Analysis of Ecological Valence Theory on Consumer Purchase Intension: A Case Study of FMCG Sector in Pakistan

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Abstract

Color choice is a crucial component of visual perception that affects various human actions, including purchasing decisions. The ecological valence theory (EVT) proposes that people's affective responses to the characteristics of objects shape their color preferences. This theory suggests individuals like colors associated with pleasing objects, feel neutral about irrelevant colors, and dislike colors tied to unpleasant objects. This research evaluates EVT by examining the impact of color factors on consumer purchase intentions for FMCG products in Pakistan. Quantitative data was collected via questionnaires distributed in Karachi. The results supported EVT, finding positive effects of color appearance, color harmony, and ecological valence on purchase intentions. Consumer color preferences mediated relationships between color predictors and purchase intentions. The findings provide support for EVT in a Pakistani context. Marketers should consider affective color meanings when designing appealing packaging to positively influence consumer behavior.

Keywords: *Ecological valence theory, color preferences, color marketing, consumer behavior, packaging design, FMCG, Pakistan*

Introduction

Color choice is a crucial component of visual perception that affects various human actions, including purchasing vehicles, making fashion decisions, decorating houses, and creating websites.(Qiao et al., 2023). Only to mention a few. Most scientific research on Color choice has been on psychophysical descriptions, which, although useful for marketing purposes, lack an explanation for why individuals prefer specific colors or even have preferences (Wang et al., 2022). Some theories concerning the origin of color preferences have been put out more recently. (Deliya, 2012).

This study and several others in the same field based on consumer psychology have shown that customer behavior varies with color preferences. (Caivano, 2021). Changes in color schemes may alter consumer purchasing habits and influence the things they choose. Consumer choices are influenced by colors, color changes, and packaging(Huang et al., 2018). The colors should be striking and appealing in order to draw customers' attention, boost their desire for them to buy them, and influence their choices to make purchases.

Kolenda's research includes color vision, consumer perception, and the magnetic attraction of colors. An analysis of color brightness finds a link with increased attention and memory, boosting customer propensity to acquire goods and services. Experts in psychology produced an applied model that looked into the merging of Color Psychology and Ecological Valence within the area of color psychology. This fusion was then used to understand customers' learning, perception, and, ultimately, purchase behavior or expectations(Motoki et al., 2019). Numerous firms are involved in branding efforts and neuro marketing. This method, which is strongly related to understanding customer perceptions and color schemes, has a strong resonance with consumer behavior and attitudes.

The ecological valence theory (EVT) examined in this study offers a new and fundamentally different approach to explaining human color preferences. The EVT proposes that people's affective responses to the characteristics and affordances of objects in their ecological environment shape their color preferences over time(Palmer & Schloss, 2010).

Scope of the Study

The major goal is to investigate the influence of colors on consumer purchase choices. Despite previous research in this area, this study offers a novel method by investigating how consumer learning and perception regulate the connection and, as a result, impact consumer purchasing

behavior. Based on previous findings, the ramifications of this study are significant, as it seeks to analyze the impact of colors on branding and how this, in turn, impacts consumer purchasing behavior(Bodhankar, 2020). Another compelling reason for doing this research is to investigate the ecological valence theory, which provides insights into customers' color preferences during purchasing choices.

This research helps both FMCG consumers and company owners and sellers. Furthermore, it gives useful data to marketers and advertisers, allowing them to modify their branding and promotional activities in accordance with the idea of ecological valence. This technique promotes a better understanding of the critical function that colors play in the purchase experiences of customers. This research, in particular, coincides with the 8.4 Goal of Sustainable Development, which focuses on business and economic development. This study has the ability to significantly improve organizational productivity and so contribute to overall economic growth as it relates to commercial operations and sustainable practices.

Statement of the Problem

The aim of this study is to identify importances of colors in making purchasing decisions. Despite prior research in this area, this study provides a fresh way for exploring how consumer learning and perception govern the relationship and, as a consequence, influence consumer purchase behavior. This research is based on Kolenda's (2016 model and the Ecological Valence theory(Palmer & Schloss, 2010), which were specifically utilized to investigate consumer buying behavior in Karachi Pakistan's Fast-Moving Consumer Goods (FMCG) market.

