Impact of Consumer's perceived Greenwashing in Advertisements on Green Brand Equity of the Firm: A moderated mediation model using elements of Green Branding

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Abstract

Purpose: Recent rise in global warming has led to more sustainable choices by consumers and increasing focus on environmental responsibility by the firms (Chen et al., 2016). Green marketing has emerged as an effective medium to advertise green messages such as "environmental friendly" to its consumers. However, not all firms have the capabilities to market green products to its audience which has led to an increase in practice of "greenwashing" by the firms; a practice of "misleading consumers regarding the environmental practices or environmental benefits of the product or service" (Parguel et al., 2011). If such unethical practices are unmasked by consumers this may have a detrimental effect on brand evaluations variables of the firm. Using Attribution Theory (Harvey and Weary 1984; Heider 1944; Kelley and Michela 1980), this study investigated relationship between consumer's perceived greenwashing in advertisement and green brand equity of the firm using two separate mediators brand credibility and green brand image. Furthermore, this study used perceived brand age of the brand as a boundary condition to test a moderated mediation model where it analyzed whether brand age plays a role in creating difference in perceptions of consumer about greenwashing in advertisements and its negative impact on green brand equity of the firm via two mediators green brand image and brand credibility.

Research Questions: This thesis investigated whether or not perceived greenwashing in advertisements by consumers have a negative impact on green brand equity of the firm. Furthermore, this thesis explored whether green brand image and brand credibility mediates the relationship between independent variable greenwashing and dependent variable green brand equity. Specifically this thesis investigated whether effect of greenwashing on green brand equity varies based on consumer's perception of brand age; such that whether or not impact of greenwashing on green brand equity is different for brand perceived as older by consumer as compared to those consumers who perceived brand as younger using a moderated mediation model.

Method and Analysis: This study utilized a quantitative research strategy and a pen & paper/online survey was conducted. All constructs were latent variables for which data was collected using existing items in the literature. All variables were measured on a Likert Scale. Respondents were shown a print advertisement prior to filling the questionnaire. The print

advertisement chosen of a petroleum brand; Pakistan State Oil (PSO) was chosen which presented both elements of claim and executional greenwashing. From a total of 300 questionnaires distributed to a convenience sample of general consumers in Lahore who are familiar or used this brand, 282 have been used in the data analysis. The collected data were analyzed using confirmatory factor analysis (CFA) to analyze the measurement model whereas the structural model was analyzed using path model for simple mediation and moderated mediation (Taylor et al., 2008).

Results: Results of the CFA confirmed reliability and validity of constructs. Results for structural analysis show perceived greenwashing in advertisements by consumers not only directly but indirectly as well effects green brand equity of the firm through brand credibility whereas green brand image does not mediates this relationship. Furthermore, results of moderated mediation analysis concluded that perceived brand age of the brand does play an important role in differentiating the impact of greenwashing on green brand equity of the firm for brands perceived as older as compared to younger by consumers; where the path co efficient calculated for consumers who perceived PSO to be older or mean age brand were significantly different from consumers who perceived PSO as a younger brand. Furthermore, the negative impact of greenwashing turned positive with the inclusion of information about perceived brand age of the firm.

Keywords: Perceived Greenwashing, Green Brand Equity, Brand Credibility, Green Brand Image, Perceived Brand Age, Green Consumers, Green Marketing

Declaration

I declare that this thesis was composed by myself, that the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or professional qualification.

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List of Abbreviations

Abbreviation	Full Form
GW	Perceived Greenwashing
PBA	Perceived Brand Age
GBI	Green Brand Image
BC	Brand Credibility
GBE	Green Brand Equity
CFA	Confirmatory Factor Analysis
PSO	Pakistan State Oil

CHAPTER I

Introduction

"Be not deceived with the first appearance of things, for show is not substance."

- English Proverb

In the twentieth century world witnessed boom in population and unparalleled economic growth leading to boom in mass marketing to satisfy needs of the growing population. Markets became competitive leading to emergence of formal marketing; which forced firms to think about increasing their market shares with respect to their competitors. Later, at the beginning of twenty- first century, the consequences of this rapid growth and mass production became evident in form of increased levels of greenhouse gases, depletion of ozone layer, deforestation, and global warming or climate change. For the new century, the challenge exists in the form of "sustainability"; which is to produce, consume and live in more equitable and sustainable manner (Peattie, 2003). Due to this challenge; "green" has gone main-stream. Today, more people are worried about sustainability related issues. Ottman (2011) suggested that consumer across the globe show at least some "shade" of green in their consumption choices; reflecting awareness about their choices and its consequences over time.

But, the challenge that marketers face today is to translate the good intentions of being environmental friendly or environmental sustainability, into meaningful practices as global economy is entrenched with environmentally-hostile management practices with powerful vested self-interests (Peattie, 2016). The two fold challenge faced by marketers is to react to changing customers' needs and environmental regulations, as they are source of significant external influence on social and ecological practices of firms in short term. Whereas, in the long term, firms need to reflect on sustainability demands by bringing fundamental changes in the management practices which underpin marketing and other functions of the organization (Shirivastava, 1995).

1.1 Green Marketing

As society becomes more concerned with the practices that are damaging the environment, businesses have evolved and started to tailor their behavior to address these new concerns. Green marketing is one discipline that emerged as a result of these valuable concerns of

society. Heenison and Kinnear, (1976) highlighted the concept of "ecological marketing" which explained the wave of environmental concern back in early 1970's. This early concept of "ecological marketing" targeted only industries with severe environmental impact and helped in creating new technologies to reduce their harmful effect. Later in late 1980s and early 1990s there was a new surge in the wave of environmental concern from both academicians and practioners. Some believe that integration of environmental concern into marketing theory is an extension of societal marketing concept; however an alternate view about green marketing is that it has developed as a response to the green movement of today. According to Peattie (2001) green marketing has evolved over time and has passed through three different phases. Phase one focused offering solutions to the environmental problems known as the "ecological phase", whereas the second phase focused on development of cleaner technologies and discovery or invention of products that will improve the ecological performance. In the late nineties and early twenties, the third phase emerged, named as "sustainable phase", which incorporated practices of product modification, packaging changes, alterations to production processes and modification in advertising according to the environmental needs. This phase of green marketing is prevalent in current times and marketers attempt to implement different activities to bring a holistic environmental experience to consumers.

Academicians and practitioners overtime have coined various terms such as "ecological marketing", "environmental marketing" and "sustainable marketing" referring to the concept of green marketing to show the evolution of the concept, but in this study they all are considered as synonyms. In the extant literature, green marketing has been defined differently by various scholars and associations. American Marketing Association (AMA) provides three definitions of green marketing. First, green marketing in the context of retailing is defined as "marketing of products that are presumed to be environmentally safe". Second, in the context of social marketing, green marketing is defined as "the development and marketing of products designed to minimize negative effects on the physical environment or to improve its quality". Third, environmental definition of green marketing provided by AMA, it "is the efforts by organizations to produce, promote, package, and reclaim products in a manner that it is sensitive or responsive to ecological concerns".

Chronologically in early nineties, Charter (1992), defined green marketing as "a holistic and responsible strategic management process that identifies, anticipates, satisfies and fulfils stakeholder needs, for a reasonable reward, that does not adversely affect human or natural

environmental well-being". Polanski (1994) has defined green marketing as "all activities designed to generate and facilitate any exchanges intended to satisfy human needs or wants, such that the satisfaction of these needs and wants occurs, with minimal detrimental impact on the natural environment". Recently, American Marketing Association defined green marketing as “marketing of products that are presumed to be environmentally safe” (Mishra & Sharma, 2014).

1.1.1 Need for Green Marketing

With previous research studies' confirming that green marketing is here to stay, it is important to look at factors that led to the need for green marketing and evolution of green markets. Organizations such as World Bank and Organization for Economic Co-operation and Development (OECD) presented a report in G20 Summit in Mexico (2012) suggesting that if governments across the globe do not take drastic policy measures, the condition of the environment is expected to worsen by year 2050. A few predictions made by OECD and World Bank for global changes by year 2050 are presented in the table below.

Table 1.1
Forecast about climate change

Temperature	Rise between 1.8 – 4.0 degree Celsius
Climate change induced calamities	500,000 expected deaths
Global water demand	Increase by 55%
Global terrestrial biodiversity	Decline by 10%

Source: OECD (2012), World Bank (2012).

With climate changes bringing changes to the earth's biodiversity, agricultural system of some countries has also resulted in soil exhaustion and salinity problems (World Bank, 2012). The results of these environmental challenges are so enormous that they can jeopardize the economic and human well being of future generations (OECD, 2008). As the economic theory suggests that we have finite resources and unlimited wants, therefore for earlier fulfillment of these wants producers made use of all possible resources at their disposal, but today looking at the consequences of their actions and the problems they may create for future generations, businesses must develop alternate ways to satisfy these wants, thus creating the need for "green marketing", which encapsulates achieving both individuals and organizations objectives. Green marketing caters to all stakeholders including customers, investors and employees. Firms create green products, modify their production processes,

and develop green credentials to be environmentally and socially responsible. Furthermore, in attempting to install green marketing, organizations indulge in creating advertisements and running campaigns that show organizations' commitment to environment, portraying image of environmental friendliness of the firm. During 1990's authors like Elkington (1994) and Porter (1995) suggested that greening the firm can act as a source of competitive advantage for the firms, such as "The Body Shop" emerging as pioneers to satisfy consumers demand for greener products. Interestingly, as there does not exist one particular definition for green marketing, it gives firms the ability to create their own definition based on their goals, opportunities and competencies; helping them achieve competitive advantage in the marketplace (Moravcikova, Krizanova, Kliestikova & Rypakova, 2017). Green marketing involves all stakeholders, among them one important stakeholder involved in this practice are consumers. Measuring the perception of consumers about the green marketing efforts made by firms, especially through green advertisements, is important because these perceptions affect brand credibility, brand equity and brand image (Chan, Ng, & Luk, 2013; Spry, Pappu & Cornwell, 2011).

1.2 Green Advertising and Consumer Response

Increasing trend of green consumerism has led to consumers being more involved in maintaining eco-friendly lifestyles by making choices that not only provide personal benefits but also are environmentally responsible. Considering this change in consumers' preference, many organizations have started focusing on good social and environmental performance, with more emphasis on the practice often referred to as "triple bottom line", which requires focusing on 3 things: people, planet and profits (Cronin et al., 2011). To limit the negative aspects of their business activities on environment, business organizations have started green initiatives such as green energy, organic food and eco friendly production processes, but one interesting aspect related to organizations' effort is the green marketing communications made by the companies to cater to these environmentally conscious consumers (Marchand & Walker, 2008). A large number of companies devote considerable amount of effort to promote their products as eco-friendly "green products" (Bhatia & Jain, 2013). As research findings suggest that investment in promoting the greenness of the organization has increased ten folds in the past twenty years (Terrachoice, 2009). Formally, green advertisements are defined as "advertisements including messages with appeals that are ecological, environmental and sustainable or nature friendly; and these ads are targeted specifically towards needs and desires of environmentally concerned stakeholders including consumers,

governments or other organizations" (Zinkhan and Carlson, 1995). Green advertisements may show direct or indirect relationship between the advertised product or service with the environment; or it may just highlight the importance of leading an environmentally responsible lifestyle with or without highlighting the product or service; or sometimes these advertisements may want to project an environmentally responsible corporate image of the organization, commonly known as Corporate Social Responsibility (CSR) which improves consumer's reactions towards the firm (Torres et al. 2012). Popularity of green advertising has prompted many organizations to build up their green image through green marketing (Chen & Chiu, 2016).

Green advertisements can present array of content such as educational content, for example helping consumers (or other stakeholders) to understand the importance of conserving water (nature of environmental issues). Green ads may be purely commercial, for example encouraging people to buy the company's products and become its regular customers. Green ads can be image-focused, for example, enhancing the firm's green corporate image (Menon et al., 1999). As environmentalist groups are among one of the stakeholders that the firms need to cater to. Corporations all around the globe use green advertising to support domestic and international environmental concerns (Belz and Peattie, 2009). On the other hand, research also suggests that the greenness of the products, that consumers consume believing they are green, cannot be verified. This fact undermines the consumer's confidence towards green advertising (Chen & Chang, 2013; Parguel, Benoit-Moreau & Russell, 2015; D. Schmuck et al., 2018). Green marketing and green advertising literature has grown significantly in the past few decades producing array of areas that have been well researched such as marketing management, environmental management, corporate environmental response, environmental corporate policy and green advertising (Leonidou and Leonidou 2011), but one area that has been overlooked and needs attention is ''investigating the effects of consumer perceptions of green marketing strategies toward green behaviors of consumers" (Cronin et al. 2011, p. 170). It is widely accepted that among the stakeholders (firms, consumers and government) who are targeted in green advertising or green marketing, the role of consumers is relatively important and more complex. Knowledge about marketing, psychology and advertising literature provides ample evidence that two general attitude change theories can be used to understand consumer response to green advertising, and to understand the link between attitude and behavior in all kinds of advertising. One theory is Elaboration Likelihood Model (Petty and Cacioappo, 1986), and the other theory is The

Hierarchy of Effects Model (Colley, 1961). Research findings about consumers' response to green advertisement suggest that consumers' involvement levels and other external factors moderate the relationship between marketing communication and consumer attitude; as well as relationship between marketing communication and consumers' purchase intention. In both cases it was reported that green claims in advertisements create more favorable brand attitudes among consumers as compared to ads without green claims (Mobley et al. 1995). Hence this study focuses on consumer's perceptions of green efforts, and how such efforts by marketers affect consumers' response (attitude) towards brand elements such as green brand equity, brand credibility, and green brand image.

1.2.1 Greenwashing in Advertisements and Consumer Response

Since the boom in green marketing efforts in late 1980's (Easterling et al., 1996) many firms made sincere attempts to minimize the impact of their products on environment, while on the other hand many firms have just exaggerated or even some times fabricated environmental claims in their advertisements (Garfield, 1991). Organizations create advertising with green claims (Divine & Lepisto, 2005) but many of these claims of being environmentally friendly are ambiguous and deceptive in nature (Chen & Chang, 2013). Such ads with deceptive and misleading environmental claims are referred to as greenwashed ads and companies producing such ads are considered to be involved in the practice of "*greenwashing"*. Greenwashing is defined as *"the act of misleading consumers regarding the environmental practices of organizations (firm level greenwashing) or the environmental benefits of a product or service (product level greenwashing)*" (Delmas & Burbano, 2011, p.66). The term was introduced in 1986 but later three categories of greenwashed advertisements were introduced in early ninety's (Kangun, Carlson & Grove, 1991).

Based on the definition stated above, researchers have differentiated between two kinds of greenwashing in the advertisements by the organizations. One is "*claim greenwashing"* which focuses on the use of textual material in the ads that create a misleading environmental claim (Laufer, 2003; Lyon & Maxwell, 2011), whereas the other type is known as "*executional greenwashing*" which involves presence of nature evoking elements in the ads which may give to consumers a perception of brand's greenness regardless of advertisers intent to convey or not to convey such image.

Many advertising regulations exist about the textual claims that are made in the green advertisements (Carlson, Grove & Kangun, 1993), but on executional elements such as pictures (endangered animals such as pandas, dolphins), sounds (birds chirping, sea), backgrounds (forests, mountains) chosen to communicate brand's or product's ecological character, no clear rules or regulations exist in most of the countries. The reason for this lack of regulations primarily is associated with lack of knowledge about these executional elements (Parguel, Moreau & Russell, 2015). Previous research studies suggest that the use of such subtle images and colors may trigger ecological inferences in the mind of consumer regarding brand greenness (Xue, 2014). Such activities create feeling of betrayal and skepticism among consumers (Finisterra do Paco & Reis, 2012); as well as discourage sincere firms to perform sustainable actions as they see others performing only "window dressing" rather than authentic action. The ultimate result is a slowdown in global movement towards sustainable consumption (Cherry and Sneirson, 2012).

A number of authors have pointed out that this practice of executional greenwashing has "sky rocketed" because of the increasing pressures from consumers, governments and environmentalist groups on corporations to think responsibly about society and make their practices eco-friendly (Baum, 2012; Delmas & Burbano, 2011). One result of such greenwashing practice is that green consumers cry foul, and tend to believe that firms are showing their products greener than they actually are (Han et al., 2011). Furthermore, negative attitude towards the green advertisements arise among consumers when they find that information presented in the green advertisements is neither reliable nor true (Newell, Goldsmith and Banzhaf, 1998). Kilbourne (1995) suggested that this lack of trust among consumers leads to relatively low credibility of green marketing, which often causes problems for green marketers to sell their products. In more recent times, this lack of trust among consumers on green advertising claims has resulted in research into the field of "green consumer skepticism" (Aji & Sutikno, 2015; Matthes & Wonneberger, 2014). False advertising, the difference between firm's actions and green image, and firms' vague claims about product green functionality reportedly gives rise to high consumer skepticism (Matthes & Wonneberger, 2014; Joeng, Jang, Day & Ha, 2014). Previous researchers have found presence of "intention behavior gap" where consumers exhibit higher intentions to purchase the green product but very few consumers actually purchase green products. It is concluded by researchers that reason for such gap has been high levels of consumer's skepticism (Albayrak, Caber, Moutinho, & Herstein, 2011). Many researchers now focus on reducing

this gap by the use of persuasive appeals and point of purchase information (Nguyen et al., 2019; Frank & Brock, 2018). Previous research studies have suggested that a positive green image, high environmental performance by the firms, and third party eco-labels may help to reduce the consumers' skepticism and may result in higher purchase intention and green behaviors among the consumers (Zarei, & Maleki, 2018; Goh, & Balaji, 2016).

