Contents lists available at ScienceDirect

Sustainable Production and Consumption

journal homepage: www.elsevier.com/locate/spc

A Bayesian Network Model on the association between CSR, perceived service quality and customer loyalty in Indian Banking Industry

Praveen Goyal[a,1], *Udayan Chanda*[b,*]

[a] *Department of Management, Room No.-6068-U, NAB, BITS Pilani, Pilani Campus, Pilani-333031, Rajasthan, India*
[b] *Department of Management, Room No.-6068-W, NAB, BITS Pilani, Pilani Campus, Pilani-333031, Rajasthan, India*

ABSTRACT

Corporate Social Responsibility has become a buzzword in the contemporary era. Decision makers are including CSR as important part of company's corporate strategy. Indian banking industry is also facing huge challenges and looking for the avenues to create competitive advantage to retain and attract the customer. This study aims at identifying the association of various CSR initiatives on the perceived service quality and customer loyalty in the Indian perspective by using Bayesian Network analysis. Results of the study show the different dimensions of CSR that establishes relationship with the perceived service quality and customer loyalty.

Keywords: CSR; Banking industry; Perceived service quality; Customer loyalty; Bayesian network

1. Introduction

Indian banking industry has enjoyed a huge growth and expansion in the 21st century. Entry of various private players has made this industry more competitive. Due to this, banking institutions need to develop strategies to retain and attract more and more customers to remain successful in the market. In contemporary era awareness about the environmental issue, intense exposure to the information has increased customer's knowledge about companies' activities. Currently, incorporation of CSR in business strategy had become an important concern due to its widespread impact on wide variety of stakeholders.

Growing competition and increasing awareness for the environment has developed CSR as a mainstream corporate agenda in the contemporary era. In order to behave as responsible corporate citizen companies are focusing on their CSR initiatives. Increasing demand for organization's CSR efforts from government, employees, and customers is also motivating companies to think beyond the traditional bottom line of the organization. Organizations are voluntarily taking steps to showcase their CSR efforts among all stakeholders (Luo and Bhattacharya, 2006). Companies are adopting various communication modes to showcase their CSR initiatives. CSR has become the important ingredient of the firm's marketing strategy (Pirch et al., 2007). Companies are concerned how their CSR efforts can affect the consumer's behavior in order to improve customer loyalty. Literature has reported that CSR initiatives exert significant impact on customer product interaction (Bhattacharya and Sen, 2004). Literature also widely acknowledged the positive influence of CSR on customer loyalty (Mandhachitara and Poolthong, 2011) and customer's attitude towards the product (Berens et al., 2005).

Pursuit of CSR efforts and their appropriate disclosure can manage both regulatory and social pressure on

* *Corresponding author. Fax:* +91 1596 244183.
E-mail addresses: praveen.goyal@pilani.bits-pilani.ac.in (P. Goyal), udayanchanda@pilani.bits-pilani.ac.in (U. Chanda).
[1] Fax: +91 1596 244183.
Received 3 June 2016; Received in revised form 21 November 2016; Accepted 13 December 2016; Published online 2 January 2017.

http://dx.doi.org/10.1016/j.spc.2016.12.001

the organization. Economic Times (2016) reported that improvement in CSR disclosure may attract more foreign investment. Rai and Bansal (2014) argued that investment in CSR initiatives can lead to better brand image. CSR expenditure may facilitate firms in differentiating them in competitive environment. CSR initiatives can strengthen the relationship with stakeholders of the organization (Bhattacharya et al., 2009). According to a study conducted by E&Y (2016), disclosure of sustainability efforts leads to various benefits to the organization like better reputation, meeting the expectations of the employees, environmental and social risk reduction. De Klerk et al. (2015) states that higher level of CSR disclosure has a positive impact on the company's share prices. Zain et al. (2006) emphasized the importance of inclusion of social information in the financial statements. CSR reporting can also help company in positioning them as responsible member of the society (Kulkarni, 2014). The present study attempts to identify a relationship between consumer's perception about bank's CSR initiatives and perceived service quality and customer loyalty. Despite growing interest about CSR and its impact on customer loyalty, there is a dearth of studies investigating this relationship in the context of banking industry in developing economies like India.

In 2016, Economic Times in association with Futurescape and IIM Udaipur conducted a survey in India on the best companies for CSR.[2] According to the survey Tata Steel Ltd tops the CSR list followed by Tata Power, UltraTech Cement and Mahindra & Mahindra. Most of the companies have taken CSR initiatives in the areas of girl child, education, environment, community development, health, safety, skill building, women's empowerment, etc. Companies focused maximum of their CSR initiatives on education and healthcare. The survey also reveals that maximum of the CSR initiatives is being taken by manufacturing industry. Unfortunately not a single company from Indian Banking Industry featured in the Top 10 list. Thus Indian banking industries need to take more focused approach in the area of CSR initiatives to engage with communities.

The present study contributes in a different manner to the existing literature. First, this evaluates the role of various CSR initiatives in the development of various dimensions of customer loyalty. Second, study extends existing literature by assessing the impact of perceived service quality on customer loyalty in the banking industry. To the best of author's knowledge, no research has been conducted for banking industry using Bayesian approach considering these factors in the context of developing economies. The objective of the study is to identify the relationship between different dimensions of corporate social responsibility and perceived service quality and customer loyalty. This paper is structured in a very regular manner. Next section deals with the literature review followed by measurement scales of variables in interest. Next to this, methodology is discussed. In next section data analysis and results are presented. Further, discussion, conclusion, implications and limitation of the present study are presented.

[2] How top companies are blending CSR with responsible growth (http://economictimes.indiatimes.com/news/company/corporate-trends/how-top-companies-are-blending-csr-with-responsible-growth/articleshow/54338244.cms), Accessed on 13th Nov. 2016.

2. Literature review and hypotheses development

This section consists of three main parts. We review the CSR initiatives in the development of various dimensions of customer loyalty in Section 1. Section 2 consists of a brief discussion on assessing the impact of perceived service quality on customer loyalty in the banking industry. In Section 3 we discuss the customer loyalty and customer focus CSR initiatives.

2.1. *Corporate social responsibility*

With the dawn of 20th century notion of corporate social responsibility attracted the interest of both scholars and practitioners. Carroll (1979) proposed one of the most accepted constructs to explain CSR that consists of economic, legal, ethical, and discretionary (philanthropic) responsibilities of the organization. Maignan et al. (1999) defined CSR as the degree to which firms assume economic, legal, ethical and discretionary responsibilities towards their stakeholders. CSR has defined as the firm's initiatives to fulfill its obligations related to all stakeholders (Sen and Bhattacharya, 2001). Important reason behind the focus on CSR is its potential advantages that firms can exploit if stakeholders perceive them socially responsible (Tian et al., 2011). CSR has both direct and indirect influences on consumer behavior (Berens et al., 2007). Research on consumer behavior proposed that there is positive correlation between firm's CSR initiatives and costumer's behavior (Luo and Bhattacharya, 2006; McWilliams and Siegel, 2001; Mohr and Webb, 2005; Poolthong and Mandhachitara, 2009).

Studies explored the linkage in different variables of consumer behavior like customer satisfaction (Luo and Bhattacharya, 2006; He and Li, 2011; Carvalho et al., 2010), customer loyalty (Stanaland et al., 2011; Garcia de los Salmones et al., 2005). Involvement in CSR initiatives positively influences evaluation of service quality (Garcia de los Salmones et al., 2005). Due to increasing importance of the strategic importance of CSR, it has become important issue for research studies in recent era (Luo and Bhattacharya, 2006). There are some contradiction also that suggests CSR is not an important criterion in shopping behavior and that raises the need to explore this link further (Boulstridge and Carrigan, 2000; Marin et al., 2009). Considering the importance of perceived service quality especially, the present study explores the impact of perceived CSR on the perceived service quality in the Indian banks.

2.2. *Perceived service quality*

Certain differentiating factor of services makes this sector more complex and presents various challenges for the managers. Customer's perception about the quality of service is one of the important variables that need manager's attention. Parasuraman et al. (1988) defined perceived service quality (PSQ) as "global judgment, or attitude, relating to the superiority of the service". Managers need to focus on the parameters which may create positive perception about the quality of services of their organization. Further, inseparability of service provider from services enhances the human factor and subsequently leads to the emotional connection between service provider and service receiver. Credibility of service is one of the important selection criteria for any services (Javalgi and Moberg, 1997).

Literature proposed that perceived service quality is an important antecedent of customer loyalty (Rai and Srivastava, 2013; Kiran and Diljit, 2011; Auka et al., 2013; Boohene and Agyapong, 2011). Service quality is one of the important driving forces in developing better customer loyalty. Company's product value proposition depends on the amount of value consumer perceives from the same. Consumer's positive perception about the service quality may lead to higher value of the service provided by the firm (Cronin et al., 2000) and further lead to better relationship with customer. Positive perception of firm's service quality also promotes the positive word of mouth for the firm. Based on the above discussion following hypotheses may be proposed:

H_1: *Perceived service quality influences customer loyalty.*

H_2: *Perceived service quality influences customer's value of the company's product.*

H_3: *Perceived service quality influences customer loyalty bank–customer relationship.*

H_4: *Perceived service quality influences the customer's recommendation to other customers.*

2.3. *Customer loyalty*

Customer loyalty has been considered one of the important variables in the generation of success to many businesses (Chaudhuri and Holbrook, 2001; Day, 1969; Dick and Basu, 1994; Jacoby and Kyner, 1973). Improvement in customer loyalty leads to the better profitability for the company (Hallowell, 1996). In order to have a more loyal customer it is necessary to assess how customer perceives organizations efforts.

Customer loyalty is defined as "*a deeply held commitment to re-buy re-patronize a preferred product or service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behavior*" (Oliver, 1999). Growing competition in banking industry raises the requirement of gaining and retaining the customers. Banks are coming up with the various schemes to enhance their market presence. Presence of private players is also enhancing the competitiveness of the sector. There is a well-researched phenomenon that customer loyalty leads to the improvement in the profitability of the organizations. Growing awareness about CSR also makes it imperative that banks should be involved in the CSR initiatives. It had become an important element because customer loyalty has been linked to CSR both theoretically (Sen and Bhattacharya, 2001) and empirically (Garcia de los Salmones et al., 2005; Marin et al., 2009; Perez and del Bosque, 2012). According to Birth et al. (2008) CSR communication is a very important method to improve the customer loyalty. Positive impact of CSR on customer loyalty, trust, profit increase is well studied in the literature (Drumwright, 1996; Sen and Bhattacharya, 2001; Maignan and Ferrell (2001); Murray and Vogel, 1997; Sen et al., 2006; Brown and Dacin, 1997).

