

The Impact of Corporate Social Responsibility on Consumer Purchase Behaviour in High-Street UK Retailers

Christabel Annora Paramita Parung
Faculty of Creative Industry
University of Surabaya
Surabaya, Indonesia
christabelannora@staff.ubaya.ac.id

Lately, Corporate Social Responsibility (CSR) is considered a commitment and responsibility of a company to reduce the harmful effects from their manufacturing process and giving a good impact for society and environment. Some brands have really good CSR values and transparency and some don't. This research is a good way to investigate whether consumer purchasing behaviour is influenced by particular brands' ethical and social responsibility or not. Qualitative methods was used for this study, and for the data collection, semi-structured interviews were used. The consumers were informed about each of companies' CSR activities in the middle of answering the questions in questionnaires and interviews. The objectives of this research are to investigate the influence CSR actions of certain fashion brands on their reputation (from consumers' point of view), and also to determine the impact of their reputation on customer buying/purchasing behaviour. The findings of this study was intended to investigate whether CSR influenced the consumer's purchasing behaviour.

corporate social responsibility, high street, retailers

1.Introduction

Corporate Social Responsibility (CSR) in the fashion industry has been very popular lately in the past 10 years. The businesses role is no longer focused on gaining profit only, but also focused on being actively responsible towards the society (Harrison and Freeman, 1999). It has gained much attention and publicity from media all across the world. Mohr et al (2001) believed that CSR is a commitment and responsibility of a company to reduce the harmful effects from their manufacturing process and giving a good impact for society and environment. CSR can involve range of actions like building good relationship with local communities, investing in schools/ community activities, ensuring their employees' welfare like giving them health insurances for them and their family, also taking part in protecting the environment. Nowadays, companies seem to compete each other in showing their concern for environmental and social ethical issues like global warming, factory waste, inadequate working condition, child labor, etc. transparently. Brands like Marks & Spencer, New Look, and H&M, even have specific website for their contributions in sustainability and social responsibilities. These companies are trying to show their transparency in ethical issues to their customers by kindly and transparently showing the customers about their recycling activities (UNIQLO "Fleece Recycling Program"), sustainability plans (M&S "Plan A"), workers welfare (New Look "Modern Slavery Statement"), their supply chain, their stores and factories location, etc. This might happen because according to Folkes and Kamins (1999), unethical behavior of companies had bad impact on customer attitudes, even though the brands / the products were good. No companies want to be boycotted because of 'bad reputation', but unfortunately not all companies are willing to participate in social environment and being socially responsible. However, companies with great ethical behaviour which provides transparency and do CSR activities not always being rewarded.

It has been confirmed that consumers do appreciate products with good ethical value. Over the last decade, ethical consumerism has become trend and widened to mainstream society (Shaw et al, 2006). Nevertheless, many consumers remain buying products from companies they choose without thinking about companies' ethical value and social responsibility. This might happened because lack of knowledge the consumers have about the companies they buy the products from. Another research also indicated that not all of consumers are willing to pay more for product just because it has a good ethical value. For example, McDonalds' attempt to use only free-cage eggs for

their product was not kindly received by their consumers. Almost 50% of their consumers said they are agree buy foods made from cage-free eggs, but only 17% of them are willing to pay more (Forbes,2016). This poll shows that McDonalds' consumers would like to buy ethical products, only they don't want to spend more money to support the action. This also proves that today's competitive economy cause difficulties for corporates/companies to be sustainable and have good ethics. This case not only happened in food companies, but also happens in fashion industry. People tend to buy lower price clothes no matter how unethical it was produced.

This study's aim is to investigate the influence and impact of CSR on consumer buying behavior between two or more brands which have different level of CSR. Some brands are actively doing their CSR actions like Marks and Spencer and H&M, and some are not. This research is a good way to investigate whether consumer purchasing behaviour is influenced by particular brands' ethical and social responsibility or not. Qualitative methods will be used for this study, and for the data collection, self-completion questionnaires and semi-structured interviews will be used. The consumers will be informed about each of companies' CSR activities after answering the questions interviews.

