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Examining the moderating effects of CRM on retail atmospherics-shopping behavior link

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A B S T R A C T

Retail atmospherics have been well studied to have both functional and emotional impact on the behavioural intent of shoppers. The usage of well-orchestrated retail servicescape with its expanding canvas, both inside and outside the retail premise, has been targeted to induce subliminal perception of comfort and convenience in the mind of shoppers. Modern retail practice has incorporated customer relationship management (CRM), a pivotal business analytical process, to strengthen their interaction with shoppers. This paper attempts to gather empirical evidence on the possible mediating effects of CRM dimensional performance on the emotional orientation of shoppers, apprehended to be antecedent to favourable shopping behaviour. Appropriate statistical applications, following adequate literature survey, were deployed to test the hypotheses and the robustness of the default model. The results were indicative of strong moderating impact of CRM dimensional performance in augmenting emotional behaviour of customers to induce a fovourable behavioural intent. The default model also holds good confirming the causal convergence of constructs.

1. Introduction

Retail scenario in India has underwent a sea change specifically in terms of experiential shopping which has compelled the organized retail sector to delve deep into retail atmospherics as it became deterministic to emotionally satisfied shopping. This has also put the practicing retailers at the crossroad of product/brand value addition and retailscape value addition. The retail atmospherics has been conceptualized to be a spectrum of tangible and intangible dispositions intertwined to frame meaningful stimuli (Markin et al., 1970) that generate response across the social, psychological, economic, cultural, ethnic and religious life-styles of consumers because of concordance with prevailing trends. Retail atmospheric cues may function as antecedents to develop both threshold and subliminal perception culminating into evaluation and predisposition when it comes to purchase (shopping) behaviour. In fact, retail atmospherics can generate a chain of attributes, benefits and emotions of pleasure-displeasure, attraction-distraction, high-low confidence, motivational layers and desire (Kumar et al., 2010). The retail atmospherics consist of factors namely olfactory, tactile, tangible and intangible which operate on the cognitive process of shoppers resulting in specific

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behavioural pattern both short-term (purchase intention, purchase decision) and long-term (patronage, advocacy) in nature. Retail displays are not mere agglomeration of products but a harmonious ensemble and arrangement of brands compatible to retailscape whereby transposition of abiotic brand components to its biotic personified form and the communication of the same with the shoppers is ensured.

The strategic usage of atmospherics in multi-branded retail malls is now well witnessed. The sole purpose of using the atmospheric cues is to stimulate the cognitive emotions of the shoppers which are expected to generate favourable shopping behaviour. The integration of customer relationship management (CRM), as an adjunct business process, with the retail operations has enabled the retail operators to segment shoppers in a better way, which is likely to help them design effective communication and display of merchandise.

The quantifiable influence of retail atmospheric cues on cognitive domain of shoppers is a problematic issue to be addressed because of which the proper atmospheric-mix is difficult to identify. In addition to this, the CRM dimensional elements, which are also likely to intervene in the relationship between retail atmospherics and shopping behaviour link, have not been perfected for a retail set-up.

The objective of this study is to understand the causal relationship between the retail atmospherics and shopping behaviour and to their apprehended modification under the mediating influence of CRM dimensional performances. The study also attempts to identify the mediating effects of emotional behaviour of shoppers on the shopping behaviour under the impact of CRM dimensional elements. Further to this the study proposes a default model involving all the constructs.

2. Review of literature

While prescribing the term ‘atmospherics’, Kotler (1974) was of the opinion that buying environment can be designed to generate desired level of emotional effects in shoppers, culminating into increased probability of purchasing. Later Donovan and Rossiter (1982) used the Mehrabian-Russell framework (Mehrabian & Russell, 1974) and presented supportive views that favourable environmental conditions and impact of intervening variables are deterministic in retail shopping behavior. The practicing retailers have identified a number of subliminal cues generated that appeals to the emotional self of shoppers and stimulate purchasing behavior. Over the years the researchers have empirically explored the retail atmospheric variables namely music (Milliman, 1982; Morin et al., 2007; Yaleh & Spangenberg, 2000; Jain & Bagdare, 2011; Smith & Curnow, 1996; Spangenberg et al., 2005; Oakes & North, 2008; Bailey & Arenis, 2006; Garlin & Owen, 2006; Broekemier et al., 2008), colour (Bellizzi & Hite, 1992; Turley & Milliman, 2000; Babin et al., 2003; Ng, 2003; Chebat & Morrin, 2007; Lawes, 2008), odour/scent (Bone & Ellen, 1999; Sprangenberg et al., 1996; Baron, 1997; Michon et al., 2005; Hirsch, 1995; Morrin & Ratneswar, 2000; Fiore et al., 2000; Knasko, 1993; Eroglu & Machleit, 1990), use of illumination (Levy & Weitz, 2004; Ng, 2003; Underhill, 1999; Areni & Kim, 1995), crowding (Machleit et al., 2000; Machleit & Mantel, 2001; Whiting, 2009; Li et al., 2009; Hofstede, 2011), temperature and touch (Jacobs, 1984; Areni & Kim, 1994; d’Astous, 2000), visual communication (Levy & Weitz, 2004; Din, 2000) and store layout (Woodruffe-Burton & Wakenshaw, 2011) to be having significant impact on shopping behaviour and perceived image of the retail outlet. Several studies demonstrated that shoppers’ behaviour can be attributed to their perceived inferences about the quality of merchandise displayed, using the retail atmospheric signals (Espinoza et al., 2004; Baker et al., 2002). In-store display or point-of-purchase (POP) displays was also reported to be significant strategic initiatives (Levy & Weitz, 2009), although adequate study of their psychological impact on customers’ cognitive decision making was not asserted. Inman et al. (2009) observed that product display and in-store POP usage induced unplanned purchase behaviour, specifically for products that are frequently purchased. This

observation of unplanned purchase supported the findings of Bawa et al. (1989) that in-store product display increases customers' sensitivity to promotion and price and significantly reduces brand loyalty. While dealing with two specific retail atmospheric variables Michon et al. (2005) found that moderate incongruity level is more likely to stimulate a favourable evaluation of the shopping experience. Study conducted by Massicotte et al. (2009) revealed significant associationship between retail atmospherics and functional congruity (perceived quality) which shared a positive correlation with shopping behaviour. Visual communications, namely signage & retail information and shopping behaviour were found to be closely related as congruent interactions between shopping tasks and retail information were found to exert increased effect on value perception of retail outlet by the shoppers (Mathwick et al., 2002). In a study conducted by Dennis and Newman (2005) it was found that retail atmospheric stimuli may directly increase pleasure and thus, indirectly, approach behaviours of shoppers which conform to the Mehrabian-Russell model (PAD) (1974). Retail shoppers were found to assign greater values to olfactory and tactile factors namely air-conditioning facility, ambient odour etc. and also on design factors namely shelf arrangements, floor layout, architecture etc. (Kumar et al., 2010).

