Computer and Decision Making

An International Journal

www.comdem.org
eISSN: 3008-1416

A Soft Computing Approach for Investigating the Dominance of Femluencing and Brand Evangelism on Customers' Purchase Intentions

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ARTICLE INFO

Article history:
Received 14 April 2025
Received in revised form 21 May 2025
Accepted 24 May 2025
Available online 26 May 2025

Keywords:
Femvertising; Brand evangelism; Stimulus-organism-response (SOR) theory; Picture fuzzy numbers; Force field analysis; Comparisons between Ranked Criteria (COBRAC)

ABSTRACT

Imagine the advertisements: Dove's "Real Beauty Sketches,"; "Shot on iPhone," Neutrogena's "See What's Possible," and "End your wait for effortless shaving with Gillette Mach3." All these are examples of promotional campaigns that inundated the entire world. But the question is, what was the driving force that overwhelmed the customers? Is it the extreme love and trust for the brand, or is it the influence of the feminine message? This paper seeks answers to these questions using a novel soft computing framework utilizing Picture Fuzzy Set (PIFS). The underlying intention is to compare the effects of femluencing (FEMC) (influencer marketing with feminine content) and brand evangelism (BEG) (extreme loyalty to a brand) on customers' purchase intention (CPI). The theoretical framework of Stimulus-organism-response (SOR) is used to finalize the factors (related to FEMC and BEG) in tune with supportive past studies and experts' views. Then, it develops an expert decision-making framework using the COBRAC (Comparisons between Ranked Criteria) method with Picture Fuzzy Frank aggregation. We conduct a force field analysis (FFA) to compare the effects of FEMC and BEG. We observe that BEG marginally wins over FEMC based on its influence on CPI. The deviation from consistency (Δ =0.0000) is found to be insignificant while calculating the weights of FEMC and BEG factors, suggesting the robustness of the model. The insignificant variations in the ranking while conducting sensitivity analysis reflect the stability of the model. The approach and findings of this study shall provide valuable insight to the researchers and strategic decision-makers.

1. Introduction

Over the years, influencer marketing has emerged as a prominent tool for businesses to promote their products and brands. Due to the significant advancements in digital technology and the rapid growth of social media platforms (Facebook, Instagram, YouTube, X, TikTok, WhatsApp, and others), as well as e-commerce, the impact of influencer marketing has become pronounced. Influencer marketing (IM) is a digital strategy in which organizations partner with social media influencers to

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https://doi.org/10.59543/comdem.v2i.14215

endorse their products or services, leveraging their credibility and influence to enhance brand recognition and influence consumer purchasing decisions [1-2]. The impact of IM is manifold: It fosters widespread brand awareness, enhances consumer reach and engagement, provides cost-effective marketing, increases trust and credibility, drives traffic to support SEO, and facilitates easy entry into new markets [3-4]. IM, as a promotional strategy, has enormous business potential. In an emerging economy and vast market like India, the estimated growth is 18 percent (CAGR) [5]. Worldwide, the market value of IM reached a new high of USD 21.1 billion at the end of 2023 [6].

Femvertising (FEMV) is a term derived from the fusion of "feminism" and "advertising." FEMV is a popular promotional approach that utilizes feminist concepts to empower women while promoting corporate brands. FEMV is a notable trend in the marketing and advertising sector that seeks to confront conventional gender stereotypes [7]. FEMV aims to inspire and empower women and girls by utilizing pro-female capabilities, messages, and imagery, promoting a more genuine and diverse representation of femininity [8].

Brand evangelism (BEG) refers to the emotional and symbolic connection between consumers and a brand, marked by proactive behaviors such as endorsement, defense against criticism, and unwavering loyalty. This phenomenon surpasses simple satisfaction or allegiance, embodying an emotional connection in which consumers serve as advocates, fervently promoting the firm within their social circles [9-11].

1.1 Research Gaps and Contributions

The detailed review of past studies reveals the following prominent research gaps.

a) Studies were more focused on understanding the effect of FEMV or BEG on consumers' behavior. There is limited evidence to consider their combined effects and relative impacts.
b) Studies mostly concentrated on qualitative approaches related to FEMV, while multivariate analysis and SEM in the case of BEG. There is no evidence of using a multi-criteria group decision analytics framework.
c) The application of the soft computing framework is scant in explaining a subjective analysis like consumer behavior.

The contributions of the ongoing work are manifold.

a) It offers a new perspective on marketing communication and promotional strategies by considering FEMC and BEG together. To the best of the authors' knowledge, this is the first-of-its-kind work to uncover the dynamics of FEMC and BEG.
b) The S-O-R theoretical lens was applied to assess the relative effect of FEMC and BEG on buying intention for daily-use products.
c) Advances the literature by providing a new perspective on FEMC.
d) The innovative application of FFA to compare FEMC and BEG. The present work uses a PIFS-based soft computing framework with a Frank aggregation scheme. Before this paper, no such contribution is found in the literature.
e) This is the first contribution to extend the application of the COBRAC method in understanding the variables that influence consumers' purchase intentions.
f) The extension of the COBRAC method with PIFS and Frank aggregation.

1.2 Motivations and Research Objectives

The motivations behind undertaking the current research stem from several apertures of the literature. Firstly, retrospection reveals a notable effort by scholars to establish the impact of FEMV on consumer behavior and business performance, as well as to explore the attributes of FEMV [9,12-18]. IM is a trend-setting approach to redefining the marketing mix in Industry 4.0. Various scholars

[19] recognized the initiatives of the organizations to promote female empowerment on social media. The researchers noted the influence of female-led endorsements on purchase intentions while upholding brand equity. Therefore, FEMV acts as a helpful strategy for IM. This leads to a new trend, femluencing (FEMC), a feminine IM [9]. Some evidence suggests that scholars discuss female empowerment in IM [20-21]. However, contributions related to using FEMV as an IM tool are scant. This paper acknowledges the synergistic effect of FEMV and IM in examining the impact of FEMC on purchase intentions. It motivates us to consider Femluencing (FEMC) a symbiosis of FEMV and IM to investigate its impact on consumers' purchase intentions.

Secondly, FEMC is essential for brand advocacy, highlighting the genuineness and consistency of pro-female messaging [22]. When customers view femvertising messages as authentic and consistent with the company's values, they are more likely to form favorable opinions of the brand, thereby augmenting brand equity and fostering consumer advocacy. Studies indicate that FEMC enhances brand equity and endorsement outcomes, particularly when consumers view the company's messaging as genuine. BEG, on the other hand, entails a supreme form of consumers' attachment to a brand. FEMC (brand advocacy) and BEG (brand loyalty) influence consumer views. Scholars have notably explored BEG [11, 23-26]. However, no past study focuses on the dynamics of FEMC and BEG. There has been no noticeable contribution to comparing the effects of FEMC and BEG on customer purchase behavior. The current research intends to explore the differences in the influence of FEMC and BEG on purchase intentions. The present research employs a force field analysis (FFA) to examine their relative impacts.

Thirdly, from a methodological perspective, the application of multi-criteria group decision analytics is rare, albeit non-existent. This motivates us to develop a robust framework. Besides, soft computing frameworks are relatively rare in examining customers' purchase intentions (CPI). FEMC and BEG are subjective in nature. Hence, a decision analysis framework with imprecise information is needed to explain their effects.

Fourthly, applying FFA under uncertainty and imprecision does not significantly utilize soft computing frameworks, such as picture fuzzy numbers.

Motivated by the above-mentioned possibilities, this research undertakes the following objectives:

a) To identify key impacts of FEMC and BEG.
b) To compare the relative effects of FEMC and BEG.
c) To develop a reliable soft computing multi-criteria group decision framework for discerning the dynamics of FEMC and BEG.

1.3 Approach

The current study relies on a PIFS-based group opinion analysis. PIFS provides the unique advantage of considering three membership values, such as positive (μ^{+}), negative (μ^{-}) and neutral (η) with a linear additive value between 0 and 1 [26-27]. Besides, there is a refusal value (γ). Several research problems have utilized PIFS in developing multi-criteria models [28-33]. For weighted aggregation, the COBRAC method calculates the priority weights of the factors related to FEMC and BEG. The COBRAC method [34] is advantageous in many aspects, such as a reduction in the pairwise comparisons leading to better dealing with subjectivity, granular comparison of the criteria through localized pairwise comparison over a closed interval, inherent measures to ensure consistency with the ideal values, and ability to working reliably with an extensive feature set. Despite its advantages, scholars and practitioners have not explored the COBRAC method extensively. A handful of applications are found [35].