2. Literature Review

2.1 Corporate Social Responsibility (CSR)

The concept of Corporate Social Responsibility (CSR) historically has been existed since 1917, when Henry Ford declared that in business (in this case the business is Ford Motor), we should do as much as possible for everybody concerned, provide employment, send the car where people can use , and at the same time making money (Lee 2008, p.54). The term 'CSR' grow from time to time and all of the definitions are pointing to one aim, which is to be socially responsible. Carroll's (1979) wrote that CSR is a conceptualization including economic, legal, ethical, and philanthropic responsibilities. Ethical responsibilities relate to the norms and rights, economic and legal responsibilities are the fundamental part of the CSR. CSR nowadays has appeared as a major business issue that includes the business itself with the societies (Auld et al, 2008, Hastings and Angus, 2011). CSR is believed to give positive impacts on consumers' intentions and purchase behaviour (Becker-Olsen et al, 2006 ; Brown and Dacin, 1997). CSR activities won't be influential if the consumers are not aware of them. Pomeroy and Dolniar (2009) wrote that good consumers' awareness of CSR can be achieved if the consumers are aware of the companies' CSR activities, as well as the company with bad CSR can influence the consumers . Consumer's awareness of the company's activities is the target of CSR communication strategy by a company because consumers take control and may use the information to assist buying process. (Berman et al, 1999). If consumer awareness is low, CSR actions won't have any significant effects and initiatives on purchasing behaviours. However, many researches focused on the importance of awareness as a prerequisite for buying behaviour, Duncombe and Heeks (2002) mentioned the fact that awareness itself is not translated into actual actions. Consumers' awareness makes impacts in the consumers themselves. It builds consumer's trust towards the brand. Without trust, we would simply be unable to act (Klewes, 2009) Trust can be defined as belief, desire or assumptions about a brand (Swaen and Chumpitaz, 2008). Trust in consumer is broadly defined as the consumer's belief that the company will keep promises with honesty and good will (Blomqvist, 1997).

2.2 Consumers Purchase Behaviour

Consumers purchase behaviour are influenced by medias nowadays. Fashion magazines and internet are perfect medium to give customers influence on product concept and building self-esteem in the society (Tay, 2009). According to Gupta and Hodges (2012), consumer's purchase behaviour are influenced heavily by the price, quality, and style. Personal motives like design and price seem to be a stronger motivation to customers in buying products than unethical production practices (Iwanow et al , 2005).

2.3 Brand Normative / Social Reputations

Corporate Social Responsibility as social, economic, and ecological aspect can be determined within a reputation that supports good reputation of an organization with social theory. (Eisenegger, 2011). Habermas (2000) evaluates company's reputation by subdividing the reputation itself into :

1. Functional Reputation (related to economic reputation)
2. Normative Reputation (related to CSR)
3. Expressive Reputation (related to brand identity, trend, and design)

Normative Reputation requires socio-moral integrity and sustainability actions in social, economic, and ecological terms. However, the theories are not backed up by the fact that The 20 top ranked companies in Swiss include only three companies with good social reputation. (Klewes, 2009 p. 89)

2.4 Consumers' responses towards CSR

Consumers' awareness and trust are followed by consumers' responses. This includes information processing which is judging, reasoning, and making behavioural response (Miller, 1956). The action of processing CSR information also contains the steps: focusing on the information, judging company's truthfulness in doing CSR, reasoning the CSR towards the products, and the purchasing actions. Brown and Dacin (1997) mentioned that consumers may associate with companies within two sectors: Corporate ability associations which relates to consumer's perception about company's service and CSR (Corporate Social Responsibility) which relates to consumer's point of view about the company's character regard to socio-environmental aspects. The results of the study indicated that consumers' responses are directly influenced by the corporate social responsibility of a company.

2.6 Ethical consumer and green consumer

Ethical consumerism is defined as the choices that are made by consumers based on social and ethical components of the products (Auger et al., 2003) as well as sense and morals beliefs (Carrigan et al., 2004). Ethical consumers often confused with green consumers. According to Balderjahn (1988), green consumers are paying attention to environmental and animal welfare issues, whereas ethical consumers are concerned about the social issues such as labours, workers welfare, etc.

2.7 TRA (Theory of Reasoned Action)

In order to determine the influence of CSR in customer's purchase behaviour and intentions, behavioural study is needed. Fishbein and Aizen (1975) defined TRA / Theory of Reasoned Action as a form of attitude by suggesting that attitudes are caused by an attitude object, and in this case, the behaviour can predict a person's intention of doing something/ behaving. In this study, interest focused on the intentions of general customers, not particular generation/group of people.

2.8 Customer Purchase Decision /Consumer Buying Decision

Consumer Purchase/Buying Decision is defined as the decisions the consumers made about purchasing/buying either services/product. (Hawkins, Best, and Coney, 2001). Consumer Buying Decision is the final outcome of the consumers' awareness towards CSR process. The outcome of the decision is the action which is consumers' purchase actions. However, a consumer's decision-making process consists of 5 stages before the actual purchase.

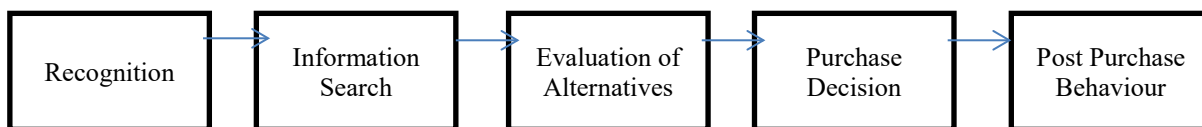


Figure 1. Consumer's Buying Process
Source : Armstrong and Kotler (2013)

2.9 Marks&Spencer and Zara's CSR

Inditex is a retail company that was built in 1963. Zara is one of the brands under this company. This organization covers every manufacturing process, including design, distribution, and sales. According to GRI (Global Reporting Initiative) in 2002 Inditex got an A+. Also, EIRIS (Ethical Investment Research Services) granted Inditex grade 4.3 points of 5 in the evaluation. In other hand, there is a lot of CSR issues in Inditex. Setem (2014) stated that wages paid in certain countries are way lower than what the company states in CSR policy.