Narwal (2007) states that 66.7% banks in their study agreed to the opinion that CSR helps in developing social image of the banks. Further, this study mentions that 39.4% banks consider CSR to assist in business expansion. Involvement in CSR also helps banks in developing competitive advantage. CSR involvement leads to improvement in bank's goodwill and improved social image. Garcia de los Salmones et al. (2005), mentioned that perception of consumer towards company's CSR behavior influences directly how they recognize services and perceived service quality. According to Sen and Bhattacharya (2001), consumer penalizes those corporations that are perceived as not involved in CSR activities. Chai et al. (2015), suggested that 96.4% consumers inclined to select the firms which perform better on CSR initiatives.

Consumer awareness for a company's CSR efforts, influences purchasing decision and his/her loyalty towards the company. If consumer is not aware about CSR initiatives it may hamper his/her ability to respond to these initiatives (Bhattacharya and Sen, 2004). Awareness about the company's CSR initiatives can help customers to understand company's value system (Lee and Heo, 2009; Sen and Bhattacharya, 2001). It can also help in generating consumer's positive perception about any company (Yoon et al., 2006; Menon and Kahn, 2003).

Focus on the employee responsibility and bank's investment on training and skill upgradation may effectively improve the company–customer long term relationship. Employees are the important stakeholders of the company and training of employees is very crucial especially in case of service industry. Focus of the company on the employee responsibility, raises the requirement to focus more on motivation and skill upgradation of the employees so that employee feels motivated and helps the customer professionally which can result in the improvement of customer commitment towards the bank (Parvatiyar and Sheth, 2001). Based on the above discussion, we can propose the following hypothesis:

H_5: *Improving the employee focus CSR initiatives will improve the bank–customer long term relationship.*

Also, customer centric CSR initiatives by companies have the highest influence on customer's attitude and behavior (McDonald and Lai, 2011; Pomering and Dolnicar's, 2006). According to Auger et al. (2006), consumers get highly influenced by the customer centric CSR initiatives. According to Handelman and Arnold (1999) consumers are more involved in positive word of mouth communication of firms which are involved in CSR initiatives. Focus on customer centric CSR initiatives can be used by bank as strategic tool to gain positive word of mouth in order to attract new customer as well as retaining the existing customer (McDonald and Lai, 2011). In financial industry customer centric CSR activities are helpful in success of the strategies to maintain the long term relationship with customers (Pomering and Dolnicar, 2006). Morrison and Bridwell (2011) argued that "*Consumer Social Responsibility is the true corporate social responsibility*". Thus, we have the following hypothesis:

H_6: *Improving the customer focus CSR initiatives will improve the customer's recommendation to other customers.*

Organizations need to focus on environment related CSR initiatives to achieve competitive advantage and can be achieved by effectively communicating firm's environmental friendly initiatives and recycling programs. Companies need to recognize the growing concern for the environmental issues; so that they can act as role model for the society and can develop the long term relationship with the customer (Sustainability-Oriented Customer Relationship Management—Current State of Research and Future Research Opportunities by Anna-Luisa Müller). Environmentally responsible firms are able to maintain a long term relationship

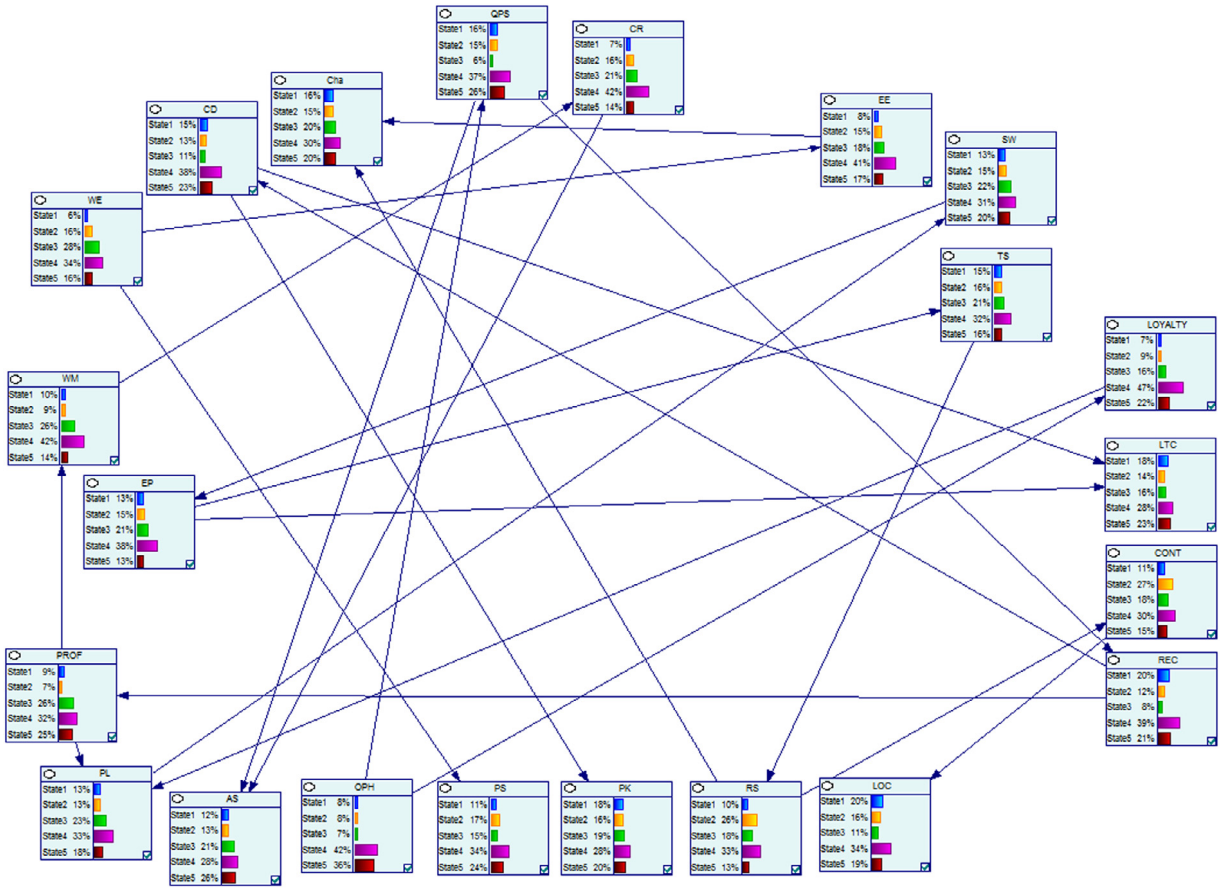

Fig. 1 – Bar chart of Bayesian network on corporate social responsibility survey data.

with the customers (Barnett, 2007; Castaldo et al., 2009). Sen and Bhattacharya (2001) argued that involvement in the community responsibility improves the attractiveness of the company's products and has positive effect when customer values the company's products. From the above discussion, we can have the following hypotheses:

H_7: *Improving the environmental focus CSR initiatives will influence the customer loyalty.*

H_8: *Improving the community focus CSR initiatives will influence the customer and thus company's product valuation.*

H_9: *Improving the community focus CSR initiatives will improve the customer's recommendation to other customers.*

3. Research methodology

The conceptual framework developed from the literature review has been presented in Fig. 1. Quantitative research approach has been adopted in the present study. A structured questionnaire was developed and tested to collect data from the consumers of banks. The questionnaire was initially developed and tested on the 25 management graduates of one of the reputed management colleges. Some of them were well aware about some bank's CSR initiatives. After this, bank managers working in both government and private sector banks were contacted to comment on the questionnaire. In total 15 managers were contacted to ensure the face validity of the questionnaire. Further, data was collected from a pilot sample of 78 people to evaluate the reliability of the questionnaire. 5-point Likert scale (1—highly disagree, 2—Disagree, 3—Neutral, 4—Agree and 5—Highly agree) was used to measure variables of interest (see Table 1). Reliability and validity tests were performed. The final questionnaire was used to collect data from the final set of respondents. To test the hypotheses discussed above, data was collected from the rural area of northern Rajasthan and west Haryana. We used simple random sampling (SRS) method to collect data. The anonymity of participants was assured while collecting the data. This data was collected in the collaboration with final year management students. In total 347 questionnaires were distributed to the bank's customers. In total 319 responses were received. Out of total returned questionnaires 19 questionnaires were not usable due to missing data.

3.1. *Measurement scales of CSR*

Measurement of CSR is very diverse in nature. Carroll (1979) proposed a widely accepted four dimensional model to measure the CSR. These dimensions were ethical, legal, philanthropic and economic. In the present study for CSR assessment three dimensions except legal were adopted. From the literature 18 practices were identified covering these three categories. The customers were asked to respond based on their perception about CSR activities from the banks where they regularly stay. High score reveals their high level of perception of the banks, related to CSR activities.

Perceived service quality evaluation is an important area that varies with the industry specific characteristics (Chiou and Droge, 2006). The most known measurement of perceived service quality is SERVQUAL model (Parasuraman et al., 1988) and SERVPERF model (Cronin and Taylor, 1992). In the present study author(s) have adopted the perceived service quality scale provided by Gounaris et al. (2003). In this scale 5-point Likert scale has been used. In the scale provided by

Gounaris et al.'s (2003) perceived service quality is measured on a five-point Likert scale.

3.2. Measurement scales for customer loyalty

There are various scales that have been provided in literature by various authors. In this study author(s) have adopted customer loyalty scale from Zeithaml et al. (1996), Chaudhuri and Holbrook (2001), Musa (2005), Fullerton (2005) and Cheng et al. (2008).

3.3. Bayesian network learning

A Bayesian network (BN) is a directed acyclic graph (DAG) that characterizes the probabilistic relationships among nodes of interest in an uncertain reasoning problem (Pai et al., 1988). Each node has a finite set of mutually exclusive states and is associated with a conditional probability distribution (CPD) that provides the probability of each state for each combination of values of its parents (Wu et al., 2015). The initiation of classifiers from datasets of pre-classified cases is an important issue in Bayesian network learning. In recent years a number of methods were proposed to learn Bayesian network structure. They are categorized in two groups, *Constraint-Based Approach* (Heckerman et al., 1995; Chickering and Heckerman, 1997; Chickering, 2002) and the *Score-and-Search-Based Approach* (Pearl and Verma, 1991; Spirtes et al., 2000).

