An Examination of the Effects of Ecological Valence Theory on Consumer Intention to Buy: A Case Study of Pakistan's Food and Beverage Industry

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Abstract

The choice of colours is a crucial element in visual perception, impacting various human behaviours, including purchasing decisions. According to the ecological valence theory (EVT), people's colour preferences are influenced by their emotional responses to different object qualities. EVT suggests that individuals tend to prefer colours associated with pleasant items, remain indifferent to colours of little significance, and have an aversion to colours linked to unpleasant objects. To further explore this theory, a study was conducted to examine how colour affects Pakistani consumers' inclination to purchase fast-moving consumer goods (FMCG). The study involved the distribution of questionnaires in Karachi to gather quantitative data. The study findings validated the ecological valence theory, showing that factors such as colour harmony, attractiveness, and ecological valence positively impacted purchasing intentions among Pakistani consumers. Moreover, it was found that the associations between colour predictors and purchase intentions were influenced by consumer colour preferences. These results provide empirical support for the ecological valence theory in the specific context of Pakistan. From a practical standpoint, these findings have implications for marketers and product designers. When developing product packaging, considering the emotional meaning of colours can significantly positively influence customer behaviour. By incorporating colours that align with consumers' emotional responses, marketers can enhance the appeal and effectiveness of their products in the Pakistani market.

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

Introduction

The selection of colour is an essential aspect of visual perception that influences a wide range of human behaviours, such as choosing a car, dressing, decorating a home, and building websites. et al., Qiao (2023).

only to name a handful. The majority of scientific studies on colour choice have focused on psychophysical explanations, which are helpful for marketing but don't explain why people have preferences for particular colours or even why they like them at all (S. Wang et al., 2022). Proposals have emerged more recently regarding the origins of color preferences. (Deliya, 2012).

This research and numerous others in the same field, based on consumer psychology, have demonstrated that colour preferences have an impact on consumer behaviour. To attract consumers and increase brand sales, marketers use colour schemes, eco-friendly packaging, and branding techniques (Caivano, 2021). Modifications in colour schemes have the potential to impact customer choices and purchase behaviours. Huang et al. (2018) assert that colour, colour variations, and packaging impact consumer preferences. To grab clients' attention, increase their desire to buy them, and sway their decision to make a purchase, the colours should be eye-catching and enticing.

Kolenda has researched the magnetic attraction of colors, consumer perception, and color vision. Kolenda has linked colour brightness to improved attention and memory, thereby increasing the likelihood of customers purchasing products and services.

Psychology experts developed an applied model that examined the integration of ecological value and colour psychology within the field of colour psychology. This fusion then led to an understanding of the clients' learning, perception, and, ultimately, buying behaviour or expectations (Motoki et al., 2019). Numerous companies are actively involved in neuromarketing and branding initiatives. Since it closely ties into understanding customer perceptions and color schemes, this approach resonates powerfully with consumer behaviour and attitudes.

This study's examination of the ecological valence theory (EVT) provides a novel and radically distinct method for understanding human colour preferences. The EVT posits that people's emotional reactions to the affordances and qualities of items in their ecological environment shape their color preferences over time (Palmer & Schloss, 2010). This hypothesis states that people develop strong preferences for colours linked to items they like, a neutral attitude towards colours associated with neither objects they like nor dislike, and a strong aversion to colours associated with objects they despise.

We tested the ecological valence theory (EVT) in a number of different experiments by examining how well empirically derived weighted affective valence estimates (WAVEs) for colors might predict participants' reported color preferences. We calculated the WAVEs using the emotional assessments of real items, individually created by participants and associated with each colour.

The various study results strongly supported the ecological valence hypothesis, revealing that WAVEs accounted for 80% of the variation in colour preferences. Development and experience link colour preferences to the normal emotive reactions generated by connected items (Härtel & Russell-Bennett, 2010). WAVEs outperformed other models based on neural opponency, colour appearance, or colour-emotion correlations in predicting colour preferences, according to further research.