Research Question 1

- What are the main reasons customers choosing certain products?

Research Question 2

- Does CSR influence consumers' trust and point of view towards the brand?

Research Question 3

- Is normative reputation (CSR related) more influential than expressive reputation (brand identity related) to consumer behaviour?

Research Question 4

- Are consumers aware of CSR issues from the brand they shop at?

Research Question 5

- How CSR influence the consumer's purchase behaviour (including intention)?

3. Method

3.2 Data Collection Method

Data Collection Method is divided into two groups: primary and secondary. For primary data collection method, the author interviewed 3 high street customers (Zara and M&S) and for secondary data collection, the author used literatures and online information about the theory used and company profiles.

3.3 Sample

The sample frame for the study was people who shop in both M&S and Zara. 4 participants were chosen for this interview based on their shopping habits in both brands. The age of participants ranged from 18-40, and they were all female. In terms of occupation, 2 of them were students and the other two were employees.

4. Results

4.1 Interview Results

Do you shop at M&S and Zara? (which brand you shop more often)

P1 : *Yes. I shop at Zara more than I shop at M&S.*

P2 : *Zara*

P3 : *I occasionally shop at both. I would say for clothes I shop at Zara the most.*

P4 : *I shop at both but prefer M&S*

What do you think about M&S and Zara as high street brands?

P1: *M&S is for older people I think, I shop only if I want to get something for my mum. Zara is more my style*

P2 : *Both are most likely easy to be found even in a mid- range cities. And Zara seems more popular in Indonesia's market nowadays. M&S are more expensive to compare with Zara. Yet both is indeed offer daily casual look to party with several certain designs which provide the trending fashion style, plus they offer pretty much affordable prices.*

P3 : *I would say that M&S generally has a target market of more elderly people whereas Zara appeals more to younger people. Zara is probably more affordable for everyday items than M&S – however the quality of M&S products is likely to be of a higher standard.*

P4 : *I think M& S fashion appeals more to middle age women like me . It also has more conservative fashion lines and quality products.*

Why do you choose to shop at M&S or Zara? (Including why you don't shop anywhere else, why the brands are special to you)

P1 : *I love Zara designs, they look good on me.*

P2 : *It's rather convenient than special. But indeed Zara offer good cutting to my small body. Their Cotton based Fabrics are also comfortable and the style is up to date Too*

P3 : *I choose to shop at Zara as there are many clothes that I like that are in my price range and they have a variety of styles. I choose to shop at M&S when I am looking for a specific item that I want to be good quality.*

P4 : *I choose to shop at M&S more as there is a M&S store in Galashiels and near my home so goods can be delivered there for pick up for free. I choose to shop at Zara for my daughters clothes as their fashion is more for the young and my teenager likes their fashion.*

Why do you trust the brands? Do you trust the brands because of the quality, design or image?

P1 : *Quality and design.*

P2 : *Quality and design, to be compared to the unbranded one. Cause indeed several local industry offer good design but the quality is rather so-so. And if the local industry has good quality, the prices are pretty much more expensive to compare to these two brands.*

P3 : *For M&S I would say I trust the brand in terms of quality, whereas for Zara I trust them in terms of design and image as I normally pick clothes based on the way they look in Zara.*

P4 : *I trust these brands because of their reputations for quality , design and they both have good return policies*

How do you see yourself as customer? Generally, do you buy things because of products quality, designs, brands, good image, or price? (please sort your answers based on the aspect you care most)

P1 : *I buy things because of the design, brand, price, and quality.*

P2 : *Quality first, then design, price next.*

P3 : *I tend to buy certain items, such as shoes and jackets/coats for quality so that I know they will last, however for some items such as tops I am not as bothered about quality and will choose the products based on the design.*

P4 : *As a customer I generally look for quality first and then price and whether the design is suitable for who the product is bought for.*

Can you mention what other aspects you see from the brands?

P1 : *Nothing more.*

P2 : *-*

P3 : *I would say the price in comparison to the quality is important – for example if I like a product but it is expensive for what it is I will often change my mind (unless I like it too much!).*

P4 : *Other aspects that I like about M&S is that they are more socially and environmentally conscious.*

Does issue from internet/magazine influence you in buying products? Is there any issue related Zara and Marks and Spencer that you're aware of?

P1 : *Not really. I don't think I know anything about it.*

P2 : *So far, No. But I try hard not buy the animal cruelty goods one..*

P3 : *Personally, I am not heavily influences my magazines however what I see on the internet for example adverts can sometimes influence what I buy. I am not aware of issues that Zara/M&S have however I would imagine that they could both have issues with labour, especially Zara as many of the clothes are not as high quality.*

P4 : *Yes ... Both magazines and Internet advertising influences my shopping habits as that is how I know what the current fashion trend is.*

Section B

(Handing articles containing issue/CSR actions about the brand) What do you think about the issue?