In this article, *Greedy Thick Thinning Approach* is used for the structure learning. *Greedy Search Approach* is used to structure when the system is relatively unknown to us. The algorithm starts at a specific point in the structure space and considers all the nearest neighbors of the existing point. The *Greedy Thick Thinning Approach* identifies the DAG with maximum score in the search space. In the next subsection a brief discussion on Learning Bayesian networks from data is presented.

3.4. Parameter learning of Bayesian network

The parameter learning of a Bayesian belief network finds interdependent relationships as joint conditional probability distributions among variables, using cause and consequence interactions from the available variables. In this research, CPTs were estimated from the data using the expectation–maximization (EM). The EM algorithm is an extension of maximum likelihood (ML) estimation. The EM algorithm is an efficient iterative procedure for estimation of model parameter(s) in the presence of missing or hidden data. In this research, GeNIe 2.0 was used for parameter learning (GeNIe 2.0 uses EM algorithm for parameter estimation). Sensitivity analysis was also performed to describe strength of the relationship among several variables. On evaluation of conditional probability of each variable, the important variables that affect customer loyalty can be identified.

3.5. Model assessment

Classification accuracy is often used to measure the accuracy of a classification model. It is defined as the number of sample cases correctly classified by the model from the total number of sample cases. In this research we argued that classification accuracy cannot be the only measure to scrutinize the precision of the classification model. Studying the measures of the precision (Positive Predictive Value) and recall (Sensitivity) of a model is also important to validate the performance of the model. Confusion matrix can be used to describe the prediction result of a classification model in a precise way.

In this research paper, performance of trained classifiers of the proposed BBN model was evaluated using the classification accuracy and Kappa Statistics. Cohen's Kappa Statistic is often used to evaluate inter-rater reliability between two respondents; and it shows the degree to which the collected data are true depiction of the variables measured. Cohen's Kappa is also considered as robust measure as it takes into account the inter-rater agreement occurring by chance as well.

Fleiss' kappa (Fleiss, 1971) is another statistical measure to assess the reliability of the classification for categorical rating data. Fleiss' kappa is the natural extension of Cohen's kappa statistics, where the number of respondents can be more than two. Landis and Koch (1977) suggested the following interpretation of Kappa values for a classification model as described in Table 2.

In this research we used Fleiss' kappa statistics to measure the inter-rater agreement, as the number of raters was more than two. Fit of the proposed Bayesian Network was also validated by AIC and BIC values.

4. Conceptualization of Bayesian belief network

In this section a Bayesian Belief Network (BBN) was used to develop an analytically driven graphical representation of the relationships among CSR initiatives, perceived service quality and customer loyalty. As discussed a BBN is an analytical approach to model and graphically represent the probabilistic relationships among variables of interest based on directed acyclic graph and a probability distribution. In this paper a BBN is developed for representing the causal relationships among the given set of variables using CSR survey data collected from 300 respondents who participated in the survey. The basic BBN developed using the survey data is presented in Fig. 1.

4.1. Results

The Greedy Thick Thinning algorithm was used in this paper to develop BBN on CSR survey data where the questionnaire was composed of 22 questions. The proposed BBN merges the causal and probabilistic logic by considering prior knowledge and data, jointly. To generate the learned network GeNIe version 2.0 software was used. GeNIe (Graphical Network Interface) is a graphical user interface for SMILE, which is its platform independent interface engine. Both packages are freely available (Chanda and Aggarwal, 2016). On the basis of the proposed BBN, a range of sensitivity analysis and diagnostic checks were performed. Fit of the model and the complexity of the network are summarized in Table 3.

Based on the AIC and BIC values we can strongly conclude that the given Bayesian Network model that consists of all the input variables gives a good fit for the CSR-survey dataset. The network produced 25 arcs, justifying the strong dependency among variables.

Table 1 – Corporate social responsibility.

Assessment characteristics	Items	Questions
Employee responsibility	TS	Bank provides livelihood training and support to its employees
	SW	Bank ensures safe working place for its employees
	EE	Bank follows equal employment opportunity
Community responsibility	Cha	Bank frequently donates to charities
	CD	Bank helps the local community development
	WE	Bank is involved in various women empowerment initiatives
Environment responsibility	WM	Bank practices waste paper management in its vicinity
	EP	Bank runs campaigns for environment preservation
Consumer responsibility	CR	Bank preserves and promotes consumer rights and interests
	QPS	Bank provides quality product and services
Customer loyalty	LOYALTY	I usually use this bank as my first choice
	LTC	I do not like to change to another bank because I value the selected bank and the product
	CONT	I shall continue considering this one as my main bank in the next few years
	REC	I would recommend this bank if somebody asked my advice
Perceived service quality	PK	Your bank staff has adequate product knowledge
	PS	Your bank staff provides prompt service
	RS	Your bank provides reliable services
	LOC	Location of your bank is convenient
	OPH	The operating hours of your bank are convenient and sufficient
	AS	The additional services provided by your bank are valuable for you
	PL	The physical layout of the equipment and furnishings are comfortable
	PROF	The appearance of the branch employees is neat and professional

Table 2 – Interpretation of Kappa values.

Kappa value	Interpretation
<0	Poor agreement
0.01–0.20	Slight agreement
0.21–0.40	Fair agreement
0.41–0.60	Moderate agreement
0.61–0.80	Substantial agreement
0.81–1.00	Almost perfect agreement

4.2. *Performance level of the proposed Bayesian network for classification*

The performance of trained classifiers can be estimated using the classification accuracy measures and Kappa Statistics. Classification accuracy measures the percentage of correctly classified (PCC) observations. Tables 4, 5, 6 and 7 depict the classification accuracy and Confusion Matrix of the Customer Loyalty variables CONT, LOYALTY, LTC and CD respectively.

Tables 4, 5, 6 and 7 show that overall accuracy (measures the proportion of the total number of predictions that were accurate) of the variables CONT, LOYALTY, LTC and CD is 92.67%, 90.33%, 90.00% and 93.67% respectively. The Kappa Coefficient, which compares an observed accuracy with an expected accuracy of the four of the variables CONT, LOYALTY, LTC and CD, is 0.904, 0.859, 0.872 and 0.913 respectively for the given model (Fleiss, 1981, considered kappa >0.75 as excellent measure of accuracy).

Table 8 shows that OPH is the most significant factor causing the largest entropy reduction to one of the important Customer Loyalty variables 'Loyalty'. Similarly, CD, RS and CD are the most significant factors causing the largest entropy reductions in LTC, CONT and REC respectively. Furthermore, PL also shows a strong influence on Loyalty with 28.38% entropy reduction value. Sensitivity analysis also indicates that PROF and QPS have strong influence on REC with 23.4% and 12.5% entropy reduction values. AS, WE, EE, PS, CR, CHA, WM each results in less than 3.2% entropy reduction indicating their least influence on beliefs of the class variables. In the next subsections we will use Bayesian Network for predicting posterior probabilities in a diagnostic capacity, by conditioning on end result variables.

The sensitivity analysis results of this model are presented in Table 8 and the nodes are ranked according to degree of influence of their findings on the outcomes of the CSR initiative with respect to the factors Loyalty, LTC, CONT and REC calculated as a measure of Mutual Information or entropy reduction (%). A reasonably high accuracy rate indicates that the network can be used for prediction analysis for different cases of the input variables. For example we can compute distribution of responses to various CSR initiatives and its impact on Customer Loyalty. Such an analysis allows understanding the awareness level of customers to design and predict customer loyalty.

5. Discussion

The overall objective of the paper is to transform all the available data into knowledge so that it can help managers to take complex decisions on a daily basis. From Table 8, based on the network of the Bayesian model we can observe that some of the input variables are intensely related to the output variables. These variables are intensely related to the customer loyalty and hence can be useful for the decision makers. In the next subsections we will use the proposed BBN Model for predicting posterior probabilities in a diagnostic capacity, by conditioning on end result variables.

5.1. *Change in belief of customer loyalty variables and interaction with service quality attributes*

Table 9 represents the diagnostic distributions conditioned on the attributes of model variables at their highest level.

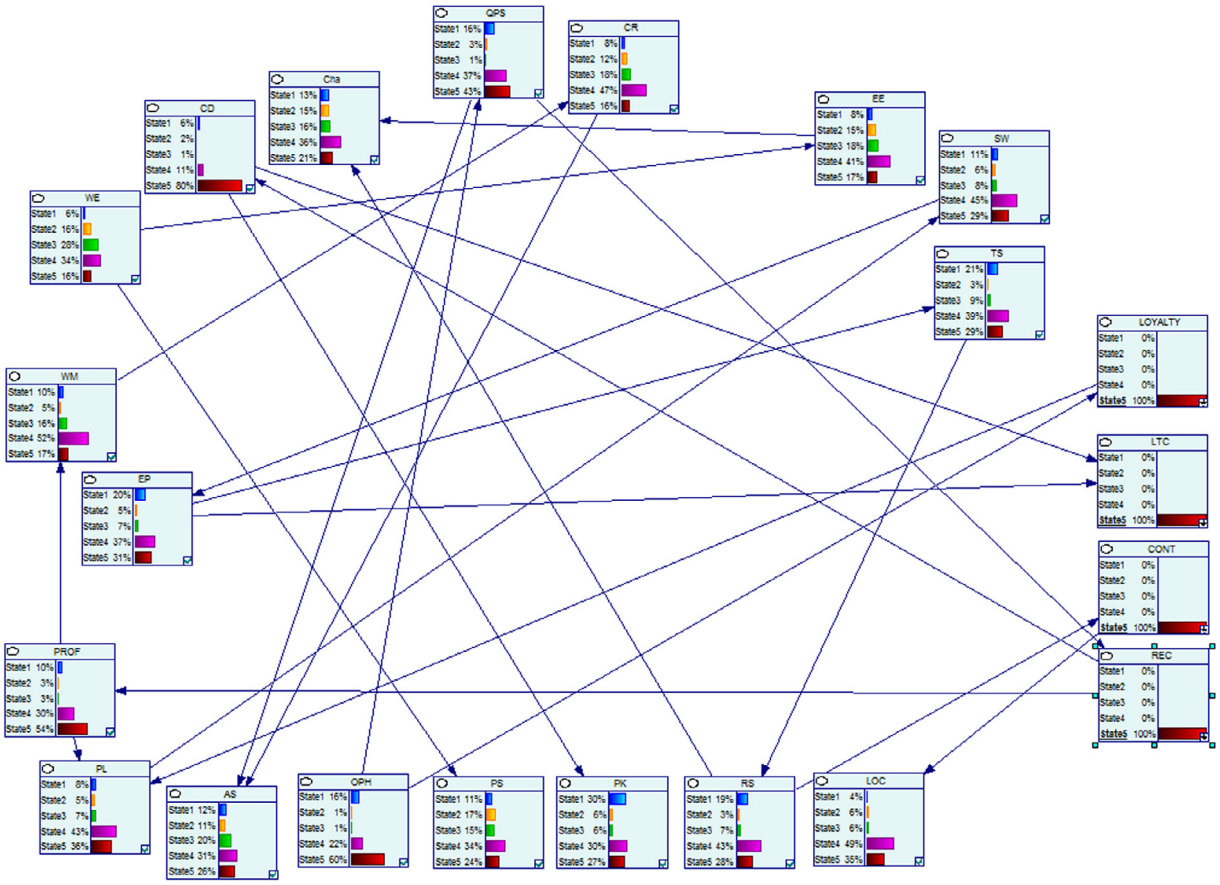

Fig. 2 – Diagnostic distributions conditioned on the changing customer loyalty attributes at their highest level.