Apart from inanimate displays and physical environmental stimuli, the human factor associated with in-store transaction cannot be neglected as literatures confirmed. Turley and Milliman (2000) grouped the atmospheric variables into external variables (pertaining to the exterior of the shopping store), internal variable (pertaining to the interior of the shopping store), layout & design variables (POP variables) and human variables. Behaviour and responsiveness of in-store employees were found to invoke a superior level of service quality amongst the customers (Turley & Milliman, 2000; Hutton & Richardson, 1995; Baker et al., 1992). In addition to the internal atmospherics of the store, the exterior was also found to be influencing the purchase behaviour of customers, considered to be a 'spill-over' effect on to the store image (Cornelius et al., 2010). However, Pan et al. (2008) could not establish a link between exterior-atmospheric-variables (access, parking, architecture, landscaping, outdoor exhibition area etc.) and customers' in-store shopping behaviour. Quite a number of research works have identified the moderating effects of customer demographics on store-atmosphere-shopping behaviour relationship. Gender was found to be an important personal moderator (Raajpoot et al., 2008; Inman et al., 2009) and so was 'age' (d' Astous, 2000). Occupational status, particularly in case of women, was found to be extremely relevant for repatronage decision (Raajpoot, et al., 2008) and unplanned purchase (Inman, 2009).

Several studies have revealed that servicescapes (service environments) affect customers' emotional states by either augmenting or suppressing them (Hui & Bateson, 1991; Baker et al., 1992; Wakefield & Baker, 1998). Mehrabian and Russell (1974) confirmed that PAD (pleasure, arousal and dominance) elements are enough to capture emotional effects caused by service environments which were perceived to display antecedent role in determining approach/avoidance behaviours of customers covering four aspects: (1) intention to store-patronage, (2) in-store exploration, (3) desire to communicate and (4) satisfaction & performance related to time and money spent, and, this view was, later, supported by Harlena and Holbrook (1986).

A significant amount of literature support can be traced for empirical evidence of pleasant environments on both planned and unplanned purchases. Ang et al. (1997) and Spies et al. (1997) observed that shoppers' pleasure and intent for impulse purchase may increase with pleasant retail atmosphere. Subliminal cues namely aroma and background music were found to be influential to stimulate emotional self of shoppers and increase the probability of spending (Chebat & Michon, 2003; Dubé & Morin, 2001; Newman, 2002; Mattila & Wirtz, 2001). Donovan et al. (1994) and Sherman and Smith (1987) were of the opinion that manipulable and controllable retail atmospheric cues can influence the moods of the shoppers resulting in specific shopping behavioural pattern. The Mehrabian Russell model was found empirically acceptable across cultures (Foxall & Soriano, 2005;

Foxall & Pearson, 2002) as it proved that pleasure (Chebat & Michon, 2003) and arousal, to certain extent, (Russell & Pratt, 1980) were found influential in determining shopping responses.

The 'human' variable assumed to be a significant in-store atmospheric variable, has been expanded functionally to incorporate the elements related to customer relationship management (CRM). In a study conducted by Dargah and Golrokhsari (2012) it was found that CRM can be instrumental in segmenting in-store customers and thereby providing in-store employees opportunity to customize communication-pattern with the customers to meet their specific requirements. One of the major applications of CRM in retail environment focuses on the use of technology to capture consumer data (Payne, 2009) which becomes the foundation for customization strategy for individual customer. Majority of the studies involving CRM were targeted to identify the same as an antecedent to customer satisfaction and retention (Mithas et al., 2005; Verhoef, 2003; Gustaffson et al., 2005). Mithas et al. (2005) also observed that CRM can also induce better consumption experience for the customers. Salespeople are leveraging the use of CRM (Widmier et al., 2002) in improving their relationships with customers thereby enhancing the capability of sales forecasting, lead management and personalization (Rigny & Ledingham, 2004). Further to this, as salespeople are operating at the organisation-customer interface, CRM enables them to add value proposition for the customers (Beverland, 2001) while managing the buyer-seller dyadic relationship (Reynolds and Arnold, 2000). In a study conducted by Gilaninia and Ghashlagh (2012) it was found that relationship marketing can pacify transaction related anxiety in customers and that retail atmospherics (including store employees) had a significant role to play in it. Study of extant literatures revealed that implementation of CRM necessarily involved four specific activities: (a) focusing on key customers (Schmid & Weber, 1998; Srivastava et al., 1999; Sheth et al., 2000; Ryals & Knox, 2001; Armstrong & Kotler, 2003; Vandermerwe, 2004; Srinivasan et al., 2002, Jain & Singh, 2002) which encompassed the view of a customer-centric organizational structure with dyadic interactive points targeted towards identification of key or valued customers through lifetime value computations, (b) organizing around CRM (Brown, 2000; Homburg et al., 2000; Ahmed & Rafique, 2003), which emphasized on customer-centric organizational functions with an objective to ensure value proposition to customers, (c) managing knowledge (Peppard, 2000; , Freeland, 2003; Stefanou et al., 2003; Stringfellow et al., 2004, Yim et al., 2004; Plessis & Boon, 2004; Brohman et al., 2003) whereby customer-information are effectively transformed into customer-knowledge and disseminated across the organizational hierarchy which will equip salespeople with better understanding of customers' requirements and (d) adopting CRM-based technology (Butler, 2000; Pepperd, 2000; Vrechopoulos, 2004; Widmier et al., 2002) to optimize communication with customers, accurate service delivery with back-up and supportive information, managing customer-knowledge by data warehousing and data mining and providing customized services. However, there has been a dearth of research in identifying these CRM dimensions in the context of retail industry.
The major findings from the existing literature are:

- existing research found strong support to correlate retail-atmospheric elements to be deterministic of customers' in-store shopping experience and behaviour.
- the retail-atmospheric elements are instrumental in emotional influence of customers
- CRM has been identified as a critical customer-retention tool, which can be additionally used to augment the value proposition of customers.