P1 : *That's awful.*

Does this issue make any difference in your buying decision?

P1 : *I am not comfortable saying this, but not really. This is not good, I understand, but we cannot resist buying things from Zara, can we?*

P2 : *Apparently yes. Every time I am about to buy something, I will remember this.*

P3 : *I don't think so. I feel bad buying from unethical company, but that doesn't stop me from buying it.*

P4 : *I don't shop at Zara very often, and I think M&S doesn't have ethical issue problem like Zara do.*

(Handing another article about company with good CSR)

Are you willing to buy products from the socially and eco-friendly company with more expensive price?

P1 : *If the design is nice, why not?*

P2 : *That depends on my capability of buying at the moment. Not going to splurge with money I don't have too. Since I am the person who most likely shopping clothing by needs, and to find a win-win solution is the homework to do.*

P3 : *As I said, if I like it too much, yes I will.*

P4 : *Yes, I don't mind.*

11. What do you think you will feel after purchasing from an ethical brand?

P1 : *Maybe I will feel like a good person.*

P2 : *I am glad I can support a good activity.*

P3 : *It will make me relieved, I guess.*

P4 : *To know yourself doing a good thing for other people is an amazing feeling.*

12. Would you buy products in the same brand again or you tend to be bored and like to buy from other brands?

P1 : *If I trust certain brand, I would buy from the brand again. Besides, I will always want to feel like a good person.*

P2 : *I am too afraid to trust new brand. I will stick to them.*

P3 : *Depends, I like to try new things too. But if this brand makes me feel great, I will be their loyal customer.*

P4 : *I am not a shopaholic and I only shop whenever I need to shop. I also only shop from the brand I trust, so yes I will buy from the same brands. In this case, I always shop in Marks and Spencer.*

Discussion

A. Preference between two brands

Table 1. Participants and Brand Preference

Participant	Brand (Q1)	Main Reason (Q2)
Participant 1	Zara	Style
Participant 2	Zara	Style
Participant 3	Zara	Affordable
Participant 4	M&S	Quality

Based on the questions of preference between two brands (Question number 1 and 2), the main reasons customers buy the brands are style / design, followed by price and quality of the products. As seen in Table 1, between the two brands Zara and M&S, 3 from 4 participants shop at Zara more often than M&S. This condition supports Gupta and Hodges (2012) theory, that the main considerations the consumers' buying certain brands are the price, quality, and style. These aspects are included in personal motives as written by Iwanow et al (2005).

Research Question 1

- What are the main reasons customers choosing certain products?

Answer:

Style/Design , Price, and Quality .

B. Reason trusting brands in general

Table 2. Participants and Brand Trust

Participant	Reason choosing the brand instead of other brands(Q3)	Brand Trust Aspects (Q4 and Q5)	CSR (Q6)
Participant 1	Design	Design – Brand – Price	x
Participant 2	Convenient	Quality – Design – Price	x
Participant 3	Design and price	Design – Quality – Price	x
Participant 4	Convenient (location friendly)	Quality – Price – Design	√

The question “why the brand is special to you” means indirectly asking about why people choose the brand over other brands and lead to the next question which is about “brand trust”. P1 and P3 put design as the first aspect they trust the brand, mean while P2 and P4 choose quality over design. It seemed no participants put CSR / ethical values of certain brands as the main reason why they trust the brands. These participants' brand trust aspects more based on expressive reputation from a brand (related to the brand identity and trend).

In Question 6 “what other aspects other than the participants have mentioned they see from the brand” , Participant 1,2, and 3 don't mention anything. However, Participant 4 mentioned that “M&S is socially and environmentally conscious”. This means Participant 4 still considers CSR adds good value in a brand, although it is not the main aspect.

Research Question 2

- Does CSR influence consumers' trust and point of view towards the brand?

Answer:

No, because all of the participants didn't mention CSR as the reason of why they trust certain brand. But CSR does influence some customers' point of view towards the brand. Participant 4 mention that company's CSR (Marks&Spencer) is other aspect the participant see in a brand.

Research Question 3

- Is normative reputation (CSR related) more influential than expressive reputation (brand identity related) to consumer behaviour?

Answer :

No. from the interviews, expressive reputation of a brand is more influential than the normative reputation.

C. Consumers' CSR Issue Awareness towards the brands

Table 3. Participants and CSR's issues awareness

Participant	Brand CSR issue influence in buying products (<i>before handing the articles</i>) (Q7)	Aware of any CSR Issue (Q7)
Participant 1	x	x
Participant 2	x	x
Participant 3	x	√
Participant 4	x	√

In Question 7, researcher tried to investigate the participants' awareness of the brands' CSR issue by asking them whether they know any issue related to the brand, and how that issues influence them in buying the products. Participant 3 and 4 are aware of the CSR issues of Zara (P3 mentioned about Zara's labour issue), but none of the participants are influenced. Participant 1 and 2 are not aware of the issue, so their buying behaviours are also not influenced by the issue. This supports the theory Pomeroy and Dolnicar (2009) wrote, which consumers buying behaviour won't be influenced if they are not aware of the CSR issues /activities of the brands.