The rest of this paper is outlined as follows. Section 2 provides a retrospection of past studies. The conceptual background of PIFS and the theoretical foundation of SOR are briefly discussed in Section 3. The details of the research design, including the methodological steps, are elaborated in Section 4. The outcome of the data analysis, in relation to the problem addressed in this paper, is presented in Section 5. The explanations of the results in relation to the research objectives and past studies are also outlined in Section 5. Section 6 sheds light on the research implications. Researchers' concluding comments and prospective future plans are highlighted in Section 7 to wrap up the paper.

2. Revisit the Literature

2.1 Femvertising and IM

The growing trend among women to reject sexist marketing in favor of authenticity and inclusivity, driven by social media platforms and business incentives, has made the impact of Feminism pronounced [36]. Prior research argued that FEMV advocates for women's empowerment, influencing societal attitudes among consumers, enhancing emotional connection, and enabling brand differentiation [37]. Femvertising is persuasive, particularly among younger, educated demographics, such as Millennials and Gen Z [22].

Research suggests that perceptions of femvertising vary according to residential contexts, emotional inclinations, and feminist identity [38]. Urban consumers exhibit more favorable sentiments about femvertising compared to rural ones. Emotional commercials were anticipated to elicit positive sentiments, and individuals with a robust feminist identity tended to regard femvertising more favorably. One study investigated the impact of gratitude and personality characteristics on customer purchase behavior and their responses to FEMV [39]. The study reported a significant mediation effect of gratitude and personality traits, reflecting the need to design an FEMV campaign accordingly. Past research [40] examined the influence of brand-cause alignment on the efficacy of FEMV initiatives. Based on interviews with advertising specialists, the study suggests that a significant alignment between a brand and a social issue is crucial for FEMV to be perceived as authentic and credible. One study found that femvertising influences perceptions of female representations across genders, contributing to societal norm changes and promoting more inclusive attitudes [16].

In FEMV, women embody strong, competent, and autonomous personalities characterized by self-esteem and societal standing. Generational perspectives on FEMV vary, with Generation X women showing greater receptivity. The effectiveness of FEMV is closely tied to the authenticity of the message and the brand identity. FEMV also impacts male audiences, facilitating cultural transformations in gender roles [18,41]. A summary of some of the past contributions is recorded in Table A.1 (Appendix A).

2.2 Brand Evangelism

The antecedents of BEG encompass brand symbolism, consumer involvement, value co-creation, and online brand communities. Brands that convey significant symbolic meanings can strengthen strong consumer-brand identification, while active engagement in value co-creation and brand-related activities increases emotional attachment to the brand. Participation in online brand communities enables customers to share experiences and connect with like-minded individuals, enhancing brand loyalty and fostering advocacy behaviors [10,25,29].

BEG is a strategy that bolsters brand equity and word-of-mouth, shaped by demographic parameters such as age and gender. Generational cohorts exhibit distinct responses to brand symbols and engagement techniques, affecting their likelihood of becoming brand advocates.

Comprehending this can enhance strategic brand management by augmenting brand symbolism, facilitating engagement platforms, and investing in digital communities. Brand evangelism is a multifaceted consumer-brand relationship characterized by emotional and symbolic ties [11,24]. Several scholars contributed significantly to the strand of literature on BEG in various contexts [11,23,24,25, 42-46]. Table A.2 (Appendix A) summarizes the recently published contributions.

3. Theoretical background

3.1 SOR Theory

The Stimulus-Organism-Response (S-O-R) theory elucidates the influence of external stimuli on an individual's internal states and the resultant behavioral reactions [47]. It comprises three elements: stimuli (external cues), organisms (internal mechanisms and emotional responses elicited by the input), and resultant behaviors or responses. This theory is widely applied across various fields to explain how distinct inputs can elicit different reactions through internal cognitive and emotional processes. Several researchers have applied the S-O-R theory to understanding consumer behavior in various contexts [48-51]. However, the S-O-R theory has never been applied to investigating the dynamics of FEMC and BEG.

3.2 Preliminary concepts: Picture fuzzy sets

This section records some fundamental definitions and operators related to PIFS [26-27].

Definition 1.

The PIFS, $\mathcal{P}$ belonging to the universe of discourse, $\mathcal{U}$ is defined as

$$\mathcal{P}=\left(x,\mu_{\mathcal{P}}^{+}(x),\eta_{\mathcal{P}}(x),\mu_{\mathcal{P}}^{-}(x)\middle|x\in\mathcal{U}\right) \quad (1)$$

Such that, $0\le\mu_{\mathcal{P}}^{+}(x)+\eta_{\mathcal{P}}(x)+\mu_{\mathcal{P}}^{-}(x)\le 1$ and $\mu_{\mathcal{P}}^{+}(x),\eta_{\mathcal{P}}(x),\mu_{\mathcal{P}}^{-}(x)\in[0,1]$

The refusal value is derived as $\gamma_{\mathcal{P}}(x)=1-\left(\mu_{\mathcal{P}}^{+}(x)+\eta_{\mathcal{P}}(x)+\mu_{\mathcal{P}}^{-}(x)\right)$ (2)

The picture fuzzy number (PIFN) is expressed as

For a given element x in U, a PFN is represented as

$$\mathcal{P}=\left(\mu^{+},\eta,\mu^{-}\middle|\mu^{+},\eta,\mu^{-}\in\mathcal{U};\mu^{+},\eta,\mu^{-}\in[0,1];0\le\mu^{+}+\eta+\mu^{-}\le 1\right)$$

Properties

Let, $\mathcal{P}=\left(\mu^{+},\eta,\mu^{-}\right),\mathcal{P}_1=\left(\mu_1{}^{+},\eta_1,\mu_1{}^{-}\right)$ and $\mathcal{P}_2=\left(\mu_2{}^{+},\eta_2,\mu_2{}^{-}\right)$ be any three PIFNs. Then, we have the following properties.

Prop. 1. $\mathcal{P}_1\cup\mathcal{P}_2=\left\{x,Max\left(\mu_{\mathcal{P}_1}^{+}(x),\mu_{\mathcal{P}_2}^{+}(x)\right),Min\left(\eta_{\mathcal{P}_1}(x),\eta_{\mathcal{P}_2}(x)\right),Min\left(\mu_{\mathcal{P}_1}^{-}(x),\mu_{\mathcal{P}_2}^{-}(x)\right)\middle|x\in\mathcal{U}\right\}$

Prop. 2. $\mathcal{P}_1\cap\mathcal{P}_2=\left\{x,Min\left(\mu_{\mathcal{P}_1}^{+}(x),\mu_{\mathcal{P}_2}^{+}(x)\right),Min\left(\eta_{\mathcal{P}_1}(x),\eta_{\mathcal{P}_2}(x)\right),Max\left(\mu_{\mathcal{P}_1}^{-}(x),\mu_{\mathcal{P}_2}^{-}(x)\right)\middle|x\in\mathcal{U}\right\}$

Prop. 3. $\mathcal{P}^{C}=\left\{x,\mu_{\mathcal{P}}^{-}(x),\eta_{\mathcal{P}}(x),\mu_{\mathcal{P}}^{+}(x)\middle|x\in\mathcal{U}\right\}$

Operations

Op. 1. $\mathcal{P}_1 \oplus \mathcal{P}_2 = \left(\mu_1^+ + \mu_2^+ - \mu_1^+\mu_2^+, \eta_1\eta_2, \mu_1^-\mu_2^-\right)$

Op. 2. $\mathcal{P}_1 \otimes \mathcal{P}_2 = \left(\mu_1^+\mu_2^+, \eta_1 + \eta_2 - \eta_1\eta_2, \mu_1^- + \mu_2^- - \mu_1^-\mu_2^-\right)$

Op. 3. $\alpha\mathcal{P} = \left\{1-(1-\mu^+)^\alpha, \eta^\alpha, \left(\mu^-\right)^\alpha\right\}$ ($\alpha > 0$ is a scalar number)

Op. 4. $\mathcal{P}^\alpha = \left\{\left(\mu^+\right)^\alpha, 1-\left(1-\eta\right)^\alpha, 1-(1-\mu^-)^\alpha\right\}$ ($\alpha > 0$ is a scalar number)

Definition 2.

