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The algorithmic wardrobe: How artificial intelligence is reshaping apparel buying decisions in Coimbatore District

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Abstract
Artificial intelligence (AI) is increasingly becoming part of apparel shopping, influencing how consumers search for, evaluate and select clothing. This study examines the role of AI in apparel buying decisions among consumers in Coimbatore District, with particular focus on the consumer characteristics associated with AI influence and the factors that predict AI-driven decision-making. Primary data were collected from 402 apparel consumers representing different demographic and behavioural segments. The study employed Correlation Analysis, Multiple Regression Analysis and Step-wise Regression Analysis to examine relationships, determinants and key predictors of AI influence. The correlation results indicate significant associations with educational qualification, marital status, household income, occupation, apparel purchase frequency, monthly apparel spending, smartphone usage and awareness of AI apparel features, while gender, residence, shopping channel and apparel applications show no significant association. Multiple regression identifies educational qualification, marital status**,** monthly apparel spending, smartphone usage and awareness of AI apparel features as significant determinants of AI apparel decision-making. Step-wise regression further identifies marital status and educational qualification as the strongest predictors, followed by AI awareness, apparel spending, purchase frequency and smartphone usage. The findings demonstrate that AI influence on apparel buying decisions varies according to consumer characteristics and is shaped by both socio-economic and behavioural factors. The study provides useful insights into the emerging algorithmic consumer in a tier-2 Indian market and offers implications for apparel retailers seeking to develop more consumer-responsive AI-enabled shopping experiences.

Keywords: AI influence, algorithmic consumer, apparel buying decisions

Introduction

Artificial Intelligence (AI) is increasingly transforming the way consumers search, evaluate and purchase apparel. Recommendation systems, virtual try-on applications, AI-powered visual search, chatbots, styling assistants and intelligent sizing tools have become important components of digital fashion retail. These technologies enable personalised product discovery, reduce search effort and provide consumers with technology-supported assistance throughout the buying process. The impact of AI is particularly significant in apparel because clothing decisions are influenced by appearance, fit, style, personal preferences and identity. AI can analyse consumer behaviour and preferences to recommend products and influence the alternatives considered by shoppers. Thus, apparel buying is gradually shifting from a consumer-controlled process towards a decision environment in which algorithms play an active role. The rapid expansion of smartphones, e-commerce and digital payments has further strengthened AI-enabled retail in India. Online fashion platforms increasingly use AI for personalisation, recommendations, search, customer assistance and product discovery. However, consumers do not respond to these technologies uniformly. Education, income, gender, age, spending behaviour and digital experience may influence the extent to which consumers accept and depend on AI. Coimbatore District provides a relevant setting for examining these developments because of its strong textile and apparel ecosystem and diverse consumer population. The district combines traditional apparel retail, branded stores and online fashion platforms, while consumers belong to different age and socio-economic groups. Against this background, the present study examines the influence of AI on apparel buying decisions and identifies the consumer characteristics that are associated with and predict AI-driven decision-making.

Review of Literature

Recent research indicates that AI-enabled technologies are increasingly influencing apparel consumer behaviour. Gao and Liang (2025) found that visual vividness, interactivity, personalisation and ease of use in AI-powered virtual try-on can increase impulsive buying intention through perceived value and immersion. Nguyen et al. (2025) [9] reported that perceived usefulness, enjoyment and ease of use positively influence attitudes towards virtual try-on, while privacy concerns can discourage adoption. Jeong and Kim (2025) [7] identified generational differences in AI-based fashion curation, particularly in perceptions of technological usefulness and fit. Qi, Ko and Cho (2025) found that AI chatbots with visual search can improve fashion shopping intentions through perceived usefulness and ease of use. Akter et al. (2025) [2] also reported that virtual try-on can enhance usefulness, curiosity, control and enjoyment, although these perceptions do not always translate directly into adoption. Earlier studies by Longoni, Bonezzi and Morewedge (2019), Castelo, Bos and Lehmann (2019) and Yeomans et al. (2019) demonstrate that consumer responses to algorithmic recommendations can range from resistance to appreciation depending on the nature of the decision and the perceived role of the algorithm. Overall, previous studies establish the importance of usefulness,

personalisation, trust, privacy, technology experience and demographic characteristics in AI-enabled consumer behaviour.