Research Question 4

- Are consumers aware of CSR issues from the brand they shop at?

Answer:

Yes, although only from 4 participants are aware.

D. Consumers' Responses towards Brands' CSR

Table 4. Consumers' Responses towards Brands' CSR

Participant	Brand CSR issue influence in buying products (<i>after handing the articles</i>)	Buying products from company with good CSR with higher price
Participant 1	x	√ (Depends on the design)
Participant 2	√	√ (Depends on capability)
Participant 3	x	√ (Depends on design)
Participant 4	√	√

Table 4 shows consumers' responses about the Brands' CSR. Questions 8-10 were asked after P1-P4 were given the articles about the company CSR (Zara with the CSR Issue and M&S's successful CSR actions). At this time, all of the participants had already known about each company's CSR activities. Only two participants were influenced by the articles, meanwhile the other two mentioned they felt bad about it, but would still buy the products from the company with bad CSR. Although there are two participants who are influenced by the articles, when it comes to 'price', only 1 participant that is willing to buy product from company with good CSR with higher price with the intention of supporting the company's CSR activities. The other 3 participants are willing to buy products with higher price depends on the design and their capability in buying the products at that time.

Research Question 5

- How CSR influence the consumer's purchase behaviour (including intention)?

Answer:

All of the participants are willing to spend more for buying products from company with good CSR. But, only one from four participants are willing to buy products from company with good CSR with higher price with the intention of supporting the company's CSR activities.

E. Post Purchase Behaviour

Table 5. Consumer's Post Purchase Behaviour

Participant	Feeling	Repurchasing
Participant 1	(+)	✓
Participant 2	(+)	✓
Participant 3	(+)	✓
Participant 4	(+)	✓

All of the participants admitted they would feel happy when they purchase something from ethical company, and they will also repurchase from the brand if the brand suits them.

5. Discussions

5.1 Similarities

There were a lot of similarities among 4 participants interviewed. Four of them were all not influenced by CSR issues in buying fashion products before reading the articles. All of them were also put Design and Quality as the top reasons they trust certain brands. The other things these participants have in common is all of them do not mind spend more money for buying products from more ethical company, the difference is for three of them, their decision is based on the design and their capability. These 4 participants are also feeling positive, relieved, satisfied when they purchased products from ethical company. Participant 4 said, "To know yourself doing a good thing for other people is an amazing feeling."

5.2 Anomalies

Among four participants, Participant 4 has the most different opinion. Participant 4 mentioned CSR as the other reason she trusts the brand while the other don't. This is a good anomaly. As mentioned in the interview, Participant 4 has a daughter and she thinks M&S is for the people her age, which might be one of the reasons of this anomaly. Participant 4 might be different in term of age than the other participants, which makes her has different opinions about company's CSR and the buying decision.

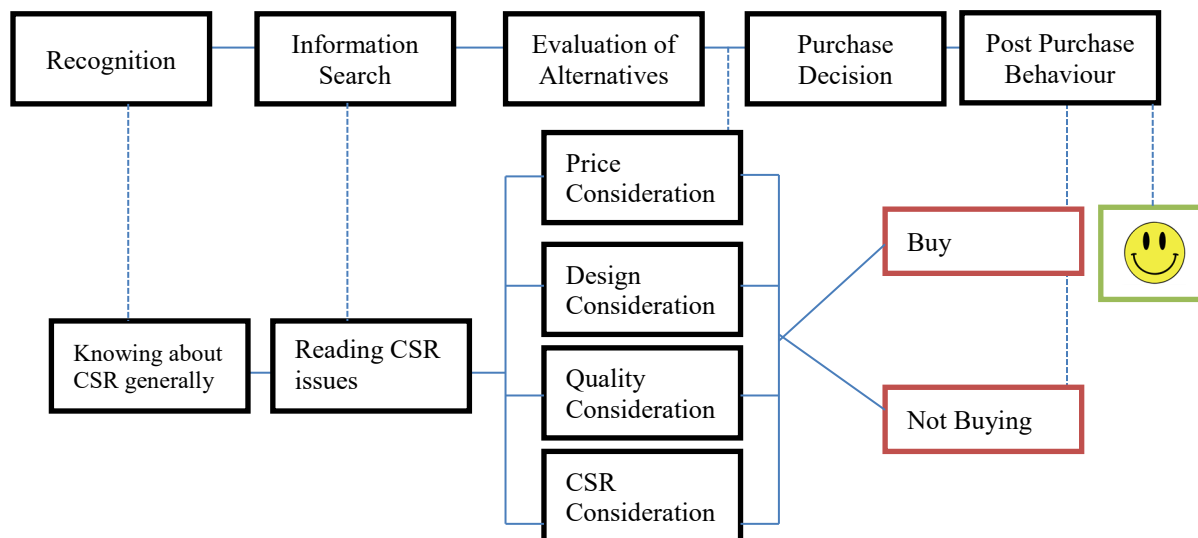


Figure 2. Consumers Buying Process based on CSR's Awareness

Figure 2 shows the consumer buying process in the context of CSR. This diagram is modified by the researcher, but the original is based on Armstrong and Kotler's diagram (2013) for the theory of consumer's buying process in general.