The implications of this research are substantial, based on prior results, since it tries to assess the effect of colors on branding and how this, in turn, influences customer buying behavior. Another compelling reason for doing this study is to look into the ecological valence theory, which gives insights into consumers' color preferences while making purchase decisions. This work contributes significantly to the academic landscape by addressing a theoretical need in the Pakistani FMCG Unilever business. This study benefits both FMCG Unilever consumers and business owners and sellers. Furthermore, it provides important data to marketers and advertisers, enabling them to adjust their branding and promotional operations to reflect the concept of ecological valence.

This method develops a deeper awareness of the crucial role that colors play in client buying experiences. This study, in particular, aligns with the 8.4 Goal of Sustainable growth, which focuses on economic and corporate growth. As it pertains to commercial operations and sustainable practices, this research has the potential to greatly boost organizational efficiency and so contribute to total economic development.

Review of Literature

Color Appearance

Several studies have indicated that age and sex impact customers' color choices. Early in childhood, people develop color preferences. Childhood environmental factors shape early choices. Children prefer warm colors because of associative learning and lens aging. Color preferences facilitate population segmentation(Chen et al., 2021). The most fundamental aspect of color vision is the ability to match colors, which also serves as the foundation of calorimetry. In the earliest studies on matching colors, stimuli of a single color were utilized as the subjects.(Caivano, 2021). Nonetheless, both the items in our visual surroundings and the environment itself have extremely few surfaces that are a single hue throughout. In addition, the materials used to construct these surfaces span a broad spectrum. Variations in the reflected light are caused by the fact that various materials each have their own unique set of qualities related to how well they reflect light. When evaluating different materials, one of the most significant cues to use is color. Variations in luminance, on the other hand, may be brought on by either shifts in the material itself or shifts in the lighting; nonetheless, variations in color are highly diagnostic of shifts in the substance(Lv & Luo, 2021).

H1: Color Appearance has a significant impact on consumer purchase intension.

Color Harmony

Color harmony refers to the visually pleasing effect created by combining colors in aesthetically harmonious ways. Multiple factors influence perceptions of harmony, including lightness, hue, and chroma contrast between colors(Li et al., 2020). However, research shows that individual color preferences also substantially impact harmony judgments. There is no universal formula for predicting optimal color harmony(Arabi, 2017). Recent research has further examined the relationship between lightness and color harmony. Recent research on the influence of chroma is more limited, but existing principles still apply. Combining highly chromatic, saturated colors

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tends to reduce harmony, so more moderate chroma levels work best. However, the impact of chroma on harmony likely depends on the hues used and personal preferences(S. Wang et al., 2022).

H2: Color Harmony has a significant impact on consumer purchase intension.

Ecological Valance

The ecological valence theory (EVT) was rigorously tested in the different studies by examining how well empirically calculated weighted affective valence estimates (WAVEs) for colors could predict participants' reported color preferences. The WAVEs were derived from affective ratings of actual objects generated independently by participants as associated with each color. Color preferences do become tethered to the typical affective responses elicited by associated objects over the course of development and experience(Härtel & Russell-Bennett, 2010). Additional analyses found WAVEs better-predicted color preferences than alternative models based on neural opponency, color appearance, or color-emotion associations.(Al-Rasheed et al., 2022).

H3: Ecological Valence has a significant impact on consumer purchase intension.

Color Preference

Color preference is a significant component of the visual experience that has an impact on a diverse range of human activities, such as the selection of clothing, the arrangement of interior space, and the creation of websites, to mention just a few examples. The vast majority of scientific research on color choice have concentrated on psychophysical descriptions. (C. Wang et al., 2022). In more recent times, a few hypotheses and guesses on the origin of color preferences have been proposed.

Advertising, branding, and packaging employ color in marketing. Color in marketing is supposed to aid in the identification and recall of advertising and, thereby, brands and goods. Individual customers and cultural groups see color differently; therefore, it has multiple meanings. Understanding cultural color preferences help marketers optimize product offers and reduce unnecessary advertising(Waheed et al., 2018).

