Bridging AI and Tradition: Consumer Perception of Cultural Authenticity Paradox in AI – Designed Indian Sarees with Reference to Madurai

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Abstract

The use of Artificial Intelligence (AI) technology in redesigning traditional products is making way for innovations as well as bringing into light the issue of cultural authenticity. The current study, "Bridging AI and tradition: Consumer perception of cultural authenticity paradox in AI-Redesigned Indian sarees with reference to Madurai", purpose is to analyse the perception of consumers regarding traditional sarees after being redesigned in terms of colour, motifs, patterns and borders by the use of AI technology. The study seeks to bring into limelight the emerging conflict between technological innovation and cultural authenticity. Descriptive and analytical research designs are adopted and primary data is collected from consumers based in Madurai city through structured questionnaire in five – point Likert scale format. This research studies the knowledge and exposure of consumers regarding Ai-designed traditional sarees, AI improvement, innovation, cultural Authenticity, skepticism about AI and purchase intention. The percentage and frequency method are adopted to evaluate the demographic structure, awareness and exposure of consumers and to analyse the response of consumers towards AI-designed sarees. The chi-square test is performed to find out the relationship between educational background and the perception of AI improvement. Exploratory factor analysis (EFA) is conducted to determine the dimensions of the perceptions of consumers towards AI-designed traditional sarees. The correlation technique is used to investigate the relationship between innovation and cultural Authenticity. The Garret ranking technique is employed to rank the influencing factors for evaluation of AI-designed traditional sarees by consumers.

Keywords: AI, Artificially Redesigned Sarees, Paradox of Authenticity, Perception, Purchase

1.Introduction

Artificial Intelligence (AI) makes impact in the designing, marketing, and presentation of traditional products and a way possible for the combination of technology with cultural heritage. Traditional Indian sarees, including Kanchipuram (Kanjeevaram silk) silk, Madurai Sungudi, Paithani, chettinad kandangi, Banarasi silk are known for their unique designs, craftmanship and cultural heritage. By apply the AI technology to redesigning colours, designs, motifs, patterns and borders will certainly make these sarees innovative and attractive to the modern consumers; however, it may bring concerns regarding their originality and cultural authenticity. This creates an "Authenticity paradox" in which consumers may value innovation due to AI application but at the same time have doubts about the cultural authenticity. Cultural Authenticity can be defined as the degree of consumers' perception about the product being culturally authentic. So, it is essential to investigate the consumer's perception to find out whether AI technology can be combined with traditional sarees without damaging their cultural heritage. From this perspective, the current research focuses on the consumer perception of cultural authenticity towards AI-redesigned traditional Indian sarees with special consideration of Madurai city. It will investigate such factors as AI awareness, AI enhancement, innovation, cultural Authenticity, AI skepticism and purchase intention.

2.Statement of Problem

The use of AI technology in the design of products presents possibilities to remodel the traditional sarees using different colours, designs, patterns, and styles. While such AI modification would make the traditional sarees more attractive and appealing to modern-day consumers, it might also create doubts about the cultural Authenticity of these sarees. This poses an "Authenticity Paradox "between technology and culture. Not much research has been done on the consumers perception of AI-modified traditional Indian sarees. Therefore, this research aimed to study consumer perceptions of AI modification, innovation, cultural authenticity, AI skepticism and purchase intention.

3.Review of Literature

According to Bagul et al., (2026), the AI assisted customization of traditional Paithani sarees helps in adding value to personalization, customer involvement, decision making and confidence through real-time preview and virtual try-on options, bridging tradition and technology in the process. Arunachalam (2024) stated that the combination of AI and

Kanchipuram silk weaving enables innovative designs, quality assurance, increased efficiency, market reach and fusion of traditional patterns with fashion industry needs, but AI use must be taken seriously to ensure the traditional values of handwoven sarees are preserved. Pop-cohut (2026) described how the use of generative AI can lead to the creation of “hybrid artisan" where AI and human creativity work together, but there is a conflict between technological development and cultural preservation. The authors stressed the need for cultural safety measures, heritage knowledge protection and clear communication about AI to maintain cultural identify during technological transition.

4.Objectives

The present study aims:

- To Analyse the perception of consumers towards AI redesigned Indian sarees in Madurai city.
- To investigate the dimensions of consumer perception of AI redesigned traditional Indian sarees.
- To identify the relationship between the perceptions of AI enhancement innovation and cultural Authenticity of traditional Indian sarees.