Greenwashing by firms reduces firms brand equity and negatively affects firms' brand image (Akturan, 2018; Chen et al. 2016). Hence to enhance brand image, consumer satisfaction and brand equity, firms have to reduce their greenwash behaviors and enable consumers to decrease their skepticism towards the green claims of the firms (Chen et al. 2016). High perceptions of greenwashing in the minds of consumer often leads to negative evaluation of green ads as well as of green brand by the consumers (Nyilasy, Gangaharbatla & Paladino, 2014). Furthermore, if consumer's level of perceived deception is higher, it will result in lower organizational credibility, lower favorable attitudes toward the ads and brand, and decreased intentions to purchase the product being advertised (Newell et al. 1988). On the contrary it is also suggested that consumers with high level of environmental knowledge and expertise are not entirely resistant to greenwashing in advertisements (Parguel, Benoit-Moreau & Russell, 2015).

The research on greenwashing came under spotlight in the late 2000 when triple fold increase in green advertising was reported (Terrachoice, 2009). The focus of greenwashing research is primarily on its antecedents (Lyon & Montgomery, 2015), only a few studies have explored consequences such as consumer skepticism, consumer perceived risk, consumers evaluation of brand ecological image, and attitude toward the brand (Aji & Sutikno, 2015; Chen & Chang, 2013). Considering the prevalence and potential seriousness of greenwashing in the present times, the research in this area is rather limited (Jong, Harkink, & Barth, 2018), and mixed results were reported with respect to consequences of greenwashing practices (Jong, Harkink, & Barth, 2018; Parguel, Moreau & Russell, 2015; Nyilasy, Gangaharbatla & Paladino, 2014). Hence, it is important to further explore the impact of perceived greenwashing and generate empirical evidence about its positive or negative consequences on consumer's attitudes towards brand credibility, green brand image and green brand equity.

1.3 Current Study

The current study proposed and tested three models through which effects of consumer's perceived greenwashing on green brand equity of the firm via brand credibility and via green

brand image were measured. For this purpose this study used Attribution Theory (Harvey and Weary 1984; Heider 1944; Kelley and Michela 1980), borrowed from the discipline of psychology, which provides explanatory framework to understand consumers' way of processing green messages in green advertisements, and to explain the boundary condition, the role of perceived brand age and its impact on green brand equity via green brand image was studied.

1.3.1 Attribution Theory

To better understand the concept of consumer's perceived greenwashing in advertisements and its impact on green brand equity, Attribution Theory provides most salient explanatory framework as it has been used previously by researchers to explain advertising situations where consumers' skepticism was involved; and effects of such skepticism were studied. Attribution Theory stems from the discipline of general psychology (Harvey and Weary 1984; Heider 1944; Kelley and Michela 1980). The theory lays casual explanations for people's behavior when confronted with other's behavior in the social environment. In the field of consumer behavior use of attribution theory has been made in areas of sales, advertising and customer relationship management; and researchers found that consumers demonstrated similar attributional processes when exposed to behavior of the firms as they do with human behavior (Weiner, 1986; Oliver, 1993). With attributional processes the attitude change mechanism becomes complicated and if skeptical attributions arise, such attributions by the consumers may hinder formation of positive attitude or behavior change among the consumers; and such hindrance may ultimately affects the brand elements (Friestad and Wright, 1994). According to Nyilsy et al. (2013) consumers may become skeptical when they see discrepant green advertising and corporate activities; they may start to form negative attributions about the motives of the company. Simply put they might consider firms being engaged in practice of greenwashing, and firms not doing what they preach through their ads. Research findings suggest that such internal processes of consumers in turn ''upset'' the normal additive process of attitude formation (Friestad and Wright 1994) —where the positive stimuli such as green advertising progressively builds green credentials of the firm such as brand credibility, green brand image, so it shifts attitudes and purchase intentions in a positive direction while also adding onto green brand equity. Attributional processes may ''stand in the way'' of achieving this positive impact if consumer's perceived greenwashing level about green advertisement of the company are high. As greenwashing is considered an

unethical practice opted by firms, research has found that a firm's unethical behavior results in negative publicity, and in turn, negative consumer attitudes (e.g., Folkes and Kamins 1999).

1.3.2 Brand Age

As explained above, if consumers perceive that the firm is involved in unethical practices such as greenwashing then negative attribution may lead to unfavorable consumer responses. Interesting question arises here that how firms can protect themselves from the consequences of such acts and consumer perceptions? Previous researchers have listed variety of ways through which firms can redeem themselves if they get stuck in such crisis. Godfrey (2005) suggested that corporate philanthropy can help firm generate positive moral capital that can protect firm from the consequences of unethical behavior. Sometimes history of positive social activities and good social performance in the eyes of consumers may shield the firm from negative consequences of unethical practices (Kashmiri et al. 2017). Apart from the brand behavior to mitigate the crisis, research suggest that brand itself has the signaling power which may lead consumers to draw inferences such as price, brand name, packaging and sometimes country of origin (Dodds et al. 1991; Keller et al. 2011). All these components act as external cues that help consumer evaluate a brand. Sometimes such brand characteristics are used by consumers to evaluate and respond to unethical behavior of the firm. One such example is presented in the work done by Aaker et al. (2004) where they concluded that brands which were perceived by consumers as having exciting personalities were given more leeway than brands which were considered having sincere personalities following same ethical transgressions committed by both the brands.

Brand age is a common brand characteristic that is frequently used in brand communications; it has the potential to powerfully contribute towards brand evaluation by the consumer (Simon and Sullivan, 1993; Guillory 2012), but the literature on role of brand age in brand evaluations is rather scarce. A study conducted by Zhang, Kashmiri & Cinelli (2017) empirically tested the impact of brand age on consumer attitudes following a brand related crises. The study concluded that brand age does help in creating favorable attitudes towards brands considered older than towards brands considered younger.

Brand age is defined as the length of time the brand has existed in the marketplace. It has been reported that today's marketplaces are more competitive and represent survival of the fittest situation. As many as 95% of new brands fail every year in this competitive market (Reimann et al. 2012). Therefore, it can be assumed that the brands that have existed for a long period of time in the market may signal their competence in marketplace to consumers and effect their brand evaluations. Hence, brand longevity (indicated by an older brand) may signal qualities like competence, ability and consistency (Simon and Sullivan, 1993) which may mitigate the negative effect of unethical practices (such as greenwashing) and may improve brand credibility which refers to the degree to which consumers can believe in the validity of the product information presented by a brand, and it requires that consumers view the brand as having the ability (i.e., competence) and willingness (i.e., trustworthiness) to continuously produce a product that is in accordance with what has been promised (Erdem and Swait, 2004). Older brands are reported to have survived in market for so long they are predicted to have accumulated their own credibility and trust (Simon and Sullivan, 1993). It is assumed that consumers will associate brands perceived as old with brands having high brand credibility (Zhang, Kashmiri & Cinelli, 2017). Brand perceived as older may also improve its brand image because consumers will take into account the experience the brand has gathered over time in the marketplace which may give brand a positive outlook as compared to new brands which do not have such reputational capital. Previous research conducted by Johar (1996) and Godfrey (2005) suggest that prior opinions bias consumers' interpretation of new information. Hence prior positive opinion about the brand due to its age is likely to provide a "buffering effect" which may protect firm from the negative consequences of the unethical behavior (such as greenwashing). In other words, brands considered younger will face harsh backlash from consumers for their unethical practices as compared to brands that are perceived as older by consumers. The buffering effect can also be explained by the use of Confirmation Bias Theory where consumers tend to interpret the evidence provided to them in the light of already held beliefs and expectations (Nickerson, 1998). When consumers believe that a brand is credible due to its brand age, confirmation bias may lead consumers to be positively biased in their interpretation of that firm's activities. Consumers might give older brand benefit of doubt following any unethical practice (such as greenwashing). This is likely to give a competitive edge to older brands and may add onto their brand equity.

1.4 Greenwashing and Green Brand Image

In a marketplace where there are a lot of similar options available to consumers for one product; brand image plays a crucial role in differentiating a brand from the rest available in the market (Mudambi, Doyle and Wong, 1997). Brand image refers to "consumer's mental picture of a brand in consumers' mind that is associated with an offering and it contains symbolic meanings that relate to the particular features of the brand" (Cretu and Brodie, 2007). Brand image can also be defined as set of perceptions consumer's have in mind based on their brand associations (Cretu and Brodie, 2007; Keller, 1993). Therefore it is suggested that brand image includes benefits which are symbolic, functional, and experiential in nature for the consumers (Park, Jaworski and Maclnnis, 1986).

Similar to this concept of brand image; the idea of green brand image came into existence when the need for green products and green marketing boomed. Green brand image refers to "a set of perceptions of a brand in consumers' mind that are linked to environmental commitments and environmental concerns" (Chen, 2010). A vast amount of literature is available analyzing the impact of various consumer responses on brand equity of the firm but the concept of green brand image is relatively a newer one, hence, in the context of greenwashing, it is important to understand effects that consumers perceived greenwashing has on green brand image. The practice of greenwashing by firms can confuse the consumers since the deceptive advertising can make it difficult for them to evaluate the firm's product correctly (Ramus and Montiel, 2005). Consequently, this can damage green brand image of the firm as suggested by Chen et al. (2016). Hence this study has tested that high levels of perceived greenwashing by consumers in green advertisements is likely to negatively impact green brand image of the firm.

1.5 Greenwashing and Brand Equity

Brand equity is defined from two perspectives in the literature; first from the customer perspective that elaborates the value of a brand to the customers (Aaker 1992; Keller, 1993); and the second, from the financial perspective which focuses on the value of a brand to the firm (Simon and Sullivan, 1993). Keller (1993) was the one who defined the concept of brand equity from the perspective of the individual consumer and suggested that brand equity is the "differential effect of brand knowledge on consumer response to the marketing of the brand". In a marketplace loaded with thousands of similar options for one product type,

customer-based brand equity occurs when the "consumer is familiar with the brand and holds strong, favorable and unique brand associations in memory" (Keller, 1993). This concept of customer based brand equity is a relative new construct (Yoo et al., 2000).

Aaker (1991) defines brand equity as "a set of brand liabilities and assets related to a brand, its name or symbol, which add to or subtract from the value provided by a product or service to a firm and to that firm's customers". Based on the above definition, Chen (2010) coined the concept of green brand equity and defined it "as a set of brand liabilities and assets about green commitment and environmental concerns that are related to the brand name, and symbol that can either enhance or decrease the value given by the eco-friendly goods and services". Compared to brand equity, green brand equity is much more difficult to manage because of the rise of consumer environmentalism and international environmental regulations (Chang and Chen, 2014). Furthermore, rise in consumer skepticism due to greenwashing practices performed by the firms have made it even more difficult to manage green brand equity. As suggested above, greenwashing practices by the firm hinder the way green marketing works, as it creates more skeptical consumers about green claims in the advertisements. If the firms indulge in the practice of greenwashing, it will impede the development of green marketing as it will become difficult for consumers to distinguish the reality of green initiatives of the firm (Horiuchi, Schuchard and Townsend, 2009). Over time consumers have realized that firms usually mislead them and do not fulfill their environmental claims (Ramus and Montiel, 2005). Practice of greenwashing delivers false green claims which obstruct the prevalence of real green products and thereby lowers the effectiveness of green marketing practices (Polonsky, Grau and Garma, 2010).

Research suggests that enhancing green brand equity helps companies to have a competitive advantage over competitors by positioning and marketing their products differently (Ng et al., 2014). If firms generate positive customer based brand equity, it may lead to more revenue, less cost, and greater profits (Keller, 1993). Furthermore it is proposed that customer based brand equity enable companies to take better long-term and short-term marketing actions (Keller, 1993). For firms to manage the brand successfully, understanding customer based brand equity is important because the content of memory for the brand will affect the future effectiveness of brand strategies (Keller, 1993). Nevertheless, companies' greenwashing behaviors cause a crisis of trust (Guo et al., 2015) which, in turn, may affect brand equity.

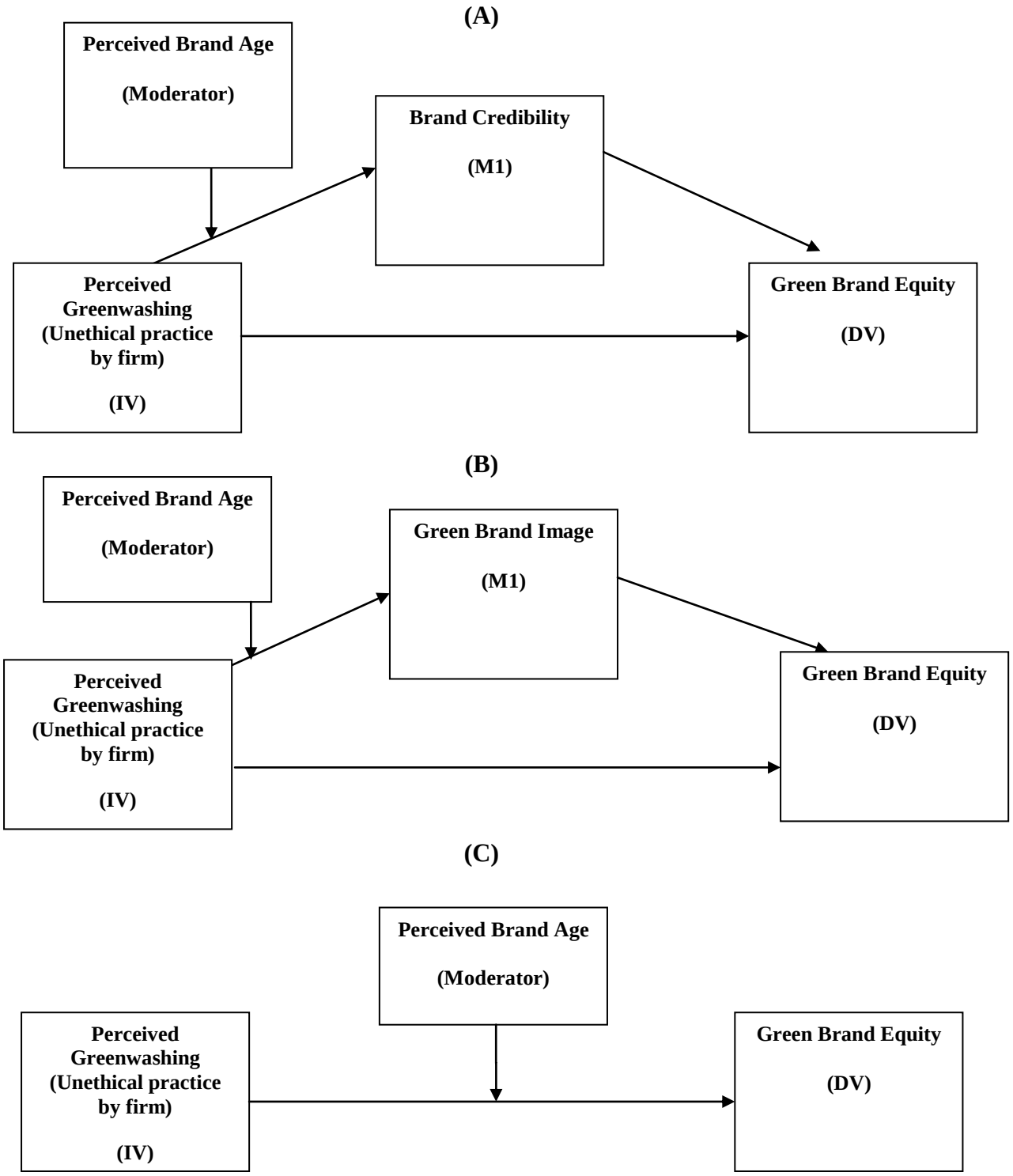
1.6 Greenwashing and Brand Credibility

Brand credibility is “the believability of the product information contained in a brand, which requires that consumers perceive the brand having the ability (i.e. expertise) and willingness (i.e. trustworthiness) to deliver continuously what has been promised” (Erdem et al., 2006, p. 35). Two dimensions of brand credibility are expertise and trustworthiness. Expertise is defined as "the ability of companies to actually deliver what they have promised" whereas trustworthiness is the" willingness of firms to deliver what they have promised" (Baek et al., 2010). Marketers build brand credibility by brand investment, consistent marketing-mix efforts, and clarity about marketing efforts by firm (Erdem and Swait, 1998). For the firms to be consistent it requires a degree of harmony and convergence among marketing actions and stable marketing-mix strategies (Erdem et al., 2006); whereas brand investments represent a company’s spending on a brand to improve it, indicating a long-term relationship and such actions assure consumers that brand promises will be kept. Lastly, clarity is lack of ambiguity (Baek et al., 2010). Research in the field of green marketing, suggests that it is difficult to build credibility because of consumer cynicism and marketplace uncertainty (Mendelson and Polonsky, 1995). In order for firms to build an eco-friendly image they must create brand credibility, because brand credibility raises perceived quality, while causes a decline in the information cost and perceived risk (Erdem and Swait, 1998). Furthermore, brand credibility positively impacts green perceived value and green brand image (Ng et al., 2014). Research suggests that brands having higher credibility exhibit stronger brand equity (Papasolomou and Vrontis, 2006).