Psychological, biological, occupational, and medical conditions may cause grownup color changes. Experiments show evolving color preferences from birth to maturity. Infants favor color and saturation above brightness, unlike adults. Brown and grey, children's least chosen colors, arrive late in conceptual development. This shows a relationship between color liking and

intellect. Children's color choices should be offered before accurate naming. The link between language development of color terminology and early childhood color perception may also influence young children's color choices. As with cultural absorption, a mother's use of color with her children may alter their color choices(C. Wang et al., 2022).

H4: Consumer Preference have mediating effect over Color Appearance and Consumer Purchase Intension.

Consumer purchase Intentions

Brand image, colors, advertising, promotion, and customer loyalty attract consumers to brands. Consumers are attracted to colors, packaging, and brands. Humans are fascinated by color. (Lavuri et al., 2023). Dynamic shading preference plays a prominent role. Every company builds its brand image from different factors, including customer happiness, brand image, loyalty, and relationship-building. Brand image is the worth of the Brand in consumers' minds and how the Brand generates income(Morwitz, 2014). Brand image is affected by branding, advertising, customer happiness, customer value, and more. Corporate Social Responsibility affects Brand Equity by building value and recognition in consumers' thoughts and creating value for firms Physical appearance and case design attract end users, who identify and appraise the product (Huang et al., 2020). Is color important? How does color affect our emotions, decisions, confidence, and wrapping style? Per his prior purchasing experience, the customer chooses and dislikes product designs based on age, sex, rituals, religion, feelings, and conduct. Surveyors use color differently. Color has a significant initial impression on consumers and often inspires us(Ding & Dong, 2019). Color is a consumer's initial barrier to inspiration.

Research Methodology

Geographical and Demographic Distribution of Sample

This study focuses on FMCG Company Unilever products (Sunslik, Lipton & Blue Band). The investigation used Positivism and primary data. The research has been conducted in the FMCG sector in Karachi, Pakistan. The demographic factors include from our chosen FMCG company Unilever products (Sunslik, Lipton & Blue Band) targeted customers. The Respondent of this study consists of both males and females. The Respondent of our study varies from different age

groups and has different income levels. The Sample taken from this Demographic enables us to understand the Customer's point of view on this Study Topic.

Research Design

This research has been conducted through a quantitative research approach with the Positivism research paradigm. The research conducted uses the explanatory strategy and the deduction approach. The research results have been generalized in the same industry from where we have the collected data. The research paradigm is the researcher's stance on conducting the research. The research paradigm provides the way and direction to perform research. Positivism has tested existing facts and knowledge based on data. In this research, primary data has been collected based on specific hypotheses that research proves and rejects with justification. The research paradigm is Positivism because the researcher performs the validity of the data based on available theory and facts. Better packaging attracts customers and boosts revenue.

Conceptual Framework

Figure 1

Conceptual Framework
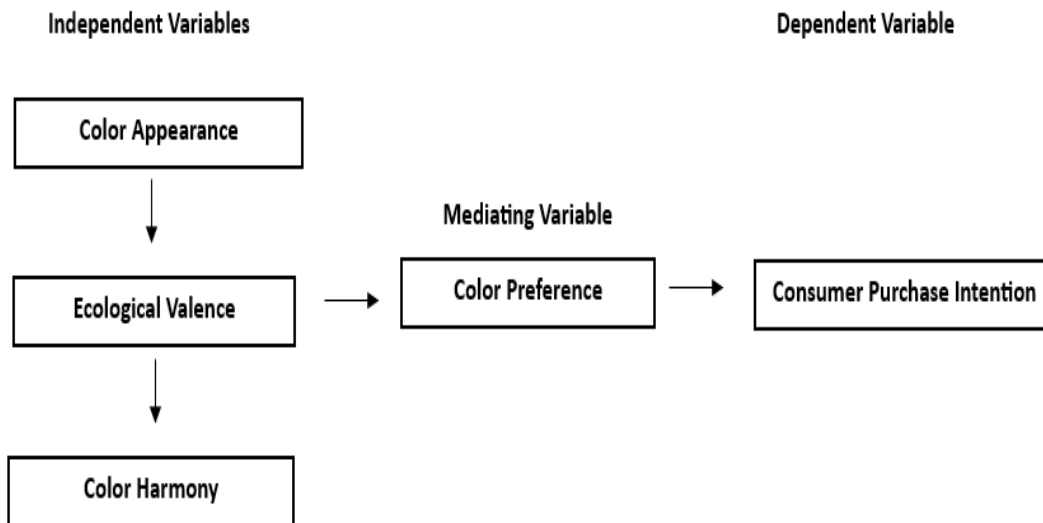
Source: Adapted from Alexander, B., & Nobbs, K. (2020), Motoki, K., Saito, T., Nouchi, R., Kawashima, R., &Sugiura, M. (2019). &Waheed, S., Khan, M. M., & Ahmad, N. (2018).