2.1 Research gap identified

But literature remained absolutely inconclusive regarding the moderating impact of CRM dimensions on retail atmospherics-shopping behaviour link, whereas, it is absolutely critical to assess the impact considering the fact that the retail outlets are spending much on CRM implementation.

2.2 Formulation of hypothesis

Apropos to the review of literature, the researcher aimed to identify the causal relationship between retail atmospheric elements, emotional behavioural response of the shoppers and shopping behaviours. Therefore it was hypothesized that:

H_1: External retail atmospheric elements (RAE) influence emotional behaviour (EB) of shoppers.
H_2: Internal retail atmospheric elements (RAE) influence emotional behaviour (EB) of shoppers.
H_3: Layout & design retail atmospheric elements (RAE) influence emotional behaviour (EB) of shoppers.
H_4: POP retail atmospheric elements (RAE) influence emotional behaviour (EB) of shoppers.
H_5: Human retail atmospheric elements (RAE) influence emotional behaviour (EB) of shoppers.
H_6: External retail atmospheric elements (RAE) influence shopping behaviour (SB) of shoppers.
H_7: Internal retail atmospheric elements (RAE) influence shopping behaviour (SB) of shoppers.
H_8: Layout & design retail atmospheric elements (RAE) influence shopping behaviour (SB) of shoppers.
H_9: POP retail atmospheric elements (RAE) influence shopping behaviour (SB) of shoppers.
H_{10}: Human retail atmospheric elements (RAE) influence shopping behaviour (SB) of shoppers.
H_{11}: Shopping behaviour (SB) is dependent on emotional orientation (EB) of shoppers.
One of the major objectives of the researcher was to estimate the moderating impact of CRM dimensional performance (CRMDP) on the links apprehended to be existing between retail atmospheric elements, emotional behaviour and shopping behaviour of shoppers. Therefore the hypotheses formulated are as follows:

H_{12}: CRMDP is likely to have an impact on retail atmospheric states-emotional behaviour link.

H_{13}: CRMDP is likely to have an impact on retail atmospheric states-shopping behaviour link.

H_{14}: CRMDP is likely to have an impact on emotional behavioural states-shopping behaviour link.

2.3 Proposed default model

The proposed default model was constructed by taking into consideration the hypotheses formulated and was represented in Fig.1.

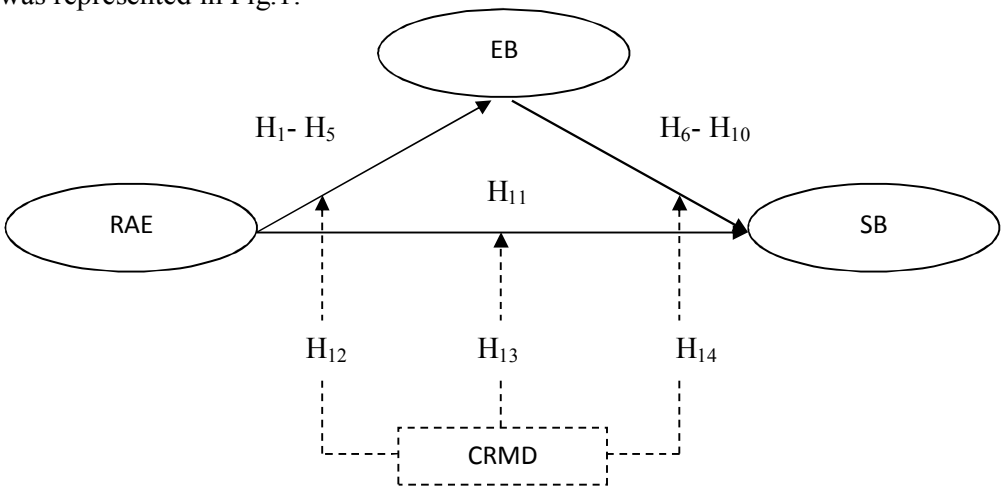

Fig. 1. The proposed default model
[Legends used: RAE- retail atmospheric elements, EB- emotional behaviour, SB- shopping behaviour, CRMD-Customer relationship management dimension]

3. Methodology

The study used quantitative survey method and was comprised of two phases. Phase-I involved a pilot study to refine the survey instrument with rectification of question ambiguity, refinement of research protocol and confirmation of scale reliability was given special emphasis (Teijlingen & Hundley, 2001). FGI was administered among twenty five (25) selected personnel representing retail shoppers, academicians and researchers. Cronbach's α coefficient (>0.7) established scale reliability (Nunnally & Bernstein, 1994). The structured questionnaire thus obtained after refinement contained five sections. Section-1 was targeted for the shoppers to generate response about the perceptual impact of retail atmospherics. Section-2 was designed to assess shoppers' emotional state of mind. Section-3 was intended to generate response regarding the attitude of the shoppers. Section-4 was targeted for the employees of retail outlets to realize the CRM initiatives that were deployed from their end and section-5 was designed to generate the demographic profile of the respondents. The second phase of the cross-sectional study was conducted in 15 retail malls spreading over the Burdwan district in West Bengal, India. Retailer sales data were eschewed to avoid anomalies caused by adverse climatic conditions, fluctuating pricing and interest rates and promotional initiatives by the competitor retailers. Convenience sampling technique was administered through mall-intercept process as was used in comparing shopping malls by Howard (1992) and Hackett and Foxall (1994) and was supposed to provide data accuracy (Bush & Hair, 1985). A total number of 6000 questionnaires was used which generated 43898 usable responses with a response rate of 81.63% (approximately). A 7 point Likert scale was used to generate response across the items of the constructs (Alkibisi & Lind, 2011)