The defuzzified value of a PIFN is derived [52-53] through two steps as described below

Step 1. Define the modified positive and negative membership values

$\left(\mu^+\right)^* = \mu^+ + \frac{\eta}{2}; \left(\mu^-\right)^* = \mu^- + \frac{\eta}{2}$

Step 2. Compute the defuzzified value

$$Df(\mathcal{P}) = \left(\mu^+\right)^* + \gamma\left(\frac{1+\left(\mu^+\right)^* - \left(\mu^-\right)^*}{2}\right) \quad (3)$$

The former researcher provided a simple definition of defuzzification (Eq. 4) [54].

$$Df^*(\mathcal{P}) = \frac{1}{3}\left\{\mu^+ + \left(1-\eta\right) + \left(1-\mu^-\right)\right\}; Df^*(\mathcal{P}) \in [0,1] \quad (4)$$

Definition 3.

The score value for a PIFN [27] is obtained by using Eq. 5 as follows

$$\mathrm{S} = \mu^+ - \mu^- \quad (5)$$

The accuracy value is obtained by using Eq. 6 under

$$\mathrm{A} = \mu^+ + \eta + \mu^- \quad (6)$$

To compare two PIFNs, the following norms are referred to.

$\mathrm{S}_1 \geq \mathrm{S}_2 \Rightarrow \mathcal{P}_1 \geq \mathcal{P}_2$; otherwise, $\mathcal{P}_1 < \mathcal{P}_2$

If $\mathrm{S}_1 = \mathrm{S}_2$; $\mathrm{A}_1 \geq \mathrm{A}_2 \Rightarrow \mathcal{P}_1 \geq \mathcal{P}_2$; otherwise, $\mathcal{P}_1 < \mathcal{P}_2$

Definition 4. Absolute (ABS) and actual score (ACS) values

A new concept of considering neutral membership values was introduced when calculating score values [55]. Accordingly, the authors derived ABS and ACS values based on the following steps.

Step 1. Identify the positive ideal reference (PIR)

The PIR for a set of $j = 1, 2, \ldots, n$ PIFNs are obtained as

$$R^{+}=\left\{\underset{j}{Max}(\mu_j^{+}),\underset{j}{Min}(\eta_j),\underset{j}{Min}(\mu_j^{-})\right\} \tag{7}$$

Step 2. Compute the goal difference values (GDV)

The positive and negative GDVs are obtained as

$$\text{PGDV: } \partial^{+}=\underset{j}{Max}(\mu_j^{+})-\mu_j^{+} \tag{8}$$

$$\text{NGDV: } \partial^{-}=\mu_j^{-}-\underset{j}{Min}(\mu_j^{-}) \tag{9}$$

Step 3. Calculate the mean of neutral membership values

The mean values are obtained as

$$\eta_{avg}=\frac{1}{n}\sum_{j=1}^{n}\eta_j \tag{10}$$

Step 4. Calculation of the ABS values

The ABS values are calculated as follows.

$$\mathrm{S}_{j(abs)}=\left(1-\partial^{+}\right)-\partial^{-} \tag{11}$$

Step 5. Compute the ACS values

The ACS values are computed as follows

$$\mathrm{S}_{j(act)}=\frac{\mathrm{S}_{j(abs)}}{1-\left(\eta_{avg}-\eta_j\right)} \tag{12}$$

Note: $\left(\eta_{avg}-\eta_j\right)\neq 1\Rightarrow \mathrm{S}_{j(act)}$ is finite.

The rules for comparison (using ACS values) are the same as described in definition 3.

Definition 5. Picture Fuzzy Frank Weighted Averaging (PIFFWA)

Past work provided definitions of Frank t-norms, t-co-norms, and PIFFWA and illustrated their application in the MCDM problem [56]. Referring to the aforesaid work, the definition of PIFFWA for a set of $j=1,2,\ldots,n$ PIFNs with corresponding weight values $w_j\left(w_j>0;\sum w_j=1\right)$, is provided below.

$$\mathcal{P}_F=\left(\mu_F^{+},\eta_F,\mu_F^{-}\right)=PIFFWA\left\{\mathcal{P}_1,\mathcal{P}_2,\ldots,\mathcal{P}_n\right\}$$

$$=\left\{1-\log_b\left(1+\prod_{j=1}^{n}\left(b^{1-\mu_j^{+}}-1\right)^{w_j}\right),\log_b\left(1+\prod_{j=1}^{n}\left(b^{\eta_j}-1\right)^{w_j}\right),\log_b\left(1+\prod_{j=1}^{n}\left(b^{\mu_j^{-}}-1\right)^{w_j}\right)\right\} \tag{13}$$

Here, the parameter of the Frank aggregation, b>1 is any real number. For more details and proof, refer to the work of [56]. Frank aggregation is advantageous for several reasons: a) the t-norms and t-conorms are flexibly interpolated between fundamental operations, such as the minimum, product,

and Lukasiewicz t-norms; b) it is governed by De-Morgan's laws that provide a better aggregation for symmetric fuzzy numbers like PIFN; c) satisfies the fundamental properties like associativity, continuity, and monotonicity [57-59].

4. Materials and Methods

4.1 Influencing Factors Related to FEMC and BEG

The factors related to FEMC and BEG that influence customers' buying decisions are identified in Tables 1 and 2, based on discussions in the existing literature and informal discussions with marketing experts.

Table 1. FEMC Factors influencing customers' buying decisions

Factor	Statement	Supportive References
F1	Female-led ads are more convincing and authentic than other ads	[36]; [37]; [40]
F2	I often decide to buy products after seeing female-led ads	[39]
F3	I feel emotionally connected with female-led ads	[38]; [22]
F4	It gives me a nice feeling to see how females endorse the brands.	[36]; [22]
F5	I find messages and content inspirational, positive, inclusive, and empowering.	[36]; [16]
F6	Female-led ads have cultural values	[60]; [61]
F7	Female ads uphold the brand image to me.	[40]; [22]
F8	As a responsible citizen, femvertisement appeals to me as it has social value	[40]; [16]

Table 2. BEG Factors influencing customers' buying decisions

Factor	Statement	Supportive References
B1	I always prefer to buy products with which I have good experience	[23]
B2	I prefer to see the value rather than promotional communication	[11]
B3	I prefer to buy products that have an emotional attachment to me	[25]
B4	I trust brands which are having a legacy while buying the products	[62]
B5	I prefer to select products that are visible, well-known, and convenient to access	[63]
B6	I prefer products and brands that have good social perception and image.	[10]; [24]; [62]
B7	I prefer to select my dream brands while buying the products	[63]
B8	The quality of the products/services is my priority when selecting a brand.	[23]

4.2 Data Collection

In this study, 25 experts participated in the survey. The group size satisfies the minimum requirement for group decision-making [64-65]. The group comprises marketing experts specializing in promotional campaigns, digital marketing, consumer sales, and managing large retail establishments, as well as educators— senior professors with expertise in sales and marketing. The profiles of the experts are given in Table 3.

Table 3. Respondents' Profile

Category		Experience (Years)	
Marketing experts	17	10 to 15	4
Educators	8	15 to 20	12
Total	25	20 to 25	6
Education		Above 25	3
Graduate	12	Total	25
Post-graduate	13		
Total	25		

The experts were asked to rate the factors (expressed in terms of statements) as "Yes" (if they agreed with the statement), "No" (if they disagreed), or "Cannot say" (if they could not say yes or

no). In effect, we obtained the positive (corresponding to "Yes"), neutral (corresponding to "Cannot say"), and negative (corresponding to "No") membership values. For instance, the positive membership value for any factor is calculated as the ratio of the total number of responses in favor of the corresponding statement to the total number of responses given (i.e., 25). The data collection was done offline. Table 4 summarizes the responses.

Table 4. Response summary in linguistic scale and corresponding PIFNs

FEMC Factor	Yes	Cannot Say	No	μ^+	η	μ^-	BEG Factor	Yes	Cannot Say	No	μ^+	η	μ^-
FE 1	16	4	5	0.64	0.16	0.20	BE 1	21	3	1	0.84	0.12	0.04
FE 2	18	3	8	0.72	0.12	0.32	BE 2	19	3	3	0.76	0.12	0.12
FE 3	17	2	6	0.68	0.08	0.24	BE 3	19	2	4	0.76	0.08	0.16
FE 4	13	3	9	0.52	0.12	0.36	BE 4	15	4	6	0.60	0.16	0.24
FE 5	21	1	3	0.84	0.04	0.12	BE 5	14	6	5	0.56	0.24	0.20
FE 6	15	5	5	0.60	0.20	0.20	BE 6	18	4	3	0.72	0.16	0.12
FE 7	19	4	2	0.76	0.16	0.08	BE 7	14	4	7	0.56	0.16	0.28
FE 8	16	6	3	0.64	0.24	0.12	BE 8	17	5	3	0.68	0.20	0.12

4.3 COBRAC

The following steps illustrate the algorithm of the COBRAC model [34].