Research Statement

This study aims to evaluate the importance of colours in branding contexts and examine how colour harmony, ecological valence, and consumer preferences affect consumer purchase decisions. In contrast to other studies in this field, this study offers a novel approach to investigating how consumer perception and learning control the connection and, ultimately, affect consumer purchasing behaviour.

Based on Kolenda's (2016) model and Palmer & Schloss's (2010) Ecological Valence Theory, this study examines customer purchasing behaviour in Karachi, Pakistan's Fast-Moving Customer Goods (FMCG) sector. Drawing on previous findings, this study has significant implications as it examines the impact of colour on branding and how it affects consumer purchasing behaviour. Examining the ecological valence theory—which provides information on consumers' colour preferences during the purchasing process—is another strong justification for doing this study.

By filling a theoretical gap in the Pakistani FMCG Unilever industry, this paper makes a substantial contribution to the academic community. This study provides valuable insights for both sellers and business owners, as well as customers of FMCG Unilever. Additionally, it gives marketers and advertisers crucial information that helps them modify their branding and advertising strategies to better represent the idea of ecological value. Using this approach, one becomes more cognizant of the significant influence colours have on customers' purchasing decisions.

This study is particularly aligned with the 8.4 Goal of Sustainable Growth, which emphasises business and economic growth. This research has the potential to significantly increase organisational efficiency with regard to sustainable practices and commercial operations, therefore contributing to overall economic development.

Literature Review

Numerous studies have suggested that age and gender influence consumers' colour preferences. People form colour preferences early in life. The environment of childhood shapes early decisions. Due to associative learning and lens ageing, children have a preference for warm colours. Color preferences facilitate population segmentation (Chen et al., 2021).

The most basic feature of colour vision is the capacity for colour matching, which forms the basis of calorimetry. The first experiments on colour matching used single-colour stimuli as participants. [Caivano, 2021]. However, there are very few surfaces in the world, and the objects in our visual surroundings are all of the same colour. Furthermore, a wide range of materials make up these surfaces. Different materials differ from one another in terms of how strongly they reflect light, resulting in variations in the reflected light. Colour is one of the most important indicators to use when comparing various materials. On the other hand, changes in brightness might result from changes in the material or the illumination, while changes in colour are a strong indicator of changes in the substance itself (Lv & Luo, 2021).

H1: Color appearance has a significant impact on consumers' intentions to make purchases.

Colour Coherence

Colour harmony is the visually appealing result of blending colours in aesthetically pleasing combinations. Variables such as lightness, hue, and chroma contrast between colours influence the perception of harmony (Li et al., 2020). Individual colour tastes, however, can have a significant influence on harmony assessments, according to studies. To forecast the ideal colour harmony, there is no one-size-fits-all formula (Arabi, 2017).

Recent studies have further explored the relationship between brightness and colour harmony. Though chroma's impact has been the subject of less recent research, the general rules still hold true. More moderate chroma levels work best because combining highly chromatic, saturated colors tends to undermine harmony. However, chroma's effect on harmony probably depends on personal taste and the colors chosen (S. Wang et al., 2022).

H2: Color harmony significantly influences a consumer's intention to buy.

According to the ecological valence hypothesis, a person's unconscious integration of all of their positive and negative associations with color determines their preferred color. EVT specifically argues that a person's preferences for colors reflect the average affective valence of items associated with those colors, indicating a preference for colors associated with concepts and objects that have a higher positive valence (Al-Rasheed et al., 2022).

Given that the valence of Saudi color associations accounted for 50% of the variance in Saudi color preferences, we can conclude that the explanatory power of EVT varies among cultures. Palmer and Schloss (2010) assert that while the data provides some support for the ecological valence theory overall, it also implies that variables other than the valence of ecological colour associations likely influence colour preferences. Therefore, this study proposes the following hypothesis

H3: Ecological values significantly influence consumers' intention to make purchases.