3.1 Factor constructs measurement

To develop a measure for the perception of retail atmospheric environment, the 57 item scale developed by Turley and Milliman (2000) was used. The emotional behaviour of the shoppers was measured by using the Mehrabian-Russell model (1974) and its PAD items (pleasure, arousal and dominance). This measurement also drew inspiration from the studies of Lin and Chiang (2010), Sautter et al (2004), Wolfinbarger and Gilly (2002) and Baksi and Parida (2012). Responses to the seventeen bipolar adjective scales adaptive from Donovan and Russell's (1982) scales were factor analyzed. The Pleasure dimension consisted of contented-depressed, happy-unhappy, satisfied-unsatisfied, annoyed-pleased, bored-interested, hopeful-despairing. Responses to these items were summed and considered a measure of positive and negative mood during the task. The second factor was labeled Arousal and was composed of the items relaxed-stimulated, calm-excited, aroused-unaroused, and frenzied-sluggish. The third dimension was Dominance and included responses to three items, controlled-in control, dominant-submissive, and influenced-influential. But, unlike Donovan and Rossiter (1982), the bipolar adjective distributions of pleasure, arousal and dominance items were fitted into a interval (Likert) scale to understand the variations (the intermediate values) in moods. The measurement of shopping behaviour was estimated with the help of a 4 item scale adopted from Sautter et al., 2004; Sweeny and Wyber, 2002 and Donovan and Rossiter, 1982. Lastly, to develop a measure for CRM performance three CRM process elements namely CRM initiation, CRM maintenance, and CRM termination (Reinartz et al., 2004) and four CRM dimensions namely customer orientation ,CRM organization , knowledge management, and CRM technology (Abdullateef et al., 2010) were identified for the study. The CRM performance items thus obtained were subsequently modified to suit the study.

3.2 Reliability and validity test

Exploratory factor analysis (EFA) was deployed using principal axis factoring procedure with orthogonal rotation through VARIMAX process with an objective to assess the reliability and validity of all factor constructs. Factors loading with Cronbach's α value <.6 were sumptuously discarded.

Secondly confirmatory factor analysis (CFA) was used to understand the convergence, discriminant validity and dimensionality for each construct to determine whether all the items measure the construct adequately as they had been assigned for. Finally, LISREL 8.80 programme was used to conduct the Structural Equation Modeling (SEM) and Maximum Likelihood Estimation (MLE) was applied to estimate the CFA models.

4. Data analysis and interpretation

The demographic distribution of the sample was represented in Table 1.

Table 1
Personal characteristics of the participants

Demographic Variables	Factors	Frequency	%
Gender	Male	3176	64.84%
	Female	1722	35.16%
Age	≤ 21 years	101	2.06%
	22-32 years	1762	35.97%
	33-43 years	2114	43.16%
	44-54 years	825	16.84%
	≥ 55 years	96	1.96%
Income (per month)	≤ 20000.00	152	3.10%
	>20000.00≤ 35000.00	2461	50.24%
	>35000.00≤ 50000.00	1298	26.50%
	>50000.00	987	20.15%
Occupation	Service [govt./prv]	2422	49.45%
	Self employed	979	19.99%
	Professionals	291	5.94%
	Student	62	1.27%
	Housewives	1144	23.36%
Educational qualification	High school	29	0.59%
	Graduate	3398	69.38%
	Postgraduate	1345	27.46%
	Doctorate & others (CA, fellow etc)	155	3.16%

To assess the reliability and validity of the constructs, the researcher applied exploratory factor analysis (EFA) using principal axis factoring procedure with orthogonal rotation through VARIMAX process. The results of the EFA were displayed in Table 2. The Cronbach;s Coefficient alpha was found significant enough, as it measure >.7 (Nunnally & Bernstein, 1994) for all constructs and therefore it is reasonable to conclude that the internal consistency of the instruments used were adequate. Each accepted construct displayed an acceptable construct reliability with estimates well over .6 (Hair et al., 1998). Further to this the average variance extracted (AVE) surpassed minimum requirement of .5 (Haier et al., 1998). The KMO measure of sample adequacy (0.907) indicated a high-shared variance and a relatively low uniqueness in variance (Kaiser & Cerny, 1979). Barlett's sphericity test (Chi-square=652.118, df=389, $p<0.001$) indicated that the distribution is ellipsoid and amenable to data reduction (Cooper & Schindler, 1998).

The initial 57 items related to retail atmospherics were reduced to 21 items with items having factor loading scores of <0.6 were discarded. The items related to emotional behaviour of shoppers were significantly loaded on 8 items, while the 3 items of shopping behaviour revealed significant factor loading. The items related to 'dominance' scored an alpha score of .521 and therefore summarily rejected. The emotional behaviour will be represented by two factor constructs: pleasure and arousal. The omission of 'dominance' related items confirms the findings of Donovan and Rossiter (1982). The CRM dimensional items completed loading in 20 items.