Firms can build green credibility by cooperating with environmental protection bodies and groups. Furthermore, they can also introduce eco-friendly products by existing credible brands (Ng et al., 2014). Either way might be adopted by the firms, but it takes time and effort to build credibility. However, it may be easily destroyed by an instant wrongdoing such as any unethical practices by firm (e.g. greenwashing), since it is a matter of trust. In this context, research conducted by Chen and Chang (2013) reported that greenwashing creates consumer confusion, increases risk perception and negatively affects green trust.

Theoretical Framework: the following figure is proposed as theoretical framework for this thesis

Figure 1.1:
Three suggested processes by which perceived greenwashing in advertisements influences green brand equity of the firm via green brand image and via brand credibility with perceived brand age as a boundary condition.



The above figure 1.1 explains three independent models. First two models explain mediated moderation models testing impact of consumer's perceived greenwashing on green brand equity through brand credibility and through green brand image as two separate mediators; while perceived brand age acts as a boundary condition in both mediation models. Previously, green brand image and brand credibility has been used as mediators to test relationship between green branding variables and greenwashing but they have not been tested in the presence of brand age, hence this study uses three different models to test these relationships in the presence of brand age. The third model is simple moderation model testing whether relationship between perceived greenwashing and green brand equity is moderated by the perceived brand age.

1.7 Statement of the problem

Due to high preference for green products by consumers and external pressures on firms to be more environmental friendly; marketers today attempt to mask themselves as more environmental friendly than they actually are through the practice of greenwashing. Previous research suggests that if such practices are unmasked by consumers it will have a detrimental effect on consumer brand evaluations. Furthermore, recent research on brand age suggest that consumers are more forgiving towards the older brands as compared to younger brands if they are indulged in any ethical transgression. Hence, this research combined these two findings and analyzed the process through which consumer's perceived greenwashing in advertising affects green brand equity of the firm. The current research tried to explore the effect directly as well as; first through brand credibility, and in another model through green brand image. Perceived brand age acted as a boundary condition for all three relationships that were tested in the study; the purpose was to analyze differences in perceptions that may exist for older brands as compared to younger brands in consumer's mind with respect to brand evaluations if green washing was being practiced by the company.

The independent variable used in the study was perceived greenwashing. Study focused on two antecedents of green brand equity which serve as mediators in two separate models to understand perceived greenwashing effects. Mediators used in the study were (i) brand credibility and (ii) green brand image. The dependent variable used in the study is green brand equity whereas one moderator; perceived brand age was used.

1.8 Scope of the Study

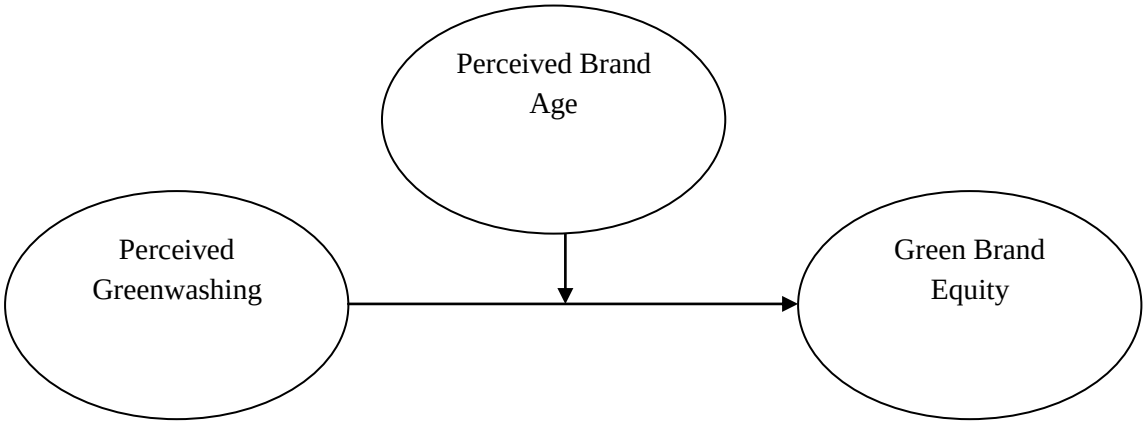
The scope of this study is limited to researching effect of greenwashing on one important brand evaluation variable, that is, green brand equity. Based on review of literature, it was decided to test effect of mediators in the relationship; and 2 mediators, namely, brand credibility and brand image, were used in separate mediation models. It was further theorized, based on literature, that brand age was likely to moderate the path from greenwashing to green image; as well as the path from greenwashing to brand credibility, thus resulting in moderated mediation.

This study was an attempt to answer the following research questions (RQ)

RQ1. Whether the relationship between perceived greenwashing and green brand equity was moderated by perceived brand age?

Figure 1.2

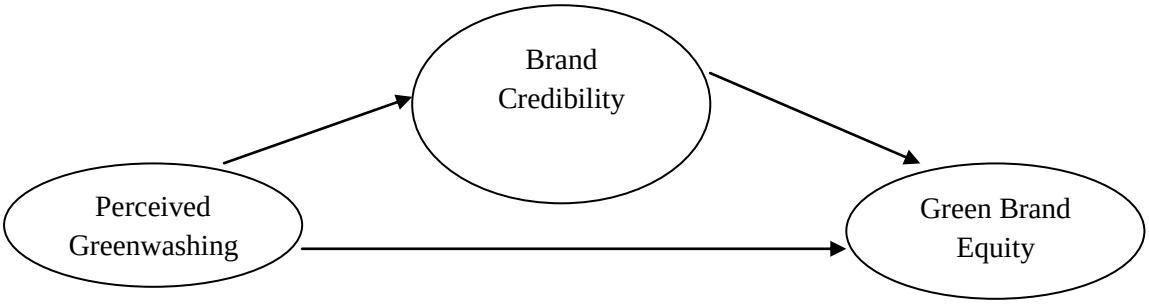
Perceived brand age moderated model for perceived greenwashing



RQ2. Whether the relationship between perceived greenwashing and green brand equity was mediated by brand credibility?

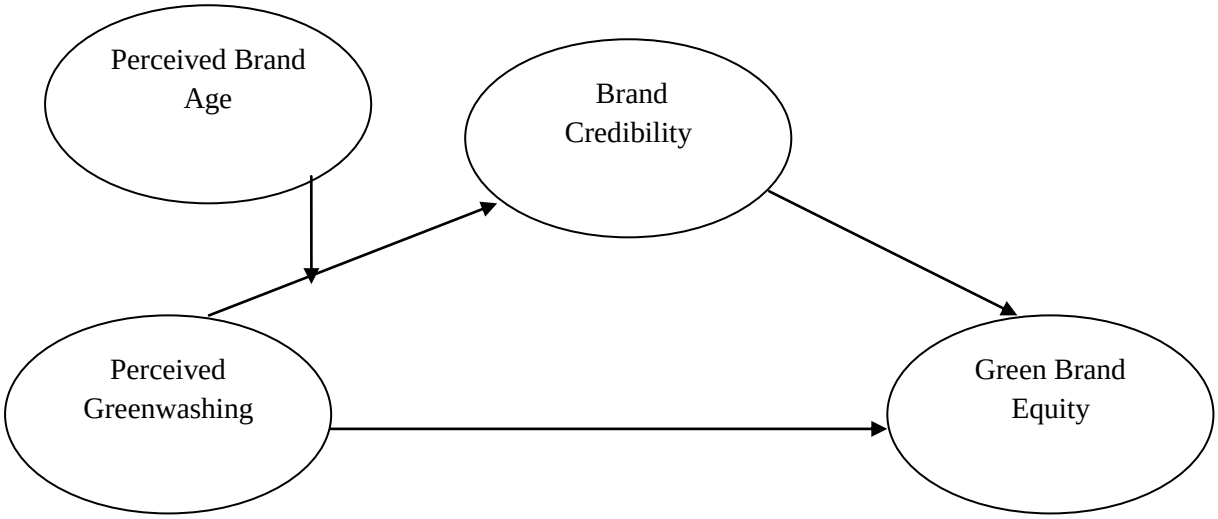
Figure 1.3

Brand credibility mediation model for perceived greenwashing



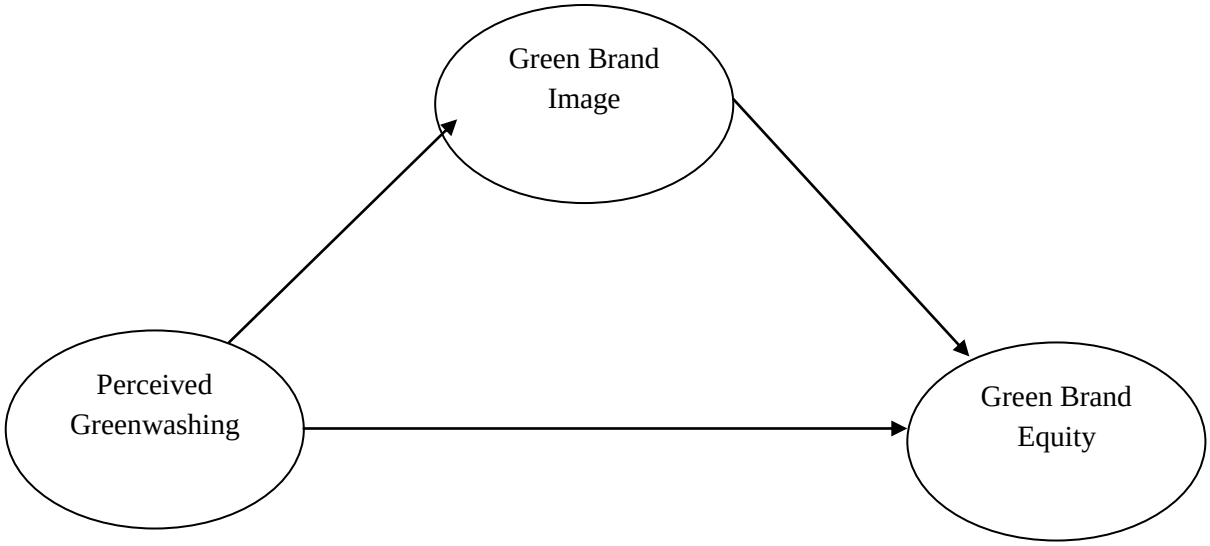
RQ3. Does perceived brand age act as a boundary condition for perceived greenwashing to impact green brand equity of the firm through brand credibility? Or (in other words) above stated mediation is moderated by brand age

Figure 1.4
Moderated Mediation model for perceived greenwashing



RQ4. Whether the relationship between perceived greenwashing and green brand equity was mediated by green brand image of the firm?

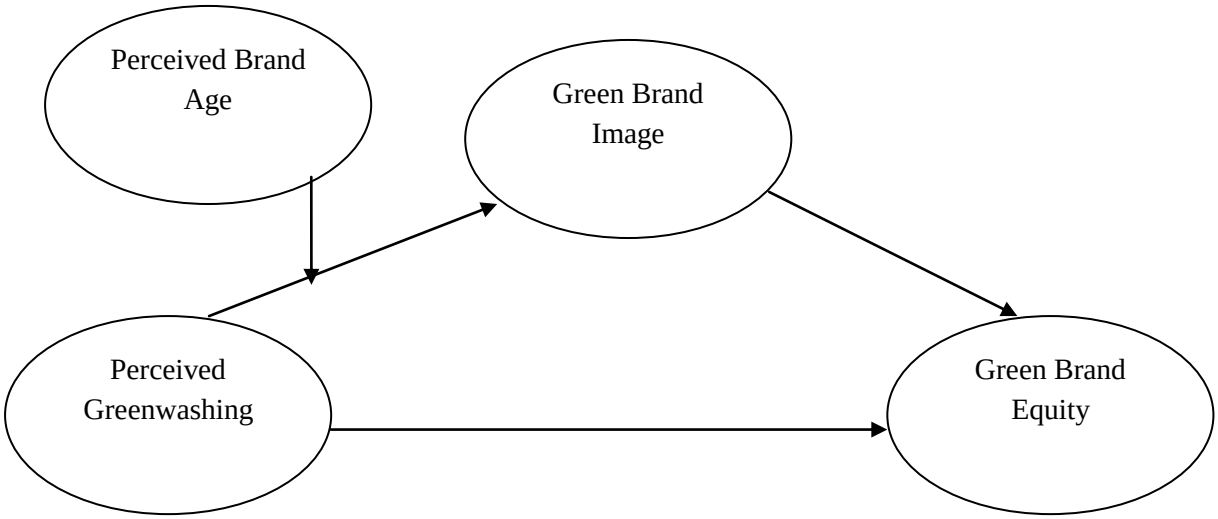
Figure 1.5
Green brand image mediation model for perceived greenwashing



RQ5. Whether perceived brand age acted as a boundary condition for perceived greenwashing to impact green brand equity of the firm through green brand image? Or (in other words) whether the above stated mediation (RQ 4) is moderated by brand age

Figure 1.6

Moderated Mediation model for perceived greenwashing



1.9 Assumptions of the Study

Following are the assumptions for the study:

1) A print green advertisement of a petroleum brand (product category which is not so eco friendly), highlighting the green features of the product was used in this study as stimulus. The selected advertisement had used both claim greenwashing as well as executional greenwashing practices.

2) The respondents were assumed to understand the statements in the questionnaire; and also the instructions given to them.

3) The respondents were assumed to provide honest responses to the questions in the study.

1.10 Conceptual Definitions of the Constructs

Table 1.2
Conceptual definitions of constructs

Construct	Definition	Author
Perceived Greenwashing	Consumers' ability to unmask greenwashing intentions in ads.	Chen and Chang (2013)
Brand Credibility	The believability of the product information contained in a brand, which requires that consumers perceive the brand having the ability (i.e. expertise) and willingness (i.e. trustworthiness) to deliver continuously what has been promised.	Erdem & Swait, (2004)
Green Brand Image	A set of perceptions of a brand in a customer's mind that is connected to environmental features and environmental concerns.	Chen (2010)
Green Brand Equity	A set of brand assets and liabilities about green commitments and environmental concerns linked to a brand, its name and symbol that add to or subtract from the value provided by a product or service.	Chen (2010)
Perceived Brand Age	Consumer's understanding of the age of a particular brand in a specified category. Age represents the length of time that a brand has existed	Guillory (2012)

Chapter II

2. Literature Review and Hypothesis Development

This section provides a review of the previous literature on all the independent variables used in this study and their relationship with green brand equity; in order to propose a conceptual model that illustrates how perceived greenwashing in advertisements effects green brand equity of the firm through green brand credibility and through green brand image with perceived brand age as boundary condition. This discussion involves theoretical underpinnings, explanation of research constructs and the conceptual framework to test the proposed conceptual model in the context of Pakistan.

2.1 Environmental Consumerism and Environmental Change

Environmental protection has become a public concern and the efforts to protect environment has increased tremendously in the previous years (Carlson, Grove & Kangun, 1993). Now consumers across globe have become environmentally concerned; and they are not only concerned with their environmentally friendly purchases but rather also about the impact of their purchase on the multiple processes from production to its disposal of related waste (Carlson, Grove & Kangun, 1993). Such consumers are referred to as "environmentally conscious consumers" who actively seek to use such products that have minimal impact on environment (Ottman, 1993). Due to such consumers in recent times, "environmental consumerism" is on the rise (Carlson, Grove & Kangun, 1993). With strong presence of environmental consumerism in the market companies have now adjusted their products and policies to appease these consumers in hope to make profits from such actions (Carlson, Grove & Kangun, 1993). Research has shown that these consumers often hold biases against corporations involved in green marketing and distrust their green advertising efforts (Zinkhan & Carlson, 1995). On the other hand a few of these consumers react favorably to these green advertising efforts and believe that the firm is actually environmentally conscious (Weber, 1990). Firms use green marketing to gain green consumer's attention and approval. They present their environmentally friendly corporate images through different mediums to attract environmentally conscious consumers in order to gain profit (Iyer & Banerjee, 1993). Research suggests that company's environmental reputation impacts consumers' purchase decisions (Dagnoli, 1991). Due to this concern of consumers, a few firms have truly lessened their negative environmental impact while others simply have made exaggerated or claims to be environmentally responsible where in reality they are not (Garfield, 1991).