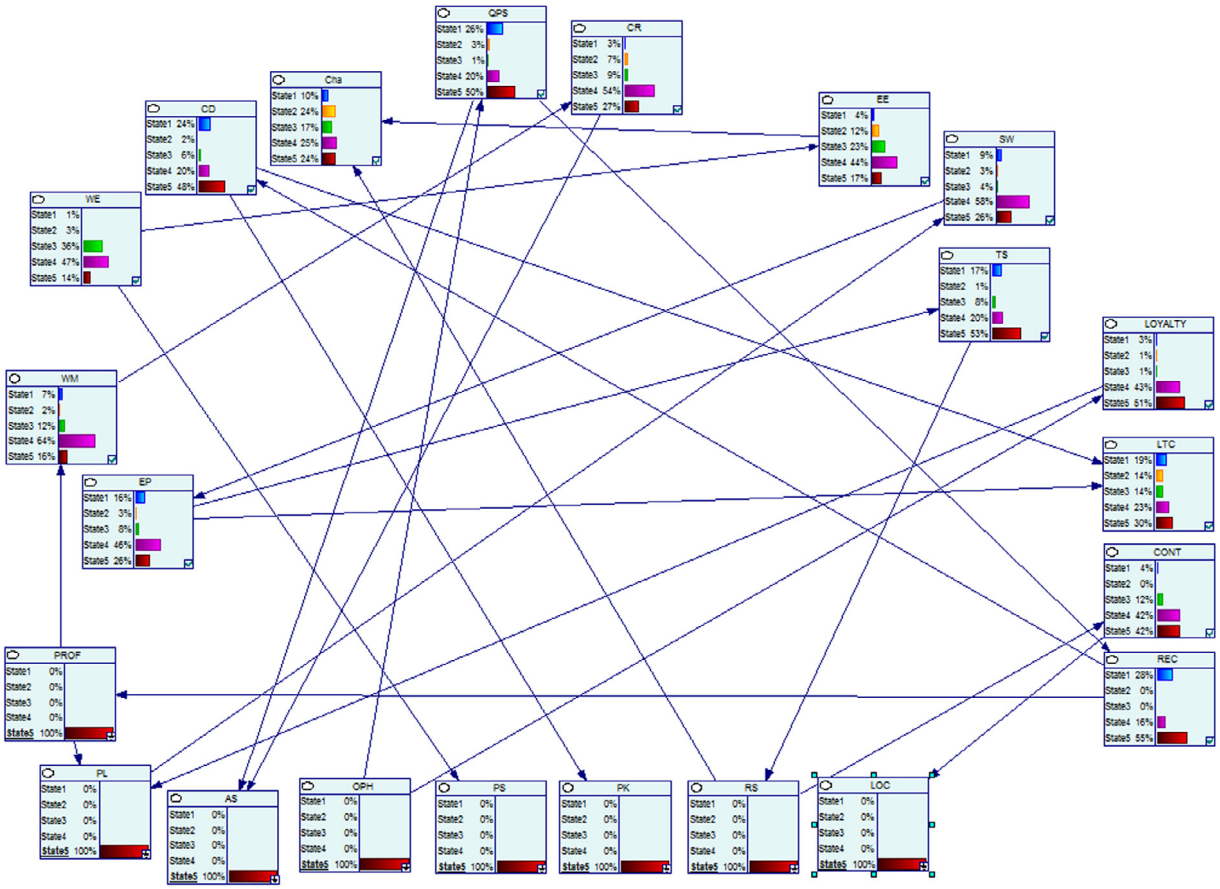

Fig. 3 – Diagnostic distributions conditioned on the changing service quality attributes at their highest level.

Table 3 – Result from the model.

Fit of the model		Complexity of the network	Parameters/Independent	Accuracy for all 4 nodes
AIC	−827.094	22 nodes and 25 Arcs	910/728	0.9167 (1100/1200)
BIC	−897.264			

Table 4 – Classification capacity: CONT.

	Truth table							
	State1	State2	State3	State4	State5	Classification overall	Producer accuracy (precision)	AUC
State1	38	1	1	2	1	43	88.37%	0.8507
State2	1	27	1	1	0	30	90.00%	0.9419
State3	0	1	64	2	2	69	92.75%	0.9716
State4	1	0	1	47	2	51	92.16%	0.9249
State5	1	1	1	2	102	107	95.33%	0.8678
Truth overall	41	30	68	54	107	300		
User accuracy (recall)	92.68%	90.00%	94.12%	87.04%	95.33%			
Overall accuracy (OA)					92.67%			
Kappa					0.904			

Table 5 – Classification capacity: LOYALTY.

	Truth table							
	State1	State2	State3	State4	State5	Classification overall	Producer accuracy (precision)	AUC
State1	61	1	0	1	2	65	93.85%	0.8579
State2	2	15	1	1	1	20	75.00%	0.9394
State3	2	2	18	0	2	24	75.00%	0.9015
State4	3	0	2	40	2	47	85.11%	0.9227
State5	6	0	0	1	137	144	95.14%	0.8614
Truth overall	74	18	21	43	144	300		
User accuracy (recall)	82.43%	83.33%	85.71%	93.02%	95.14%			
Overall accuracy (OA)					90.33%			
Kappa					0.859			

Table 6 – Classification capacity: LTC.

	Truth table							
	State1	State2	State3	State4	State5	Classification overall	Producer accuracy (precision)	AUC
State1	70	2	1	1	1	75	93.33%	0.8497
State2	1	45	1	2	2	51	88.24%	0.7560
State3	1	1	33	2	1	38	86.84%	0.8530
State4	1	2	2	38	1	44	86.36%	0.8473
State5	2	1	2	3	84	92	91.30%	0.8368
Truth overall	75	51	39	46	89	300		
User accuracy (recall)	93.33%	88.24%	84.62%	82.61%	94.38%			
Overall accuracy (OA)					90.00%			
Kappa					0.872			

The table also indicates the change in belief (from the initial beliefs) of the class variables when the beliefs of the model variables were fixed at the highest level. The changes in belief in the model parameter reveal that the Customer Loyalty is highly sensitive to Service Quality attributes. Fig. 2 represents the diagnostic distributions conditioned on the changing Customer Loyalty attributes at their highest level and Fig. 3 represents the diagnostic distributions conditioned on the changing Service Quality attributes at their highest level.

Table 9 also shows that the attributes of Customer Loyalty are highly sensitive to service quality attributes and almost has no or negative effect on Employee Responsibility, Community Responsibility, Environment Responsibility and Consumer Responsibility. As we place the customer loyalty attributes at the highest level, the variable RS (state4 by 30.3% and state5 115.39%), LOC (state4 by 44.12% and state5 by 84.21%), PL (state4 by 30.3% and state5 by 100%) and PROF (state5 by 116%) improved significantly.

Table 7 – Classification capacity: CD.

	Truth table							
	State1	State2	State3	State4	State5	Classification overall	Producer accuracy (precision)	AUC
State1	54	4	0	0	2	60	90%	0.9105
State2	2	55	2	0	1	60	91.67%	0.9722
State3	0	1	32	1	1	35	91.43%	0.9805
State4	0	1	1	20	0	22	90.91%	0.9627
State5	1	1	1	0	120	123	97.56%	0.9502
Truth overall	57	62	36	21	124	300		
User accuracy (recall)	94.74%	88.71%	88.89%	95.24%	96.77%			
Overall accuracy (OA)					93.67%			
Kappa					0.913			

Table 8 – Sensitivity analysis results ranked in decreasing order of influence on corporate social responsibility based on Mutual Information or entropy reduction (%).

Node (variable)	Mutual Information or entropy reduction (%)	Node (variable)	Mutual Information or entropy reduction (%)	Node (variable)	Mutual Information or entropy reduction (%)	Node (variable)	Mutual Information or entropy reduction (%)
Loyalty	0.21597 (100)	LTC	0.23290 (100)	CONT	0.15063 (100)	REC	0.23713 (100)
OPH	0.10145 (46.97)	CD	0.02115 (9.08)	RS	0.10081 (66.9)	CD	0.12782 (53.9)
PL	0.06130 (28.38)	EP	0.01942 (8.34)	LOC	0.01397 (9.27)	PROF	0.05549 (23.4)
SW	0.01730 (8.01)	TS	0.00719 (3.09)	TS	0.00949 (6.3)	QPS	0.02954 (12.5)
QPS	0.01143 (5.29)	SW	0.00388 (1.67)	EP	0.00570 (3.78)	PK	0.00995 (4.2)
EP	0.00325 (1.51)	PK	0.00352 (1.51)	CHA	0.00474 (3.15)	WM	0.00096 (0.41)
TS	0.00153 (0.71)	QPS	0.00164 (0.70)	SW	0.00414 (2.75)	PL	0.00088 (0.37)
PROF	0.00108 (0.50)	RS	0.00159 (0.68)	PL	0.00109 (0.72)	CR	0.00073 (0.31)
RS	0.00064 (0.30)	PROF	0.00131 (0.56)	PROF	0.00006 (0.04)	OPH	0.00053 (0.22)
CD	0.00059 (0.27)	PL	0.00053 (0.23)	OPH	0.00001 (0.006)	SW	0.00042 (0.18)
WM	0.00024 (0.11)	WM	0.00034 (0.15)	WM	0.00001 (0.006)	AS	0.00035 (0.15)
PK	0.00022 (0.10)	OPH	0.00018 (0.08)	QPS	0.00001 (0.006)	EP	0.00030 (0.13)
LOC	0.00009 (0.04)	CHA	0.00015 (0.06)	CD	<0.00001	TS	0.00020 (0.08)
CHA	0.00008 (0.04)	AS	0.00011 (0.05)	CR	<0.00001	RS	0.00007 (0.03)
CR	0.00005 (0.02)	LOC	0.00010 (0.04)	PK	<0.00001	LOC	<0.00001
AS	0.00004 (0.02)	CR	0.00010 (0.04)	AS	<0.00001	CHA	<0.00001
PS	<0.00001	EE	<0.00001	EE	<0.00001	WE	<0.00001
WE	<0.00001	PS	<0.00001	PS	0	EE	<0.00001
EE	<0.00001	WE	<0.00001	WE	0	PS	<0.00001

Table 10 represents the diagnostic distributions conditioned on the attributes of the model variables Service Quality at their highest level. The table also indicates the change in belief (from the initial beliefs) of the class variables when the beliefs of the model variables were fixed at the highest level. The changes in belief in the model parameter reveal that all the class variables are highly sensitive to Service Quality (upper level of Loyalty, LTC, CONT and REC vari-

Table 9 – Change in belief of customer loyalty variables.