Step 1. Sorting of the attributes based on their priority scores

Let there are n attributes (denoted by y_j) with priority score values $\vartheta_j (j=1,2,..,n)$. The attributes are sorted based on the score values, and positional ranks are assigned. Suppose the positional order is $y_{j(1)} > y_{j(2)} > ..... > y_{j(g)}$, where $y_j (j=1,2,...,n)$ can be any attribute with positional rank $g(g=1,2,...,n)$.

Step 2. Pairwise comparison of the attributes

At this step, each local pair of attributes are compared. Hence, the COBRAC method conducts $(n-1)$ pairwise comparisons. The pairwise comparisons are made to determine the relative contributions of the attributes within the local interval in relation to each other. In this respect, the COBRAC method requires fewer comparisons vis-à-vis other popular methods like AHP ($n(n-1)/2$ comparisons) and BWM ($2n-3$ comparisons). Let $y_{j-1} \succ y_j (j=2,3,..,n)$ and the relative priority of the $(j-1)^{th}$ attribute over the j^{th} attribute is given by $\beta_{j-1,j} \in [0,1]$. The relative priority values indicate the contributions of the corresponding attributes in their local interval. For instance, $\beta_{j-1,j} = 0.6$ means the contributions of y_{j-1} and y_j are 60% and 40% respectively.

Step 3. Determination of attribute weights

The COBRAC model first conducts all possible pairwise comparisons and determines the relative priorities. If the decision-making process is consistent, then the following conditions are satisfied.

$$w_{j-1} : w_j = \beta_{j-1,j} : (1-\beta_{j-1,j});\ i,j = 1,2,..,n$$

$$\Rightarrow \frac{w_{j-1}}{w_j} - \frac{\beta_{j-1,j}}{(1-\beta_{j-1,j})} = 0 \qquad (14)$$

However, if $\left|\frac{w_{j-1}}{w_j}-\frac{\beta_{j-1,j}}{(1-\beta_{j-1,j})}\right|<0$ then there is a deviation from the consistency (Δ). For a robust calculation of attribute weights, minimize the deviation from the consistency. Hence, the model for determining the attribute weights is developed as follows.

$$\min \ \max_j \left\{\left|\frac{w_{j-1}}{w_j}-\frac{\beta_{j-1,j}}{(1-\beta_{j-1,j})}\right|\right\}$$

$$s.t. \qquad (15)$$

$$\sum_{j=1}^{n} w_j = 1; w_j \geq 0$$

Eq. 15 is then transformed into a final MILP model for computing the attribute weights as follows.

$$Min\ \Delta$$

$$s.t.$$

$$\left|\frac{w_{j-1}}{w_j}-\frac{\beta_{j-1,j}}{(1-\beta_{j-1,j})}\right| \leq \partial, \qquad (16)$$

$$\sum_{j=1}^{n} w_j = 1; w_j \geq 0 \forall j = 1,2..,n$$

4.4 FFA

Force Field Analysis (FFA) is a decision-making framework that reveals the dynamics of two categories of forces: those driving change (driving forces) and those restraining change (restraining forces) [66]. To instill the change, the equilibrium point must be shifted by enhancing driving forces, reducing restraining factors, or combining both. Scholars have extensively utilized this framework to examine the adaptability of changes and identify the critical forces [67-68].

4.5 PIFS-based FFA

The steps are described below. Figure 1 illustrates the flowchart of the steps.

Step 1. Obtain the ratings of the FEMC and BEG factors using PIFNs (Section 4.2, Table 4).

Let $\mathcal{P}_j^{FE}$ and $\mathcal{P}_j^{BE}$ are the PIFNs describing the j^{th} factors corresponding to FEMC and BEG, respectively.

Step 2. Determine the score values of the PIFNs

We use Eq. 7-12 to determine the $S_{j(act)}$ values for all FEMC and BEG factors. Let the score values of $\mathcal{P}_j^{FE}$ and $\mathcal{P}_j^{BE}$ are $S_{j(act)}^{FE}$ and $S_{j(act)}^{BE}$ respectively.

Step 3. Determine the weights of the factors

The steps of the COBRAC method are utilized to determine the weights (see Eq. 14-16). Let the weights be represented as w_j^{FE} and w_j^{BE}, respectively.

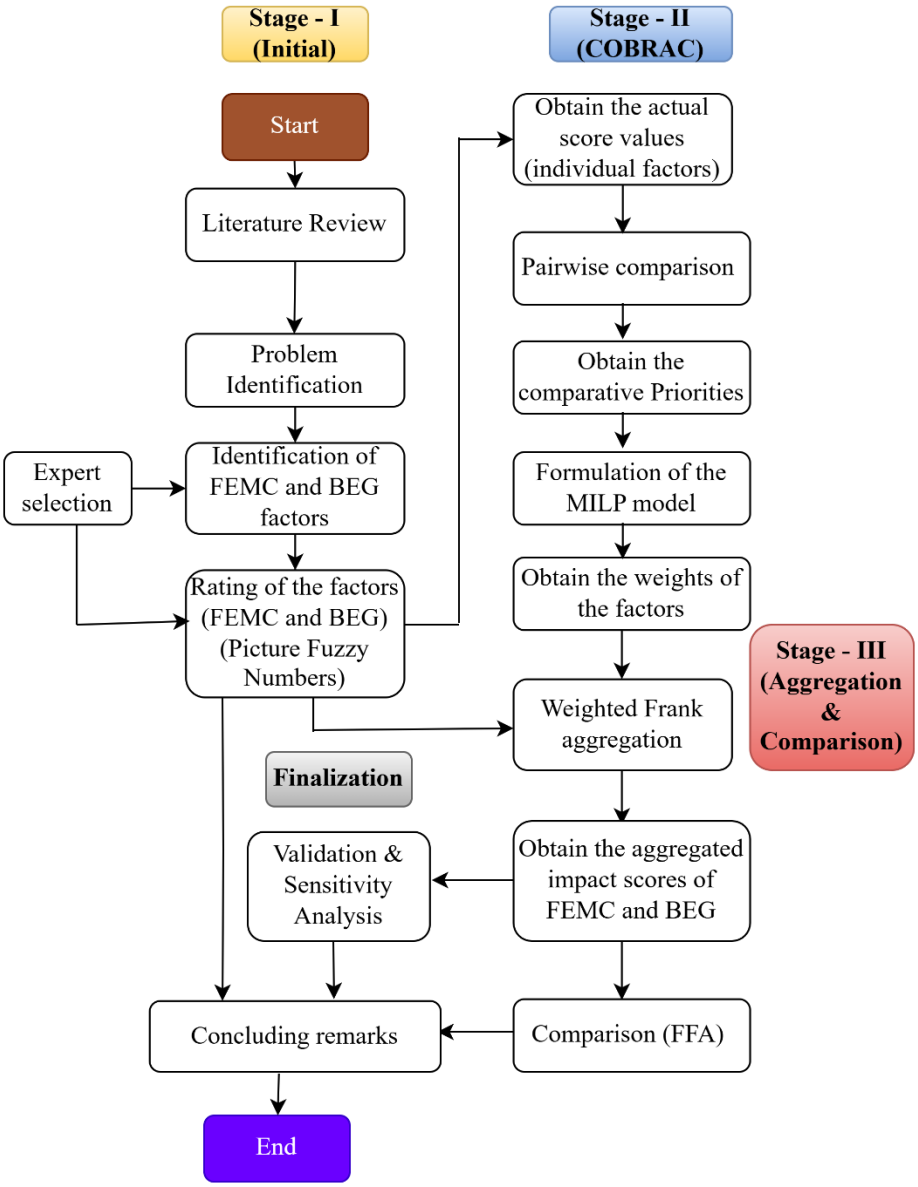

Figure 1. Flowchart of the research methodology

Step 4. Weighted aggregation

We use the PIFFWA operator (Eq. 13) to aggregate all $\mathcal{P}_j^{FE}$ and $\mathcal{P}_j^{BE}$ for FEMC and BEG separately. The resultant PIFNs are obtained by Eq. 17 and 18, respectively.

$$\mathcal{P}^{FE} = \left(\mu_{FE}^{+}, \eta_{FE}, \mu_{FE}^{-}\right) = PIFFWA\left\{\mathcal{P}_1^{FE}, \mathcal{P}_2^{FE}, \ldots, \mathcal{P}_n^{FE}\right\}$$

$$= \left\{1 - \log_b\left(1 + \prod_{j=1}^{n}\left(b^{1-\mu_{j(FE)}^{+}} - 1\right)^{w_j^{FE}}\right), \log_b\left(1 + \prod_{j=1}^{n}\left(b^{\eta_{j(FE)}} - 1\right)^{w_j^{FE}}\right), \log_b\left(1 + \prod_{j=1}^{n}\left(b^{\mu_{j(FE)}^{-}} - 1\right)^{w_j^{FE}}\right)\right\} \quad (17)$$

$$\mathcal{P}^{BE}=\left(\mu_{BE}^{+},\eta_{BE},\mu_{BE}^{-}\right)=PIFFWA\left\{\mathcal{P}_1^{BE},\mathcal{P}_2^{BE},\ldots,\mathcal{P}_n^{BE}\right\}$$
$$=\left\{1-\log_b\left(1+\prod_{j=1}^{n}\left(b^{1-\mu_{j(BE)}^{+}}-1\right)^{w_j^{BE}}\right),\log_b\left(1+\prod_{j=1}^{n}\left(b^{\eta_{j(BE)}}-1\right)^{w_j^{BE}}\right),\log_b\left(1+\prod_{j=1}^{n}\left(b^{\mu_{j(BE)}^{-}}-1\right)^{w_j^{BE}}\right)\right\} \quad (18)$$

For the initial case, we set b = 2 [56].