6. Conclusion

In conclusion, this research shows that the CSR does influence consumer's purchase behaviour, even though it doesn't influence all people. According to these participants, there are many things to be considered other than CSR. Purchasing products from company with good CSR also make the consumers feel relieved and satisfied. This feeling also makes these consumers want to repurchase the brand. Although there is only 1 person's buying behaviour that is directly influenced by CSR, but all of the participants agreed that buying from company that has good CSR make them feel relieved and safe. In other words, CSR can build brand trust, indirectly. A brand should think about their CSR activities, as well as the quality and design. When all of the factors are fulfilled, the brand will be successful and will be able to influence the customer to be more aware ethically.

7. Recommendation

This research was done by interviewing the general customers without asking about their age, occupations, status. For a deeper research, further research can be done to analyze deeper about the demographics factor that influence CSR Awareness (such as age, gender, jobs, ethnicity etc.) Maturity level in every age is different and CSR awareness in people from developing and developed country also different.

References

- Auger, P., Burke, P., Devinney, T.M., and Louviere, J.J., 2003. What will consumers pay for social product features?. *Journal of Business Ethics*, 42 (3), 281-304
- Auld, G., Bernstein, S. and Cashore, B. (2008). The New Corporate Social Responsibility. *Annual Review of Environment and Resources*, 33(1), pp.413-435.
- Ajzen, I. and Fishbein, M. (2002). *Understanding attitudes and predicting social behavior*. Upper Saddle River, N.J: Prentice-Hall.
- Balderjahn, I. (1988). Personality variables and environmental attitudes as predictors of ecologically responsible consumption patterns. *Journal of Business Research*, 17(1), pp.51-56.
- Becker-Olsen, K., Cudmore, B. and Hill, R. (2006). The impact of perceived corporate social responsibility on consumer behavior. *Journal of Business Research*, 59(1), pp.46-53.
- Berman, S., Wicks, A., Kotha, S. and Jones, T. (1999). DOES STAKEHOLDER ORIENTATION MATTER? THE RELATIONSHIP BETWEEN STAKEHOLDER MANAGEMENT MODELS AND FIRM FINANCIAL PERFORMANCE. *Academy of Management Journal*, 42(5), pp.488-506.
- Blomqvist, K. (1997), 'The Many Faces of Trust', *Scandinavian Journal of Management*, vol.13 no.3, 271-286.
- Brown, T. and Dacin, P. (1997). The Company and the Product: Corporate Associations and Consumer Product Responses. *Journal of Marketing*, 61(1), p.68.
- Buchanan, D. (2018). *The Zara workers' protest shows why fast fashion should worry all of us | Daisy Buchanan*. [online] the Guardian. Available at: <https://www.theguardian.com/commentisfree/2017/nov/08/zara-workers-protest-fast-fashion-worry-all-of-us> [Accessed 20 Apr. 2018].
- Carrigan, M. and Attalla, A. (2001). The Myth of The Ethical Consumer - Do Ethics Matter in Purchase Behaviour? *Journal of Consumer Marketing*. 18(7), 560-577.
- Carroll, A. (1979). A Three-Dimensional Conceptual Model of Corporate Performance. *The Academy of Management Review*, 4(4), p.497.
- Duncombe, R. and Heeks, R. (2002). Enterprise across the digital divide: information systems and rural microenterprise in Botswana. *Journal of International Development*, 14(1), pp.61-74.
- Eisenegger, Mark & Schranz, Mario. (2011). Reputation Management and Corporate Social Responsibility. *The Handbook of Communication and Corporate Social Responsibility*. 10.1002/9781118083246.ch7.
- Fishbein, M. & Ajzen, I. (1975). Belief, attitude, intention and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley.
- Gupta, M. and Hodges, N. (2012). Corporate social responsibility in the apparel industry. *Journal of Fashion Marketing and Management: An International Journal*, 16(2), pp.216-233.

- Habermas, J. (2000), *On the Pragmatics of Social Interaction: Preliminary Studies in the Theory of Communicative Action*, MIT Press, Cambridge, MA.
- Hastings, G. and Angus, K. (2011), "When is social marketing not social marketing?" *Journal of Social Marketing*, Vol. 1, Issue 1, pp. 45-53.
- Inditex 2012. Informe anual. [pdf]. La Coruña. Inditex S.A. Available at: <https://www.inditex.com/home-uk> [accessed 20 April 2018]
- Klewes, J. and Wreschniok, R. (2009). *Reputation Capital*. Springer Berlin Heidelberg.
- Miller, G.A. (1956). The magical number seven, plus or minus two: Some limits on our capacity for processing information. *Psychological Review*, 63, 81-97.
- Kotler, P. and Armstrong, G. (2013). *Principles of marketing*. Upper Saddle River, NJ: Pearson.
- SETEM 2012. La moda española en Tánger: trabajo y supervivencia de las obreras de la confección [pdf]. Ámsterdam. SETEM.org. Available at: <https://ropalimpia.org/recursos/moda-espanola-en-tanger-2/> [accessed 24 April 2018]
- Swaen, V. and Chumpitaz, R. (2008). Impact of Corporate Social Responsibility on Consumer Trust. *Recherche et Applications en Marketing (English Edition)*, 23(4), pp.7-34.
- Hawkins, D., Best, R. and Coney, K. (2001). *Consumer behavior*. Boston: Irwin/McGraw Hill.
- Wulfhorst, E. (2018). *Notes sewn into Zara clothes by unpaid workers are 'just the tip of the iceberg'*. [online] The Independent. Available at: <https://www.independent.co.uk/news/world/europe/zara-clothes-help-sewn-labels-tip-iceberg-human-rights-expert-a8057206.html> [Accessed 20 Apr. 2018].