2.2 Literature on Unethical Practices of Firms, Branding Strategies and Consumer Response

The recent rise in the number of green consumers has significantly impacted the CSR (Corporate Social Responsibility) and other environmental initiatives taken by the firms (Porter and Kramer, 2006). Many firms now invest large amount of money on green advertisements and CSR activities to be perceived as socially and environmentally responsible firms. In return of this effort they hope that consumers will form positive brand attitudes and purchase intentions (Forbes, 2012). Unfortunately, as green marketing gained momentum the phenomena of greenwashing also became increasingly prevalent. Greenwashing is defined as "intentionally misleading or deceiving consumers with false claims about firm's environmental practices and impact" (TerraChoice, 2010). Due to this there has been a rise in consumer skepticism and confusion and consumers are becoming more discerning of corporations promising to protect the environment but many failing to do so through their actions similar to the case of B.P oil spill crisis (Forbes, 2012). From consumer's perspective the emphasis on sustainability has been a main concern for a while now (Davis, 1993) with sustainable production and consumption being the organizational imperatives in today's world (Kotler, 2011). But not all companies get rewarded for being "green" as they are subjected to closer scrutiny by their stakeholders (government, consumer and competitors), which may deter them from advertising their sustainability goals and practices (Easterling et al., 1996). Since 1960's green messages in advertisements has become a common mean to communicate green messages to consumers (Easterling et al., 1996). But these green messages by firms do not always translate into favorable responses by the consumers. Furthermore, increase in consumer's skepticism and perceived deception lead to negative impact on organizational credibility (Newell et al., 1998; Vanhamme & Grobben, 2009). A vast body of research is now highlighting the importance of ethics related behavior and its harmful effects on the firm (Folks & Kamins, 1999; Vitell et al., 2010). Firm's unethical behavior can take variety of forms such as Target's credit card fraud (Kashmiri et al, 2017); environmental problems caused by Coca Cola cans in Belgium (Andrews, 1999), Volkswagen's environmental pollution caused by its car emissions (Hotten, 2015) or act of greenwashing in advertisements to be perceived as more environmental friendly (Ng et al., 2014). Regardless of the type of unethical behavior the firm is involved in; previous research has found that firm's unethical behavior leads to negative publicity which ultimately translates into negative consumer attitudes towards brand/firm (Folkes & Kamins, 1999).

With the advancement in technology and use of internet; this negativity against firm can spread exponentially and quite easily; hence it is important to look for ways through which firm's can protect themselves from such negative information (Lei et al., 2012; Dutta & Pullig, 2011). Previous researches has focused on impact of firm's unethical behavior on consumer attitude (Dutta & Pullig, 2011; Kashmiri et al., 2017) and how firm's can recover using strategic branding decisions such as corporate philanthropy and positive social performance history of the brand following an ethical crisis (Godfrey, 2005; Kashmiri et al., 2017). According to Aaker et al., (2004) brands with exciting personalities were given more leeway as compared to brands with sincere personalities by the consumers following an ethical transgression by the brand. Based on the same rationale, brand age a commonly used component in brand communication has the potential to powerfully contribute to consumer's brand evaluations (Simon & Sullivan, 1993; Guillory, 2012; Zhang, Kashmiri & Cinelli, 2017). Here, brand age represent the length of time the brand has existed (Zhang, Kashmiri & Cinelli, 2017). With markets becoming more intense and competitive the longevity of the brand in marketplace signals qualities like competence, skill and consistency (Simon & Sullivan, 1993). But no previous research has empirically examined the role of brand age on consumer's attitudes and brand evaluation following a brand's ethical transgression in the context of green marketing. In this research, when green advertising (the talk of the firm) and actual performance of the firm (deed of the firm) are different from one another; a perceived greenwashing effect is generated where firms actions are different then what is being told in the advertisement or in other words firm is portrayed as more green/environmental friendly then it actually is. Furthermore, the study tries to incorporate the idea of brand age as means to save the firm from its ethical transgressions in the form of greenwashing on the assumption that consumers may perceive older brands more credible and having expertise to deliver on their green promise as compared to brands perceived as younger by the consumers, hence reducing the negative impact of perceived greenwashing on green brand equity of the firm

2.3 Greenwashing: An Unethical Practice by Firms

With the rising concerns about global warming in the world, consumers around the globe have become more concerned about environmental issues (Chen & Chang, 2014) due to which firms opt to greenwash to make consumer's believe that the firms are environmentally friendly and responsible in order to seize green opportunities that are available in the market (Chen et al., 2018; Praguel et al., 2011). Greenwash is a misleading behavior in which green

marketing or green public relations (green PR) is deceptively applied to promote the perception that a firm's products, brands, or services are environmentally friendly (Parguel, Benoît-Moreau, & Larceneux, 2011). Furthermore, Cherry & Sneirson (2012) described greenwashing as "insincere, dubious, inflated or misleading environmental claims". According to Financial Times greenwashing is defined as "overstating *of the environmentally conscious attributes of a firm's offering and the understating of the negative attributes for the firm's benefit. Greenwashing can be explicit or implicit and can be expressed in many forms, including pictures, direct claims in text, symbols, labels, or even partnerships or relationships. These claims can be made in press releases, advertisements, on websites and even on the products themselves*". The idea of "greenwashing" originated from the term "whitewashing" which means to camouflage, cover up or mask. This term was first used by an American environmentalist Jay Westerveld in 1986, when he highlighted that hotels in America were greenwashing by directing consumers to reuse the towels in order to save the environment, however, in reality the hotels do not care about the environment rather they only do this practice to save cost and gain profit. Research suggests that greenwashing is kind of "creative reputation management", where firms try to hide their deviance (Laufer, 2003; Akturan, 2018). It is a common practice for firms that need to raise their market share for green products (Chen & Chang, 2013). Lyon & Maxwell (2011) concluded that firms often greenwash to selectively disclose positive messages about its environmental features of the product and hide negative traits to enhance sales in green market. Greenwashing can take many forms; firm might present wrong information to portray itself environmentally friendly, may make promises which it does not intend to deliver upon in future, or make false claims about its activities to appear less environmentally damaging. Hence, greenwashing is not always outright lies but most of the time exaggeration, understatement or vague claim that leaves room for interpretation.

Terra Choice (2009) identifies seven "sins" of greenwashing that firms are involved in when creating green advertisements for their products. First among these is the "Sin of hidden trade-off" where the claim made for the product being "green" is based on narrow set of attributes without mentioning other important issues. An example for such practice would be a paper making company highlighting its source of raw material rather than highlighting its production process which might not be environmentally friendly. Second is the "Sin of no proof" where the environmental claim made cannot be substantiated by the information provided by the advertiser or by any reliable third party certification. An example of such

practice would be a firm claiming to be organic by mentioning it on the packaging of the product but fails to provide any evidence related to it. Third is the "Sin of vagueness" where the claim made is poorly defined or so broad that its real meaning is likely to be misunderstood by the consumer. An example for such practice is taglines like "100% natural" which cannot be true as the ingredients used in the production may be environmentally harmful. Fourth is the "Sin of worshipping a fake label" where the product advertisement either use words or images that gives an impression of a third party endorsement, when in reality there is no such endorsements. An example for such practice is fake eco labels and tags that give an impression of third party endorsement. Fifth is the "Sin of irrelevance" where the environmental claim provided in the advertisement might be true but is irrelevant and does not provide consumers with information that may help them judge the product better. Sixth is the "Sin of the lesser of two evils" where the claim made is true in the product category but it distracts the consumer from the greater environmental impact of the category as a whole. Last is the "Sin of fibbing" which includes environmental claims that are simply false. Greenwashing is executed by companies through communication media, mainly by advertising. Green marketing literature defines two types of greenwashed advertising: claim greenwashing and executional greenwashing.

2.3.1 Claim Greenwashing

Claim greenwashing is done by using indefinite or arguable terms, generating false claims and manipulating claims to exclude necessary information (Kangun et al., 1991). In other words, claim greenwashing is “lying, lying by omission or lying through lack of clarity” (Parguel et al., 2015, p. 108). Since quite a time the use of deceptive claims has become a common practice among advertisers and marketers (Shabbir & Thwaites, 2007). In environmental advertising, advertisers can use two kinds of deceptive claims; one false appeals and second vague appeals. False appeals are demonstrably false claims based on objective evidence (e.g. a gasoline company claiming that its unleaded gas cause no pollution) whereas vague appeals are overly broad and poorly defined claims that create incorrect impression (e.g. " All natural") (Schmuck et al., 2018). False claims are outright lies which are considered to be a more explicit form of deception (Kangun, Carlson & Grove, 1991; Chaouachi & Rached 2012) whereas vague claims are rather more implicit in nature, as they represent poorly defined and broad claims that cannot be verified but do produce wrong

evaluations about product advertised by the consumers. These are more difficult to be identified as greenwashing than false claims (Xie, Madrigal & Boush, 2015).

2.3.2 Executional Greenwashing

Advertisers not only use the textual claims in their advertising campaigns to promote their goods but they often apply affect laden images of nature with verbal claims in advertisements of environmental products to communicate its ecological attributes (Matthes, Wonneberger & Schmuck, 2014). Executional greenwashing is about using nature-evoking elements in advertising such as nature imagery using colors (i.e. blue, green), sounds (i.e. birds, the sea) and natural landscapes (i.e. mountains, forests) (Parguel et al., 2015). But the presence of natural imagery can produce perceptions about product greenness without referring to the environmental features of advertised good usually referred to as executional greenwashing (Paraguel, Benoit-Moreau & Russell, 2015). Research suggests that the presence of green imagery can have positive effect on the consumer's attitude towards brand as compared to advertisements without such imagery ((Paraguel, Benoit-Moreau & Russell, 2015).

2.4 Greenwashing: Company's Perspective

According to Delmas & Burbano (2011) there are three forms of greenwashing drivers described as external, organizational and individual. External drivers are of two kinds market driven and non market driven. Non market driven factors include the lax and uncertain regulatory environment which makes it easier for the firms to greenwash. Market driven factors are the consumer's and investor's demand and their competitive pressure. Organizational greenwashing drivers include firm's characteristics where there is weak ethical grounds and high pressures to meet the targets and environmental commitments such organizations often indulge in greenwashing. Lastly, individual level drivers of greenwashing include cognitive tendencies such as narrow decision making accompanied with conditions of uncertainty which cause individuals to indulge in this unethical practice. According to Blome et al., (2017) organizational culture that fosters obedience to authority and base decision making on hierarchy in organization tends to suppress ethical values of individuals and act as a reason for managers to indulge in greenwashing practices.

2.5 Greenwashing: Consumer's Perspective

Greenwashing when studied from the perspective of consumers is known as "perceived greenwashing". Perceived greenwashing refers to consumers ability to unmask greenwashing intentions in ads (Chen and Chang, 2013; Schmuck, 2018). The idea of perceived greenwashing stem from consumer's ability to have analytical cognition which helps them unmasks greenwashed ads through the mechanism of rational cognitive persuasion (Schmuck et al., 2018). Carlson et al., (1993) concluded that consumers could perceive that a company is deceiving, confusing or misleading if their marketing campaigns often include environmental claims. Furthermore, consumers can also perceive greenwashing intentions even without firm making an actual verbal claim of being environmental friendly. The use of nature imagery, sound or symbols that hint sustainability can cause virtual experience of nature for the consumers (Schmuck et al., 2018). Previous research suggest that consumers can be easily manipulated about a company "being green" as green brands elicit positive emotions and some consumers feel better when they think they are using green brands (Hartmann and Ibáñez, 2006). However, greenwashing impacts negatively consumers' perceptions and behaviors as it stimulates green skepticism and engenders perceived risk (Lin et al., 2017; Chen and Chang, 2013) which make consumers question the reliability of green claims, and such questioning results in escalating consumers' confusion and risk perception (Chen and Chang, 2013). Similar findings were reported by Rahman et al., (2015) where consumers who identified hotels ulterior motive in environmental claim were more skeptical and responded negatively to intention to participate in linen reuse program or revisit the hotel. Consequently, negative attitude towards green brand is seen for consumers who are skeptical, and have low levels of environmental concern (Albayrak et al., 2013). With greenwashing practice becoming common among various brands, it has resulted in more cynical consumers by inducing their suspicions (Johnstone and Tan, 2015). Nyliasy et al., (2013) suggest that high levels of perceived deception and green skepticism leads to lower organizational credibility and perceived company performance. To reduce the suspicions of greenwashing among consumers; acknowledging economic motives instead of communicating environmental motives is a good approach as the consumers were reported to be more receptive to the energy company's message when it highlighted its economic motive instead of its environmental motive (De Vries et al., 2015). Newman et al., (2014) findings suggest that when companies communicate about green enhancements intentionally made to a product (primarily beneficial to the environment), consumers tend to become more

skeptical about the quality of such products. Similar to this idea, this study focuses on a petroleum brand; Pakistan State Oil (PSO), which made an improvement in its existing product E10 with focus on it being environmentally friendly promoting it with elements of executional and claim greenwashing, hence it is expected that the perceived greenwashing for this brand would be higher among consumers.

Although there has been a lot of talk and research into sustainability and green marketing but there is little research into green branding (Huang et al., 2014). This study tries to incorporate green branding variables such as green brand image and green brand equity with traditional branding variables such as brand age and brand credibility and tries to build a model testing relationships among these variables in the context of greenwashing. Following paragraphs provides literature review for these traditional and green branding variables and findings of the so far tested relationship in the context of greenwashing.

2.6 Green Brand Equity

Farquhar's (1989) presented the idea of brand equity, in which it is outlined as the barometer to determine the degree of value added by a brand to a product or service. Brand equity is a relative construct which can only be evaluated, when comparisons are made of the brand with its rival brands (Yoo et al. 2000). Formally, Aaker (1996) defined brand equity as "the assets or liabilities which are associated to the name, term, logo or emblem of a brand, whereby it may enhance or depreciate the value that are generated by a good or/and service to the companies' brands or customers" (p. 103). Based on this definition of brand equity, Chen (2010, p. 313) defines green brand equity as 'a set of brand assets and liabilities about green commitment and environmental concerns which are associated to the brand name, symbol and logo that can either elevate or decrease the value given by the eco-friendly goods and services'. The salience of managing green brand equity, in the growing environmental conscious era is that it enables firms to achieve competitive advantages by positioning their products differently in the market (Ailawadi and Keller 2004).

Chen (2010) proposed four novel constructs in green marketing literature; green brand image, green satisfaction, green trust and green brand equity, where the first three are the drivers of green brand equity. Using questionnaire survey method to collect data from Taiwanese consumers on electronic products, study concluded that green brand image, green trust and

green satisfaction are positively related with green brand equity, suggesting that investing on these three drivers may help in increasing the green brand equity of the firm.

Kang & Hur (2012) in their study conducted in South Korea using structured interview approach focused on testing relationship between novel constructs of green satisfaction, green affect, green trust, green brand loyalty and green brand equity. Results of the study concluded that perceived green trust; arising from eco friendly attributes of the product and green affect; charachterized by positive emotional consumption, are two important variables in building green loyalty and green brand equity for the firm.

Ng et al. (2014) revealed that green brand perceived value and green brand image positively affect green brand equity which helps the firm to position them differently among fierce competition. Furthermore, to manage their green brand equity Misra and Panda (2017) suggested that firms should focus on their environmental performance, environmental positioning and communications.

2.6.1 Studies testing the relationship between Greenwashing and Green Brand Equity

With the rise of consumer environmentalism and international regulations it has become more difficult for firms to manage their green brand equity as compared to brand equity in general (Chang and Chen, 2014). It was found that managing customer based equity is important for firms to gain competitive advantage in market (Keller, 1993). Similar can be said for firms portraying themselves as green to manage their green brand equity in order to maintain their green competitive advantage in market. Nevertheless, company's greenwashing behaviors can cause a crisis of trust (Guo et al., 2015) which, in turn, may affect its green brand equity.
In a recent study conducted by Akturan (2018) explored the relationship between greenwashing, green brand equity, brand credibility, green brand associations and purchase intentions using two local brands which were categorized as high involvement and low involvement products. The study used survey method to collect data from 500 respondents and used structural equation modeling (SEM) to test the hypothesis. Findings suggested that greenwashing negatively affects green brand associations and brand credibility therefore indirectly influencing green brand equity. The study attempted to study green branding constructs in relation to greenwashing practice and concluded that greenwashing not only

negatively affects purchase intention but also generates negative impact on relationships with brands.