Step 5. Defuzzification of the resultant PIFNs

The defuzzification of the resultant PIFNs for FEMC and BEG is done utilizing Eq. 4. Accordingly, we get

$$Df^{*}(\mathcal{P}^{FE})=\frac{1}{3}\left\{\mu_{FE}^{+}+\left(1-\eta_{FE}\right)+\left(1-\mu_{FE}^{-}\right)\right\} \quad (19)$$

$$Df^{*}(\mathcal{P}^{BE})=\frac{1}{3}\left\{\mu_{BE}^{+}+\left(1-\eta_{BE}\right)+\left(1-\mu_{BE}^{-}\right)\right\} \quad (20)$$

Step 6. Conduct the FFA to compare the effects of FEMC and BEG

The conclusion is drawn based on the comparison of FEMC and BEG as follows.

If $Df^{*}(\mathcal{P}^{FE})>Df^{*}(\mathcal{P}^{BE})$, the consumers are driven by FEMC factors. If $Df^{*}(\mathcal{P}^{FE})<Df^{*}(\mathcal{P}^{BE})$, BEG factors drive consumers. Otherwise, the effects of FEMC and BEG are the same.

5. Findings and Discussions

This section demonstrates the application of the suggested research methodology for the present research problem. Referring to Table 4, we first determine the score values using Eq. 7-12. Tables 5 and 6 provide the calculated actual score values for the factors related to FEMC and BEG, respectively.

Table 5. Actual score values of the FEMC factors

FEMC Factors	PGDV	NGDV	Absolute Score	Actual Score
FE 1	0.200	0.680	0.640	0.6275
FE 2	0.120	0.720	0.520	0.5306
FE 3	0.160	0.760	0.600	0.6383
FE 4	0.320	0.720	0.480	0.4898
FE 5	0.000	0.800	0.720	0.8000
FE 6	0.240	0.640	0.640	0.6038
FE 7	0.080	0.680	0.760	0.7451
FE 8	0.200	0.600	0.720	0.6545
PIR	0.840	0.040	0.080	
Average η	0.140			

Next, we determine the weights of the FEMC and BEG factors utilizing the COBRAC method (Eq. 14-16). We solve the models (Eqs. 21 and 22) using Lingo software (version 20) to find the weights of the FEMC and BEG factors (Tables 7 and 8).

Table 6. Actual score values of the BEG factors

BEG Factors	PGDV	NGDV	Absolute Score	Actual Score
BE 1	0.0000	0.7200	0.8000	0.8290
BE 2	0.0800	0.7200	0.7200	0.7461
BE 3	0.0800	0.7600	0.6800	0.7351
BE 4	0.2400	0.6800	0.6000	0.5970
BE 5	0.2800	0.6000	0.6400	0.5899
BE 6	0.1200	0.6800	0.7200	0.7164
BE 7	0.2800	0.6800	0.5600	0.5572
BE 8	0.1600	0.6400	0.7200	0.6890
PIR	0.840	0.080	0.040	
Average η	0.155			

Table 7. Calculated weights of the FEMC factors

Factor	Score	β	1-β	β/(1-β)	Weight	Rank
FE 5	0.8000	0.5178	0.4822	1.0737	0.1572	1
FE 7	0.7451	0.5323	0.4677	1.1383	0.1464	2
FE 8	0.6545	0.5063	0.4937	1.0255	0.1286	3
FE 3	0.6383	0.5043	0.4957	1.0173	0.1254	4
FE 1	0.6275	0.5096	0.4904	1.0392	0.1233	5
FE 6	0.6038	0.5322	0.4678	1.1379	0.1186	6
FE 2	0.5306	0.5200	0.4800	1.0833	0.1043	7
FE 4	0.4898				0.0962	8
	Δ	0.0000		Sum	1.0000	

Model

$$Min\ \Delta$$

$$s.t.$$

$$\left|\frac{w_5^{FE}}{w_7^{FE}}-1.0737\right|\le\partial;\left|\frac{w_7^{FE}}{w_8^{FE}}-1.1383\right|\le\partial;\left|\frac{w_8^{FE}}{w_3^{FE}}-1.0255\right|\le\partial;\left|\frac{w_3^{FE}}{w_1^{FE}}-1.0173\right|\le\partial; \quad (21)$$

$$\left|\frac{w_1^{FE}}{w_6^{FE}}-1.0392\right|\le\partial;\left|\frac{w_6^{FE}}{w_2^{FE}}-1.1379\right|\le\partial;\left|\frac{w_2^{FE}}{w_4^{FE}}-1.0833\right|\le\partial;$$

$$\sum_{j=1}^{8} w_j^{FE}=1; w_j^{FE}\ge 0\forall j=1,2..,n$$

Table 8. Calculated weights of the BEG factors

Factor	Score	β	1-β	β/(1-β)	w	Rank
BE 1	0.8290	0.5263	0.4737	1.1111	0.1511	1
BE 2	0.7461	0.5037	0.4963	1.0149	0.1360	2
BE 3	0.7351	0.5064	0.4936	1.0261	0.1339	3
BE 6	0.7164	0.5098	0.4902	1.0398	0.1306	4
BE 8	0.6890	0.5358	0.4642	1.1541	0.1306	5
BE 4	0.5970	0.5030	0.4970	1.0121	0.1088	6
BE 5	0.5899	0.5142	0.4858	1.0586	0.1075	7
BE 7	0.5572				0.1015	8
	Δ	0.0000		Sum	1.0000	

Model

$$Min\ \Delta$$

$$s.t.$$

$$\left|\frac{w_1^{BE}}{w_2^{BE}}-1.1111\right|\le\partial;\left|\frac{w_2^{BE}}{w_3^{BE}}-1.0149\right|\le\partial;\left|\frac{w_3^{BE}}{w_6^{BE}}-1.0261\right|\le\partial;\left|\frac{w_6^{BE}}{w_8^{BE}}-1.0398\right|\le\partial; \quad (22)$$

$$\left|\frac{w_8^{BE}}{w_4^{BE}}-1.1541\right|\le\partial;\left|\frac{w_4^{BE}}{w_5^{BE}}-1.0121\right|\le\partial;\left|\frac{w_5^{BE}}{w_7^{BE}}-1.0586\right|\le\partial;$$

$$\sum_{j=1}^{8} w_j^{BE}=1; w_j^{BE}\ge 0\forall j=1,2..,n$$

From the calculation of the weights of the FEMC factors (Table 7), it is revealed that FE 5 ("I find the messages and content inspirational, positive, inclusive, and empowering"), FE 7 ("Female-led ads uphold the brand image for me"), and FE 8 ("As a responsible citizen, femvertising appeals to me as it has social value") hold paramount importance to the experts. The literature resonates with the findings that FEMC is influenced by authenticity, empowerment, and social responsibility [69]. Past studies show that feminist ads avoid superficial portrayals, break stereotype notions, and positively influence brand image [70]. Cultural background and gender norms significantly affect customer responses to FEMV. FEMC has emerged as a powerful strategy on social media platforms [71]. Brands must prioritize authenticity, cultural sensitivity, careful use of influencers, and ongoing evaluation and adaptation to consumer input and societal changes. The effectiveness of femvertising depends on its authenticity, cultural influences, and strategic coherence with contemporary marketing methods, including influencer collaborations.