Biography / Biographies

Christabel Annora P.P. is a lecturer in University of Surabaya, Surabaya Indonesia. She earned B.Eng in Architecture at University of Brawijaya, Malang, Indonesia and Masters of Science in Fashion and Textile Management at Heriott-Watt University, Edinburgh, Scotland.



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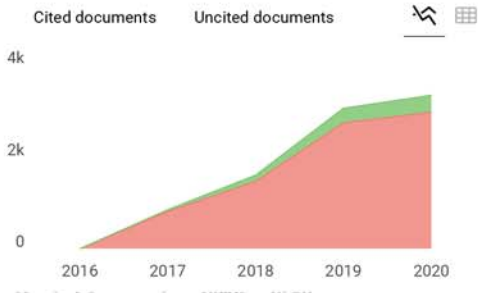
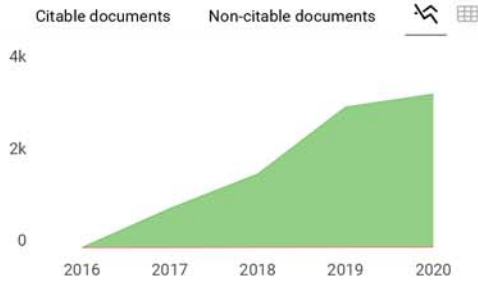
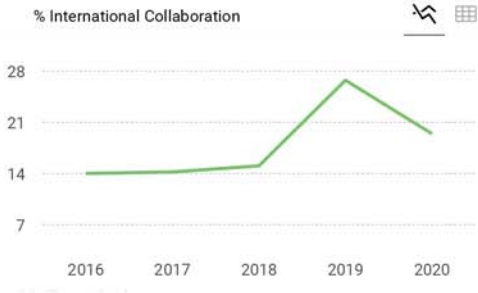
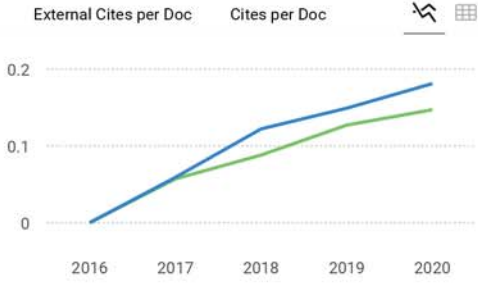
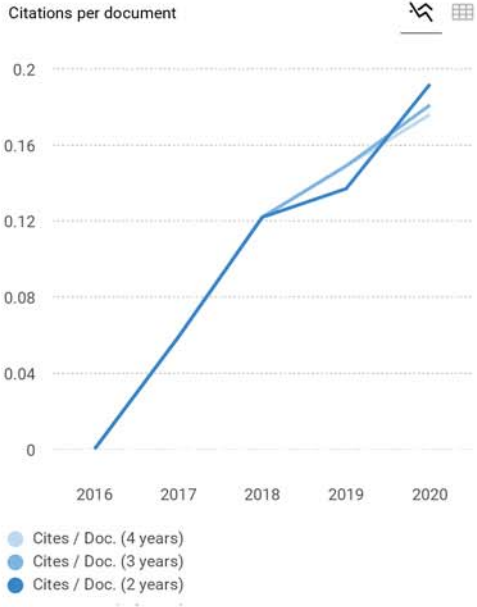
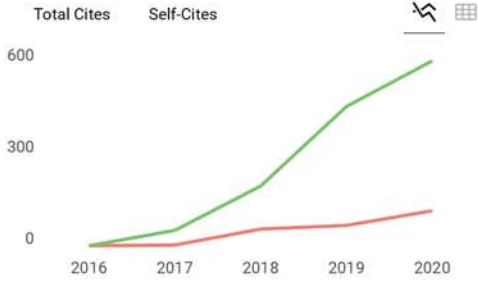
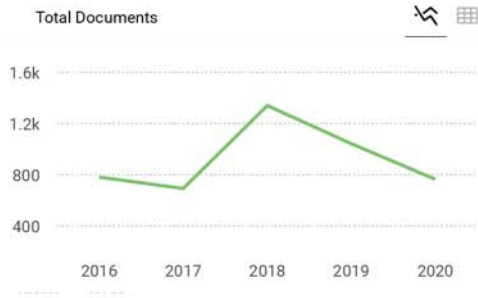
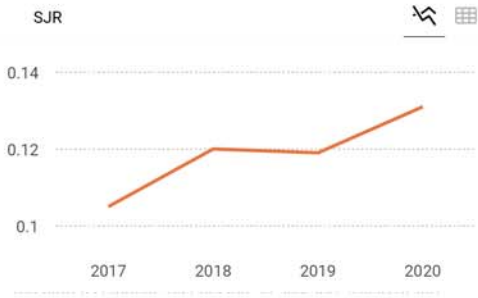
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Department of Chemical and Processing Engineering, Faculty of Engineering, Manicaland State University of Applied Sciences, Zimbabwe