Avcilar & Demirgunes, (2017) developed a perceived greenwash index and tested its impact on green brand equity of the firm using gas station companies as a subject of analysis in Turkey. The study proposed four predictors of green brand equity named as greenwashing, green perceived risk, green confusion and green trust. Results of the study concluded that perceived greenwashing and green brand equity have direct negative relationship. Furthermore, using data on 400 customers of gas stations and analyzing it using Partial Least Square (PLS) method results indicated that perceived greenwashing is positively related with green confusion and green perceived risk which ultimately have negative effect on green trust.

Chen et al., (2016) investigated the impact of greenwash practice by firms on green brand equity via mediation roles of green brand image and green satisfaction. The study used Taiwanese consumers and collected information regarding their purchase experience for electronic products in Taiwan. Using Structural Equation Modeling (SEM); results of the research verify that greenwash negatively influences green brand equity of the firm. Furthermore, greenwash negatively affects green brand equity via green brand image and green satisfaction. Hence, reduction of greenwash is an effective way to enhance firm's green brand equity via above mentioned mediators. Based on the above research findings this study also expects negative relationship between perceived greenwashing and green brand equity.

2.7 Brand Credibility

Brand credibility is "the believability of the product information contained in a brand, which requires that consumers perceive the brand having the ability (i.e. expertise) and willingness (i.e. trustworthiness) to deliver continuously what has been promised" (Erdem et al., 2006, p. 35). It has two sub-dimensions: expertise and trustworthiness. Expertise is the ability of companies to actually deliver what they have promised. Trustworthiness is the willingness of firms to deliver what they have promised (Baek et al., 2010). According to Erdem and Swait (1998) brand credibility is created and maintained by brand investment, consistent marketing-mix efforts and clarity. They also reported that credible brands enjoyed lower information processing costs and were associated with lower perceived risk (Erdem and Swait, 2004).

2.7.1 Studies testing the relationship between Brand Credibility and Brand Equity

Previous studies suggest that brand credibility helps to differentiate renowned brands from their less known counterparts (Aaker and Joachimsthaler 2000; Farquhar 1989; Keller 1993). Papasolomou and Vrontis (2006) reported that stronger brand equity prevails for those brands that exhibit higher brand credibility. Previous research also suggests that brand credibility is the central pillar around which a firm can build and manage its brand equity (Erdem and Swait 1998; Erdem et al. 2006; Spry et al. 2011). The novel construct of "green brand equity" is a subset of overall consumer based brand equity, making it plausible to be influenced by brand credibility in a similar way as brand equity is influenced. Hence, brand credibility is likely to positively impact green brand equity of the firm.

2.7.2 Studies testing the relationship between Greenwashing and Brand Credibility

As discussed above about green marketing practices; there is a rise in consumer cynicism and skepticism which may make it difficult for firms to build credibility (Mendelson and Polonsky, 1995). But in order to create an eco-friendly image brand credibility is of utmost importance, because brand credibility raises perceived quality, while causes a decline in the information cost and perceived risk (Erdem and Swait, 1998). Green credibility can be build through cooperation with environmental protection bodies or by introducing eco-friendly products by existing credible brands (Ng et al., 2014). Either way, it takes time and effort to build credibility. However, it may be easily destroyed by an instant wrongdoing, since it is a matter of trust.

Chen and Chang (2013) reported that greenwashing creates consumer confusion, increases risk perception and negatively affects green trust which is one component of brand credibility. Using sample of Taiwanese consumers who have purchase experience of local electronics products; the study uses SEM technique to investigate the proposed relationships. Results suggests that greenwashing by firms reduces the green trust consumers have in companies. Furthermore, the negative relationship between these two variables is mediated by green confusion and perceived risk suggesting that if firms want to reduce the negative impact of greenwash on green trust they must decrease consumer confusion and perceived risk.

Akturan (2018) suggested that brand credibility and green brand associations mediate the relationship between greenwashing and green brand equity. The findings of the study concluded that greenwashing by firms negatively affects firm's brand credibility and green brand associations which in turn indirectly influence green brand equity and purchase intentions of the consumer. Based on the above stated research findings this study also expects negative relationship between perceived greenwashing and brand credibility.

2.8 Green Brand Image

As the competition is fierce today in the marketplace, brand image plays a crucial role in the in helping consumers to differentiate among various options and helping firms to remain distinctive (Mudambi, Doyle, & Wong, 1997). Brand image refers to a "consumer's mental picture of a brand in consumers' mind that is associated with an offering, and it contains symbolic meanings that relate to the particular features of the brand" (Cretu & Brodie, 2007). Moreover, brand image is a set of perceptions about a brand reflected by its brand associations made by its customers on its subjective qualities (Cretu & Brodie, 2007; Keller, 1993). Hence, brand image includes symbolic benefits, functional benefits, and experiential benefits (Park, Jaworski, & Maclnnis, 1986). Based on this idea, green brand image refers to "a set of perceptions of a brand in a customer's mind that is connected to environmental features and environmental concerns" (Chen, 2010).

Zameer, Wang & Yasmeen (2020), reported key factors related to green competitive advantage in equipment manufacturing enterprises in China. Using Covariance based structural equation modeling and collecting data from managers and customers through surveys study concluded that green brand image is the main source in the process of reinforcing green competitive advantage for the firm. Study further concluded that role of customer pressure to reinforce green competitive is higher when it is mediated through green brand image suggesting that role of customers is important to ensure firms adopting green production techniques via green brand image. The findings related to the construct of green brand image have been mixed and needs further exploration in order to determine its relationship with various variables in green marketing and branding literature. A recent study conducted by Rahmi et al., (2017) analyzed the relationship between green brand image and green purchase intentions of the consumers and concluded that green brand image along with green awareness and green advertisements have no effect on the increase in consumer

purchase intention, which is contrary to the findings of many previous researches (Chen et al, 2010).

2.8.1 Studies testing the relationship between Green Brand Image and Green Brand Equity

Chen (2010) suggests green image as strong predictor of green brand equity of a brand. While presenting and testing relationship of four novel constructs of green trust, green satisfaction, green brand image and green brand equity, author concluded that green brand image directly and positively related to green brand equity. Furthermore green trust and green satisfaction are two partial mediators between green brand image and green brand equity. The findings of the study suggest that in order to increase green brand equity of the firm, managers must invest in resources that build company's strong green brand image, green trust and green satisfaction.

Similar to the model proposed by Chen (2010), Bekk et al., (2015) replicated the same model into different cultural context (German consumer sample) and extended the model to service brands testing for differences in male and female consumers. The study tested the relationship between green brand image and green brand equity via two parallel mediators green satisfaction and green trust. Furthermore, Bekk et al., (2015) extended the model to consumer response variable; positive word of mouth communication via brand attitude. Results indicated that green brand image is positively related with green brand equity whereas green brand equity had direct and positive effect on brand attitude and positive word of mouth communication. These findings suggest that green brand image can be altered by the managers that will allow them to influence its green brand equity which may alter consumer responses towards companies marketing strategies.

A study by Ng et al., (2014) studied why not all firms generate significant returns on their investment in green products and suggested that the failure is attributed to the inability of the firms to overcome consumer skepticism towards functionality of green product and inability to generate positive green image and green value in the minds of the consumers. The study concluded that perceived quality of the brand positively influences the green brand image of the firm which in turn positively affects green brand equity. Green brand perceived value and brand credibility were the other two parallel mediators used along with green brand image to test the relationship between perceived quality of brand and green brand equity. One of the

major finding of the study was that in order for brands to build strong eco friendly image, brand credibility and delivering on core functional benefits are two relevant factors that may help in building green brand image. Based on the above stated research findings this study also expects positive relationship between and green brand image and green brand equity.

2.8.2 Studies testing the relationship between Greenwashing and Green Brand Image

Research suggests that greenwash would harm green brand image of firms (Laufer, 2003). As study conducted by Chen et al., (2018) analyzed the influence of firm's greenwashing practice on consumers' green purchase behavior via mediation roles of green brand image and consumers' green brand loyalty. Study used sample of Taiwanese consumers who had purchase experience of green products. Using SEM technique to obtain empirical results, the study concluded that greenwashing practice of firms negatively influence green purchase behavior of the consumers. Furthermore greenwashing was found negatively related to green brand image and consumer's green brand loyalty which in turn are positively related with consumers purchase intentions. In other words, green brand image and green brand loyalty partially mediates the negative relationship between greenwashing and consumer purchase behavior. Firms must reduce the greenwash in order to generate favorable green brand image, green brand loyalty and to increase consumers purchase intentions.

Chen et al., (2016) investigated the impact of greenwash on green brand equity via green brand image and green satisfaction. Results of the study concluded that greenwash negatively influences green brand equity and green brand image of the firm. Furthermore, green brand image and green brand equity were found positively related. The findings suggest that in order to improve their green brand equity firms must reduce their greenwash practices that will enhance their green brand image. Based on the above stated research findings this study also expects negative relationship between perceived greenwashing and green brand image.

2.9 Perceived Brand Age

One important brand attribute, brand age, has thus far been overlooked in extant research though marketers use brand age commonly in brand communications which has the potential to powerfully contribute to consumers' brand evaluations (Simon and Sullivan 1993; Guillory 2012). As per knowledge no previous research has examined the effect of a brand's age on consumer attitudes about brand equity. Brand age reflects the *length of time that a brand has*

existed. With intense competition and brands dying out soon only the most competent brands can survive and thrive in the long term. In fact, it has been estimated that up to 95 percent of new brands fail every year (e.g. Reimann et al. 2012). Therefore, brand age, which conveys the brand's survival, may work as a signal, affecting consumers' inference making, and ultimately their brand evaluations. Specifically, longevity in the marketplace (indicated by an old brand age) may signal qualities like competence, ability, and consistency (Simon and Sullivan 1993). While previous studies have pointed out the potential importance of brand age for consumers' brand evaluations, little empirical research has examined its effect on consumers' attitudes, especially in the wake of a firm's unethical behavior.

Previous research studies have found that a consumer's prior perceptions of brand and consumer's relationship with brand effect consumer's brand evaluations, emotional attachment and commitment levels to brand (Einwiller et al. 2006; Schmalz and Orth, 2012), which can bias consumer's negative information processing in the presence of greenwashing. Also Moral Reputational Capital Theory (Godfrey, 2005) suggests that a firm's prior reputation can generate positive moral capital among communities and stakeholders and provide an ''insurance-like'' protection for the firm's relationship based on intangible assets (Godfrey 2005). This protection can contribute to a firm's recovery when it is involved in an unethical practice. As prior opinions bias consumers' interpretations of new information (e.g., Johar 1996; Godfrey 2005), it is expected that prior positive opinions of a brand due to its brand age will provide a buffering effect, which in turn will protect a firm from the consequences of its unethical behavior such as greenwashing in this case. In other words, consumers are likely to respond less negatively to an older brand's unethical behavior as compared to a younger brand, even if they have engaged in similar types of unethical practices. Therefore, this study investigates the effects of brand age on consumer perceptions of the brand in general (i.e., green brand image, brand credibility and green brand equity) in the context of greenwashing (unethical practice of deception in advertising). A limited amount of research has been done on construct of perceived brand age, where one study conducted by Guillory (2012), highlighted the importance of brand age in brand management. The study highlighted the fit between brand perceived age and preferred age by the consumer and how it affects consumer choices. By creating and testing multiple models involving brand age, study explicated the construct and understood its antecedents and consequences. In a second model of the same study explicated the brand age construct using Likert scale to understand the cues consumers use to understand age of the brand. Semantic differential scale

was further use to differentiate and assign attributes associated by consumers to younger and older brands.

Repace & Gertner (2014) suggested that brand age related factors can impact consumers attitudes and behaviors which might have significant implications for marketing, branding and advertising researchers and practioners. The study investigated the impact of perceived brand age on consumer attitudes when an established brand name introduces a new product to the market. Using experimental design, the study validated the findings that there were significant differences between consumer's attitude towards products expected by consumers to be bought by "older" or "newer" brands. The study suggested that in some cases older brands might have an advantage at being successful in introducing new products in the market as compared to the younger brands.

Zhang, Kashmiri & Cinelli (2017), identified brand age as an important variable in consumer's evaluation of the brand following an unethical practice. The study conducted two experiments where it assessed the effects of brand age on three types of brand evaluation variables; perceived quality, brand credibility and behavioral intentions of the firm. The findings of the study suggested that informing consumers about the older age of the brand not only enhances consumer's brand evaluation in general but also provide a buffering effect to save the firm from the negative consequences of its unethical practices and behavior. Furthermore, brand credibility was found to mediate the relationship between brand age and firms post crisis intentions. This study provides a boundary condition of mitigating effect of brand age on various brand evaluation variables. Using lead from the findings of this study, perceived brand age is used in this study as a boundary condition to test brand evaluations by consumers in the context of greenwashing (unethical practice by the firm).

2.10 Conceptual Development

With the help of The Attribution Theory, the proposed conceptual model for this study encapsulates perceived greenwashing and its impact on brand credibility, green brand image and green brand equity in the presence of perceived brand age as a boundary condition. Perceived greenwashing is a form of deception in green marketing that is if unmasked by the consumers will negatively affect its green brand equity. This relationship is mediated by two of the antecedents of green brand equity; green brand image and brand credibility. These two

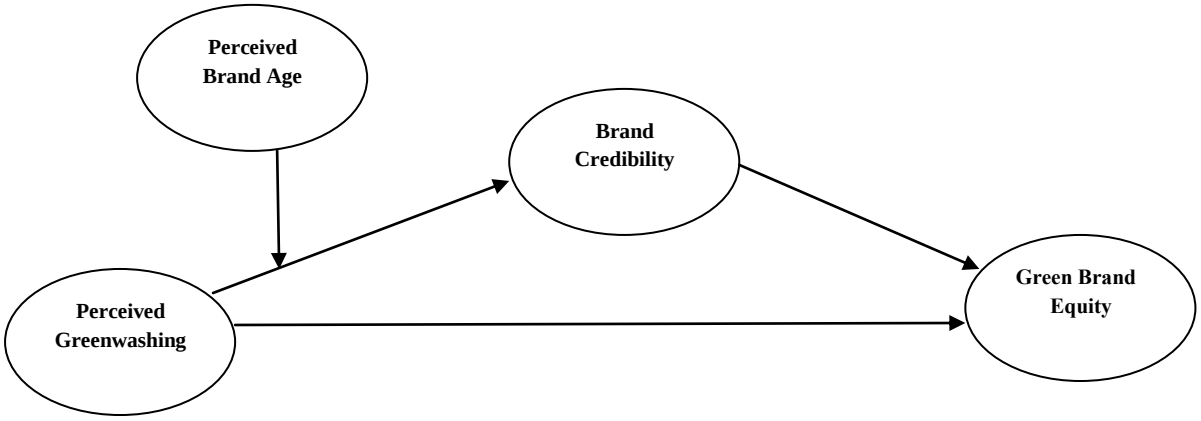
variables are used as mediators in two different models. The relationship of green brand image and brand credibility has been tested separately in previous studies in different contexts (Chen, 2010; Chen and Chang, 2013) but this research study tries to explore whether the relationship is affected in the context of greenwashing. The relationship between perceived greenwashing and brand credibility, and also relationship between green brand image and green brand equity is expected to be moderated by perceived brand age, which will act as a buffer for firms which are perceived as old in order to reduce the negative impact of greenwashing practice on green brand equity, green brand image and brand credibility.

In line with the above stated argument, following are the hypothesis and theoretical framework for the current study:

Table 2.1
Hypotheses

Sr No.	Hypotheses
1	H1: Consumer's perceived greenwashing is negatively related to firm's green brand equity.
2	H2: The relationship between consumer's perceived greenwashing and green brand equity will be mediated by brand credibility.
3	H3: The relationship between consumer's perceived greenwashing and green brand equity will be mediated by brand credibility and moderated by perceived brand age resulting in first stage moderated mediation.
4.	H4: The relationship between consumer's perceived greenwashing and green brand equity will be mediated by green brand image.
5	H5: The relationship between consumer's perceived greenwashing and green brand equity will be mediated by green brand image and moderated by perceived brand age resulting in first stage moderated mediation.