5.Scope of the Study

The research study concentrates on the cultural Authenticity of AI redesign of the saree from the perspective of consumer perception. In particular, the study will cover Madurai sungudi and Kanchipuram sarees. Specifically, Madurai sungudi, Kanchipuram (kanjeevaram silk) silk, paithani, chettinad kandangi and banarasi silk were redesigned by using AI-based changes in colours, motifs, patterns, and borders. The study will also concentrate on the relationship between consumers' AI awareness, AI enhancement perception, innovation perception, cultural Authenticity, AI skepticism and purchase intention. The study is confined to female consumers in Madurai city. The geographical scope will be limited to consumers from Madurai city.

6.Research Methodology

This research work uses a descriptive and analytical approach to investigate consumer perception of the cultural Authenticity paradox in AI-redesigned traditional sarees in Madurai. The primary data were obtained from 131female consumers in Madurai city through the use of a structured questionnaire using five-point Linkert scale. The research is concerned with

consumer awareness and exposure to AI-redesigned sarees, AI redressed, innovation, cultural authenticity and factors affecting purchase evaluation. The data were analysed using percentage analysis, chi-square test, mean and standard deviation, Exploratory factor analysis (EFA), Pearson-product moment correlation and Garrett Ranking Technique.

7.Analysis and Interpretation

7.1 Socio-Economic Profile of the Respondent

Table 1: Socio-economic profile of the Respondent

Variables	Classification	No. of Respondents	Percentage %
Age (in years)	Less than 25 years	46	35.11
	26-40 years	57	43.51
	41-60years	26	19.85
	Above 60 years	2	1.53
Educational qualification	School level	20	15.27
	Graduate	94	71.76
	Professional qualification	17	12.98
Present status	Student	34	25.95
	Salaried employee	45	34.35
	Business/self employed	31	23.66
	professional	8	6.11
	homemaker	13	9.92
Monthly income	Below 20000	49	37.40
	20001-40000	51	38.93
	40001-60000	19	14.50
	Above 60000	12	9.16
Frequency of Purchasing Traditional Sarees	Very frequently	22	16.79%
	Frequently	28	21.37%
	Occasionally	63	48.09%
	Rarely	15	11.45%
	Never	3	2.29%

Source: Primary data

Interpretation

From Table 1, it can be inferred that among the total of 131 respondents, most (43.51%) of them fall into age category of 26-40 years, followed by35.11% being below 25years old, which implies that the respondents mostly came from young and middle-aged individuals. With respect to educational qualification, most (71.76%) of the respondents are graduates, followed by those having school education (15.27%) and professional qualifications (12.98%). As per the present status of the respondents, most (34.35%) of them are salaried employees, followed by students (25.95%) and business/self-employed (23.66%). As far as monthly income of the respondents is concerned, most (38.93%) of them earn between Rs.20001- 40000, whereas 37.40% earn below Rs. 20000. Regarding traditional saree consumption, 48% of respondents purchase traditional sarees occasionally, indicating that occasional purchase is the most common patter. Hence, the profile of the respondents clearly indicates that the study is dominated by graduates, salaries employees, medium income earners occasionally purchasing traditional sarees.

7.2 Chi-Square Test

H_0 (Null Hypothesis): There is no association between educational qualification and level of AI enhancement perception.

H_1 (Alternative Hypothesis): There is an association between educational qualification and AI enhancement perception.

Table 2: Chi-square Test for Association between Educational Qualification and Level of AI Enhancement Perception

Educational qualification	Level of AI enhancement perception			Total	Chi-square value	df	p-value
School level	12 (60.0) [22.6]	5 (25.0) [7.1]	3 (15.0) [37.5]	20 (100.) [15.3]	**10.35**	**4**	**0.035***
Graduate	37 (39.4) [69.8]	53 (56.4) [75.7]	4 (4.3) [50.0]	94 (100.) [71.8]			

Professional qualification	4 (23.5) [7.5]	12 (70.6) [17.1]	1 (5.9) [12.5]	17 (100.) [13.0]			
Total	53 (100) [100]	70 (100) [100]	8 (100) [100]	131 (100) [100]			

Source: Computed data

Note: The value within () refers to Row percentage. The value within [ ] refers to column percentage. * Denotes significance at 5% level

Interpretation

As the p-value (0.035) is lower than 0.05, the null hypothesis is rejected at 5% level of significance. Therefore, it can be stated that there is a significant relationship between educational qualification and the level of AI enhancement perception in case of AI-designed traditional sarees. From the row percentage, it can be said that 60.0% of those who have educational qualification up to schooling level of perception while 56.4% and 70% of graduates and professionally educated people respectively have a medium level of perception.