Color preference, an important aspect of the visual experience, influences a wide range of human activities, including the design of websites, the layout of interior spaces, and the choice of apparel. The majority of scientific studies on color choice have focused on psychophysical explanations. These could work well for advertising, but they don't explain why people like the colours they do or even why they have colour preferences in the first place (C. Wang et al.,

2022). More recently, researchers have proposed several educated estimates and conjectures regarding the origins of color preferences.

Packaging, branding, and advertising all use color. Advertising uses colour to help consumers recognise and remember products and brands. Since various customers and ethnic groups see it in different ways, color has several connotations. According to Waheed et al. (2018), marketers may optimise product offers and cut down on needless advertising by taking into account cultural colour preferences. Psychological, biological, occupational, or medical factors can cause changes in adult color. Experiments demonstrate how colour choices change as people get older.

According to Huang et al. (2020), the product's physical appearance and case design draw in end consumers, who then recognise and evaluate it. Is hue significant? How can color influence our feelings, thoughts, self-esteem, and wrapping style? Based on his past shopping experiences, the client selects and disapproves of product designs according to factors such as age, sex, customs, religion, emotions, and behaviour. Colour is used differently by surveyors. According to Ding and Dong (2019), colour frequently inspires us and makes a big first impression on customers. For a customer, the primary obstacle to inspiration is color.

Research Methodology

To carry out this study, we used the positivist research paradigm and a quantitative research technique throughout the entire research process. We conducted the research using both the explanatory technique and the deductive approach. The discovery was made. We generalized the research findings within the same sector of the economy, which provided the initial researcher's perspective on how to conduct the study. We refer to this perspective as the research paradigm. As a framework that guides and drives the research process, a research paradigm acts as a guide for the research process. Positivism has conducted a test of previously established facts and knowledge through the use of data. For the purpose of this inquiry, we have gathered primary evidence based on specific assumptions, which we have subsequently demonstrated and rationally rejected. The positivist research paradigm distinguishes itself by emphasizing the researcher's responsibility to validate the data using available theory and facts. Enhancing packaging is a fantastic way to increase revenue and attract customers.
On this scale, the appearance of the color, ecological valence, and color harmony are the independent variables.

The consumer's intention to make a purchase is the dependent variable.

Preference for specific colours is the mediating variable.

The research in question makes use of the convenience sampling method. The researcher collected data from 350 customers using a 95% confidence interval and a statistics calculator. When the total population size is unknown, a sample size of 350 is sufficient to generate meaningful results and achieve acceptable accuracy based on convention in academic and professional research with an indefinite population. Based on this convention, a sample size of 385 allows for a 95% confidence level with a 5% margin of error, assuming that the population proportion is 50%. This means we have a 95% confidence level that the actual population falls within 5% of the sample-derived estimate. The researcher collected data from 350 Karachi Pakistan's food and beverage industry brand customers using a customised questionnaire. The researcher collected the data using Google survey forms.

We used SPSS software to analyze the data gathered from primary research, conducting various tests to interpret the results. We conduct several statistical tests, such as Cronbach's alpha, regression analysis, Pearson's correlation, and mediating analysis, among others.

Data Analysis

The reliability analysis performed based on internal reliability tests and values of Cronbach's Alpha analyzed.

Table 1
Reliability of Constructs

Variables	No. of Questions	Cronbach's Alpha
Color Appearance	4	0.780
Ecological Valence	4	0.787
Color Harmony	4	0.695
Color Preference	4	0.805
Consumer Purchase Intentions	5	0.770
Overall Reliability	21	0.760

The reliability analysis reveals that each variable has Cronbach's alpha values greater than 0.7, indicating sufficient reliability and consistent responses across the scale. This means that researchers can use the same tool for further data collection and analysis to evaluate the relationship and impact of variables.