Figure 2.1
Theoretical Framework using Brand Credibility as Mediator

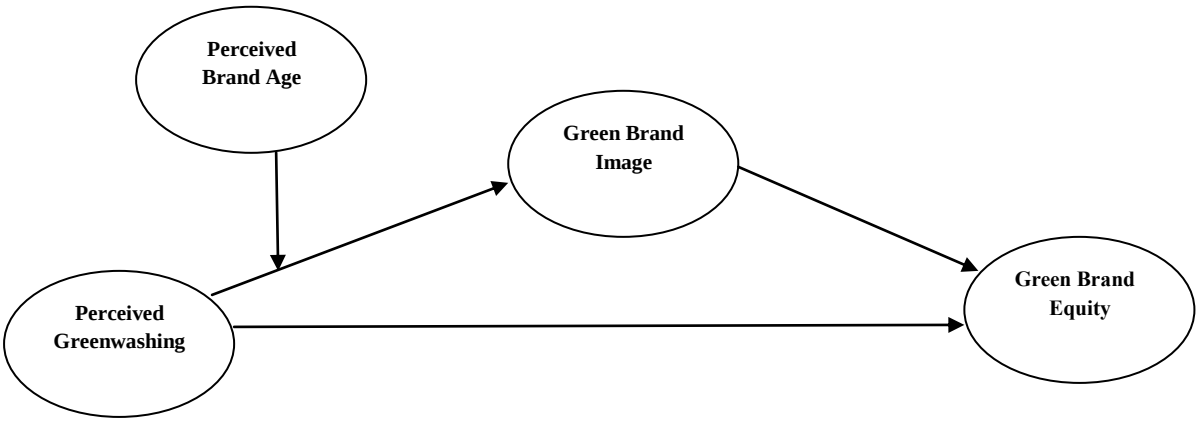


H1: Perceived Greenwashing → Green Brand Equity

H2: Perceived Greenwashing → Brand Credibility →Green Brand Equity

H3: Perceived Greenwashing * Perceived Brand Age → Brand Credibility→ Green Brand Equity

Figure 2.2
Theoretical Framework using Green Brand Image as Mediator



H4: Perceived Greenwashing → Green Brand Image → Green Brand Equity

H5: Perceived Greenwashing * Perceived Brand Age → Green Brand image → Green Brand Equity

Chapter III

METHODOLOGY

3.1 Introduction

This section explains the research design and strategy that was employed in order to empirically test the proposed relationships in this study. Research approach is discussed as to which paradigm (qualitative or quantitative) this study followed. Whereas, the research design section elaborates on methodological facets of this study such as: (i) how the advertisement was selected, its sources, and reason for its selection, (ii) which scales or instruments were used to quantify various constructs that are a part of this study, (iii) who were the respondents of the study, and finally (iv) how the data were analyzed and interpreted i.e. what techniques were used to analyze and interpret the data.

3.2 Research Approach

This section discusses the research philosophy, focusing on the epistemological considerations, ontological orientations, and research strategy for the current study. The epistemological considerations of any study helps in: (i) explaining what the knowledge in a particular area is, (ii) explaining how we know what we know, and (iii) explaining the relationship between the knower and what is known (Tuli, 2011). There are two main epistemological approaches which can be followed to design a particular study, positivism and interpretivism (Bryman & Bell, 2015). Positivism is similar to idea of normal science which follows a deductive approach; and advocates the application of approach used in natural sciences to study a social phenomenon (Neumen, 2003; Walker, 2010). Whereas in interpretivism, a social phenomenon is understood through the experience of the social actor.

On the other hand, ontological orientation explains how social reality is constructed. There are two ontological orientations objectivism and constructivism. In objectivism reality or social phenomenon is assumed to be present out there and needs to be explained as it is, whereas in constructivism the reality is constructed by the social actor and is explained through the experiences of the social actor (Bryman, 2015). Based on this explanation, quantitative research strategy is a form of positivistic and objective approach whereas

qualitative research strategy is a form of interpretative & constructionist approach for studying a particular social phenomenon (Bryman & Bell, 2015).

The current study followed a positivistic-objective approach and utilized a quantitative research strategy. In line with the quantitative research strategy a deductive approach was used. This involves review and identification of the relevant literature or theories first, then generation of hypotheses based on the literature review; and then an empirically testable theoretical framework was constructed (depicted in the previous chapter).

3.3 Research Design

Research design for any study provides a framework for the collection and analysis of the data. There are five types of research designs that guide how the research will be carried out (Bryman & Bell, 2015). These research designs include: (i) Experimental research design, (ii) Cross-sectional research design, (iii) Longitudinal research design (s), (iv) Case study research design, and (v) Comparative research design. Deciding what type of research design to follow depends on the type of research question that is being posed. For example, experimental and case study research designs focus mainly on why and how questions whereas cross sectional survey research design focuses on research questions that ask who, what, where, how many and how much. (Yin, 2003).

The following discussion sheds light on what type of research design was adopted and who were the respondents for the study.

3.4 Sample Research Tool

The main goal of the study was to investigate the relationship between the independent variable (perceived greenwashing) and two mediators (brand credibility and green brand image) on the dependent variable "green brand equity" while analyzing the role of perceived brand age as a moderator. This study used a cross-sectional method or a survey design for collecting data. Thus, the data were collected at only one particular point in time from the respondents. The data were collected using a non-probability sampling technique known as purposive sampling. The survey was conducted by using questionnaire as a tool to collect data. A pre-test of the questionnaire used in this study was conducted on 30 respondents before carrying out the original survey of 300 respondents. Respondents were customers who

have been purchasing gasoline from Pakistan State Oil (PSO) stations or were aware of the brand in Lahore, the second largest city in Pakistan. The choice and selection of the sample of consumers from general population was based on the practice of prior studies (Chen, 2012)

3.5 Sample Size:

According to Nunnally (1967) it is a "good idea to have at least ten times as many subjects as variables". However, in literature it was suggested later on that the ratio of measured indicators to latent variables should be used to decide the sample size (Boomsma, 1982; Marsh and Bailey, 1991). According to this perspective a ratio of 4 between indicator to latent variables is acceptable, the minimum number of observations should be 100 for this study; whereas if a ratio of 2 is used , then minimum number of observations required for this study should be 400 (Westland, 2010). But other rules are also available in literature. Hair et al. (1998) suggested that sample size should be at least 200 and should not exceed 400. Similarly, Kline (2005) has suggested that for complex models, the sample size should be more then 200, and has also suggested that there should be 5 observations per measured indicator. The total usable responses for this study were 282 from a total of 300 questionnaires distributed. Previous studies have also reported sample size of 200 or more (Chen and Chang, 2012). The sample size for this study is in accordance with the precedent set by the previous researches for their sample size.

3.6 Stimulus for the survey:

In order to evaluate the level of consumer's perceived greenwashing in advertisement, respondents were asked if they were aware of the brand Pakistan State Oil (PSO) or have a prior gasoline purchase experience with that brand. Respondents who were aware of the brand or had the experience of purchasing gasoline of this brand, were then shown a print advertisement of the brand which contained environmental advertising message and images.
There were many reasons for selecting printed advertisement of PSO. One reason is that among various other gasoline brand present in Pakistan, PSO has been active in developing environment friendly products for its consumers since 2006; and has been promoting them through advertisements. While selecting the advertisement it was kept in mind to look for advertisements that included environmental messages; so after screening of multiple print ads generated by the brand, "E10 gasoline EXTRA" advertisement, which is promoted as an

environmental friendly product by PSO in its produced advertisements, was selected from company's website. Another reason for selecting the above mentioned advertisement was that it included both environmental message and images to communicate greenness of this product.

Green advertising often applies affect-laden images of pleasant natural scenery along with textual appeals to communicate a product's ecological attributes (Matthes, Wonneberger, and Schmuck 2014; Segev, Fernandes, and Hong 2016). The current study focused on consumer's perception of greenwashing in an advertisement, and the greenwashing can be present either in form of "claim greenwashing" or "executional greenwashing". This selected advertisement included both aspects hence making it a suitable printed advertisement which could be used as stimulus the present study.

Environmental claims used in the chosen advertisement included messages such as "an environment friendly and economical fuel", "extra environment", "reduces carbon monoxide emission from your vehicle", which can be categorized into sin of vagueness, sin of no proof and sin of hidden tradeoff as suggested by Terrachoice (2009) using 7 sins of greenwashing. Hence, making the chosen advertisement a good choice to evaluate consumer's perceived greenwashing in the advertisements.

On the other hand, prior research suggests that images can impact the attitudinal responses of an individual (e.g., Chowdhury, Olsen, and Pracejus 2008). However, executional greenwashing which uses images of pleasant natural scenery in green advertising to induce false perceptions of a brand's greenness without referring to the actual environmental features of advertised product, such ads can create false perception about product greenness (Parguel, Benoit-Moreau, and Russell 2015, p. 108). Furthermore, results of recent research indicate that the presence of nature-evoking pictures in advertising positively affects consumers' perceptions of the advertised brand's ecological image, which in turn prompts more favorable attitudes toward the brand than attitudes prompted by the same advertising without imagery of nature (Parguel, Benoit-Moreau, and Russell 2015).

The previous studies focusing on executional elements of greenwashing highlighted use of nature imagery with birds, trees, green pastures, blue skies, waterfalls, mountains, hot springs as commonly used elements to project closeness of the product/brand with nature (Schmuck,

Matthes, & Naderer, 2018). The executional elements and images used in the selected PSO advertisement to project its greenness were "picture of green farm landscape in background with mountains and trees ", "use of green color in writing textual material", "clear blue sky. Hence this advertisement also included a few images that are form of executional greenwashing in advertisements. The stimulus advertisement used in the research is shown in Appendix (A).

3.7 Measurement:

Following are the measures for the above mentioned latent constructs (complete questionnaire in Appendix (A).

1) Perceived Greenwashing (IV): Consumers perceived greenwashing in an advertisement was measured by Chen and Chang (2013) perceived greenwashing **s**cale. The scale consists of five items. Responses for the items were recorded on a five point likert scale ranging from "strongly disagree" to "strongly agree". Sample questions from the scale include: (i) "This ad misleads with words in its environmental features" (ii) "This ad misleads with visuals or graphics in its environmental features" (iii) "This ad possesses a green claim that is vague" (iv) "This ad exaggerates what the product's green functionality actually is" (v) "This ad masks important information, which makes the green claim sound better than it is."

2) Brand Credibility (Mediator): Brand credibility was measured by using Erdem and Swait (2004) brand credibility scale. The scale consists of six items. Responses were recorded on a five point likert scale ranging from "strongly disagree" to "strongly agree". Sample questions from the scale include: (i) "This brand reminds me of someone who is competent and knows what s/he is doing"; (ii) "This brand has the ability to deliver what it promises" ; (iii) "This brand delivers what it promises" ; (iv) "This brand's product claims are believable" ; (v) "Over time, my experiences with this brand have led me to expect it to keep its promises, no more and no less" (vi); "This brand has a name you can trust".

3) Green Brand Image (Mediator): Green brand image was measured by scale developed by Chen (2010) for measuring green brand image. The scale has five items for which responses were recorded on a five point likert scale ranging from "strongly disagree" to "strongly agree". The items of the scale included: (i) "The brand is considered as the best benchmark of sustainable development"; (ii) "The brand is specialized in green reputation"; (iii) "The brand is excellent about environmental features"; (iv) "The brand is outstanding

about environmental performance"; (v) "The brand is reliable about sustainable development".

4) Perceived Brand Age (Moderator): Perceived brand age was measured by Guillory's (2012) scale of perceived brand age. The scale consisted of three items for which responses were recorded on a five point likert scale ranging from "strongly disagree" to "strongly agree". The three items of the scale were: (i) "Brand X is a younger brand"; (ii) "Brand X is a new brand" ; (iii) "Brand X advertisements target the young".

5) Green Brand Equity (DV): Green brand equity was measured by Chen and Chang (2012) scale of green brand equity. The scale consisted of four items for which responses were recorded on a five point likert scale ranging from "strongly disagree" to "strongly agree". The four items of the scale were: (i) "It makes sense to buy this brand instead of other brands because of its environmental commitments, even if they are the same" ; (ii) "Even if another brand has the same environmental features as this brand , I would prefer to buy this brand" ; (iii) "If there is another brand's environmental performances as good as this brand's, I would prefer to buy this brand"; (iv) "If the environmental concern of another brand is not different from that of this brand in any way, it seems smarter to purchase this brand".

6) Demographic Variables: Following demographic information was requested from the respondents.

a) Age
b) Gender
c) Education
d) Occupation
e) Perception about lifestyle (modern/conservative)
f) Area of living (rural/urban)

3.8 Data Analysis:

The data collected from the respondents were analyzed in two steps. The first step of the data analysis was conducting a Confirmatory Factor Analysis (CFA) which was followed by a Moderated Mediation Analysis. The following discussion describes both of these techniques:

3.8.1 Confirmatory Factor Analysis (CFA):

CFA is a confirmatory technique is a data reduction method that attempts to establish relationships among the observed and the latent variables as suggested by theory. The purpose of CFA is testing the reliability and validity of the latent variables and their measures (Schreiber et al., 2006). Reliability and validity of reflective latent constructs in any study can be measured through four components in CFA (Hair et al., 2011), these four components include: **(i) internal consistency**, which is measured by Cronbach's alpha; and should be greater than 0.70 for a latent construct (latent factor. **(ii) indicator reliability**: which is measured by indicator/factor loadings; which should be higher than 0.50 for each measured variable (Hair et al., 2009). **(iii) convergent reliability**, which is measured by average variance extracted (AVE); and should be greater than 0.50; or composite reliability (CR) greater than 0.70 for each latent construct (Malhotra & Dash, 2011). **(iv) discriminant validity** which was measured by the Fornell-Larcker criteria, which requires that "AVE of each latent construct should be higher than the construct's highest squared correlation with any other latent construct". Discriminant validity was also measured through Heterotrait-Monotrait (HTMT) ratio, the ratio for a latent constructs should be less than 1.

For this study, CFA was conducted in order to test the reliability and validity of the latent constructs using the criteria mentioned above. After establishing the reliability and validity of all the latent constructs used in this study (results of the reliability and validity of latent constructs are presented in Chapter-IV), a moderated mediation analysis was conducted.

3.8.2 Mediation Analysis:

As in this study mediation and moderated mediation analysis was performed, it is important to understand the different types of mediations. In the following paragraphs this detail is given along with guidelines about how to interpret them. Then follows explanation about the fundamentals of moderation and then how the presence of conditional process is analyzed in the form of a moderated mediation model.

Mediation analysis explains "how and by what means, an independent variable (X) affects a dependent variable (Y) through one or more potential intervening variables or mediators" (Preacher & Hayes, 2008). In mediation analysis a single mediator variable or multiple

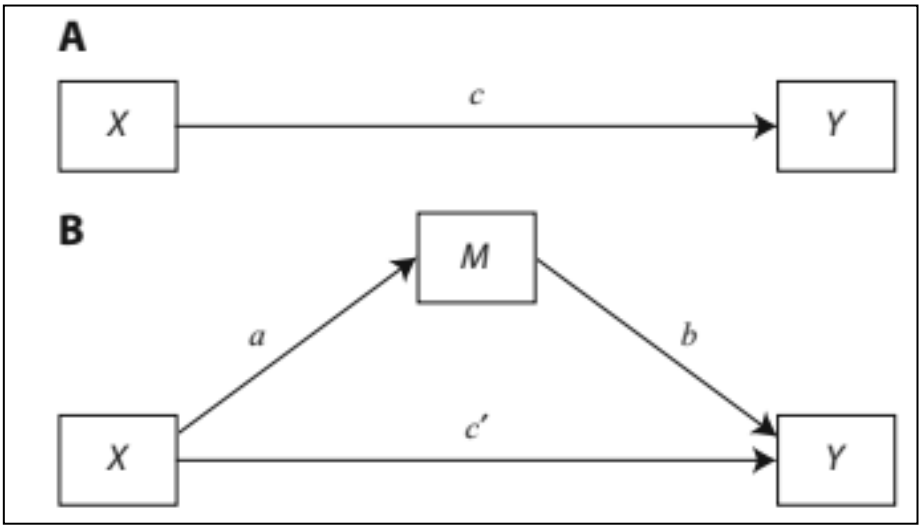
mediator variables between X and Y are responsible for variation in Y or the outcome variable. Therefore, various types of mediation models based on the number of mediator can be used to estimate the relationship between independent variable (X) and dependent variable (Y).

Simple mediation model involves a single mediator which explains the causal relationship between X and Y (Shrout & Bolger, 2002). This model postulates that X indirectly causes an effect on Y through a single mediator variable (M). Whereas, the mediation process that involves simultaneous mediation by multiple mediating variables is known as multiple mediation (Preacher & Hayes, 2008). In other words, in multiple mediation models, multiple mediators can impact the relationship between X and Y. A type of multiple mediation model in which there are two inter-connected mediators (M1 and M2) between X and Y is known as the double mediation or sequential mediation model.

Figure 3.1 below depicts a single mediation model and shows how a variable X affects a variable Y through a mediator M. The causal effect of X on Y can be apportioned into the direct effect of X on Y in the presence of mediator (path **c'**) and the indirect effect of X on Y through mediator M. The indirect effect of X on Y through mediator M can be represented by two paths (or 2 regression co-efficient), i.e. the path **(a)** from X to M and the path **(b)** from M to Y. Therefore, the indirect effect passing through the mediator M can be written as the product of these two path coefficients i.e. the indirect effect of mediator on the relationship of X and Y can be written as the product of **(a*b)**.