Variable and states Emp. Resp[a]	Change in belief (Cust. Loy.[e] = State5)	Variable and states Comm. Resp.[b]	Change in belief (Cust. Loy. = State5)	Variable and states Env. Resp.[c]	Change in belief (Cust. Loy. = State5)	Variable and states Cons. Resp.[d]	Change in belief (Cust. Loy. = State5)	Variable and states Service quality	Change in belief (Cust. Loy. = State5)
TS		**Cha**		**WM**		**CR**		**PK**	
State1	−0.4	State1	0.19	State1	0	State1	−0.14	State1	66.67
State2	0.81	State2	0	State2	0.44	State2	0.25	State2	−62.5
State3	0.57	State3	0.2	State3	0.39	State3	0.14	State3	−68.42
State4	−0.22	State4	−0.2	State4	−0.24	State4	−0.12	State4	7.14
State5	−0.81	State5	−0.05	State5	−0.22	State5	−0.14	State5	35
SW		**CD**		**EP**		**QPS**		**PS**	
State1	0.15	State1	0.6	State1	−0.54	State1	0	State1	0
State2	0.6	State2	0.85	State2	0.67	State2	0.8	State2	0
State3	0.64	State3	0.91	State3	0.67	State3	0.83	State3	0
State4	−0.45	State4	0.71	State4	0.03	State4	0	State4	0
State5	0.03	State5	−2.48	State5	−1.39	State5	−0.65	State5	0
EE		**WE**						**RS**	
State1	0	State1	0					State1	90
State2	0	State2	0					State2	−88.46
State3	0	State3	0					State3	−61.11
State4	0	State4	0					State4	30.30
State5	0	State5	0					State5	115.39
								LOC	
								State1	−80
								State2	−62.5
								State3	−45.46
								State4	44.12
								State5	84.21
								OPH	
								State1	100
								State2	−87.5
								State3	−85.71
								State4	−47.62
								State5	66.67
								AS	
								State1	0
								State2	−15.39
								State3	−4.76
								State4	10.71
								State5	0
								PL	
								State1	−38.46
								State2	−61.54
								State3	−69.57
								State4	30.3
								State5	100
								PROF	
								State1	11.11
								State2	−57.14
								State3	−88.46
								State4	−6.25
								State5	116

[a] Employee responsibility.
[b] Community responsibility.
[c] Environment responsibility.
[d] Consumer responsibility.
[e] Customer loyalty.

ables are improved by 131.82%, 30.43%, 180% and 161.91% respectively).

Thus, from the results of Figs. 2, 3, Tables 8 and 9 it can be safe to conclude that perceived service quality can influence customer loyalty; perceived service quality also influences customer's value of the company's product; perceived service quality influences bank–customer relationship. The results also signify that the perceived service quality influences the customer's recommendation to other customers, justifying the hypotheses H_1, H_2, H_3 and H_4 proposed in Section 2.2.

5.2. *Change in belief of employee responsibility attributes and interaction with customer loyalty*

Table 11 and Fig. 4 represent the diagnostic distributions conditioned on the attributes of the model variables Employee Responsibility at their highest level. As expected,

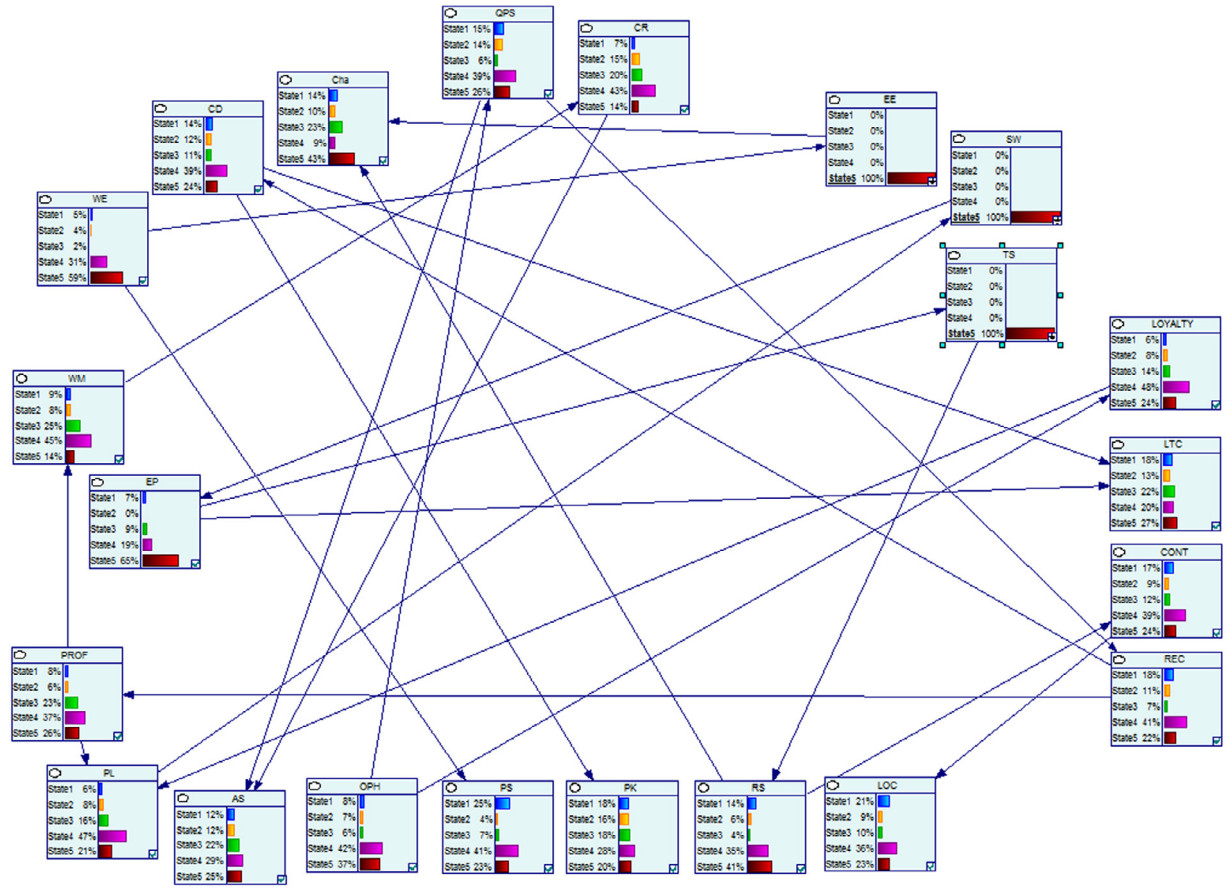

Fig. 4 – Diagnostic distributions conditioned on the changing employee responsibility attributes at their highest level.

Table 10 – Change in belief of service quality and its impact on customer loyalty variables (%).

States	Class variables			
	Loyalty	LTC	CONT	REC
State1	−57.14	5.56	−63.64	40
State2	−88.89	0	−100	−100
State3	−93.75	−12.5	−33.33	−100
State4	−8.51	−17.86	40	−58.97
State5	131.82	30.43	180	161.91

Table 11 – Change in belief of employee responsibility and its impact on customer loyalty variables (%).

States	Class variables			
	Loyalty	LTC	CONT	REC
State1	−14.29	0	54.55	−10
State2	−11.11	−7.14	−66.67	−8.33
State3	−12.5	37.5	−33.33	−12.5
State4	2.13	−28.57	30	5.13
State5	9.09	17.39	60	4.76

the diagnostic check in Fig. 4 and Table 11, shows that by keeping the attributes of Employee Responsibility at their utmost level, highest level for the variable CONT can be achieved.

From Table 11, it is also clear that changes in belief in the Employee Responsibility parameter reveal that the upper level of all the class variables are improved (upper level of Loyalty, LTC, CONT and REC variables are improved by 9.09%, 17.39%, 60% and 4.76% respectively).

From Table 11, it can be observed that the variable CONT is significantly influenced by change in belief of employee responsibility. Thus from the above analysis, we can conclude that if the employee focus CSR initiatives are improved then it will have strong positive impact on the bank–customer long term relationship. This assertion also justifies the hypothesis H_5 proposed in Section 2.3.

Table 12 – Change in belief of community responsibility and its impact on customer loyalty variables (%).

States	Class variables			
	Loyalty	LTC	CONT	REC
State1	0	0	0	−40
State2	−11.11	−7.14	−3.7	−41.67
State3	0	−6.25	0	−87.5
State4	−2.13	3.57	0	5.13
State5	4.55	8.7	0	85.71

5.3. *Change in belief of consumer responsibility attributes and interaction with customer loyalty*

To assess the significance of all the attributes of Consumer Responsibility on overall Customer Loyalty, we conditioned all the attributes of Consumer Responsibility at its highest level and analyzed the distributions of the states of the respective attributes. Fig. 5 and Table 12 present the distributions of all the attributes conditioned on Consumer Responsibility at its highest level and respective change in belief.