Table 2
Measurement of reliability and validity of the variables

Items	FL**	t-value	α**	AVE**
CRMD				
Our organization establishes and monitors customer-centric performance standards at all customer touch	0.651	19.09	0.931	0.799
Our organization has established clear business goals related to customer acquisition, development, retention	0.669	20.28	0.931	0.799
Our organization has the sales and marketing expertise and resources to succeed in CRM (CRMD3)	0.611	12.11	0.931	0.799
Our employee training programme has been designed to develop the skills required for acquiring and	0.677	23.67	0.931	0.799
Employee performance is measured and rewarded based on meeting customer needs and on successfully	0.618	15.28	0.931	0.799
Our organizational structure has been designed to foster customer centricity. (CRMD6)	0.616	14.28	0.931	0.799
Our organization commits time and resources to manage customer relationships. (CRMD7)	0.619	16.62	0.931	0.799
Our organization has apt softwares to serve our customers. (CRMD8)	0.659	20.27	0.931	0.799
Our organization has required hardwares to serve our customers. (CRMD9)	0.688	26.29	0.931	0.799
Our organization has the proper technical personnel to provide technical support to our CRM executives.	0.633	14.72	0.931	0.799
Our organization maintains a comprehensive database of our customers. (CRMD11)	0.659	18.09	0.931	0.799
Individual customer information is available at every point of contact (CRMD12)	0.606	10.02	0.931	0.799
Our organization provides customized services to our key customers. (CRMD13)	0.647	17.02	0.931	0.799
Our organization communicates with key customers to customize our offerings on demand. (CRMD14)	0.618	10.48	0.931	0.799
Our organization makes an effort to find out what the key customer requirements are (CRMD15)	0.602	10.76	0.931	0.799
Our employees make coordinated efforts to deliver customize service once a customer places a demand for	0.649	24.55	0.931	0.799
Each and every employee of our organization treats customers with great care. (CRMD17)	0.628	17.41	0.931	0.799
Our organization provides channels to enable ongoing two-way communication between our key customers	0.674	16.81	0.931	0.799
Our customers can expect exactly when services will be performed (CRMD19)	0.613	12.99	0.931	0.799
Our organization fully understands the requirements of our key customers and us. (CRMD20)	0.606	11.03	0.931	0.799
RAE				
Exterior display windows are extremely attractive and well laid out (RAE1)	0.701	20.91	0.946	0.801
Adequate parking space is available (RAE2)	0.722	24.32	0.946	0.801
The architectural ambience of the retail-building is attractive (RAE3)	0.699	19.17	0.946	0.801
The surrounding areas of the retail building have been well groomed and maintained (RAE4)	0.704	21.12	0.946	0.801
The colour schemes used for the interior décor of the retail outlet is extremely soothing (RAE5)	0.688	17.89	0.946	0.801
The use of lighting to highlight the store displays and the alleys is apt (RAE6)	0.629	12.05	0.946	0.801
The odour inside the retail outlet is carbolic-free, devoid of claustrophobic smell and extremely pacifying	0.608	10.01	0.946	0.801
The width of the aisles are adequate to avoid congestion while moving (RAE8)	0.622	11.16	0.946	0.801
The temperature of the retail outlet has been maintained to ensure physical comfort (RAE9)	0.667	15.65	0.946	0.801
The grouping of the merchandise is logical and easy for search (RAE10)	0.647	15.28	0.946	0.801
The space and design allocation of the retail outlet has been done aesthetically and to provide convenience to	0.616	13.65	0.946	0.801
The placement of equipment namely self-dispensing carts etc. is convenient for the shoppers (RAE12)	0.716	31.27	0.946	0.801
The department location on the basis of assortment of products/services are logically and conveniently laid out	0.722	33.17	0.946	0.801
The traffic flow inside the retail outlet has been well controlled to avoid crowding and congestion (RAE14)	0.673	23.91	0.946	0.801
The point-of-purchase displays are well used and symbolic (RAE15)	0.619	11.86	0.946	0.801
The signage inside the retail outlet are well marked and visible (RAE16)	0.638	18.92	0.946	0.801
The usage and informative instructions in the form of leaflets, take-away and display board are easily visible	0.624	15.10	0.946	0.801
The certificates assuring quality of goods and services are well displayed (RAE18)	0.644	14.42	0.946	0.801
The employees of the retail outlet are extremely courteous and helpful (RAE19)	0.627	9.03	0.946	0.801
The employees of the retail outlet are extremely knowledgeable about the goods and services displayed	0.625	10.29	0.946	0.801
The employees of the retail outlet are well groomed (RAE21)	0.637	12.45	0.946	0.801
EB				
I am happy with my retail experience (EB1).	0.624	21.84	0.942	0.773
I am satisfied with my retail experience (EB2).	0.665	29.65	0.942	0.773
The shopping experience was interesting (EB3)	0.621	20.01	0.942	0.773
I am pleased with my retail experience (EB4).	0.611	19.44	0.942	0.773
I felt relaxed while shopping in my retail outlet (EB5)	0.642	26.23	0.942	0.773
I was excited to shop in my retail outlet (EB6)	0.616	19.98	0.942	0.773
I was aroused by the retail display while shopping in my retail outlet (EB7)	0.652	27.84	0.942	0.773
I felt frenzied while shopping in my retail outlet (EB8)	0.637	25.06	0.942	0.773
SB				
I desire to continue shopping in my retail outlet (SB1)	0.725	28.92	0.924	0.769
I desire to recommend my retail outlet to others (SB2)	0.768	32.08	0.924	0.769
I desire to increase the gamut of shopping via my retail outlet (SB3)	0.723	26.63	0.924	0.769

Cronbach's α = 0.928 Chi-Square = 652.188 df = 389 Sig. p<0.001

**FL- Factor loadings, α - Cronbach's α, AVE – Average variance extracted

The dimensions of CRM and RAE have been nomenclated as per the component wise factor loadings (shown by colour grade in Table-2) in Table 3.

Table 3
Dimensions of CRM and RAE

Sl. No.	Variable	Items as per factor loadings post EFA	Dimension name
1	CRM	CRMD1 – CRMD7	Organizing around CRM
2		CRMD8 – CRMD12	Technology integration
3		CRMD13 – CRMD17	Key customer focus
4		CRMD18 – CRMD20	Managing knowledge
1	RAE	RAE1 – RAE4	Exteriors
2		RAE5 – RAE10	Interiors
3		RAE11 – RAE15	Layout & Design
4		RAE16 – RAE18	POP displays
5		RAE19 – RAE21	Human interface
1	EB	EB1 – EB4	Pleasure
2		EB5-EB8	Arousal
1	SB	SB1 – SB2	Approach

Bivariate correlations were obtained to assess the relationship between the constructs. The results were displayed in Table-4. Correlation results revealed that CRMD performance shared strong, positive and significant correlationship with RAE (r=.899**, p<.001), EB (r=.846**, p<.001) and SB (r=.729**, p<.001) while RAE, too, displayed strong correlationship with both EB (r=.805**, p<.001) and SB (r=.536**, p<.001). EB revealed a strong and positive correlationship with SB (r=.664**, p<.001).

Table 4
Results of bivariate correlation between the constructs

		CRMD	RAE	EB	SB
CRMD	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	4898			
RAE	Pearson Correlation	.899**	1		
	Sig. (2-tailed)	.000			
	N	4898	4898		
EB	Pearson Correlation	.846**	.805**	1	
	Sig. (2-tailed)	.000	.000		
	N	4898	4898	4898	
SB	Pearson Correlation	.729**	.536**	.664**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	4898	4898	4898	4898

**. Correlation is significant at the 0.01 level (2-tailed)

Multiple regression analysis was applied to test hypotheses H_1- H_5. To conduct the analysis (i) the composite mean score against each dimensions of RAE were obtained from the responses generated by scaling technique and (ii) dimensional (taking pleasure and arousal into consideration in combination) composite mean score was obtained which represented EB of shoppers. The results of the multiple regression analysis were displayed in Table-5a, 5b and 5c. The R square (.381) value indicated that the dimensions of RAE measured 38.10% of the variation in EB, which is considered to be significant enough for predictability of the model (Draper and Smith, 1998). The results of ANOVA established that the variation showed by dimensions of RAE was significant at 1% level (f=601.950, p<.001). The standardised regression coefficient results confirmed that the predictive capacity of the items of RAE, namely EXTD (exterior dimension - β=.692, t=11.201, p<.001), INTD (interior dimension - β=.402, t=11.201, p<.001), LDD(layout & design dimension - β=.118, t=4.558, p<.005), POPD(point-of-purchase dimension - β=.281, t=7.115, p<.001) and HID (human interface dimension - β=.692, t=11.201, p<.001) to predict the nature of EB has statistical significance (β=.471, t=29.119, p<.001). The VIF values were low enough to confirm absence of multicollinearity (Hair et al., 1998, Coakes, 2005). The results of regression analysis lend support to H_1 to H_5.