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Type of Research

The post positivism study paradigm and questionnaire data were used. This research is deductive. Applied and explanatory research uses theory and hypothesis testing to interpret outcomes.

Sample Size and Population

Convenience sampling is used in this research. The researcher sampled 385 respondents of Unilever products consumers (Sunslik, Lipton & Blue Band. When the total population size is unknown, a sample size of 385 is sufficiently large to generate meaningful results and achieve acceptable accuracy based on academic convention.

Instrument and Data Collection

The research has been conducted through Questionnaires, and the Questionnaire is designed based on close-ended questions using the 5 point Likert scale. The collected data from primary research were analyzed in SPSS Software, and various testing performed to analyze the results. Firstly, the data was arranged and coded in the Microsoft Excel sheet and then ran on the SPSS Software to evaluate the data.

Data Analysis

Table 1
Reliability of Constructs

Variables	No. of Questions	Cronbach's Alpha
Color Appearance	4	.887
Ecological Valence	4	.848
Color Harmony	4	.710
Color Preference	4	.831
Consumer Purchase Intentions	5	.916
Overall Reliability	21	.810

The reliability analysis shows that the values of Cronbach's Alpha are greater than 0.7 in each variable, this elaborates the variables having sufficient reliability and responses are consistent over the scale and research can use same tool for further data collection.

Regression Analysis

The model explains the model summary, ANOVA and analysis of coefficients based on variables.

Table 2
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.362[a]	.131	.124	.45059

a. Predictors: (Constant), CH, CA, EV

Interpretation

The model summary indicates that a multiple linear regression model was constructed with three predictors - CH, CA, and EV. It suggests that in the population, the model would account for approximately 12.4% of the variability in the outcome. Overall, this model summary conveys that the multiple regression model with three predictors has a moderate level of predictive capability, explaining 12-13% of the variance in the dependent variable, with a typical estimation error of around 0.45 between predicted and actual values. Cross-validation would likely result in approximately 12.4% predictive power based on the adjusted R-squared value.

Table 3
ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.669	3	3.890	19.159	.000[b]
	Residual	77.356	381	.203		
	Total	89.025	384			

a. Dependent Variable: CPI
b. Predictors: (Constant), CH, CA, EV

Interpretation

The ANOVA table tests whether the overall regression model is statistically significant. With 3 predictors and 381 degrees of freedom for residual error, the F test yielded a value of 19.159.

Table 4
Regression Model Results – Co-efficient
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.566	.206		12.472	.000
	CA	.063	.051	.067	1.226	.221
	EV	-.149	.069	-.147	-2.168	.031
	CH	.392	.060	.419	6.527	.000

a. Dependent Variable: CPI

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The coefficients table provides the regression statistics for each predictor variable included in the model. The constant reflects the model's predicted value when all predictors are zero. Here, it is 2.566. Of the three predictor variables, Color Harmony (CH) has the strongest statistically significant relationship with Consumer Purchase Intention (CPI), with a positive unstandardized coefficient of 0.392 and a standardized coefficient (Beta) of 0.419.

Table 5
Mediator Analysis Model
X: Consumer Purchase Intension (CPI)
Y: Color Appearance (CA)
Z: Color Preference (CP)

R	R-sq	MSE	F	df1	df2	p
0.227	0.051	0.187	20.765	1	383	<.001
Model	Coeff	SE	t	P	LLCI	ULCI
Constant	2.827	0.161	17.52	<.001	2.51	3.144
CA	0.196	0.043	4.557	<.001	0.111	0.281

Standardized Coefficients: CA = 0.227

In the first mediation model, where CP is the outcome variable, the analysis reveals a significant model (F(1, 383) = 20.765, p < .001) explaining approximately 5.1% of the variance in CP (R-squared = 0.051). The predictor CA shows a significant positive effect on CP, as indicated by its coefficient (β = 0.196, p < .001), suggesting that as CA increases, CP also tends to increase. The standardized coefficient for CA is 0.227, indicating a moderate strength of association.