Statement of The Problem

The increasing use of AI in apparel retail has changed the way consumers discover, evaluate and purchase clothing. Although considerable attention has been given to technologies such as virtual try-on, recommendation systems and AI chatbots, existing studies often focus on individual technologies rather than the broader influence of AI on apparel buying decisions. Further, consumers differ in their demographic and behavioural characteristics, which may result in differences in AI acceptance and dependence. Variables such as education, income, gender, marital status and apparel expenditure may be associated with AI influence, but their independent contribution requires further investigation. Research examining these relationships in tier-2 Indian markets remains limited. Therefore, there is a need to identify the factors associated with AI influence, determine the major determinants of AI-driven apparel decision-making and establish the strongest predictors among consumers in Coimbatore District.

Scope of The Study

The study focuses on the influence of AI on apparel buying decisions among consumers in Coimbatore District. It covers consumers using physical, online and omnichannel apparel retail channels. The study considers AI-enabled applications such as personalised recommendations, virtual try-on, AI search, chatbots, styling assistance and sizing recommendations. It includes consumers from Gen Z, Gen Y, Gen X and Boomer groups and examines selected demographic and behavioural characteristics in relation to AI influence. The study specifically focuses on identifying relationships, determinants and predictors of AI-driven apparel decision-making using correlation and regression techniques.

Objectives of The Study

1. To analyse the relationship between consumer characteristics and AI influence on apparel buying decisions.
2. To examine the determinants of AI-driven apparel decision-making among consumers in Coimbatore District.
3. To identify the key predictors of AI influence on apparel buying decisions using step-wise regression analysis.

Research Methodology

Research Design

The study adopts a descriptive and analytical research design to examine AI influence on apparel buying decisions and the factors associated with it.

Population and Sample

The population comprises adult apparel consumers residing in Coimbatore District who have engaged in physical, online or omnichannel apparel shopping. A total of 402 respondents were selected using a stratified sampling approach, covering Gen Z, Gen Y, Gen X and Boomers.

Data Collection

Primary data were collected through a structured questionnaire using both physical and online modes. A pilot study was conducted to improve the clarity and reliability of the instrument. Secondary data were collected from research articles, books, conference proceedings, industry reports and credible online sources.

Statistical Tools

The collected data were analysed using the following tools:

- **Correlation Analysis** – to examine the relationship between consumer characteristics and AI influence on apparel buying decisions.
- **Multiple Regression Analysis** – to identify the determinants of AI-driven apparel decision-making.
- **Step-wise Regression Analysis** – to identify the variables that significantly predict AI influence on apparel buying decisions.

Findings and Analysis

1. Segment Moderators and Variations — Correlation Analysis

Pearson's correlation coefficient measures the strength and direction of the linear relationship between two variables. It ranges from −1 to +1: a positive coefficient indicates that the two variables move together, a negative coefficient that they move in opposite directions, and a value near zero that no linear relationship exists. For each variable the table reports the correlation coefficient (R), which indicates the strength and direction of the relationship, and the coefficient of determination (R^2), which shows the proportion of variation in the outcome that the variable accounts for. Variables marked with a double asterisk (**) are statistically significant at the five per cent level, meaning the observed relationship is unlikely to have arisen by chance. The results are presented in the following table.

Table 1: Correlation of Segment Variables with the AI Decision-Making Outcome

Variable	R	R^2
Gender	0.04	0.006
Highest educational qualification	.344**	0.118
Marital status	.374**	0.139
Approximate monthly household income	.283**	0.080
Primary occupation	-.240**	0.056
Area of residence	0.096	0.009
How often do you purchase apparel	-.263**	0.069
Your primary apparel shopping channel	0.08	0.006
Average monthly apparel Spend	.315**	0.099
For how many years have you been using a smartphone	.131**	0.017
Which apparel apps do you actively use	0.058	0.003
Awareness of AI Apparel Features	-.346**	0.119

** Significant at the five per cent level. Source: Primary

The results show that consumer response to AI is clearly moderated by certain demographic and behavioural characteristics, while others exert no meaningful effect.