The diagnostic analysis shown in Fig. 5 and Table 12 presents some interesting results on consumer psychology when conditioned on the consumer responsibility scale. Fig. 5 and Table 12 reveal that on improving the consumer responsibilities scale it will have positive but not that significant effect on the class variables LOYALTY, LTC

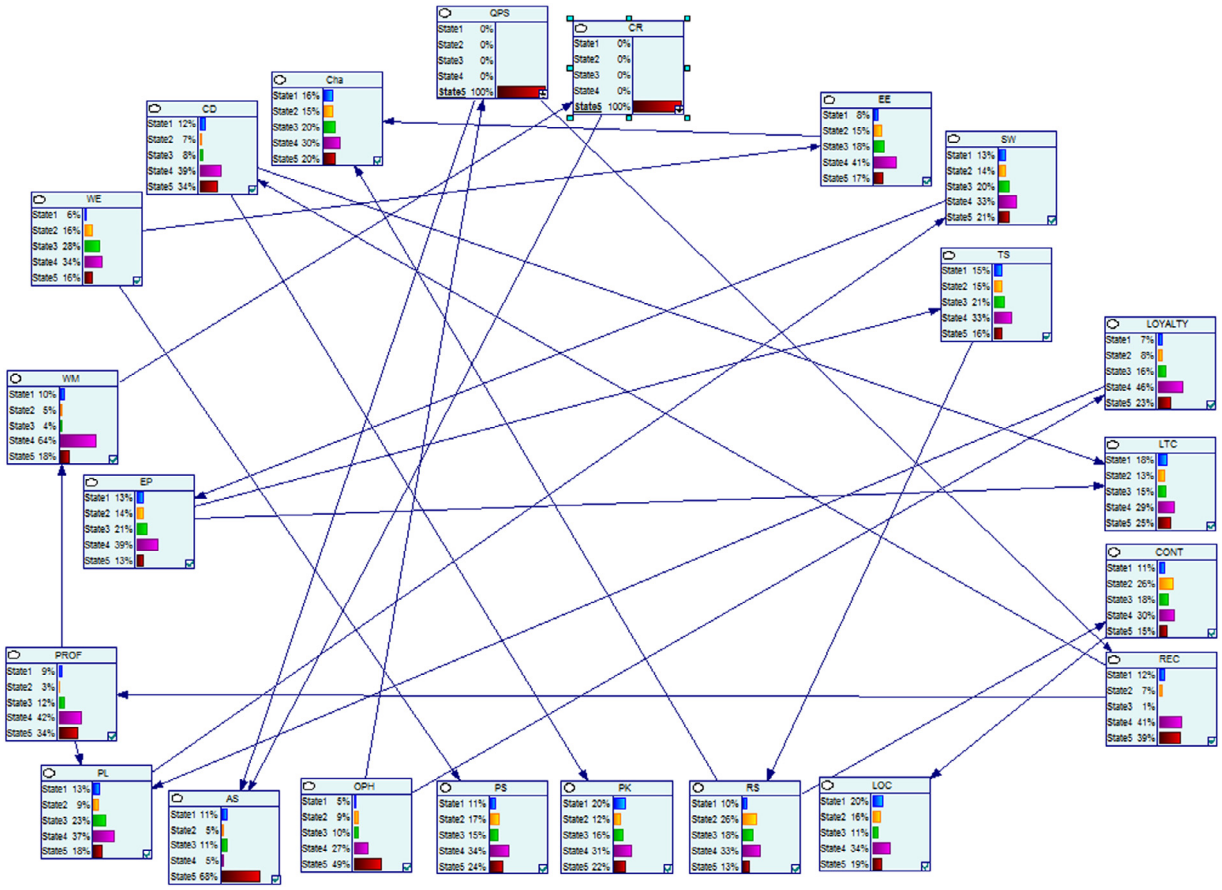

Fig. 5 – Diagnostic distributions conditioned on the changing consumer responsibility attributes at their highest level.

and CONT, but it has strong positive effect on the class variable REC. Thus from the analysis, we can conclude that improving customer centric CSR initiatives will improve the customer's recommendation to other customers, justifying the hypothesis H_6 proposed in Section 2.3.

5.4. *Change in belief of environment responsibility attributes and interaction with customer loyalty*

Fig. 6 presents the distributions of four states of the four class variables Loyalty, LTC, CONT and REC conditioned on all the attributes of Environment Responsibility attributes at their maximum level.

Table 13 represents the change in belief of environment responsibility and its impact on four class variables Loyalty, LTC, CONT and REC. Fig. 6 and Table 13 reveal that improvement of the environment responsibilities scale will have positive and significant effect on the class variables LOYALTY, LTC and CONT. Hence from the analysis, it can be concluded that on improvement of environmental responsibility, it will improve overall customer loyalty, justifying the hypothesis H_7 proposed in Section 2.3.

Similarly, diagnostic checks can be done for the characteristics *Cha*, *CD* and *WE*. Fig. 7 and Table 14 present distributions of various class attributes Loyalty, LTC, CONT and REC conditioned on *Cha*, *CD* and *WE* at their highest level.

5.5. *Change in belief of community responsibility attributes and interaction with customer loyalty*

From Table 14 and Fig. 7, we can observe that changes in belief in the model parameters reveal the responsiveness of

Table 13 – Change in belief of environment responsibility and its impact on customer loyalty variables (%).

States	Class variables			
	Loyalty	LTC	CONT	REC
State1	0	−5.56	9.09	20
State2	−11.11	0	−55.56	−50
State3	−12.5	62.5	−11.11	−50
State4	0	−57.14	33.33	−2.56
State5	13.64	34.78	33.33	28.57

Table 14 – Change in belief of community responsibility and its impact on customer loyalty variables (%).

States	Class variables			
	Loyalty	LTC	CONT	REC
State1	−14.29	−11.11	−18.18	−75
State2	−22.22	14.29	−33.33	−91.67
State3	−6.25	−43.75	11.11	−87.5
State4	4.26	−17.86	26.67	−17.95
State5	4.56	56.52	6.67	185.71

the class variables to community responsibility (upper level of Loyalty, LTC, CONT and REC variables are improved by 4.56%, 56.52%, 6.67% and 185.71% respectively). From the analysis, it is clear that change in belief of all the class variables is positively related to the change in belief of all the community responsibility attributes but the class variables LTC and REC are just strongly related. Also, Table 7 reveals that CD is the most influential factor causing the largest entropy reductions in LTC and REC (9.08% and 53.9% respectively).

From the diagnostic analysis shown in Fig. 7 and Table 14, we can conclude that on improvement of the community

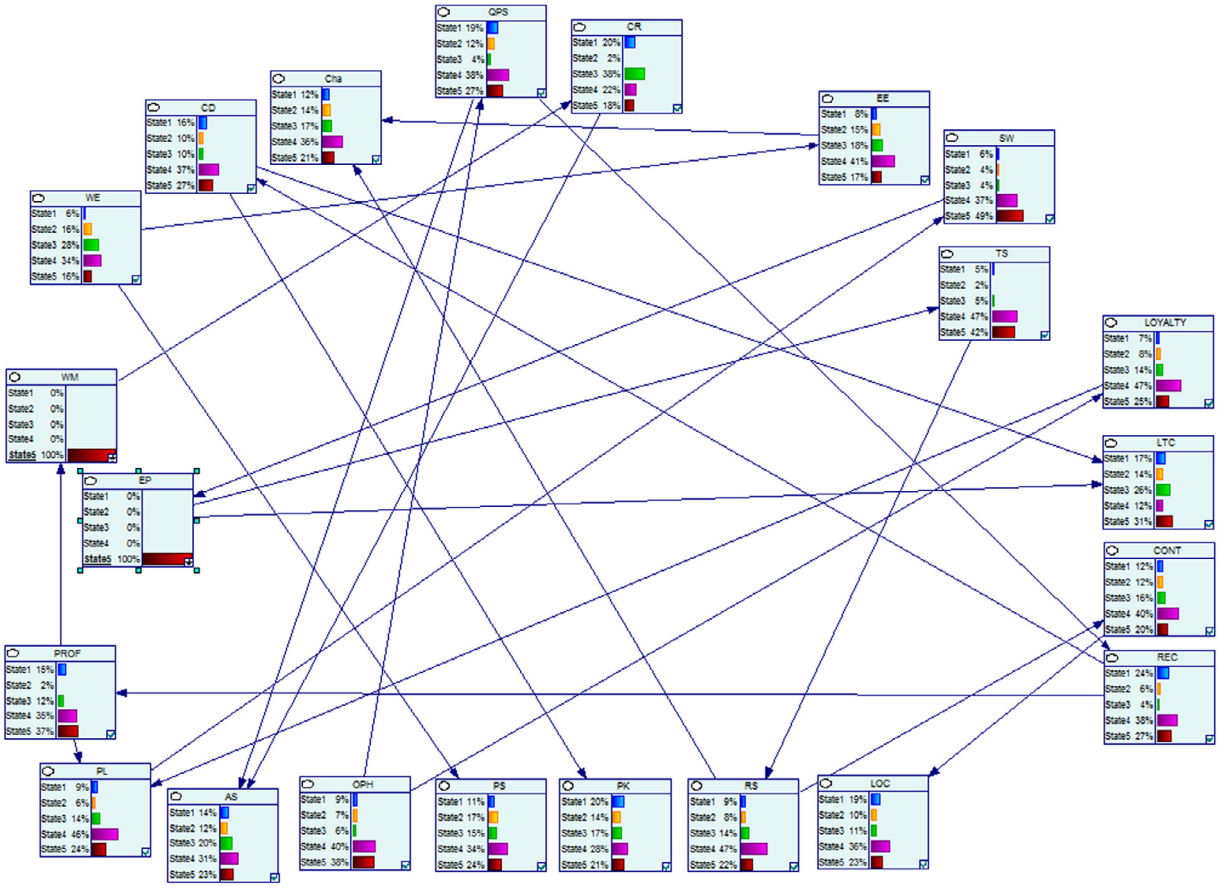

Fig. 6 – Diagnostic distributions conditioned on the changing environment responsibility attributes at their highest level.