Table 5a
Model summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Change Statistics				
					R^2 Change	F Change	df1	df2	Sig. F Change
1	.617[a]	.381	.380	.95415	.381	601.950	5	4892	0.000

a. Predictors: (Constant), HID, LDD, POPD, INTD, EXTD
b. Dependent Variable: EB

Table 5b
ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2740.084	5	548.017	601.950	.000[b]
	Residual	4453.691	4892	.910		
	Total	7193.775	4897			

a. Dependent Variable: EB
b. Predictors: (Constant), HID, LDD, POPD, INTD, EXTD

Table 5c
Regression coefficients

Model		Unstandardized B	Unstandardized Std. Error	Standardized Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	1.600	.050		31.995	.000		
	EXTD	.113	.011	.158	9.838	.000	.490	2.043
	INTD	.023	.013	.402	11.806	.000	.469	2.128
	LDD	.030	.020	.118	4.558	.004	.548	1.824
	POPD	.043	.006	.281	7.115	.000	.967	1.034
	HID	.293	.010	.471	29.119	.000	.483	2.071

a. Dependent Variable: EB

To test hypotheses H_6 to $H_{10,}$ a second phase of multiple regression was conducted in line with the first phase. The objective of this multiple regression analysis was to assess the associationship between the RAE dimensions and SB of shoppers. The results of the multiple regression analysis were displayed in Table-6a, 6b and 6c. The R square (.574) value indicated that the dimensions of RAE measured 57.40% of the variation in SB, which is considered to be significant enough for predictability of the model (Draper and Smith, 1998). The results of ANOVA established that the variation showed by dimensions of RAE was significant at 1% level (f=69.671, p<.001). The standardised regression coefficient results revealed that EXTD (exterior dimension - β=.080, t=0.753) was not predictive of SB. INTD (interior dimension - β=.125, t=8.813, p<.001), LDD (layout & design dimension - β=.087, t=6.286, p<.005), POPD (point-of-purchase dimension - β=.102, t=8.500, p<.001) and HIV (human interface dimension - β=.293, t=14.731, p<.001) displayed significant predictive power to predict the SB of shoppers. The VIF values were low enough to confirm absence of multicollinearity (Hair et al., 1998, Coakes, 2005). The results of regression analysis lend support to H_6 to $H_{10.}$

Table 6a
Model summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Change Statistics R^2 Change	F Change	df1	df2	Sig. F
1	.758[a]	.574	.572	1.42926	.574	69.671	5	4892	.000

a. Predictors: (Constant), HIV, LDV, POPV, INTV, EXTV
b. Dependent Variable: SB

Table 6b
ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	711.613	5	142.323	69.671	.000[b]
	Residual	9993.270	4892	2.043		
	Total	10704.883	4897			

a. Dependent Variable: SB
b. Predictors: (Constant), HIV, LDV, POPV, INTV, EXTV

Table 6c
Regression coefficients

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	3.756	.075		50.141	.000		
	EXTD	.070	.017	.080	0.753	.162	.990	1.043
	INTD	.035	.019	.125	8.813	.000	.493	2.028
	LDD	.184	.029	.087	6.286	.000	.499	2.003
	POPD	.014	.009	.102	8.500	.000	.468	2.134
	HID	.222	.015	.293	14.731	.000	.483	2.071

a. Dependent Variable: SB

To test $H_{11,}$ simple regression was applied to assess the strength of associationship between EB and SB and to examine the predictive power of EB to predict SB of shoppers. The results of the simple regression analysis were tabulated in Table-7. The R square value (.643) confirmed an adequate measurement of 64.30% of EB in SB. The results of ANOVA established that the variation showed by EB was significant at 1% level (f=177.560, p<.001). The standardised regression coefficient results (β=.502, t=13.325, p<.001) revealed that EB was predictive of SB of shoppers. H_{11} was accepted.

Table 7
Results of simple regression analysis

Model summary				ANOVA		Coefficients						
Model	R	R^2	Adjusted R^2	F	Sig.	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
						B	Std.	Beta			Tolerance	VIF
1	.802[a]	.643	.640	177.56	.000[b]	1.561	.177		8.812	.000	1.000	1.000
						.562	.042	.502	13.325	.000		

Hierarchical regression analysis was deployed, to test H_{12} to $H_{14,}$ by considering the dimensional summated composite mean values of the items of the factor constructs: (a) RAE as the independent variable, (b) EB and SB as the dependent variables and (c) CRMD as the mediating variable. For providing empirical evidence to our hypotheses, we proposed an ordinary least square (OLS) regression for our dependent variables EB and SB. The following models were constructed:

$$EB = \beta_0 + \beta_1 \times RAE + \beta_2 \times CRMD + \beta_3 \times CRMD \times RAE + \varepsilon_i \quad (1)$$

$$SB = \beta_0 + \beta_1 \times RAE + \beta_2 \times EB + \beta_3 \times CRMD + \beta_4 \times CRMD \times RAE + \beta_5 \times CRMD \times EB + \beta_6 \times CRMD \times RAE \times EB + \varepsilon_i \quad (2)$$