Among the significant moderators, marital status records the strongest positive association (R = .374, R^2 = .139), indicating that it is the single most influential segment variable and explains roughly 14 per cent of the variation in AI-driven decision outcomes. Highest educational qualification follows closely (R = .344, R^2 = .118), showing that more educated consumers tend to be more responsive to AI-enabled apparel features. Average monthly apparel Spend (R = .315, R^2 = .099) and approximate monthly household income (R = .283, R^2 = .080) are also significant and positive, suggesting that consumers with greater spending capacity engage more strongly with AI in their purchase decisions. Years of smartphone usage shows a weak but significant positive link (R = .131, R^2 = .017), implying that longer digital exposure has only a marginal reinforcing effect.

Three variables show significant negative associations. Awareness of AI apparel features (R = –.346, R^2 = .119) and primary occupation (R = –.240) both move inversely with the outcome, as does apparel purchase frequency (R = –.263, R^2 = .069). These negative relationships indicate that as these variables increase (or shift in their coding direction), the measured AI influence tends to move in the opposite direction — for instance, more frequent apparel buyers or certain occupational groups appear comparatively less swayed by AI, a pattern worth exploring further in the discussion.

In contrast, several variables show no statistically significant relationship and therefore do not moderate AI's influence. Gender (R = .04), primary apparel shopping channel (R = .08), area of residence (R = .096), and the specific apparel apps used (R = .058) all carry very low coefficients and negligible R^2 values, indicating that AI's effect on decision-making is broadly uniform across these groups rather than segment-specific.

Taken together, the analysis confirms that AI's influence on apparel decision-making is not uniform across the entire sample but is meaningfully shaped by socio-economic and behavioural factors — particularly marital status, education, income, spending level, and prior awareness of AI features. Demographic factors such as gender and area of residence, along with channel and app choices, do not create significant variation.

2. Determinants of AI Apparel Decision-Making and Variations — Multiple Regression Analysis

The correlation analysis examined the relationship between each segment variable and the AI outcome one variable at a time. However, because these variables are themselves inter-related — income and education, for example, tend to move together — a bivariate analysis cannot reveal the independent contribution of each. Multiple regression analysis overcomes this limitation by estimating the effect of each predictor on the outcome while holding all the other predictors constant, thereby isolating the unique influence of each determinant. This section applies multiple regression to identify the variables that genuinely determine the level of AI apparel decision-making.

In order to ascertain the variables that determine the level of AI Apparel Decision-Making, the selected twelve variables have been regressed on the AI Apparel Decision-Making Index. The dependent variable is the AI Apparel Decision-Making Index, a composite measure of the extent to which AI influences a respondent's apparel decisions, and the twelve independent variables are the demographic and behavioural characteristics profiled earlier in the chapter. The regression equation estimated is:

$$AIAD = a + b_1G + b_2HEQ + b_3MS + b_4AMHI + b_5PO + b_6AOR + b_7FPA + b_8PASC + b_9AMAS + b_{10}YSU + b_{11}AAAU + b_{12}AAAF + e$$

where AIAD is the AI Apparel Decision-Making Index; G is gender; HEQ is highest educational qualification; MS is marital status; AMHI is approximate monthly household income; PO is primary occupation; AOR is area of residence; FPA is frequency of apparel purchase; PASC is primary apparel shopping channel; AMAS is average monthly apparel spend; YSU is years of smartphone usage; AAAU is apparel apps actively used; AAAF is awareness of AI apparel features; a is the constant; b_1 to b_{12} are the regression coefficients; and e is the error term. The summary statistics of the fitted model are as follows.