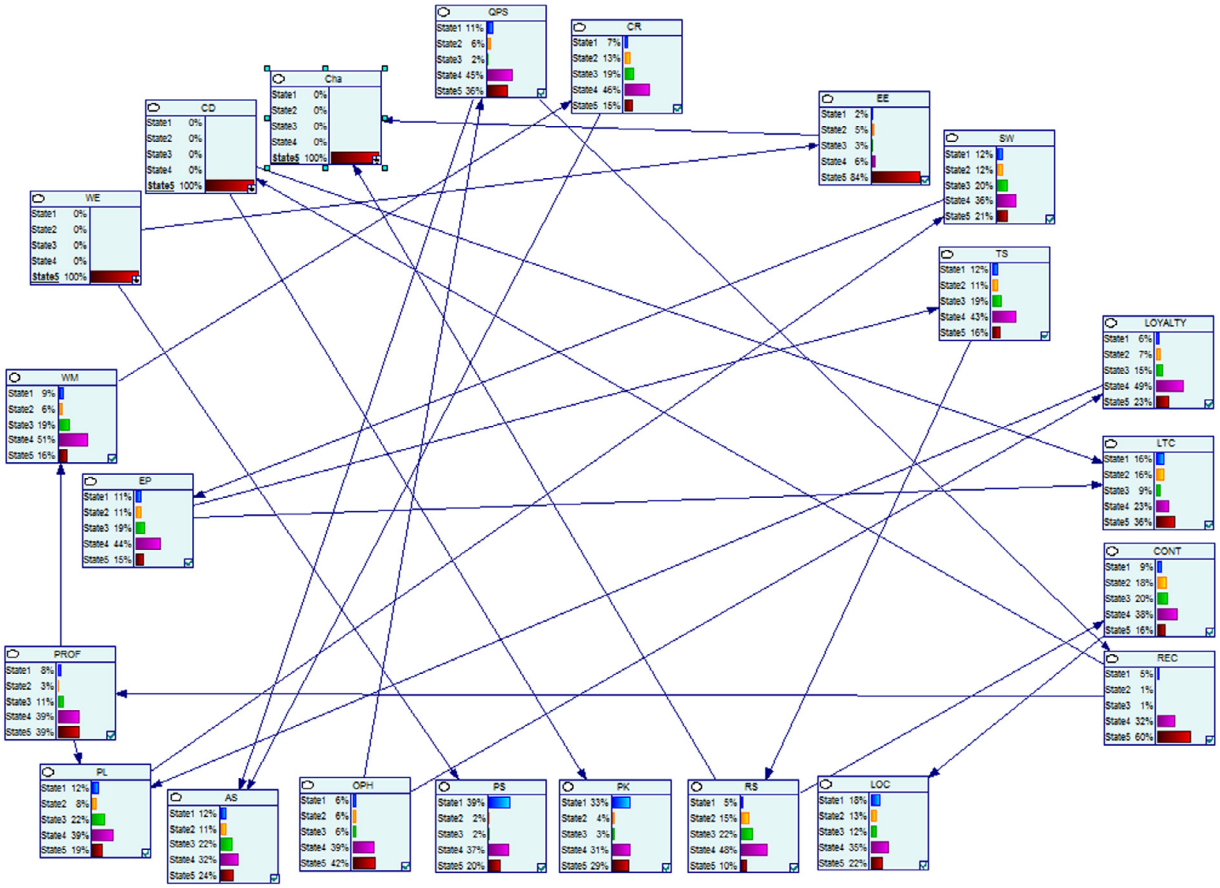

Fig. 7 – Diagnostic distributions conditioned on the changing community responsibility attributes at their highest level.

focus CSR initiatives, it will influence the customer company's product valuation and will also improve the customer's recommendation to other customers. This substantiates the hypotheses H_8 and H_9 proposed in Section 2.3.

6. Conclusion

Awareness and effect of spending on the CSR related initiatives is rapidly increasing in all sectors. Both manufacturing and service industries are involved in CSR activities. This involvement also raises concern whether investing in CSR activities is having any positive impact on the customer loyalty and perceived quality, especially in the context of the Banking sector. The present study attempted to identify the relationship of various CSR initiatives with different dimensions of perceived service quality and customer loyalty. Based on the literature review measurement scale of all three variables of interest has been identified.

In developing countries, spending on CSR is one of the intrinsic parts of their cultural traditions (Visser, 2008). Vives (2006) argued that a main CSR driver for SMEs in Latin America is religion. Amaeshi et al. (2006) stated that cultural practices have high impact on CSR practices in African companies. Poor socioeconomic conditions of the developing economies are also important drivers for CSR. Firms are supposed to address issues related to socio economic status of the country in the form of CSR. Dobers and Halme (2009) stated that connotation of ethical and immoral measures in these countries are also conditional on the economic condition. According to Vivarta and Canela (2006) "media" is one of the stakeholders which nurtures CSR in both developing and developed economies. National stock Exchange of Brazil has created a national corporate sustainability index that raised the need of disclosure of information on environmental, social and governance issues by the Brazilian firms (Malini, 2006).

Historical and cultural heritage of Indian economy supports the CSR initiatives in the country and is different from many other countries (Sundar, 2000). Indian economy has experienced a transition from agriculture base to industrial base. These changes have raised a need to understand the result of this change on economic development (Mohan, 2001). Indian consumers are cost sensitive; and tight financial market, government influence on business raise concern for economic development. Majority of the companies agreed that companies need to focus on CSR activities (Shrivastava and Venkateswaran, 2000). Although more number of Indian companies are trying to adopt the universal understanding of CSR, it is still in blurred situation. Companies are defining CSR in their own manner based on their specific context (Arora and Puranik, 2004).

Due to lack of empirical research on impact of CSR initiatives on India's rural banking sector, it is hard to know the relationship among different attributes that can affect the customer loyalty. In this paper BBN was used to mechanically detect dependency relationships among different attributes of Customer Loyalty. Further the proposed BBN was used to perform what-if-analysis to understand the impact of change in measurement variables of these attributes.

This study has some limitation. In the analysis, author(s) used data that were collected from Indian Banking customers located in rural region. Studies focusing on different industries, different regions may establish stability of the results of the present study and also present further scope for future research. Although, this study is innovative in evaluating the relationship between CSR, perceived service quality and customer loyalty using Bayesian Network and provides some strong conditional association based on the empirical results, there is always a scope for future research.

Finally, it is also necessary to identify the CSR issues in one industry to the others. In service sector, relevance and importance of CSR issues still did not get much attention. Relation of CSR and its different dimension may have varied effect on the other industries depending on the sensitivities of each industry. Thus study on assessment of various CSR dimensions on perceived service quality and customer loyalty at sectoral level is crucial and open for future research.

Acknowledgments

The authors are thankful to the anonymous referees for their useful suggestions. This article was revised in light of the comments.

References

Amaeshi, K.M., Adi, B.C., Ogbechie, C., Amao, O., 2006. Corporate social responsibility in Nigeria: Western mimicry or indigenous influences? J. Corp. Citizsh. 24, 83–99.

Arora, B., Puranik, R., 2004. A review of corporate social responsibility in India. Development 47 (3), 93–100.

Auger, P., Devinney, T.M., Louviere, J.J., 2006. Using best-worst scaling methodology to investigate consumer ethical beliefs across countries. J. Bus. Ethics 70 (3), 299–326.

Auka, D.O., Bosire, J.N., Matern, V., 2013. Perceived Service quality and customer loyalty in retail banking in Kenya. Br. J. Market. Stud. 1 (3), 32–61.

Barnett, M.L., 2007. Stakeholder influence capacity and the variability of financial returns to corporate social responsibility. Acad. Manag. Rev. 32 (3), 794–816.

Berens, G., van Riel, C.B.M., van Bruggen, G.H., 2005. Corporate as sociations and consumer product responses: the moderating role of corporate brand dominance. J. Mark. 69 (3), 35–48.

Berens, G., van Riel, C., van Rekom, J., 2007. The CSR-quality tradeoff: When can corporate xocial responsibility and corporate ability compensate each other? J. Bus. Ethics 74, 233–252.

Bhattacharya, C.B., Korschun, D., Sen, S., 2009. Strengthening stakeholder–company relationships through mutually beneficial corporate social responsibility initiatives. J. Bus. Ethics 85 (2), 257–272.

Bhattacharya, C.B., Sen, S., 2004. Doing better at doing good: when, why and how consumers respond to corporate social initiatives. Calif. Manage. Rev. 47 (1), 9–24.

Birth, G., Illia, L., Lurati, F., Zamparini, A., 2008. Communicating CSR: practices among Switzerland's top 300 companies. Corp. Comm. Int. J. 13 (2), 182–196.

Boohene, R., Agyapong, G.K.Q., 2011. Analysis of the antecedents of customer loyalty of telecommunication industry in Ghana: The case of Vodafone (Ghana). Int. Bus. Res. 4 (1), 229–240.

Boulstridge, E., Carrigan, M., 2000. Do consumers really care about corporate responsibility? Highlighting the attitude—behaviour gap. J. Commun. Manag. 4 (4), 355–368.

Brown, T.J., Dacin, P.A., 1997. The company and the product: corporate associations and consumer product responses. J. Mark. 61, 68–84.

Carroll, A.B., 1979. A three-dimensional conceptual model of corporate performance. Acad. Manag. Rev. 4 (4), 497–505.

Carvalho, S.W., Sen, S., Mota, M.O., Lima, R.C., 2010. Consumer reactions to CSR: a Brazilian perspective. J. Bus. Ethics 91 (2), 291–310.