The regression models were displayed in Table 8. For Eq. (1) two & for Eq. (2) three regression models were established. For Eq. (1), Model 1 depicted the direct effects of CRMD and RAE on EB and model 2 revealed the binary interaction effects of CRMD and RAE on EB. For Eq. (2), Model 1 depicted the direct effects of CRMD, RAE and EB on SB of shoppers, model 2 established the binary interaction effects of CRMD & RAE and CRMD & EB on SB and model 3 represented the ternary interaction between CRMD, RAE and EB on SB. Standardization was applied to avoid interference with regression coefficients arising out of Multicollinearity between interaction variables (Irwin and McClellan, 2001; Aiken & West, 1991). The VIF (variance inflation factor) corresponding to each independent variable is less than 5, indicating that VIF is well within acceptable limit of 10 (Ranaweera & Neely, 2003). Table 8, for model-1, revealed that the direct effects of CRMD and RAE were significant and predictive of EB, as CRMD was found to have a positive and significant effect on EB (β = .198, t=4.266 p<0.01) and so was RAE (β = .218, t=6.544 p<0.05). Model-1 further disclosed that RAE (β = .757, t=26.416 p<0.01), EB (β = .141, t=3.259 p<0.01) and CRMD (β = .973, t=19.866 p<0.01) were strongly associated with SB and that SB of shoppers can be predicted on the basis of the same. Model-2 revealed that the binary interaction between CRMD and RAE indicated that CRMD had a strong intervening effect on EB (β =.249, t=8.187 p<0.01) and SB (β =.873, t=39.968 p<0.01). Model-3 represented the ternary interaction and revealed that with the increase in the mediating effect of CRMD performance (β = -.172, t=12.32, p<0.01), the combined impact of RAE and EB increases on SB. The results of hierarchical regression supported $H_{12,}$ H_{13} and $H_{14.}$

Confirmatory factor analysis (CFA) was applied to assess the convergence, discriminant validity and dimensionality for each construct to determine whether all the 52 items (Table-2) measure the construct adequately as they had been assigned for. LISREL 9.90 programme was used to conduct the Structural Equation Modeling (SEM) and Maximum Likelihood Estimation (MLE) was applied to estimate the CFA models. A number of fit-statistics were obtained (Table-9) for the default (proposed) model. The comparative fit indices namely CFI (0.983), NFI (0.989) and TLI (0.974) were found significant enough to accept the fitness of the default (proposed) model (Schreiber et al., 2006,

Bentler, 1992). The Parsimonious fit indices (PNFI=0.769, PCFI=0.787, PGFI=0.747) also confirmed robustness of the model and indicated an absolute fit (Schreiber et al., 2006). The GFI (0.978) and AGFI (0.975) scores for all the constructs were found to be consistently >.900 indicating that a significant proportion of the variance in the sample variance-covariance matrix is accounted for by the model and a good fit has been achieved (Hair et al., 1998; Baumgartner and Homburg, 1996; Hulland et al., 1996; Kline, 1998; Holmes-Smith, 2002, Byrne, 2001).

Table 8
Hierarchical regression models testing the interaction effects between constructs

Independent/Mediating Variables	Dependent variable: EB			Tolerance	VIF
	Model-1 β /t /Sig.	Model-2 β/t/Sig.	Model-3 β/t/Sig.		
RAE	.218/6.544/.000			.426	2.342
CRMD	.198/4.266/.000			.448	2.229
Binary interaction effects					
CRMD×RAE		.249/8.187/.000		.367	2.719
R square	.487	.423			
F	12.365	8.705			
Sig.	.000	.000			
Dependent variable: SB					
RAE	.757/26.416/.000			.497	2.009
EB	.141/3.259/.001			.464	2.154
CRMD	.973/19.866/.000			.477	2.093
Binary interaction effects					
CRMD×RAE		.873/39.968/.000		.506	1.974
CRMD×EB		.026/.909/.364		.438	2.278
Ternary interaction effects					
CRMD×RAE×EB			.781/18.665/.000	.503	1.987
R^2	.492	.579	.760		
F	10.624	361.239	552.943		
Sig.	.001	.000	.000		

The expected cross-validation index was found to be small enough (ECVI=0.0019) to confirm the superiority of the default model to the saturated and independence model. The RMSEA value obtained (0.047) is < 0.08 for an adequate model fit (Hu & Bentler, 1999). The RMR value (0.003) is small enough (close to 0.00) to assure a robust-fit of the model. The SRMR value was also indicative of good fit (0.0287 which is ≤ .08) (Schreiber et al., 2006, Anglim, 2007). The probability value of Chi-square (χ^2=176.11, df=93, p=0.000) is more than the conventional 0.05 level (P=0.02) indicating an absolute fit of the model to the data and the χ^2/df value is ≤ 2 (1.89) suggesting its usefulness to justify the default model as the nested model.

Table 9
Fit indices for the default model

Absolute predictive fit				Comparative fit			Parsimonious fit			Others				
χ^2	df	P	ECVI	NFI	TLI	CFI	PNFI	PCFI	PGFI	GFI	AGFI	RMR	SRMR	RMSEA
176.11	93	0.02	0.0019	0.989	0.974	0.993	0.769	0.787	0.747	0.978	0.975	0.003	0.0287	0.047

To construct the nomological network structural equation modeling (SEM) was used to test the nomological validity of the proposed research model. Composite CRMD, SQ, CS, CR, RI and SC scores across individual items were obtained by summating the ratings on the scale provided in the survey instrument items which were used as indicators of their latent version.

Structural Equation Modeling (SEM) was used to test the relationship among the constructs. All the 16 paths (including direct and indirect effects) and 10 paths (depicting moderating effects) drawn were found to be significant at both $p<0.01$ and $p<0.05$ levels. The research model holds well (Fig.2) as the fit-indices supported adequately the model fit to the data. The double-curved arrows indicated correlation between the exogenous and endogenous observed variables which was found significant. The residual variables (error variances) are indicated by ϵ_1, ϵ_2, ϵ_3, etc. The regression weights are represented by λ. The relationship between the exogenous variables was represented by β. One of the factor loading was fixed to '1' to provide the latent factors an interpretable scale (Hox & Bechger).