Table 6
Mediation Model for CPI (Outcome Variable)

R	R-sq	MSE	F	df1	df2	p
0.542	0.294	0.165	79.537	2	382	<.001
Model	**Coeff**	**SE**	**t**	**p**	**LLCI**	**ULCI**
Constant	1.500	0.203	7.384	<.001	1.101	1.899
CA	0.030	0.041	0.731	0.465	-0.051	0.112
CP	0.580	0.048	12.097	<.001	0.486	0.674

Standardized Coefficients: CA = 0.032, CP = 0.534
X by M Interaction: F(1, 381) = 1.666, p = 0.198
Total Effect Model for CPI

In the second model, focusing on CPI as the outcome, the results are more robust, with the model explaining 29.4% of the variance in CPI (R-squared = 0.294). This model includes two predictors: CA and CP. CA's effect on CPI is not significant (β = 0.030, p = 0.465), indicating that CA alone does not have a meaningful impact on CPI. However, CP shows a significant

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Vol 4 , Issue 4
October to December 2024

positive effect on CPI (β = 0.580, p < .001), suggesting a strong relationship. The standardized coefficients reveal that CP (0.534) is a much stronger predictor for CPI than CA (0.032). Additionally, the interaction effect of X by M is not significant (F(1, 381) = 1.666, p = 0.198), suggesting that the mediator does not significantly modify the effect of the predictor on the outcome.

Table 7
Model Summary

R	R-sq	MSE	F	df1	df2	p	
0.153	0.024	0.227	9.227	1	383	0.003	
Model	**Coeff**	**SE**	**t**	**p**	**LLCI**	**ULCI**	
Constant	3.139	0.178	17.659	<.001	2.789	3.488	
CA	0.144	0.047	3.038	0.003	0.051	0.237	

Standardized Coefficients: CA = 0.153

Effect	**SE**	**t**	**p**	**LLCI**	**ULCI**	**c_cs**	
Total effect of X on Y	.144	.047	3.038	.003	.051	.237	.153
Direct effect of X on Y	.030	.041	.731	.465	-.051	.112	.032
Indirect effect of X on Y via CP	.114	.037				.046	.192
Completely standardized indirect effect of X on Y via CP	.121	.037				.051	.196

Hypothesis Testing

Table 8
Hypothesis Testing

Hypothesis	T Values	P values	Decision
H1: There is a significant impact of Color Appearance on Consumer Purchase Intentions.	1.226	.221	Rejected
H2: There is a significant impact of Ecological Valence on Consumer Purchase Intentions.	-2.168	.031	Rejected
H3: There is significant impact of Color Harmony on Consumer Purchase Intentions.	6.527	.000	Accepted
H4: Consumer Preference have mediating effect over Color Appearance and Consumer Purchase Intension.	3.038	.003	Accepted

Conclusion and Discussion

This study analyzes the impact of factors of ecological valence on consumer purchase decision. The ecological valence theory is adapted to evaluate the colors scheme factors of consumer purchase decisions. The colors in brands in most critical decision for marketers and advertisers and this creates attraction in consumer buying behavior. Literature elaborates the impact of colors on purchase intension. The methodology adapted is based on Positivism research approach, quantitative research is used to evaluate the responses collected. The data analyzed through SPSS Software and results are analyzed. This research helps fulfill the gap of knowledge on how colors affect the buying behavior in Unilever products. As few researches, have been conducted due to the concept being new. The researcher conducted on ecological valance sources of attention in buying behavior. The research results shows the color preference, color appearance and color harmony are significant predictors of consumer purchase decision in FMCG Industry based on collected primary data.

Recommendations

- Color Appearance is a significant factor that needs to be consider by companies and marketers in packaging to increase customer attraction and effects on consumer purchase decisions.

- Color Harmony is a significant factor that marketers must evaluate the actual combination and relevant color scheme so that customer attraction can be increased.

- Ecological Valance Theory is very important for understanding marketers and advertisers to add attractive colors which impact consumer buying decision.

- Color Preference is a significant factor that need to be consider by marketers and advertisers in packaging of brands and advertising to increase customer attraction and affects their purchase decisions.