C. Mbohwa, BioEnergy and Environmental Technology Centre, Department of Operations and Quality Management, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa

M. Mpeta, Department of Environmental Engineering, Faculty of Engineering, Chinhoyi University of Technology, Zimbabwe

E. Muzenda, BioEnergy and Environmental Technology Centre, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa

Department of Chemical, Materials and Metallurgical Engineering, Faculty of Engineering and Technology, Botswana International University of Science and Technology, P Bag 16, Palapye, Botswana

ID 012 Operations improvement in a manufacturing business of make-to-order special vehicles

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ID 013 Methane Generation from Landfill Waste as a Resource Recovery Strategy

Mercy Manyuchi, Department of Operations and Quality Management, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa

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C. Mbohwa, Department of Operations and Quality Management, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa

M. Mpeta, Department of Environmental Engineering, Faculty of Engineering, Chinhoyi University of Technology, Zimbabwe

E. Muzenda, Department of Chemical Engineering and Technology, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa

Department of Chemical, Materials and Metallurgical Engineering, Faculty of Engineering and Technology, Botswana International University of Science and Technology, P Bag 16, Palapye, Botswana

ID 014 Environmental Impacts for Setting up a Waste to Energy Landfill Site

M. M. Manyuchi, BioEnergy and Environmental Technology Centre, Department of Operations and Quality Management, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa

Department of Chemical and Processing Engineering, Faculty of Engineering, Manicaland State University of Applied Sciences, Zimbabwe

C. Mbohwa, BioEnergy and Environmental Technology Centre, Department of Operations and Quality Management, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa

M. Mpeta, Department of Environmental Engineering, Faculty of Engineering, Chinhoyi University of Technology, Zimbabwe

E. Muzenda, BioEnergy and Environmental Technology Centre, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa

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ID 015 Projector Nonlinear Gamma Effect Reduction for Fringe Projection

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ID 020 Integrated Quality Environmental Management Practices and its Impact on Operational and Environmental Performances in Food Processing SMEs

Jamaludin K.R., Hayati Habibah Abdul Talib & Syed Ali Raza Shah, Razak Faculty of Technology and Informatics, Universiti Teknologi Malaysia, Jalan Sultan, Yahya Petra, 54100 Kuala Lumpur, Malaysia

ID 331 The Impact of Corporate Social Responsibility on Consumer Purchase Behaviour in High-Street UK Retailers
Christabel Annora Paramita Parung, S.T., M.Sc., Faculty of Creative Industry, University of Surabaya, Surabaya, Indonesia

ID 332 Construction industry and women: A review of the barriers

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Noof Alawanati Msc, Construction management Coventry University

ID 333 An Energy Harvesting Alternative to Wellhead Gas Chokes

Albertus Retnanto, Ph.D. and Mohamed Idris, Petroleum Engineering, Texas A&M University at Qatar, Doha, Qatar

ID 334 The Dynamics of Community and Parents Participation: Huyula Culture Approach In Educational Financing In High School, Vocational School And Madrasah Aliyah (Islamic High School) In Gorontalo Province, Indonesia

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ID 335 A Multi-Item Inventory Control Model Using Multi-Objective Particle Swarm Optimization (MOPSO)

Ferdous Sarwar, Mahjabin Rahman and Mushaer Ahmed, Department of Industrial & Production Engineering, Bangladesh University of Engineering & Technology, Dhaka, Bangladesh

ID 336 Hidden Markov Models to Detect Early Equipment Failure

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ID 337 Development of Educational Process Capability Maturity Model

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ID 338 A Formulation of Priority - Based Financial Allocation Model for Student Development Activities in SPED Centers

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ID 339 Knowledge Management by Farmers in the Win-Win Relationship Project in Land Reform Areas, Northern Thailand

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ID 340 Demand Modelling and Establishment of Supply Chain Management for Coconut Sugar in the Philippines

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ID 341 Design issues in Maheshwar handcrafts (MP, India)

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ID 342 Early Detection of Equipment Failure Using One-class Support Vector Machine

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ID 343 Information Layout Designing of 'Barco Display Screen' used in State Load Despatch Centre at MPPTCL

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ID 344 Higher initial costs for renewables electricity: Emission, water and job-creation benefits offset the higher costs

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