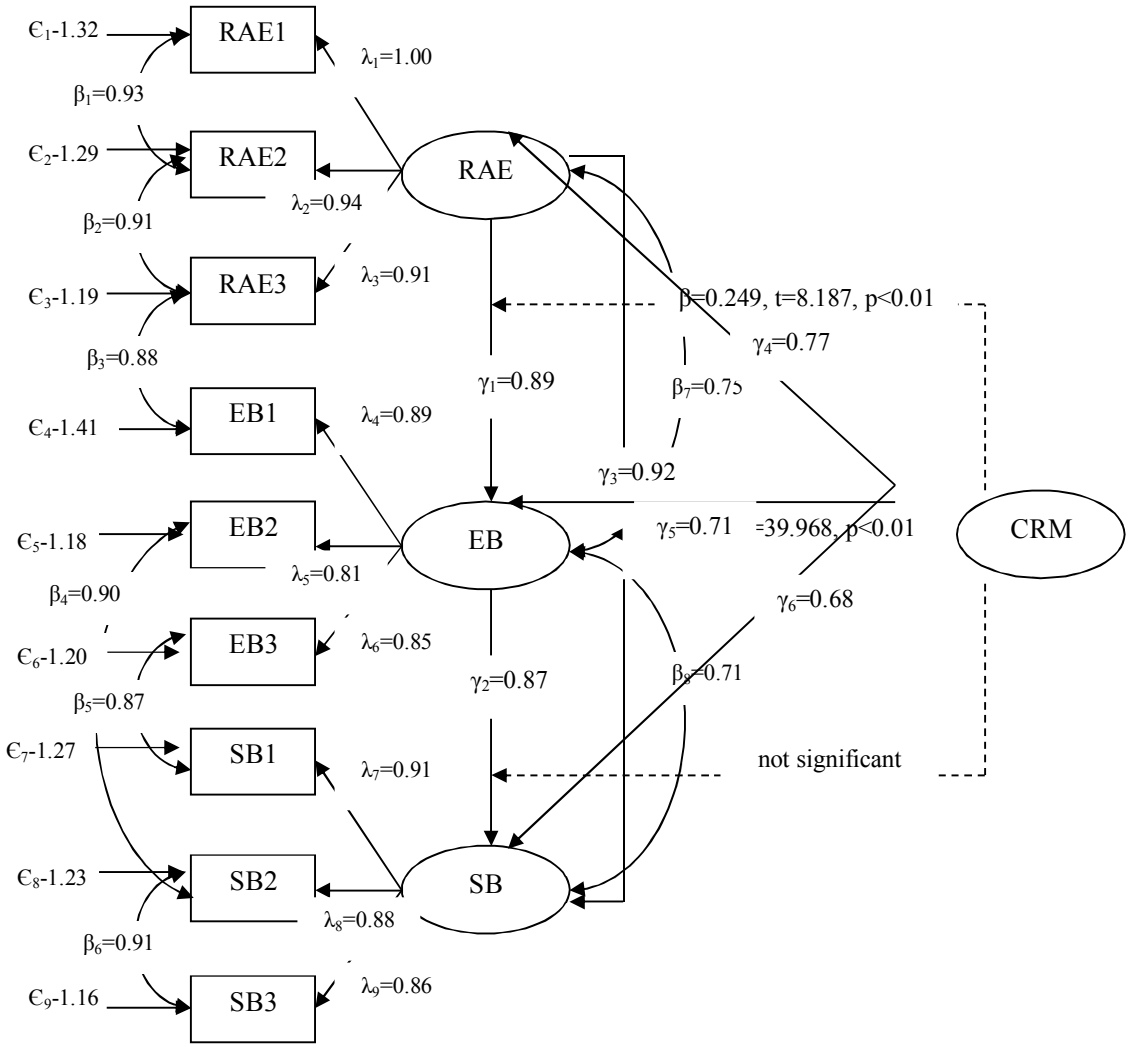

Fig. 2. Structural model showing the path analysis
----------▸Indicates mediating effects

The direct and indirect effects of the constructs were calculated and tabulated in Table-10. Since there was an absence of indirect non-causal effect, model respecification was not required (Hair et al., 2010).

Table 10
Direct, indirect and total effects of independent variables on dependent variables

Relationship	Effects			
	Direct (causal)	Indirect (causal)	Indirect (non-causal)	Total
CRMD ⟶ RAE	0.77			0.77
CRMD ⟶ EB	0.71			0.71
CRMD ⟶ SB	0.68			0.68
RAE ⟶ EB	0.89			0.89
EB ⟶ SB	0.87			0.87
RAE ⟶ SB	0.92			0.92
CRMD ⟶ RAE⟶ EB		0.68 (0.77×0.89)		0.68
CRMD ⟶ EB ⟶		0.61 (0.71×0.87)		0.61
CRMD ⟶ RAE⟶ SB		0.70 (0.77×0.92)		0.70
RAE ⟶ EB ⟶ SB		0.77 (0.89×0.87)		0.77
CRMD ⟶ RAE⟶ EB ⟶ SB		0.59(0.77×0.89×0.87)		0.59

5. Implications for theories and practice

The existing literature has identified various dimensions of retail atmospherics to be determinant of shopping behaviour. This study will add up to the body of knowledge by incorporating one of the most adopted business processes, customer relationship management and its dimensional impact as intervening variable in modulating retail atmospherics-shopping behaviour link. The study opens up avenues for future research in the area of CRM analytics and usage of subliminal atmospheric cues to induce favourable behavioural intent. The study confirmed the findings of Donovan and Rossiter (1982) as the 'dominance' factor of PAD model was found insignificant in explaining the emotional mood of shoppers. Therefore a possible extrapolation of the Mehrabian-Russell model may be done in future.

The study revealed that CRM has a strong and positive moderating impact on the relationship between retail atmospherics and shopping behaviour and that positive behavioural intent (approach) gets enhanced under the impact of retail atmospheric elements in presence of superior CRM dimensional performance. The emotional behaviour of the shoppers were affected by the retail atmospheric elements, particularly the POP displays and layout & design of the merchandise. Under the current study circumstances, the approach behaviour of the shoppers were observed, reflecting the general level of satisfaction with the atmospheric setup. Finally, the proposed model holds good depicting cause and effect relationship of the variables under study.

The study had geographical limitations as it has been restricted to specific district of West Bengal, India, which in future, can be widened to obtain a more generalized conclusion. Further extrapolations can be made by considering the impact of retail atmospherics towards determining retail loyalty. In addition to this, specific investigation may be undertaken to investigate the exact behavioural attitude and intention of dissatisfied customers under the impact of higher perceived switching cost and relationship inertia which may prove to be neutralizers of atmospheric effects. It would be also interesting for the researchers to study the impact of switching cost and inertia on satisfied customers facing better and technologically upgraded retail service offers at elevated price. The study was cross-sectional in nature; therefore longitudinal research may be taken up also to realize the gradual changes in the perception and impact of retail atmospherics and CRM dimensional impact on emotional and shopping behaviour of customers, over time.

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