7.3 Central tendency and dispersion

Table 3**: Frequency statistics of perception Towards AI-redesigned Traditional**

S. No.	Perception Statements	Mean	SD
1	New design variations	2.15	1.01
2	Improved visual appeal	2.75	1.04
3	Creative colour combinations	2.47	1.05
4	Innovative traditional patterns	2.66	1.04
5	Contemporary fashion adaption	2.44	1.03
6	New approach to traditional fashion	2.21	1.17
7	Creative alternative designs	2.33	1.09
8	More contemporary saree design	2.31	1.15
9	Traditional-modern design integration	2.31	1.17
10	Innovative product perception	2.26	1.42

11	Preservation of cultural heritage	2.10	1.22
12	Cultural Authenticity	2.18	1.11
13	Preservation of cultural identity	2.21	1.21
14	Preservation of traditional elements	2.35	1.10
15	Genuineness of traditional sarees	2.32	1.30
Overall	**Overall perception**	**3.34**	**1.14**

Source: Computed data.

Interpretation

It is inferred from Table 3, that the mean score of 3.34, which is higher than the neutral mid-point of the Likert 5-scale '3', denotes a positive perception towards the redesigned traditional sarees with the help of AI. In terms of various aspects of perception, improved visual appearance was ranked highest, with a mean score of 2.75, then innovative traditional patterns (2.66) and creative colour combination (2.47). In addition to these, positive perceptions were reported for adaption to contemporary fashion trends and blend of traditional and modern design elements.

7.4 Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis was used to identify the underlying dimensions of respondents' perceptions towards AI-redesigned sarees.

Table No.4: Communalities

Items	Initial	Extraction
1.AI can create new design variations for traditional sarees	1.01	.48
2.AI can improve the visual appeal of traditional sarees	1.07	.62
3.AI can provide creative colour combination	1.09	.62
4.AI can provide creative colour combinations for traditional saree designs	1.07	.58
5.AI can create innovative patterns inspired by traditional saree designs	1.06	.64
6.AI redesigned sarees represent a new approach to traditional fashion	1.35	1.09

7.AI redesigned sarees offer creative alternative to conventional saree designs	1.18	.87
8. AI makes traditional saree designs more contemporary	1.31	1.01
9.AI redesigned saree combine traditional ideas with modern creativity	1.36	1.04
10.I consider AI redesigned sarees to be innovative products	1.99	1.75
11.An AI redesigned saree can still represent its original cultural heritage	1.48	1.22
12.I consider an AI redesigned saree to be cultural authentic	1.23	1.02
13.AI can be used without losing the cultural identity of a traditional saree	1.45	1.16
14.An AI redesigned saree can preserve important traditional design elements	1.20	.93
15.The use of AI does not necessarily make a traditional saree less genuine	1.67	1.29

Source: Computed data.

Interpretation

From Table 4, it can be concluded that the extraction communalities suggest the proportion of the variance in each of the perception items that is accounted for by the extracted factors. The extraction values range from 0.48 to 1.75 in the 15 items, suggesting that the extracted factors account for a significant amount of the variance in most of the items. The highest extraction value is seen in the case of "I consider AI-redesigned sarees to be innovative products" (1.75), followed by "AI makes traditional saree designs more contemporary" (1.01) and "AI-redesigned sarees blend traditional concepts with modern innovation" (1.04). Other items including "AI can add visual appeal to traditional sarees" and "AI can help in creative colour combinations" have relatively higher extraction values of 0.62 each. The lowest extraction value is seen in the case of "AI can help in creating design variations of traditional sarees" (0.48). In general, the communalities in Table 4 suggest that the extracted factor solution accounts for the observed perception items to a considerable extent.

Table 5: Total Variance Explained

Particulars	Component 1	Component 2	Component 3	Component 4	Total
Initial Eigenvalue	8.67	2.41	1.98	1.25	14.31
Initial % of Variance	44.4	12.4	10.1	6.4	73.3
Initial Cumulative %	44.4	56.7	66.9	73.3	73.3
Extraction Eigenvalue	8.67	2.41	1.98	1.25	14.31
Extraction % of Variance	44.4	12.4	10.1	6.4	73.3
Extraction Cumulative %	44.4	56.7	66.9	73.3	73.3
Rotation Eigenvalue	7.03	2.32	2.43	2.53	14.31
Rotation % of Variance	36.0	11.9	12.4	13.0	73.3
Rotation Cumulative %	36.0	47.9	60.3	73.3	73.3

Source: Computed data.