Table 8 reflects that customer experience (BE 1) is the most significant determinant of brand loyalty and happiness, resonating with past studies [42]. Value and emotional connection (BE 2 and 3) hold intrinsic worth, surpassing ostentatious marketing, fostering brand attachment, and cultivating lasting preference [45]. Aspirational branding exerts minimal influence, as it may mirror evolving customer objectives. Social perception and quality remain significant since the opinions of others sway consumers and anticipate uniform quality, which is essential for reputation management and quality assurance [72].

Combining both findings, we notice that FE 3 and BE 3 show significant congruence, suggesting the brands focus on emotional messages to inspire customers. We observe the dominance of FE 7 and BE 6, reflecting the need to build a strong public perception of the brand. The alignment between FE 8 and BE 2 indicates the requirement for social consciousness. However, the discordance of FE 2 and BE 7 reminds us that mere aspiration from the brand does not necessarily lead to a firm purchase intention. Next, we conduct a weighted aggregation of the FEMC and BEG factors using the PIFFWA operator (Eqs. 17 and 18). For the initial case, we set b = 2 [57]. Then, using Eqs. 19 and 20, we defuzzify the resultant PIFNs for FEMC and BEG to obtain the final influence score (FIS) for conducting FFA (Tables 9 and 10).

Table 9. Calculation of FIS of the aggregated FEMC factors

Aggregated PIFN	μ_{FE}^{+}	η_{FE}	μ_{FE}^{-}
FEMC	0.700	0.121	0.173
FIS (Defuzzification)	0.8019		

Table 10. Calculation of FIS of the aggregated BEG factors

Aggregated PIFN	μ_{BE}^{+}	η_{BE}	μ_{BE}^{-}
BEG	0.711	0.145	0.132
FIS (Defuzzification)	0.8116		

It is observed that FIS (BEG) is marginally greater than FIS (FEMC), suggesting that the sacred love for the brand ("devotion") wins over the influencing ads ("promotion").

BEG, characterized by consumers advocating for a brand through word-of-mouth and safeguarding it from criticism, is essential in contemporary marketing strategies. Researchers discovered that characteristics such as homophily, trust, and popularity are crucial for transforming social media followers into brand supporters, with product quality and perceived warmth significantly affecting this behavior [11]. Another study descried the role of user-generated and firm-created content on social media in building up commitment, hence fostering brand evangelism and loyalty [73]. On the other hand, FEMC seeks to confront gender stereotypes and advocate for female empowerment [71]. It remains in its formative phases relative to BEG. The relatively higher significance of BEG over FEMC indicates its widespread applicability in formulating marketing strategies across industries. However, FEMC and BEG are intertwined, as influencers embodying feminism can enhance consumers' emotional connection with a brand. This relationship enhances the probability of brand champions since consumers perceive the brand as a reflection of their convictions and social identity [73]. FEMC can elevate social initiatives and cultivate a devoted brand community.

5.1 Reliability of the Result

The crux of this research is the calculation of the weights. The reliability of the result (i.e., weight calculation) is confirmed in two ways. First, Tables 7 and 8 show that Δ = 0.0000. This indicates a distinguished consistency in the weight calculation. Thus, the COBRAC method provides a robust result. The FFA result is, therefore, a reliable one. To further ascertain the reliability of the result obtained by utilizing a specific MCDM model, scholars recommend a comparison with various other methods [74-76]. This research compares the result (ranking the FEMC and BEG factors based on their calculated weights using the COBRAC method) with other models, such as LBWA, FUCOM, SWARA, and CIMAS. We observe a significant consistency among the methods. Therefore, the result of the current analysis is reliable. As an example, Figure 2 shows a comparison of various methods for ranking the FEMC factors.

5.2 Sensitivity Analysis

In MCDM analysis, the reliability of the results stands on several input conditions, such as the calculation of the criteria weights, selection of the aggregation approach for obtaining the final score, setting the coefficient or threshold values used in aggregation, and selection of the normalization. Any unforeseen changes in these conditions significantly affect the final result and decision-making. In other words, violations of the underlying conditions cause significant instability of the result, affecting the model's reliability and the decisions made [77-79]. The sensitivity analysis is performed to examine the internal stability of the MCDM model. In this work, the FEMC and BEG factors are ranked in terms of their calculated weights. The outcome of FFA depends on the weighted aggregation. Therefore, calculating the weights of the factors and their aggregation is paramount for the outcome of FFA. The aggregation needs to be insensitive to parameter (b) value change. Thus,

we conduct the sensitivity analysis of the result by changing the values of b and computing the factor weights and their differences (Table 11). Figures 3 and 4 portray the outcome of sensitivity analysis.

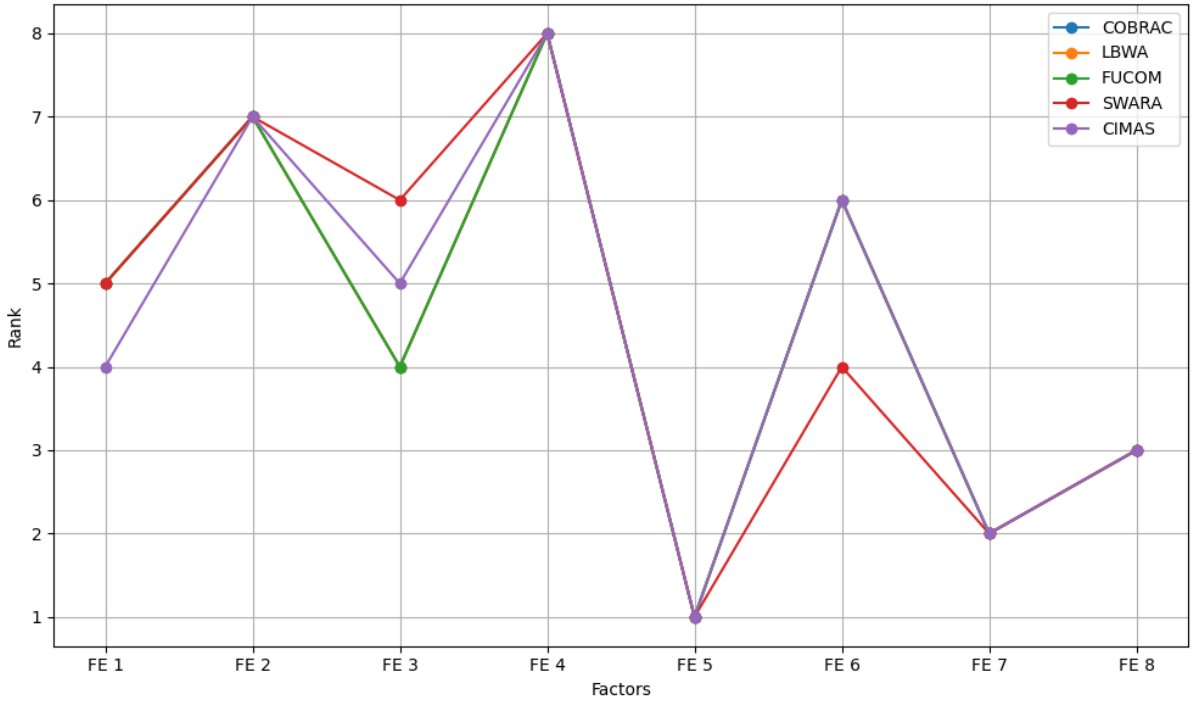

Figure 2. Comparison of various methods used in ranking FEMC factors

Table 11. Summary of Sensitivity Analysis

Cases	b	FIS (FEMC)	FIS (BEG)	Diff
Initial	2	0.8019	0.8116	0.00970
Case 1	3	0.8013	0.8110	0.00970
Case 2	4	0.8008	0.8107	0.01020
Case 3	5	0.8005	0.8104	0.01020
Case 4	6	0.8002	0.8102	0.01020
Case 5	7	0.8000	0.8100	0.01020
Case 6	8	0.7998	0.8098	0.01020
Case 7	9	0.7996	0.8097	0.01030
Case 8	10	0.7994	0.8096	0.01120
Case 9	20	0.7984	0.8088	0.01160
Case 10	50	0.7972	0.8078	0.80780