References

Al-Rasheed, A. S., Franklin, A., & Maule, J. (2022). A test of the ecological valence theory of color preference, the case of Arabic. *Frontiers in Psychology*, *13*, 1010108.

Alexander, B., & Nobbs, K. (2020). Multi-sensory fashion retail experiences: The impact of sound, smell, sight and touch on consumer based brand equity. In *Global Branding: Breakthroughs in Research and Practice* (pp. 39-62). IGI Global.

Arabi, A. (2017). Influence Of Colors On Consumer Behavior" Conceptual And Theoretical Approaches". *Annals of'Constantin Brancusi'University of Targu-Jiu. Economy Series*(3).

Bodhankar, A. (2020). The New FMCG Consumer (Challenge for FMCG Sector). *Journal Of Advanced Research in Dynamical And ControlSystems*, *12*, 582-587.

Caivano, J. L. (2021). Color order systems, color mixtures, and the role of cesia. *Color Research & Application*, *46*(6), 1169-1179.

Chen, C., Li, X., & Chen, L. (2021). Development and Application of Color Appearance Phenomenon and Color Appearance Model. *Academic Journal of Computing & Information Science*, *4*(3).

Deliya, M. (2012). Consumer behavior towards the new packaging of FMCG products. *National Monthly Refereed Journal of Research in Commerce and Management*, *1*(11), 199-211.

Ding, M., & Dong, W. (2019). Product color emotional design considering color layout. *Color Research & Application*, *44*(2), 285-295.

Härtel, C. E., & Russell-Bennett, R. (2010). Heart versus mind: The functions of emotional and cognitive loyalty. *Australasian Marketing Journal*, *18*(1), 1-7.

Holbrook, M. B., & Batra, R. (1987). Assessing the role of emotions as mediators of consumer responses to advertising. *Journal of consumer research*, *14*(3), 404-420.

Huang, F., Qi, Y., Wang, C., & Wan, X. (2020). Show me the color in your mind: A study of color-flavor associations in virtual reality. *Food quality and preference*, *85*, 103969.

Huang, X., Huang, Z., & Wyer Jr, R. S. (2018). The influence of social crowding on brand attachment. *Journal of consumer research*, *44*(5), 1068-1084.

Lavuri, R., Parida, R., & Singh, S. (2023). Unveiling ways to examine the purchase intension of green products in emerging markets. *Benchmarking: An International Journal*.

Li, K. R., Yang, Y. Q., & Zheng, Z. Q. (2020). Research on color harmony of building façades. *Color Research & Application*, *45*(1), 105-119.

Lv, X., & Luo, M. R. (2021). Newcolour Appearance Scales Under High Dynamic Range Conditions. Advances in Graphic Communication, Printing and Packaging Technology and Materials: Proceedings of 2020 11th China Academic Conference on Printing and Packaging,

Morwitz, V. (2014). Consumers' purchase intentions and their behavior. *Foundations and Trends® in Marketing*, *7*(3), 181-230.

Motoki, K., Saito, T., Nouchi, R., Kawashima, R., & Sugiura, M. (2019). Light colors and comfortable warmth: Crossmodal correspondences between thermal sensations and color lightness influence consumer behavior. *Food quality and preference*, *72*, 45-55.

Palmer, S. E., & Schloss, K. B. (2010). An ecological valence theory of human color preference. *Proceedings of the National Academy of Sciences*, *107*(19), 8877-8882.

Qiao, Y., Chen, D., Sun, Y., & Wang, H. (2023). An intelligent color design method for visual communication design for public crisis. *Color Research & Application*, *48*(1), 115-138.

Waheed, S., Khan, M. M., & Ahmad, N. (2018). Product Packaging and Consumer Purchase Intentions. *Market Forces*, *13*(2).

Wang, C., Qiu, L., Zhang, W., & Wan, X. (2022). Influence of flavor variety and color variety on consumer preference and choices of yogurt bundles. *Food quality and preference*, *96*, 104424.

Wang, S., Liu, J., Jiang, J., Jiang, Y., & Lan, J. (2022). Attribute analysis and modeling of color harmony based on multi-color feature extraction in real-life scenes. *Frontiers in Psychology*, *13*, 945951.