Interpretation

Four components were retained, with eigenvalues of 8.67, 2.41, 1.98 and 1.25. Together, these four components explain 73.3% of the total variance. After rotation, the variance is distributed across the four components as 36.0%, 11.9%, 12.4% and 13.0%, respectively. This indicates that the extracted four-factor solution captures a substantial share of the overall variation in consumers' perceptions.

Table 6: Rotated Component Matrix

Items	Components				Highest Loading
	1	2	3	4	
1.New design variations	.13	.54	-.16	.39	C2 (0.54)

2.Improved visual appeal	.25	.64	-.38	.02	C2 (0.64)
3.Creative colour combinations	.03	.75	.14	.19	C2 (0.75)
4.Innovative traditional patterns	.05	.74	.18	-.03	C2 (0.74)
5.Contemporary fashion adaption	-.20	.66	.34	.22	C2 (0.66)
6.New approach to traditional fashion	.10	.19	1.00	.22	C3 (1.00)
7.Creative alternative designs	.39	.08	.84	.08	C3 (0.84)
8.More contemporary saree design	.90	.01	.43	.13	C1 (0.90)
9.Traditional-modern design integration	.99	.06	.12	.20	C1 (0.99)
10. Innovative product perception	1.31	.12	.06	.11	C1 (1.31)
11.Preservation of cultural heritage	.50	-.04	.32	.93	C4 (0.93)
12.Cultural Authenticity	.50	.04	.17	.86	C4 (0.86)
13.Preservation of cultural authenticity	.88	-.04	.21	.59	C1 (0.88)
14.Preservation of traditional elements	.87	.10	.06	.39	C1 (0.87)
15.Genuineness of traditional sarees	1.10	.09	-.03	.27	C1 (1.10)

Source: Computed data

Interpretation

The extracted four components explain 73.3% of the total variance: Contemporary Innovation & Traditional–Modern Integration (Component 1 – 36.0%), AI-Enabled Creative Design Enhancement (Component 2 – 11.9%), Alternative & Transformative Saree Design (Component 3 – 12.4%), and Cultural Heritage & Authenticity (Component 4 – 13.0%) .Suggested Factor Labels: Component 1 - Contemporary Innovation and Traditional Integration; Component 3 - Alternative and Transformative Saree Design; Component 4 - Cultural Heritage and Authenticity.

On the whole, the EFA suggests that there exist four latent dimensions of consumer perceptions with respect to redesigned AI-based traditional Indian sarees, and these are contemporary Innovation and Traditional Integration, AI-Based creative Enhancement of Design, Alternative and Transformative Designs of saree, and cultural heritage and Authenticity. All these four factors together account for 73.3% of the variance.

7.5 Correlation

Pearson Product-Moment Correlation Coefficient (Pearson's r) was used to examine the relationship between perceived innovation and perceived cultural authenticity.

Hypothesis Testing

H_0: There is no significant relationship between perceived innovation and perceived cultural authenticity.

H_1: There is a significant relationship between perceived innovation and perceived cultural authenticity

Table 7: Correlation perceived innovation &perceived cultural Authenticity

Variables	Statistical Tools	Pearson Correlation (r)	p-value	N	Interpretation
Perceived innovation - perceived cultural authenticity	Pearson Product - Moment Correlation	0. 888	< 0.001	131	Very strong positive and statistically significant relationship

Source: Computed data

Interpretation

The Pearson Product-Moment Correlation analysis revealed a very strong positive and statistically significant relationship between perceived innovation and perceived cultural authenticity of AI-redesigned traditional Indian sarees ($r = 0.888$, $p < 0.001$, $N = 131$). Consumers who perceive AI-redesigned sarees as more innovative also tend to perceive them as more culturally authentic. The coefficient of determination ($R^2 = 0.788$) indicates

approximately 78.8% shared variance in the linear relationship. This should not be interpreted as causation. Since $p < 0.001$, H_0 is rejected and H_1 is supported. Therefore, there is a very strong, positive, and statistically significant relationship between perceived innovation and perceived cultural authenticity.

7.6 Garrett Ranking

Garrett Ranking Technique was used to rank the factors influencing consumers while evaluating AI-redesigned traditional Indian sarees.