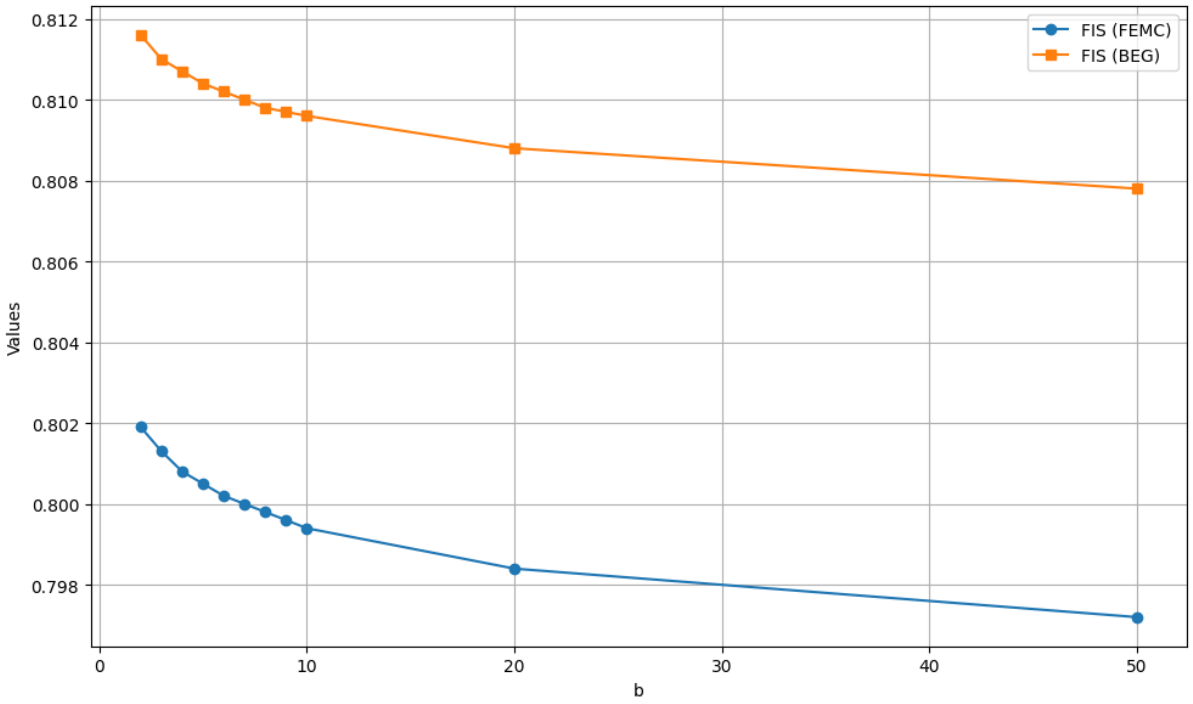

Figure 3. Variations in the FIS values of FEMC and BEG factors (Sensitivity Analysis)

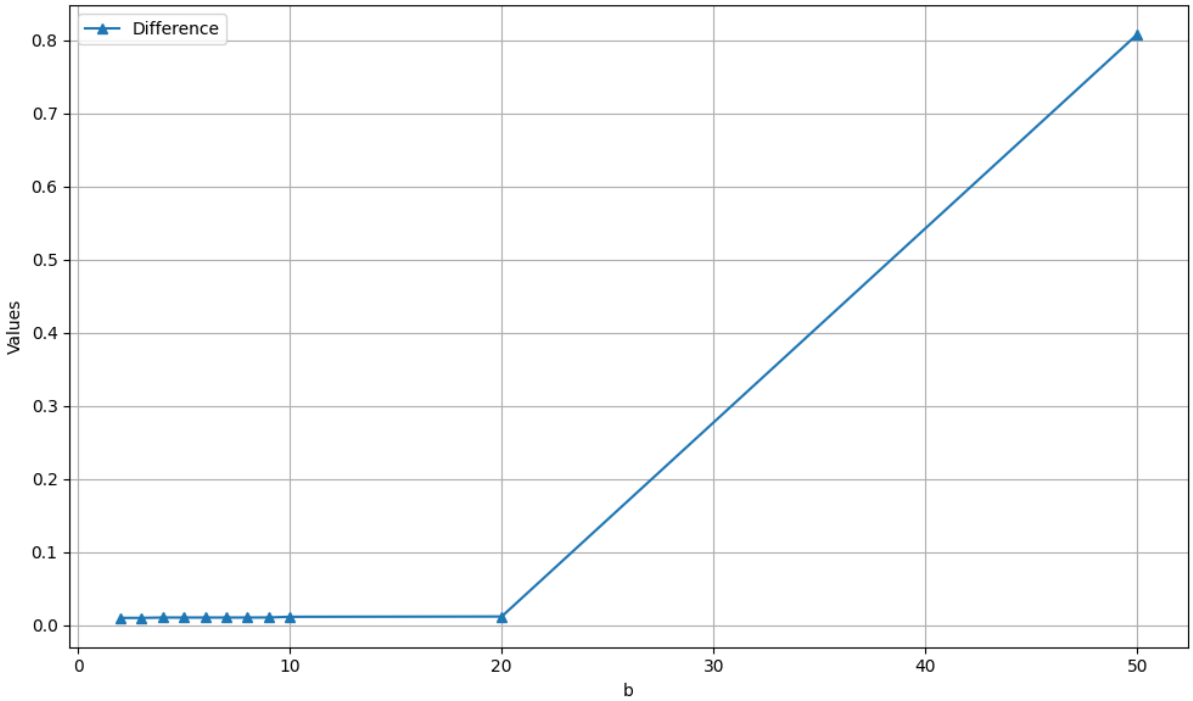

Figure 4. Difference in the FIS values of FEMC and BEG factors (Sensitivity Analysis)

Figure 3 shows that the FEMC and BEG factors show minor variations in the calculated weights. The patterns are to be similar. As the values of b increase, there is a downward slope, which is in line with the characteristics of the aggregation function. The difference between the FIS values (FEMC and BEG) (Figure 4) shows minor changes till b = 10. After that, the differences are higher, reflecting that

for higher b values, the outcome of FFA is more prominent. Overall, we contend that the result shows considerable stability.

6. Research Implications

The present study uses an innovative framework to compare the effects of femluencing and brand evangelism on customers' purchase intention. This work broadly impacts managerial decision-making, societal development, and technical advancements.

6.1 Managerial Implications

Companies must focus on customer experience programs and after-sales engagement to reinforce customers' experience while buying products. Brands can augment their influence on customers by converging on value delivery and emotional storytelling instead of concentrating on other marketing communication mix strategies. They should be able to identify that empowerment-based advertising vibrates most strongly with customers. Brand trust and emotional resonance do not always act as the components of total customer benefits and lead to purchase behavior if the customers feel the absence of product relevance and perceived value. They should avoid positioning errors by relying on values and relevance. Therefore, emotional storytelling blending with product relevancy can instigate customers' purchase behavior. This can boost brand transparency and responsibility by incorporating consumer protection strategies and educating them to discriminate between real value and promotional gimmicks. Additionally, the result relates that female-led advertisements stimulate customers' deep emotional engagement. So, the brand can perform segmented marketing by formulating various femvertising approaches for diverse demographics and cultures, as the past study suggests that contextual sensitivity (e.g., patriarchy, regional beliefs) notably impacts perceptions [61]. Marketers can publish some guidelines mentioning criteria for social value, stereotype evasion, and cultural sensitivity in commercial content. Some advertising standards can be set to stop the commodification of feminism and certify a dependable picture of women. Administrations or advertising forums may launch some incentivizing drives directed at diversity, empowerment, and social responsibility—through awards, tax assistance, or industry recognition. Likewise, some media literacy initiatives by the cohort can teach customers — particularly Gen Z—how to critically understand femvertising, comprehend commercial intent, and know performative feminism. Furthermore, tokenism or stereotype reinforcement can be minimized by implementing personalized campaigns based on data analytics and social listening.

6.2 Social Implications

When customers buy products, they emphasize the benefits of the product, service, personal, and image. Branding is no longer a process of creating and establishing an exclusive distinctiveness and image for a company or product; it is also a social act by prominence of peer perception and social values. The brands should be able to create a differentiated position through the daunting task of designing responsible, inclusive, and value-driven relevance messages integrating with social values and cultural relevance to boost emotional bonding and brand image. This social and cultural aspect of femvertising can catalyze social change, resulting in gender equality in both media and society. Customers, particularly women, feel very touched when they see their situations, inspirations, and moments portrayed realistically in media. This can lift self-esteem and endorse media literacy, primarily in younger audiences determining their identity through brand communications [8]). This extensive femvertising backs current social conversations about equality, body image, diversity, and representation, indirectly influencing public norms and attitudes.