Figure 3.1 below depicts the total effect **(c)** of X on Y which is the result of both the direct effect and the indirect effects on the relationship between X and Y. Through the above discussion it can be extrapolated that a simple mediation analysis generates 4 paths (**a** and **b, c~, and c**) and 3 effects (direct effect, c~, and indirect effect, a*b, and total effect, c).

Figure 3.1
Simple Mediation Model



Simple or Two Path Mediation Between X & Y gives us:

1. Indirect Effect= a*b or a.b
2. Direct Effect (c')= c-(a*b)
Depicted in Fig. B

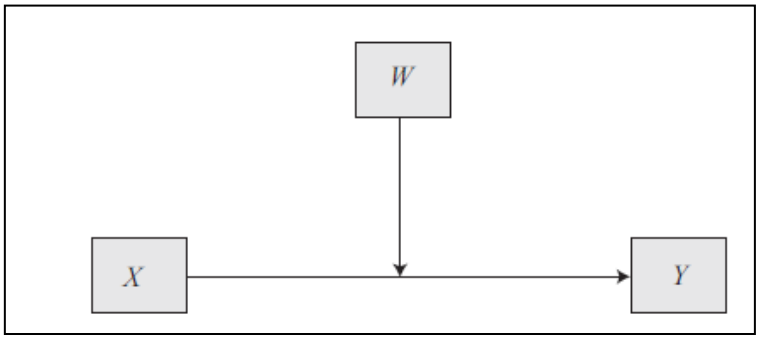
3. Total Effect (c) = c'+(a*b)
Depicted in Fig. A

3.8.3 Moderation Analysis

Many researchers believe a particular effect is contingent upon one thing on another. One effect may be greater for men as compared to women; or a group of younger consumer might be influenced more by stimuli than the older consumers. When an investigator seeks to determine whether a certain variable influences the size of one variable's effect on another, a moderation analysis is the proper analytical strategy (Preacher & Hayes, 2008). The concept of moderation effect can be explained through analyzing the effect of *X* on some variable *Y* is moderated by *W* if its size, sign, or strength depends on or can be predicted by *W*. In that case, *W* is said to be a *moderator* of *X*'s effect on *Y*, and W and *X interact* in their influence on *Y*. Moderators set up a boundary condition of that effect/stimuli for which the effect size is large versus small or present versus absent (Hayes, 2013). A simple moderation model is

presented in figure 3.2 where the effect of variable of interest X (focal antecedent) is studied on variable Y (dependent variable) while that effect is influenced or is dependent on the value taken by some variable W (moderator).

Figure 3.2
Simple Moderation Model



Moderation analysis has been used frequently in explain theories such as Elaboration Likelihood Model of Persuasion (Petty & Cacioppo, 1986), which explains conditions under which certain type of message designed to persuade consumers are effective in attitude change or not. Research conducted in the field of advertising widely used moderation analysis to explain importance of message framing and its effect on consumer reactions (Tsai, 2007). To understand the constraint condition where the effect of X on Y is dependent on W, meaning that for different values of W the effect of X on Y will be different. In generic terms, such model can be written as

$$\boldsymbol{Y = iY + f\,(W)X + b2W + eY} \quad \textbf{(1)}$$

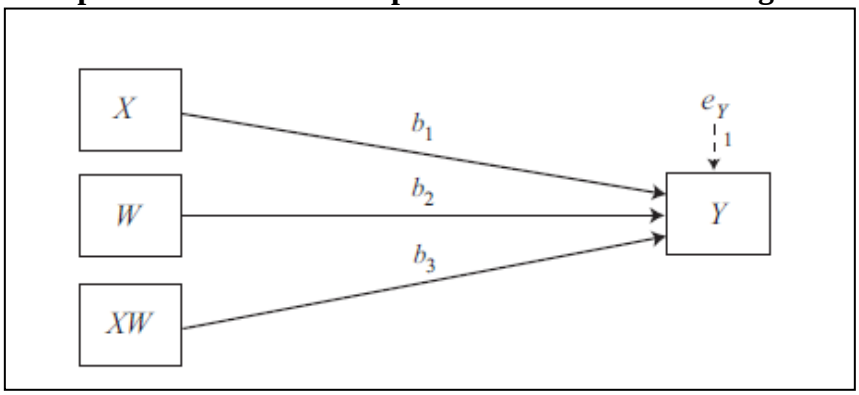
Where $f\,(W)$ is a function of W. Consider a simple function of the form $f\,(W) = (b1 + b3W)X$. Substituting value of $f\,(W)$ and expanding the equation (1) we get following equation

$$\boldsymbol{Y = iY + b1X + b2W + b3XW + eY} \quad \textbf{(2)}$$

Where XW is a variable constructed as the product of X and W. The resulting equation is the *simple linear moderation model*, depicted conceptually in Figure 3.3 and in the form of a statistical diagram. This approach, widely attributed to Saunders (1956), provides a simple

means of modeling data in which *X*'s effect on *Y* is dependent on *W* or *conditional on the value of W.* (Hayes, 2013).

Figure 3.3
Simple Moderation Model presented in Statistical Diagram



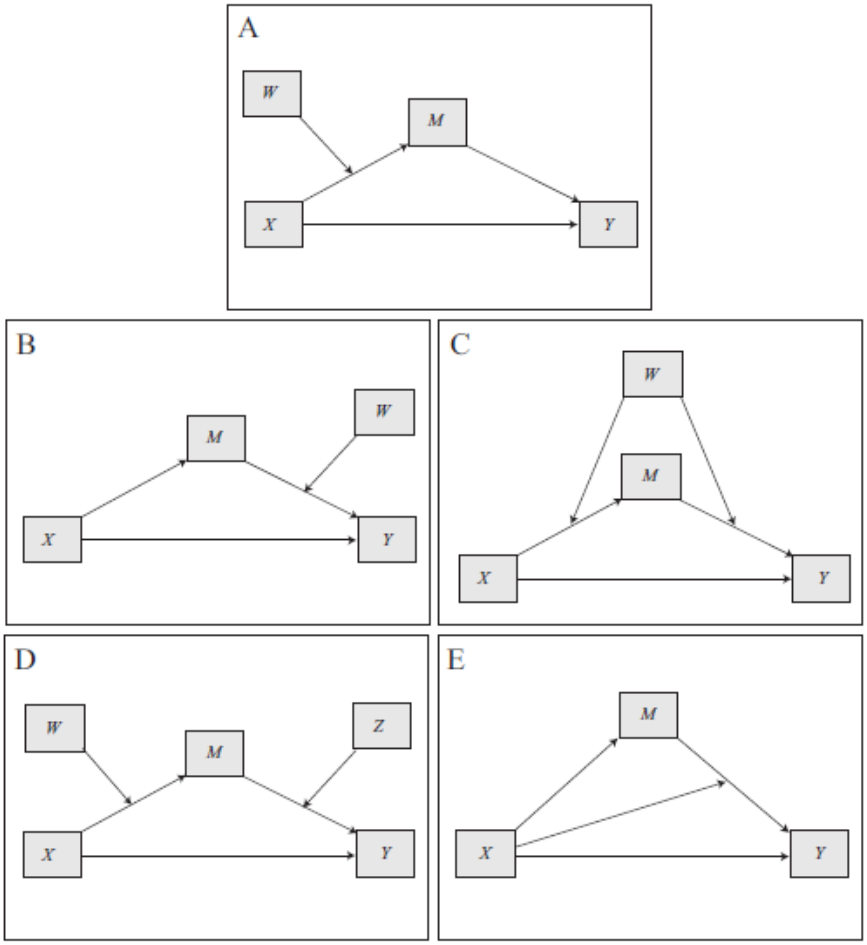
3.8.4 Conditional Process Analysis

Conditional process analysis is used when the analytical goal is to describe and understand the conditional nature of the mechanism or mechanisms by which a variable transmits its effect on another. It explains how moderation and mediation can be pieced together into a single integrated analytical model—a conditional process model (Hayes, 2013). Conditional process analysis, or conditional process *modeling*, can be used when the research goal is to understand and describe the conditional nature of the mechanism or mechanisms by which a variable transmits its effects on another; and testing hypotheses about such contingent effects (Hayes, 2013).

The mechanism linking *X* to *Y* can be said to be conditional if the indirect effect of *X* on *Y* through *M* is contingent on a moderator, W. There are many ways this could happen. For instance, the effect of *X* on *M* could be moderated by some variable *W*. The conceptual diagram in Figure 3.4, panel A, represents such a model. Alternatively, the effect of *M* on *Y* could be moderated by *W*, as in Figure 3.4, panel B. A conditional process model can include moderation of more than one path in the causal sequence. For example, the effect of *X* on *M* and the effect of *M* on *Y* could both be moderated by a common variable, as diagrammed in Figure 3.4, panel C. A variant of such a model involves the moderation of

the effect of *X* on *M* by one variable *W* but moderation of the effect of *M* on *Y* by a different moderator *Z*, as in Figure 3.4, panel D. An intriguing form of conditional process model is one in which *X* functions as a moderator of its own indirect effect on *Y* through *M*. It may be safe to call this the *original* conditional process model. A causal antecedent *X* can moderate its own indirect effect on *Y* through *M* if it moderates the effect of *M* on *Y*, as depicted in Figure 3.4, panel E.

Figure 3.4
Variants of Conditional Process Models



But regardless of the configuration of moderated paths or complexity of the model, conditional process analysis involves estimation and interpretation of direct and indirect effects, just as in a simple mediation analysis. However, when causal effects in a mediation model are moderated, they will be conditional on the values taken by those moderators (Hayes, 2013). Thus, an understanding of the concepts of the *conditional direct effect* and the *conditional indirect effect* is required before a conditional process analysis.

The moderation of a path in a mediation model does not change the fact that the indirect effect of X on Y through M is still a product of paths of influence. But rather than being a product of two numbers, the indirect effect in such a circumstance becomes a product involving at least one function (depending on which path or paths are moderated), which makes the indirect effect a function of the moderator or moderators that influence the size of the effects in the causal system. That is, the $X \rightarrow M \rightarrow Y$ mechanism differs in size or strength as

a function of a moderator variable or set of variables. A direct effect can also be moderated. In a mediation model, the direct effect of *X* on *Y* quantifies the effect of *X* on *Y* independent of *X*'s influence on *Y* through *M*. In a simple mediation model, it is estimated as *c′* as explained above. But the direct effect of *X* on *Y* could be contingent on a moderator. For instance, if *W* moderates the effect of *X* on *Y* controlling for *M*, then the direct effect is no longer a single number such as *c′* but is instead a function of *W*. It is conditional on a variable in the model rather than unconditional.

When a direct or indirect effect is conditional, analysis and interpretation of the results of the modeling process should be based on a formal estimate of, and inference about, conditional direct and/or conditional indirect effects. In various research studies, X's effect on Y is modeled as operating through a single mediator. For those mediation models that include moderation, one or more of the specific indirect effects can be expressed as a linear function of a moderator. Such is the case in this research. The simplest of conditional process modeling is the moderation of the direct path X →Y by the variable W. This is similar to simple moderation model as described above which is the case of model 3 in this study as discussed in chapter I. one interesting conditional model can be a simple mediation model with moderation of the indirect effect of X on Y through M.

3.8.5 Conducting the first stage moderated mediation

The mediation hypotheses in this study were analyzed by using the bootstrapping analytical strategy suggested by Shrout & Bolger (2002), Preacher & Hayes (2008) and Taylor et al., (2008). This estimation strategy directly tests indirect effects between X and Y through the mediators via bootstrapping procedure thus overcoming the weaknesses associated with Sobel test (Fritz & MacKinnon, 2007; Taylor et al., 2008). The bootstrapping provides estimates of the indirect effects and the significance of these indirect effects via re sampling procedure and calculates these effects at 95 percent bias corrected bootstrapped confidence intervals. In order to check the significance of the indirect effects, these bias corrected confidence intervals are used; because the performance of bootstrapping methods is higher than the Sobel test (MacKinnon et al., 2004). If zero lies within the confidence interval calculated for an indirect effect, that effect is insignificant.

The first stage moderated mediation was performed for this study by first constructing a path model and then checking the significance of the specific indirect effects via bootstrapping procedure. This analysis can be conducted using structural equation modeling (SEM) packages such as SmartPLS 3 and M-plus. Moreover, the first stage moderated mediation hypothesis can also be tested using the Process Macro (Model 7) for SPSS by Hayes (2013). The research model for this thesis has been tested using SmartPLS 3 software which works on a Partial Least Squares (PLS) method, which is a variance based method for conducting structural equation modeling (Reinartz et al., 2009; Cepeda-Carrion et al., 2016). PLS based SEM was chosen for the analysis not only because the application of PLS based SEM or PLS-SEM has become widespread in areas such as strategic management and marketing (Hulland, 1999; Hair et al., 2012); but also because SmartPLS3 software allows the researcher to assess the reliability and validity of the latent constructs as well as gives estimates of the structural coefficients between these latent constructs (Barroso et al., 2010). Moreover, Hayes Process Macro was used to test the moderated mediation of the path using Model 7 (Hayes, 2013). As this research empirically tested the process through which perceived greenwashing effects green brand equity of the firm via brand credibility and via green brand image (2 mediators) with perceived brand age as boundary condition (one moderator).

Chapter IV

Results

4.1 Pre Test

Before carrying out the final survey for this study, a pretest of the questionnaire and the stimulus (i.e. advertisement of PSO) was conducted with 30 respondents. The participants were asked to fill in the questionnaire and take a good look at the printed advertisement of Pakistan State Oil (PSO). PSO was the brand chosen for this research on green advertisement. The respondents were requested to look at the advertisement carefully, and then fill out the questionnaire, and they were asked to discuss any ambiguities or difficulties they faced during responding to the questions. They were also asked to elaborate on the advertisement i.e. do they understand the message that printed advertisement is trying to communicate. After filling the questionnaire, the concept of greenwashing was explained to them, they were asked to elaborate on any greenwashing that they could predict in the provided advertisement. Some respondents were very prompt at picking up the greenwashing practices while some respondents thought otherwise, which meant that the stimulus was effective in either eliciting or rejecting greenwashing attempts by the brand in the print advertisement.

4.2 Administrative Procedure

The questionnaire was arranged in such a way that the respondents first viewed the stimulus or the scenario i.e. the print advertisement for PSO (colored copies of the advertisement were handed over to each respondent). The respondents were asked to take a good look at the print advertisement. After the respondents had taken a good look at the advertisement, they were given the questionnaire which contained items for greenwashing, brand credibility, green brand image, green brand equity and perceived brand age. The respondents were asked to fill the questionnaire based on their feelings after viewing the advertisement.

4.3 Sample Statistics:

Out of total of 300 questionnaires, 282 were usable for the final analysis. The responses in the final analysis did not have any missing values. Out of 282 respondents, 125 were male whereas 157 respondents were female. Around 56% of the respondents were between the age of 20 and 25 years. Table 4.1 reports means and standard deviations of the latent

constructs used in this study. Scores of latent constructs for each respondent were saved during CFA (Confirmatory Factor Analysis).

Table 4.1
Mean and Standard Deviations of Latent Constructs

Latent Constructs	Mean	Std. Deviation
Perceived Greenwashing	3.1206	0.8610
Brand Credibility	3.3440	0.7898
Green Brand Image	2.9901	0.8043
Perceived Brand Age	2.6147	0.9509
Green Brand Equity	3.0173	0.5188

4.4 Confirmatory Factor Analysis-Results (Measurement Model):

In line with the discussion in the previous chapter, confirmatory factor analysis was conducted in order to check the reliability and validity of the latent constructs being used in this study. In the PLS-SEM context the reliability and validity of constructs are assessed through measurement model or the outer-model through assessing the item composite reliability; construct reliability, convergent reliability, and discriminant validity (Hair et al., 2009; Hair et al., 2011; Hair et al., 2012; Lowry & Gaskin, 2014). Following were the results of the measurement model or the confirmatory factor analysis.

4.4.1 Reliability:

Internal consistency or reliability of reflective construct evaluates the extent to which a latent variable (or a set of latent variables) is consistent with what it intends to measure (Straub et al., 2004). The internal consistency can be assessed through Cronbach's alpha of a construct (Roldan & Sanchez-Franco, 2012). A construct will be internally consistent when the value for Cronbach's alpha is greater than 0.7 (Hair et al., 2011). In this study, the all the latent variables had Cronbach's alpha greater than 0.7 or 0.7. Therefore, it can be inferred that the latent constructs were internally consistent.