Regression Analysis

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

Table 2

Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.766	.7241	.704	.665
Predictors: (Constant), CA, EV, CH				

Table 3
ANOVA

ANOVA						
Model		Sum of Square	Df	Mean Square	F	Sig.
1	Regression	47.56	6	7.965	16.878	.000[b]
	Residual	165.670	378	.467		
	Total	216.230	384			
a. Dependent Variable: CPI						
b. Predictors: (Constant), CA, EV, CH						

Table 4
Regression Model Results – Co-efficient

Coefficients						
Model		Unstandardized Coefficient		Standardized Coefficient	T	Sig,
	Constant	B	Std. Error	Beta		
1	CA	2245	.376		5.987	.000
	EV	.156	.059	.323	2.167	.014
	CH	.019	.126	.025	2.034	.008
		.311	.367	.212	2.688	.028
a. Dependent Variable: CPI						

The variables include colour appearance, ecological value, and colour harmony, with v values of t statistics greater than 2 and probability or significance values less than 0.5. This indicates that all the variables are significant and have a significant impact on consumer purchase intentions.

Hypothesis Testing

Table 5
Hypothesis Testing

Hypothesis	T Values	P values	Decision
H1: There is significant impact of Color Appearance on Consumer Purchase Intentions.	2.167	.014	Accepted
H2: There is significant impact of Ecological Valence on Consumer Purchase Intentions.	2.034	.008	Accepted
H3: There is significant impact of Color Harmony on Consumer Purchase Intentions.	2.688	.028	Accepted

We accept hypotheses H1, H2, and H3 because they have a t value greater than 2 and a probability value less than 0.05. The variables with t statistics are greater than 2, and the probability or significance value is less than 0.5. This indicates that all variables are significant and significantly influence consumer purchase intentions.

Table 6
Mediator Analysis Color Appearance – Color Preference – Consumer Purchase Intension
Mediation Model for CP (Outcome Variable)

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

Table 7

Mediation Model for CPI (Outcome Variable)

R	R-sq	MSE	F	df1	df2	p
0.592	0.363	0.175	79.537	2	382	<.001
Model	Coeff	SE	t	p	LLCI	ULCI
Constant	1.600	0.213	8.084	<.001	1.001	1.799
CA	0.040	0.051	0.631	0.365	-0.041	0.012
CP	0.490	0.049	11.197	<.001	0.506	0.598

Standardized Coefficients: CA = 0.044, CP = 0.647
X by M Interaction: F(1, 381) = 1.708, p = 0.208
Total Effect Model for CPI

Table 8
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

Table 9
Hypothesis Testing

Hypothesis	T Values	P values	Decision
H1: Consumer Preference have mediating effect over Color Appearance and Consumer Purchase Intension.	0.196	.001	Accepted
H2: Consumer Preference have mediating effect over Ecological Valance and Consumer Purchase Intension.	4.582	.001	Accepted

H3: Consumer Preference have mediating effect over Color Harmony and Consumer Purchase Intension.	4.582	.001	Accepted

Conclusion and Discussion

This study examines the impact of ecological valence factors on consumer purchase decisions. We adapt the ecological valence theory to evaluate the influence of colour scheme factors on consumer purchase decisions. The colours in brands are the most critical decision for marketers and advertisers, and this creates attraction in consumer buying behaviour.

The literature elaborates on the impact of colours on purchase intention. The quantitative research methodology employs the positivist research paradigm and the deductive approach. The researcher collected data through primary source questionnaires.

The adopted methodology relies on a positivist research approach, employing quantitative research to assess the collected responses. We analyse the data and results using SPSS software. This research helps fill the knowledge gap on how colours affect the buying behaviour of Unilever products. Given the novelty of the concept, only a limited number of studies have been conducted. The researcher investigated the role of ecological values as sources of attention in consumer buying behavior. The research results show that colour preference, colour appearance, and colour harmony are significant predictors of consumer purchase decisions in the FMCG industry based on the collected primary data.

Recommendations

- Color appearance is a significant factor that companies and marketers must consider in packaging to increase customer attraction and influence consumer purchase decisions.
- Marketers must assess the actual combination and relevant color scheme to enhance customer attraction, which is a crucial factor in color harmony.
- The Ecological Valance Theory is very important for marketers and advertisers to understand how adding attractive colors impacts consumer buying decisions.

- Marketers and advertisers should consider color preference in brand packaging and advertising to increase customer attraction and influence their purchase decisions.

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