7. Conclusions and Future Scopes

The present work delves into the dynamics of FEMC and BEG to CPI. Based on the opinions of 25 experts, it aims to explore their relative dominance. The ongoing work utilizes a PIFN-based multi-criteria expert group decision-making framework that uses the COBRAC method to determine the factor weights. The opinions about the relative importance of the factors (under BEG and FEMC categories) are aggregated using the Frank aggregation operator. Then, the composite FIS values for FEMC and BEG, respectively, are calculated. The result of the FFA reveals that BEG holds a marginal edge over FEMC in terms of its impact on CPI. The analysis shows that empowering and inspiring messages uphold the brand image and social value, eventually lead to enduring customer happiness and brand loyalty, and build an emotional connection. The results show substantial stability and consistency with other models. Besides, the insignificant DFC values indicate the model's robustness.

While the paper provides an innovative FFA methodology inspired by PIFN to address a practical problem, it offers several scopes for further extensions.

- Firstly, the present work does not consider the cross-cultural impact on FEMC and BEG. In addition, it does not consider demographic classifications before comparing the effects of FEMC and BEG on CPI. Therefore, future work may be planned to consider these aspects.
- Secondly, the present work has not conducted any causal analysis. Future work may be designed to unearth the causal impact of the FEMC and BEG factors on CPI and perform a comparative analysis.
- Thirdly, the present paper is silent about the ethical concerns. "Brandwashing" is a matter of concern. Future work may be planned to consider the ethical factors.
- Fourthly, future work may also assess the impact of AI influencers, with and without feminine content on CPI. In this regard, it may be interesting to discern the relative impacts of FEMC and BEG compared with AI ChatBoT.
- Fifth, it may also be interesting to examine the role of metaverse technologies, like AR/VR, digital twins, and others, on FEMC and BEG.
- Sixth, from the methodological perspective, future research may extend the application of the current FFA framework to other practical problems.

Author Contributions

Conceptualization: S.B, A.S, A.R.C, H.D.; methodology, S.B.; software, S.B.; validation, S.B., and A.S.; formal analysis, S.B., A.R.C; investigation, H.D.; resources, A.S.; data curation, H.D.; writing—original draft preparation, S.B., A.R.C, and H.D.; writing—review and editing, S.B. and A.S.; visualization, H.D.; supervision, S.B.; project administration, S.B. All authors have read and agreed to the published version of the manuscript.

Funding

This research received no external funding.

Data Availability Statement

The datasets utilized and studied throughout the present study are available from the corresponding author on reasonable request.

Conflicts of Interest

The authors declare no conflict of interest.

Acknowledgement

This research was not funded by any grant

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Appendix A

Table A1. Summary of past studies on FEMV

Author(s)	Theory	Context	Characteristics	Methodology	Key findings
[69]	-	Online consumer reviews about FEMV campaigns	Analysis of perceptions and emotional connect (brand-cause fit)	Content analysis (Qualitative)	Consumer perceptions and emotional reactions- Authentic (positive emotion) and stereotype (negative emotion)
[12]	-	Employer branding and female empowerment	Promotion of women's empowerment through social platform	Content analysis (Qualitative)	FEMV constructs include gender equality, equity in recruitment, women's leadership and talent development, and work-life balance. The study also highlights strategic decisions regarding the acquisition of female talents.
[80]	-	Feminist advertisement	Exploring the design of FEMV campaigns	Discourse analysis (Qualitative)	The role of FEMV in displaying feminist ideals and fulfilling social responsibility.
[71]	-	social media IM.	Integration of FEMV and IM (FEMC)	Focused group interviews and qualitative analysis	The framework of FEMC (Synthesis of FEMV and IM).
[13]	-	Revisiting literature on FEMV	Analysis of various practical and theoretical contributions	Systematic literature review (Qualitative)	Establish the role of FEMV in challenging gender stereotypes
[7]	-	To discover consumer attitudes toward FEMV in the Indonesian context	Attitude toward FEMV- perceived congruence, authenticity, self-consciousness, and emotional connect	SEM (Quantitative)	Positive FEMV attitudes enhance brand loyalty, bolster purchase intentions, and increase e-WOM intentions.
[14]	-	Luxury brand	To study the influence of message specificity and genuineness on consumer engagement	Experimental	Precise and authentic promotional messages positively influence consumer engagement in the luxury brand FEMV.
[15]	-	Ad campaigns (Product: L'Oréal Paris)	Studying the influence of the presence of mature women in FEMV	Content analysis (Qualitative)	Explain the influence of "cosmetic feminism"
[41]	Generational Cohort Theory	Delving into women's perceptions of FEMV across	Comparison of the views of Gen-X and Gen-Y on several aspects like empowerment,	Focused group interviews and qualitative analysis	Gen-X is more Pro-FEMV than Gen-Y. The dominance of individualistic empowerment is noted.

		various generations	sexuality, and identifiability in FEMV		
[16]	-	Female empowerment through sports in Egypt	Study of the effect of gender on the perceptions about FEMV authenticity and congruence	Cross-sectional SEM (Quantitative)	Authenticity is more preferred by females, while there is no gender-wise difference in congruence.
[19]	-	FEMV campaigns on social media	Several aspects of brand promises, such as symbolic, philanthropic, and explicit for the stakeholders	Experimental	The prominence of philanthropic and explicit promises and the moderating effect of motive on endorsement outcomes.
[17]	-	Customer responses to FEMV	To study the feminist campaign's strength and brand awareness	Experimental	Brand awareness and message strength significantly influence consumer responses.
[81]	Signaling Theory	Sports brands' advertising	Examining the gender equality and internal CSR practices	Content analysis (Qualitative)	There is no significant difference between award-winning and non-award-winning brands. Some non-award-winning brands show female leadership and better internal CSR practices.
[18]	Post-feminist Theory	To study the internationally award-winning advertisements (2013-2023)	Discerning the feminist discourse in advertising	Content analysis (Qualitative) and statistical tests (chi-square, p-values)	There is an increase in feminism after 2018, leveraged by the brands.
[21]	-	FEMV in Mexico and Hungary	To study customers' perceptions about FEMV	Focused group interviews and qualitative analysis	There is a significant effect of cultural differences on the perception.

Table A2. Summary of past studies on BEG

Author(s)	Theory	Context	Characteristics	Methodology	Outcomes
[23]	Value Co-Creation Theory	Co-value creation by customers and brands	Impact of customer engagement on BEG	SEM (Quantitative)	Feminist communications and promotions increase BEG
[24]	Brand Community Theory	Branding on social media	To examine the BEG behavior on social media	SEM (Quantitative)	BEG is created through an intense engagement with female-led ads.

[42]	Masstige Theory	Indian consumer goods market	The influence of mass prestige on brand happiness and BEG	SEM (Quantitative)	Brand happiness and emotional engagement lead to BEG
[25]	Consumer-Brand Identification	Starbucks	The impact of brand symbolism on BEG	Multivariate statistical analysis	BEG is influenced by symbolic identity, which is crucial in FEMV, which relies on empowerment symbols.
[10]	Social Identity Theory	Online Branding	Investigate how demographics impact BEG	Multivariate statistical analysis	BEG varies based on age and gender
[43]	SOR theory	Fast-food sector in Egypt	The influence of perceived innovativeness on BEG under mediation effect of customer engagement	SEM (Quantitative)	customer engagement significantly mediates the impact of perceived innovativeness on BEG
[72]	Country of Origin Effect	Emerging markets	Observe the influence of country of origin on brand evangelism, considering consumer engagement as a mediator	SEM (Quantitative)	Country-of-origin fosters brand evangelism. Emotional and cognitive connections in driving brand evangelism
[11]	Influencer-brand fit theory	Influencer marketing on social platforms	Association between influencers with brand evangelism	Mixed-methods: interviews + survey	Influencer association augments evangelism—imperative for femvertising influencers
[44]	Not specified	Various industries	Provides an exhaustive literature review on brand evangelism along with future research avenues	Systematic literature review	Recommend a conceptual framework for brand evangelism
[45]	Branding and Sales Management Theories	Consumer goods sector in Pakistan	Explores the influence of branding and sales management practices on brand evangelism	SEM (Quantitative)	The influence of brand associations on brand evangelism can vary with the degree of digital technology adoption among customers
[46]	Influencer Marketing Theory	Digital marketing landscape	The impact of influencer marketing on brand evangelism	Theoretical analysis	Consumer decisions to support the brands encouraged by influencers
[82]	Stimulus–Organism–Response (SOR) Framework	Metaverse environment	Discovers the influence of virtual influencers on brand evangelism	SEM (Quantitative)	Brand identity, brand fidelity, virtual influencers, purchase intentions
[83]	Brand Relationship Theories	Sri Lanka's real estate sector	Examine aspects influencing brand evangelism with an emphasis on brand love as a moderator	Quantitative: Regression	Improved brand evangelism moderated by brand love