Table 8: Garret ranking

S. No.	Factors	Total Garrett Score	Mean Garrett Score	Garrett Rank
1	Cultural authenticity	8807	67.299	1
2	Traditional craftsmanship	8266	63.099	2
3	Quality	8107	61.885	4
4	Design attractiveness	7830	59.771	5
5	Innovation	7601	58.023	3
6	Price	5689	43.427	6
7	Brand Reputation	4757	36.313	7
8	Transparency about AI involvement	4094	31. 252	8

Source: Computed Data

Interpretation

Cultural authenticity is ranked first with a mean Garrett score of 67.229, followed by traditional craftsmanship with 63.099 and quality with 61.885. Design attractiveness ranks fourth, innovation fifth, price sixth, brand reputation seventh, and transparency about AI involvement eighth with Garrett score of 31. 252.

8.Findings

1. From the analysis, it was established that 58.02% of the respondents are familiar with the use of AI in the redesigning of traditional sarees, while 62.60% of the respondents have seen AI-generated or assisted designs of traditional sarees

2. The mean value of 3.34 reveals an appreciative attitude among the respondents regarding AI-designed traditional Indian sarees.
3. According to the chi-square test, there is a significant relationship between the level of education and level of AI enhancement perception (p=0.035)
4. Four main dimensions that influence consumer perceptions according to the exploratory factor analysis are contemporary Innovation and tradition integration, AI assisted creative Design Enhancement, alternate and innovative saree design, and cultural Heritage and Authencity. These four factors account for 73.3% of the total variance.
5. There was a very strong and statistically significant relationship between innovation and cultural authenticity perceptions ($r=0.888$, $p<0.001$). This implies that if the respondents see the saree redesign through AI as innovative then they perceive it as being culturally authentic
6. The Garrett Ranking technique has established that the most significant factor influencing consumers perception of AI-designed traditional sarees includes cultural authencity, traditional craftmanship, innovation, quality, design attractiveness.

9.Suggestions

Based on analysis of the study, the following suggestions are proposed

A. Suggestions for Consumers

1. Consumers should be aware of the presence of AI in saree designing so that they will know how much role technology played in designing the saree.
2. While judging the redesigned sarees using AI, consumers should take into account how much cultural authenticity and value has been preserved in the sarees.
3. While appreciating the innovations made by AI in the saree designs, consumers should also think about the heritage and traditional aspect of the saree.
4. Consumers should consider the craftmanship and quality of the sarees rather than only modern or beautiful AI generated designs.

B. Suggestions to Manufacturers, Designers and Artisan

1. It must be ensured by the manufacturers and designers that the use of AI technology doesn’t affect the cultural authenticity of the traditional sarees. All the cultural elements including motifs, designs, colours and weaving techniques must be preserved.

2. AI should be used as a supportive technology for designing and exploring new design ideas without compromising the creativity and expertise of the traditional artisans.
3. The manufactures and designers must strike a proper balance between current trends in design and traditions so that the AI-designed sarees become innovative but at the same time don't lose their cultural aspect.
4. The quality of sarees must not be affected by the AI-based modification as quality is one of the key factors in consumer assessment.
5. The designers and manufacturers must make clear how much AI technology was involved in the design process. Transparency can build consumer trust and facilitate consumer decision making.
6. Collaboration with the traditional artisans during the process of designing and production of the sarees through the use of AI technology must be ensured.

10.Conclusion

From this study, it can be concluded that the perception of the consumers of Madurai city about the AI-redesigned traditional Indian sarees is highly positive, having a mean score of 3.34. Consumers understand the capabilities of AI to incorporate new designs, colours, patterns and contemporary fashion features in traditional sarees while making them more visually appealing. However, factors of cultural authenticity and traditional craftmanship still play a key role in consumers perception. According to Garret Ranking, cultural authenticity was ranked first and traditional craftmanship second. Four dimensions were identified in the study: Contemporarization and Tradition, AI-enabled creative Designing, Alternate/Transformative saree Designing and cultural Heritage/Authenticity. Correlation analysis indicated a very high, positive and significant correlation between innovation perception and cultural authenticity ($r=0.888$, $p<0.001$). It means that the consumers view AI innovation positively when it preserved the traditional identity, cultural authenticity, and craftmanship of sarees. Thus, the success of AI integration into traditional saree designing lies in the proper balance between innovation and tradition.

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