Model Summary Statistic	Value
Constant	74.839
Standard Error	1.833
R Square	0.635
Adjusted R Square	0.385

Source: Primary Data

Table 2: Multiple Regression — Determinants of AI Apparel Decision-Making

Variable	Regression Co-efficient	Standard Error	't' value
Gender	-.100	.416	-.239
Highest educational qualification	1.599*	.380	4.211
Marital status	3.004*	.408	7.364
Approximate monthly household income	.297	.254	1.173
Primary occupation	-.139	.400	-.347
Area of residence	.344	.306	1.126
How often do you purchase apparel	-1.235	.340	-3.637
Your primary apparel shopping channel	-.161	.458	-.352
Average monthly apparel Spend	.826*	.212	3.901
Years of smartphone usage	-.903**	.353	-2.561
Which apparel apps do you actively use	-.040	.179	-.221
Awareness of AI Apparel Features	-2.738*	.580	-4.725

* Significant at 1 per cent level; ** Significant at 5 per cent level.

Source: Primary Data

Of the variables taken for regression analysis, the variables namely (1) Highest Educational Qualification, (2) Marital Status, (3) Average Monthly Apparel Spend, (4) Years of Smartphone Usage, and (5) Awareness of AI Apparel Features are found to be significant. The other variables do not significantly influence the level of AI Apparel Decision-Making. The R Square value of 0.635 indicates that the model explains a substantial share of the variation in the AI Apparel Decision-Making Index. The variables that significantly influence the level of AI Apparel Decision-Making are discussed in the following paragraphs.

Among the variables included in the regression analysis, Highest Educational Qualification has a positive and significant influence on AI Apparel Decision-Making (B = 1.599, t = 4.211, p < 0.01). This indicates that respondents with higher educational qualifications tend to exhibit higher levels of AI Apparel Decision-Making, confirming, in a multivariate setting, the pattern already visible in both the ANOVA and the correlation analysis.

Marital Status is also found to have a positive and significant influence (B = 3.004, t = 7.364, p < 0.01), indicating variations in AI Apparel Decision-Making based on the marital status of the respondents. With the largest coefficient and the highest t value of any predictor in the model, marital status is confirmed as the single most powerful determinant of AI influence, consistent with its top ranking in the correlation analysis.

Average Monthly Apparel Spend has a positive and significant influence (B = 0.826, t = 3.901, p < 0.01). This suggests that respondents who spend more on apparel per month tend to have higher levels of AI Apparel Decision-Making, reflecting the greater opportunity and incentive that higher spenders have to draw on AI decision support.

Years of Smartphone Usage has a negative and significant influence at the 5 per cent level (B = -0.903, t = -2.561, p = 0.011). This indicates that longer duration of smartphone usage is associated with a decrease in the AI Apparel Decision-Making Index, holding other variables constant — a counter-intuitive but revealing result, suggesting that the most digitally experienced consumers have developed confident, independent shopping habits that reduce their reliance on AI prompts.

Awareness of AI Apparel Features has a negative and significant influence (B = -2.738, t = -4.725, p < 0.01). This indicates that awareness of AI-based apparel features is significantly associated with variations in the AI Apparel Decision-Making Index. The negative sign echoes the correlation finding and reinforces the interpretation that heightened awareness is accompanied by a more discerning, and therefore less automatically compliant, stance towards AI guidance.

The variables namely Gender, Approximate Monthly Household Income, Primary Occupation, Area of Residence, Frequency of Apparel Purchase, Primary Apparel Shopping Channel, and Apparel Apps Actively Used are found to be not statistically significant in determining the AI Apparel Decision-Making Index once the other variables are controlled for.

3. Variables Prominently Associated with AI Influence — Step-wise Regression Analysis

The enter-method regression of the previous section estimated the effect of all twelve variables simultaneously. A complementary approach is step-wise regression, which builds the model incrementally, entering variables one at a time in order of their statistical contribution and retaining only those that add significantly to the model's explanatory power. This procedure is particularly valuable for identifying, in rank order, the variables most prominently associated with the outcome, and for observing how the explained variation accumulates as each is added. It thus offers a parsimonious and clearly ordered account of the principal drivers of AI influence on apparel decision-making.