Castaldo, S., Perrini, F., Misani, N., Tencati, A., 2009. The missing link between corporate social responsibility and consumer trust: the case of fair trade product. J. Bus. Ethics 84 (1), 1–15.
Chai, J., Cheng, P., Wang, Z., Brew, Y., 2015. The public perception of corporate social responsibility and its effects on customer behaviour in China. Amer. J. Ind. Bus. Manag. 2015 (5), 611–621.
Chanda, Udayan, Aggarwal, Remica., 2016. Bayesian network on labour dissonance: A social sector development challenge to India. J. Manag. Anal. 3 (1), 80–111.
Chaudhuri, A., Holbrook, M.B., 2001. The chain of effects from brand trust and brand effect to brand performance: the role of brand loyalty. J. Mark. 65, 81–93.
Cheng, T.C.E., Lai, L.C.F., Yeung, A.C.L., 2008. The driving forces of customer loyalty: a study of Internet service providers in Hong Kong. Int. J. E-Bus. Res. 4 (4), 26–42.
Chickering, D.M., 2002. Optimal structure identification with greedy search. J. Mach. Learn. Res. 3, 507–554.
Chickering, D.M., Heckerman, D., 1997. Efficient approximations for the marginal likelihood of Bayesian networks with hidden variables. Mach. Learn. 29, 181–212.
Chiou, J.S., Droge, C., 2006. Service quality, trust, specific asset investment, and expertise: direct and indirect effects in a satisfaction-loyalty framework. J. Acad. Mark. Sci. 34 (4), 613–627.
Cronin, J., Brady, M., Hult, G., 2000. Assessing the effects of quality, value, and customer satisfaction on behavior intentions in service environments. J. Retail. 76 (2), 193–218.
Cronin Jr., J.J., Taylor, S.A., 1992. Measuring service quality: a reexamination and extension. J. Mark. 56 (3), 55–68.
Day, G.S., 1969. A two-dimensional concept of brand loyalty. J. Adv. Res. 9 (3), 29–35.
Dick, A., Basu, K., 1994. Customer loyalty: toward an integrated conceptual framework. J. Acad. Mark. Sci. 22 (2), 99–113.
Dobers, P., Halme, M., 2009. Corporate social responsibility and developing countries. Corp. Soc. Responsib. Environ. Manag. 16, 237–249.
Drumwright, M.E., 1996. Company advertising with a social dimension: The role of non-economic criteria. J. Mark. 60 (4), 71–87.
Economic Times 2016. http://articles.economictimes.indiatimes.com/2016-02-15/news/70642024_1_csr-disclosure-asian-companies-indian-companies (Accessed 13 November 2016).
EY and Boston College, 2016. Value of sustainability reporting, Available at: https://www.ey.com/Publication/.../EY.../EY-Value-of-Sustainability-Reporting.pdf (Accessed 13 November 2016).
Fleiss, J.L., 1971. Measuring nominal scale agreement among many raters. Psychol. Bull. 76 (5), 378–382.
Fleiss, J.L., 1981. Statistical Methods for Rates and Proportions, second ed. John Wiley, New York, pp. 38–46.
Fullerton, G., 2005. The service quality-loyalty relationship in retail services: does commitment matter. J. Retail. Consum. Serv. 12 (2), 99–111.
Garcia de los Salmones, M.d.M., Crespo, A.H., del Bosque, I.R., 2005. Influence of corporate social responsibility on loyalty and valuation of services. J. Bus. Ethics 61 (4), 369–385.
Gounaris, S.P., Stathakopoulos, V., Athanassopoulos, A.D., 2003. Antecedents to perceived service quality: an exploratory study in the banking industry. Int. J. Bank Mark. 21 (4), 168–190.
Hallowell, R., 1996. The relationships of customer satisfaction, customer loyalty, and profitability: an empirical study. Int. J. Serv. Ind. Manag. 7 (4), 27–42.
Handelman, J.M., Arnold, S.J., 1999. The role of marketing actions with a social dimension: appeals to the institutional environment. J. Mark. 63 (7), 38–48.
He, H., Li, Y., 2011. CSR and service brand: the mediating effect of brand identification and moderating effect of service quality. J. Bus. Ethics 100 (4), 673–688.
Heckerman, D., Geiger, D., Chickering, D.M., 1995. Learning Bayesian networks: The combination of knowledge and statistical data. Mach. Learn. 20, 197–243.
Jacoby, J., Kyner, D., 1973. Brand loyalty vs. repeat purchasing behavior. J. Mark. Res. 10, 1–9.
Javalgi, R.G., Moberg, C.R., 1997. Service loyalty: implications for service providers. J. Serv. Mark. 11 (3), 165–179.
Kiran, K., Diljit, S., 2011. Antecedents of customer loyalty: Does service quality suffice. Malaysian J. Lib. Inf. Sci. 16 (2), 95–113.
Kulkarni, A., 2014. Corporate social responsibility in Indian banking sector: A critical analysis. In: Implementing Corporate Social Responsibility. Springer, India, pp. 111–127.
Landis, J.R., Koch, G.G., 1977. The measurement of observer agreement for categorical data. Biometrics 33 (1), 159–174.
Lee, S., Heo, C.Y., 2009. Corporate social responsibility and customer satisfaction among US publicly traded hotels and restaurants. Int. J. Hosp. Manag. 28 (4), 635–637.
Luo, X., Bhattacharya, C.B., 2006. Corporate social responsibility, customer satisfaction, and market share value. J. Mark. 70 (4), 1–18.
Maignan, I., Ferrell, O.C., Hult, G.T.M., 1999. Corporate citizenship: Cultural antecedents and business benefits. J. Acad. Mark. Sci. 27, 455–469.
Malini, M., 2006. Turning point: Corporate social responsibility in emerging economies. J. Corp. Citizsh. 24, 20–22.
Mandhachitara, R., Poolthong, Y., 2011. A model of customer loyalty and corporate social responsibility. J. Serv. Mark. 25 (2), 122–133.
Marin, L., Ruiz, S., Rubio, A., 2009. The role of identity salience in the effects of corporate social responsibility on consumer behavior. J. Bus. Ethics 84 (1), 65–78.
De Klerk, Marna, de Villiers, Charl, van Staden, Chris, 2015. The influence of corporate social responsibility disclosure on share prices: Evidence from the United Kingdom. Pac. Account. Rev. 27 (2), 208–228.
McDonald, L.M., Lai, C.H., 2011. Impact of corporate social responsibility initiatives on Taiwanese banking customers. Int. J. Bank Mark. 29 (1), 50–63.
McWilliams, A., Siegel, D., 2001. Corporate social responsibility: A theory of the firm perspective. Acad. Manag. Rev. 26, 117–127.
Menon, S., Kahn, B.E., 2003. Corporate sponsorships of philanthropic activities: when do they impact perception of sponsor brand. J. Consum. Psychol. 13 (3), 316–327.
Mohan, A., 2001. Corporate citizenship: Perspectives from India. J. Corp. Citizsh. 12 (2), 107–117.
Mohr, L.A., Webb, D.J., 2005. The effects of corporate social responsibility and price on consumer responses. J. Consum. Aff. 39, 121–147.
Morrison, E., Bridwell, L., 2011. Consumer social responsibility – the true corporate social responsibility. Competition Forum 9 (1), 144–149.
Murray, K.B., Vogel, C.M., 1997. Using a hierarchy of effects approach to gauge the effectiveness of CSR to generate goodwill towards the firm: financial versus nonfinancial impacts. J. Pers. Soc. Psychol. 48 (3), 575–584.
Musa, R., 2005. A proposed conceptual framework of satisfaction – attitudinal loyalty – behavioral loyalty chain: exploring the moderating effect of trust. paper presented at ANZMAC 2005 Conference: Relationship Marketing (Consumer).
Narwal, M., 2007. CSR initiatives of indian banking industry. Soc. Respons. J. 3 (4), 49–60.
Oliver, R.L., 1999. Whence consumer loyalty. J. Mark. 63, 33–44.
Pai, R.R., Kallepall, V.R., Caudill, R.J., Zhou, M., 2003. Methods toward supply chain risk analysis, in: Proceedings of the IEEE International Conference on Systems, Man and Cybernetics, Vol. 5, Washington, DC, October 5–8, pp. 4560–4565.
Parasuraman, A., Zeithaml, V.A., Berry, L.L., 1988. SERQUAL: a multipleitem scale for measuring consumer perceptions of service quality. J. Retail. 64 (1), 12–40.
Parvatiyar, A., Sheth, J.N., 2001. Customer relationship management: Emerging practice, process, and discipline. J. Econ. Soc. Res. 3 (2), 1–34.
Pearl, J., Verma, T., 1991. This is a chapter. Principles of Knowledge Representation and Reasoning: A theory of inferred causation. In: Proceeding of the Second International Conference. Morgan Kaufmann, San Mateo, CA, pp. 441–452.
Perez, A., del Bosque, I.R., 2012. The role of CSR in the corporate identity of Banking service providers. J. Bus. Ethics 108 (2), 145–146.

Pirch, J., Gupta, S., Grau, S.L., 2007. A framework for understanding corporate social responsibility programs as a continuum: an exploratory study. J. Bus. Ethics 70 (2), 125–140.

Pomering, A., Dolnicar, S., 2006. Customers' sensitivity to different measures of corporate social responsibility in the Australian banking sector. paper presented at the Australia and New Zealand Marketing Academy Conference (ANZMAC), Brisbane, 4–6 December.

Poolthong, Y., Mandhachitara, R., 2009. Customer expectations of CSR, perceived service quality and brand effect in Thai retail banking. Int. J. Bank Mark. 27 (6), 408–427.

Rai, S., Bansal, S., 2014. An analysis of corporate social responsibility expenditure in india. Econ. Polit. Weekly 49 (50).

Rai, A.K., Srivastava, M., 2013. The antecedents of customer loyalty: An empirical investigation in life insurance. J. Compet. 5 (2), 139–163.

Sen, S., Bhattacharya, C.B., 2001. Does doing good always lead to doing better? Consumer reactions to corporate social responsibility. J. Mark. Res. 38 (2), 225–243.

Sen, S., Bhattacharya, C.B., Korschun, D., 2006. The role of corporate social responsibility in strengthening multiple stakeholder relationships: a field experiment. J. Acad. Mark. Sci. 34 (2), 158–166.

Shrivastava, H., Venkateswaran, S., 2000. Business of Social Responsibility- The Why, What and How of Corporate Social Responsibility in India. Books for Change, Bangalore.

Spirtes, P., Glymour, C., Scheines, R., 2000. Causation, Prediction, and Search, second ed. MIT Press, Cambridge, MA, USA.

Stanaland, A.J.S., Lwin, M.O., Murphy, P.E., 2011. Consumer perceptions of the antecedents and consequences of corporate social responsibility. J. Bus. Ethics 102 (1), 47–55.

Sundar, P., 2000. Beyond Business: From Merchant Charity to Corporate Citizenship. Tata McGraw Hill, New Delhi.

Tian, Z., Wang, R., Yang, W., 2011. Consumer responses to corporate social responsibility in China. J. Bus. Ethics 101 (2), 197–212.

Visser, W., 2008. Corporate social responsibility in developing countries. In: Crane, A., McWilliams, A., Matten, D., Moon, J., Siegel, D. (Eds.), The Oxford Handbook of Corporate Social Responsibility. Oxford University Press, Oxford, pp. 473–479.

Vivarta, V., Canela, G., 2006. Corporate social responsibility in Brazil: The role of the press as watchdog. J. Corp. Citizsh. 21, 95–106.

Vives, A., 2006. Social and environmental responsibility in small and medium enterprises in Latin America. J. Corp. Citizsh. 21, 39–50.

Wu, K.J., Liao, C.J., Tseng, M.L., Chiu, A.S.F., 2015. Exploring decisive factors in green supply chain practices under uncertainty. Int. J. Prod. Econ. 159, 147–157.

Yoon, Y., Gurhan-Canli, Z., Schwarz, N., 2006. The effect of corporate social responsibility (CSR) on companies with bad reputations. J. Consum. Psychol. 16 (4), 377–390.

Zain, M.M., Rashidah, M., Rashidee Alwi, M., 2006. Malaysian corporate responsibility disclosure: miscommunication between providers and users of information. Soc. Respons. J. 2 (2), 151–158.

Zeithaml, V.A., Berry, L.L., Parasuraman, A., 1996. The behavioral consequences of service quality. J. Mark. 60, 31–46.