The dependent variable is the INDEX of AI influence on apparel decision-making. Six variables were entered into the model across six successive steps, and the results — showing the constant, the coefficient of each variable at each step, and the cumulative R^2 — are presented in the following table.

Table 3: Step-wise Regression of Segment Variables on the AI Influence Index

Step	Constant	MS	HEQ	AAF	AMS	FPA	SUY	R^2
1	74.769	3.384	–	–	–	–	–	.140
2	68.383	3.669	2.178	–	–	–	–	.281
3	73.243	3.267	1.968	-3.307	–	–	–	.333
4	71.118	3.042	1.732	-3.167	.849	–	–	.362
5	73.021	2.767	1.774	-2.937	.787	-.979	–	.384
6	74.743	2.948	1.971	-2.823	.817	-1.196	-.909	.395

Dependent variable: INDEX (AI influence on apparel decision-making). All coefficients significant at p < .01. Source: Primary Data

Key to abbreviations: MS = Marital status; HEQ = Highest educational qualification; AAF = Awareness of AI Apparel Features; AMS = Average monthly apparel Spend; FPA = Frequency of apparel purchase; SUY = Years of smartphone usage.

The step-wise regression analysis was carried out to identify the variables most prominently associated with the AI influence index in apparel decision-making. Six variables were entered into the model across six successive steps, and each was retained as a statistically significant predictor (p < .01). At every step the variable introduced added to the explanatory power of the model, confirming that all six factors are meaningfully associated with the outcome.

In the first step, the variable Marital status was introduced (B = 3.384, β = .374, p < .001). It is the strongest single predictor and, entering the model first, accounts for the largest share of the variation in AI influence (R^2 = .140). In the second step, Highest educational qualification was introduced (B = 2.178, β = .377, p < .001). Together with marital status it raises the explained variation to R^2 = .281, indicating that better-educated respondents are more responsive to AI in their apparel decisions. In the third step, Awareness of AI Apparel Features was introduced (B = –3.307, β = –.234, p < .001). Its negative coefficient shows an inverse relationship with the index, and its addition further increases the explained variation to R^2 = .333. In the fourth step, Average monthly apparel spend was introduced (B = .849, β = .178, p < .001). This positive predictor lifts the explained variation to R^2 = .362, suggesting that higher-spending consumers are more strongly influenced by AI. In the fifth step, the frequency of apparel purchase was introduced (B = –.979, β = –.151, p < .001). Its negative sign indicates that more frequent buyers are somewhat less swayed by AI, and the model's explained variation rises to R^2 = .384. In the sixth and final step, smartphone-usage years was introduced (B = –.909, β = –.120, p = .006). It is

the weakest of the retained predictors but still contributes significantly, bringing the model to its final explained variation of $R^2 = .395$.

Overall, the step-wise procedure retains marital status, highest educational qualification, awareness of AI apparel features, average monthly apparel Spend, frequency of apparel purchase and smartphone-usage years as the variables most prominently associated with AI influence on apparel decision-making. Marital status and educational qualification emerge as the dominant positive drivers, awareness of AI features and purchase frequency exert a dampening (negative) effect, while apparel spend adds a modest positive contribution and smartphone experience a small negative one.

Conclusion

This study set out to characterise the algorithmic consumer within Coimbatore District's apparel retail sector — a tier-2 Indian context of considerable sectoral importance that has remained largely absent from the consumer-AI literature. The evidence indicates that artificial intelligence is not experienced uniformly across Coimbatore's apparel shoppers: educational qualification and household income meaningfully differentiate how consumers identify, trust, and transact through AI features, while gender exerts a narrower but commercially significant influence on trust and purchase-related engagement. Consumers accept AI primarily because it makes shopping more efficient and helps them discover new items, rather than because AI interfaces are easy or pleasant to use — a finding that should temper retailers' emphasis on interface design relative to functional value delivery. As generative AI styling, automated fit prediction, and algorithmic personalisation continue to deepen, the findings from this study offer an empirical baseline against which the evolving Coimbatore algorithmic consumer can be tracked in future research.

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