Convergent validity of the constructs can be assessed by average variance extracted (AVE), which is a more conservative criteria, and convergent validity can also be assessed from composite reliability (CR) of a construct (Malhotra & Dash, 2011). A latent factor is deemed to have convergent validity if its CR is 0.5 and above; and AVE for each latent variable is above 0.5. For this study, CR of all the constructs was greater than 0.50; and AVE was also greater than 5. Values for Cronbach's alpha, CR and AVE are reported in table 4.2 below.

Table 4.2
Reliability of Constructs

Construct	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE) Convergent Validity
Perceived Greenwashing	0.791	0.856	0.544
Brand Credibility	0.853	0.892	0.582
Green Brand Image	0.876	0.910	0.668
Perceived Brand Age	0.698 (round off 0.7)	0.833	0.624
Green Brand Equity	0.840	0.893	0.676

The next step in assessing the reliability of the latent construct was checking the reliability of individual items of the questionnaire that were used to measure respective latent constructs. An individual item reliability is adequate when an item has a factor loading of greater than 0.5 (Hair et al., 2009).

In this study, all the reflective indicators for perceived greenwashing, brand credibility, green brand image, perceived brand age and green brand equity have factor loadings greater than 0.50 except for two indicators of greenwashing (item 4 and item 5) and one indicator of brand credibility (item 1), hence these were dropped for better model fit (table 4.3 reports factor loadings of the indicators of latent constructs). The rest of the items and constructs were deemed internally consistent.

Table 4.3
Factor Loadings for Latent Constructs

Indicators/ Items	Latent Constructs				
	Perceived Greenwashing	Brand Credibility	Green Brand Image	Perceived Brand Age	Green Brand Equity
GW1	0.831				
GW2	0.827				
GW3	0.766				
GW4	Dropped				
GW5	Dropped				
BC1	Dropped				
BC2		0.760			
BC3		0.836			
BC4		0.766			
BC5		0.839			
BC6		0.820			
GBI1			0.798		
GBI2			0.810		
GBI3			0.826		
GBI4			0.841		
GBI5			0.812		
PBA1				0.793	
PBA2				0.825	
PBA3				0.750	
GBE1					0.762
GBE2					0.844
GBE3					0.842
GBE4					0.838

4.4.2. Validity & Multi-collinearity:

Discriminant validity of latent constructs can be checked by Fornell-Lacker criteria according to which the square root of AVE of each latent construct should be greater than correlation of that construct with any other construct. Table 4.4 below reports the discriminant validity for each construct, from this table it can be seen that the diagonal elements (the square root of AVE) for each construct is greater than all the other entries in the table. So, we can conclude that discriminant validity holds for all the constructs in this study. Another measure for assessing discriminant validity in Smart PLS3 is the Heterotrait-Monotrait (HTMT) ratio. The ratio is calculated by dividing the correlations of the items of all the constructs by the correlations of the items of the same constructs. The constructs is deemed to have discriminant validity if the ratio is less than 1 (Hensler et al., 2015). Table 4.5 reports the Heterotrait-Monotrait (HTMT) for each construct, it can be seen from the table that ratios

calculated for each latent construct when compared to other constructs is less than 1. So we can say that discriminant validity holds for all the latent constructs in this study.

Table 4.4
Forenll-Lacker Criteria for Discriminant Validity

Construct	Perceived Greenwashing	Brand Credibility	Green Brand Image	Perceived Brand Age	Green Brand Equity
Perceived Greenwashing	**0.737**				
Brand Credibility	-0.134	**0.763**			
Green Brand Image	-0.114	0.613	**0.818**		
Perceived Brand Age	0.061	0.130	0.458	**0.790**	
Green Brand Equity	-0.108	0.576	0.635	0.294	**0.822**

Table 4.5
Heterotrait-Monotrait (HTMT) Ratio Comparisons

Construct	Perceived Greenwashing	Brand Credibility	Green Brand Image	Perceived Brand Age
Brand Credibility	0.161			
Green Brand Image	0.142	0.712		
Perceived Brand Age	0.144	0.200	0.582	
Green Brand Equity	0.132	0.676	0.736	0.383

Using Smart PLS3 , In CFA, multi-collinearity among independent (exogenous) variables can also be assessed through variance inflation factor (VIF) of a latent constructs which should be less than 3.3 (Lowry & Gaskin, 2014). Table 4.6 below reports the VIF values for all the independent latent constructs used in this study. It can be seen from the table that VIF values for all the independent latent constructs are less than 3.3 which means that there is no issue of multi-collinearity among the latent constructs in this study.

Table 4.6
VIF values for constructs

Constructs	VIF recommended values < 3.3
Perceived Greenwashing	1.004
Green Brand Image	2.107
Perceived Brand Age	1.016
Green Brand Equity	1.715

4.5 Structural Model -Results:

The following discussion pertains to the relationship between perceived greenwashing and green brand equity. The model in this study combines moderation and mediation simultaneously, which is termed as conditional indirect effect or conditional process modeling. Such a mechanism linking the independent variable to the dependent variable can be conditional if the indirect effect of the former (IV) on the latter (DV) through a mediator is contingent on the value the moderator takes (usually: high, medium, and low). Two mediators were used in this study, and separate mediation and moderated mediation model were estimated for each mediator.

4.5.1 Model Fit

The important model fit indices listed in extant literature to explain goodness of fit for a SEM model includes; Standardized Root Mean Square Residual (SRMR) which is defined as the difference between the observed correlation and the model implied correlation matrix. A value less than 0.10 or of 0.08 (in a more conservative version; see Hu and Bentler, 1999) are considered a good fit. The second measure is Normed Fit Index (NFI) proposed by Bentler and Bonett (1980). It is defined as 1 minus the Chi square (X^2) value of the proposed model divided by the Chi square (X^2) values of the null model. NFI results in values between 0 and 1. The closer the NFI is to 1, better the fit of model with the data. Similar to NFI the values of GFI, CFI, TLI, RFI if closer to 1 are interpreted as model having good fit with the data.
Thirdly, the cut off value for RMSEA to depict a good model fit is less than 0.08 (MacCallum et al, 1996). For the current model the value of RMSEA is 0.061 showing a good model fit. Byrne (2006) suggested that ratio of CMIN should not exceed 3 before it can

be concluded that model is a good fit. Table 4.7 below shows values of these indices are within the acceptable range, which means CFA model had good fit with the data.

Table 4.7
CFA Model Fit Indices

Model Fit Indices	Values
SRMR	0.068
NFI	0.906
RFI	0.884
TLI	0.937
GFI	0.918
CFI	0.949
RMSEA	0.061
CMIN	2.062

The current study has explored 5 research questions:

1. Whether brand age moderates the relationship between perceived greenwashing (GW) and green brand equity (GBE).
2. Whether brand credibility (BC) mediated the relationship between perceived greenwashing (GW) and green brand equity (GBE).
3. Whether perceived brand age (PBA) moderates the path from perceived greenwashing (GW) to brand credibility (BC); while perceived greenwashing (GW) to brand credibility (BC) to green brand equity (GBE) is the indirect path in the mediation model. In other word whether mediation by brand credibility (BC) is moderated by the perceived brand age (PBA): Testing a Moderated Mediation Model.
4. Whether relationship between perceived greenwashing (GW) and green brand equity (GBE) is mediated by green brand image (GBI).
5. Whether perceived brand age (PBA) moderates the path from perceived greenwashing (GW) to green brand image (GBI); while perceived greenwashing (GW) to green brand image (GBI) to green brand equity (GBE) is the indirect path in the mediation model. In other words whether mediation by green brand image is moderated by the perceived brand age (PBA): Testing a Moderated Mediation Model.

In the following paragraphs results of the data analysis are presented; and results about each research question are presented one by one. The estimation of the mediation and moderated

mediation models was done using Hayes PROCESS macro. In order to conduct analysis using Hayes PROCESS macro, factor scores for all latent variables i.e. perceived greenwashing, brand credibility, green brand image, green brand equity and perceived brand age were calculated for each respondent during CFA , and were saved as 5 new variables in the data file. CFA was conducted using Smart PLS3 software. Once scores of latent constructs estimated by CFA were saved for each respondent, these latent constructs became measured variables, and these measured variables were used in Process Macro that is installed in SPSS to estimate mediation and moderated mediation.

Research Question One: tested whether perceived brand age (PBA) moderates the relationship between perceived greenwashing (IV) and green brand equity (DV).

Hayes PROCESS Macro's model 1; which tests simple moderation, was used to test this research question. The results are reported below in table 4.8 which show significant impact of perceived greenwashing (GW) on green brand equity (GBE) (b = -0.1279, p = 0.0257). Perceived brand age was also found to positively impact GBE (b = 0.2945, p = 0.000). The interaction term (perceived greenwashing * perceived brand age) was not found to impact green brand equity (GBE) significantly as confidence interval reported in table 4.8 has zero in it and p = 0.1092.

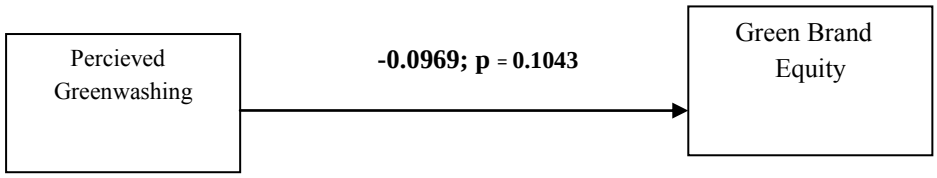
Table 4.8
Relationship of Perceived Greenwashing and Green Brand Equity moderated by Perceived Brand Age

Relationship		**Path Coefficients and p value**	**95% CI**
Perceived Greenwashing → Green Brand Equity	b_1	-0.1279 p= 0.0257	(-0.2402 , -0.0156)
Perceived Brand Age → Green Brand Equity	b_2	0.2945*** p= 0.000	(0.1816 , 0.4074)
Perceived Greenwashing * Perceived Brand Age → Green Brand Equity	b_3	0.0848 p = 0.1092	(-0.0191 , 0.1886)
****p<0.01, ***p<0.001**			

Research Question Two explored whether brand credibility (BC) mediated the relationship between perceived greenwashing (GW) and green brand equity (GBE).

The total effect from perceived greenwashing (Independent Variable) to green brand equity (Dependent Variable) was found insignificant (b= -0.0969 and p value = 0.1043).

Figure 4.1
Bivariate Regression



Direct effect (C~) that is effect of perceived greenwashing on green brand equity in the presence of mediator brand credibility (BC) is insignificant (beta = -0.0090, p value = 0.8597). However, indirect effect: the path from perceived greenwashing to green brand equity mediated through brand credibility is significant with upper and lower bounds values of Confidence Interval (CI) -0.1712 to -0.0130 as reported in table 4.9 below. As zero does not appear within these bounds it is concluded that brand credibility does mediates the relationship between perceived greenwashing and green brand equity.

According to Zhao et al (2010) such case is referred to as "indirect only mediation"; and in Barron and Kenny terminology this is called full mediation. Total effect, direct effect and indirect effects and their significance is reported in table 4.9 below; and this mediation model is also shown as path diagram below with 3 paths labelled with their respective path coefficients in figure 4.2

Figure 4.2

Brand Credibility mediating relationship between Perceived Greenwashing and Green Brand Equity

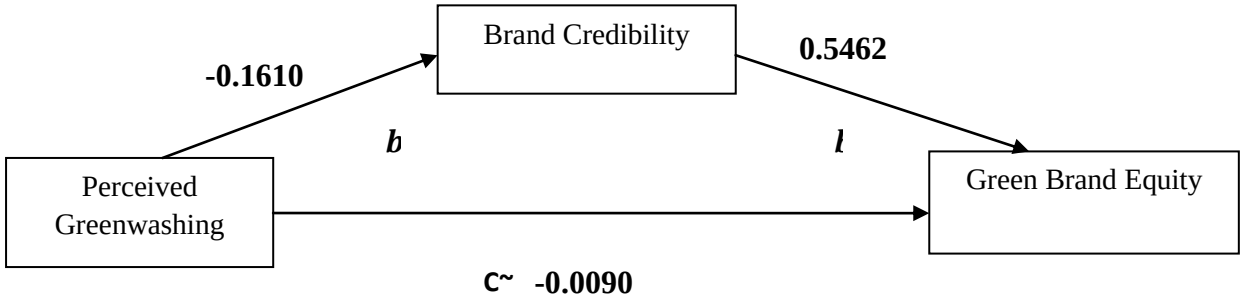


Table 4.9
Relationship of Perceived Greenwashing with Green Brand Equity Mediated by Brand Credibility

Relationship		**Path Coefficients**	**95% CI**
Perceived Greenwashing → Green Brand Equity (direct effect)	C~	-0.0090 (p= 0.8597)	(-0.1089 , 0.0909)
Perceived Greenwashing → Brand Credibility	b_1	-0.1610** (p= 0.0067)	(-0.02771 , -0.0449)
Brand Credibility → Green Brand Equity	b_2	0.5462*** (p= 0.000)	(0.4463 , 0.6461)
Indirect Effect	b_1 * b_2 = -0.1610 * 0.5462 = -0.0879		(-0.1712 , -0.0130)
Total Effect = Indirect effect + Direct effect	(b_1* b_2) + c~ = -0.0879 + (-0.0090) = - 0.0969		
****p<0.01, ***p<0.001**			

Research Question Three explored whether perceived brand age (BA) moderates the in direct path from perceived greenwashing (GW) to brand credibility (BC) to green brand equity (GBE).

This type of analysis is also called testing the first stage moderated mediation, which is a conditional mediation process wherein different values of moderator are boundary conditions. Therefore in such analysis mediation or presence of significant indirect effect depends on what value the moderator takes; for certain values of moderator the mediation effect would be present as statistically significant and for some other value (s) of moderator the mediation effect may not be significant, therefore levels of moderating variable act as boundary condition, hence the name conditional process analysis.

The results show whether or not effect of perceived greenwashing (GW) on brand credibility (BC) is influenced by the level of perceived brand age (PBA) of the particular brand. In other words: whether the first leg of indirect effect from perceived greenwashing (GW) to brand credibility (BC) was moderated by perceived brand age (PBA). The results were obtained using Hayes PROCESS macro model 7.

Figure 4.3
Moderated Mediation Model: Relationship between GW and GBE is mediated by BC; and relationship between GW and BC is moderated by perceived BA

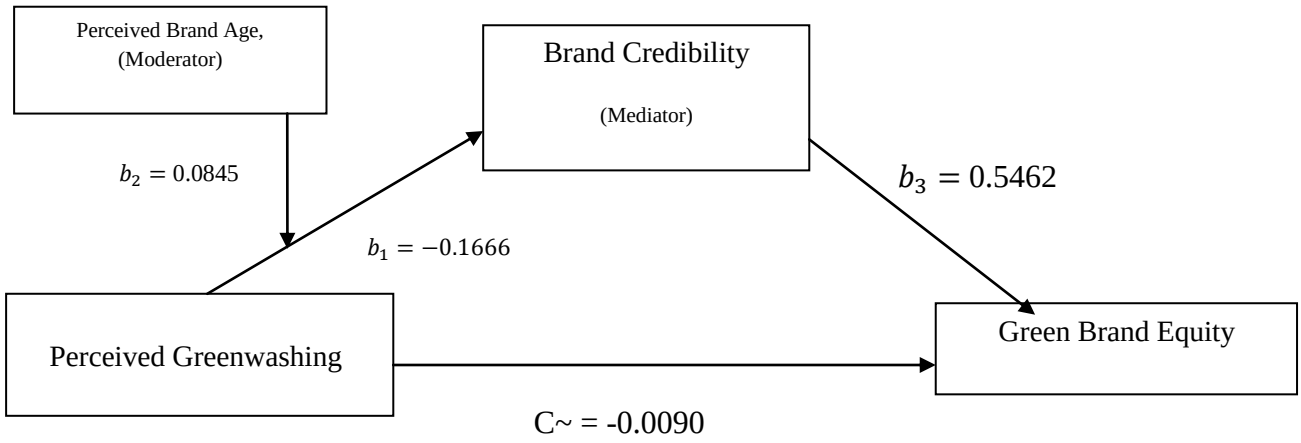


Table 4.10

Relationship of GW with GBE mediated by BC and moderated by PBA

Relationship	**Beta**	**Path Coefficient**	**95% CI**
Perceived Greenwashing → Brand Credibility	b_1	-0.1666** (p = 0.0050)	(-0.2815 , -0.0504)
Perceived Brand Age → Brand Credibility	b_2	0.0845 (p = 0.1530)	(-0.0316 , 0.2007)
Brand Credibility → Green Brand Equity	b_3	0.5462*** (p = 0.000)	(0.4463 , 0.6461)
Perceived Greenwashing*Perceived Brand Age → Brand Credibility	b_4	0.1363** (p = 0.0126)	(0.0295 , 0.2432)
Perceived Greenwashing → Green Brand Equity (Direct Effect)	C~	-0.0090 (p = 0.8597)	(-0.1089 , 0.0909)
****p<0.01, ***p<0.001**			

The beta coefficient for the unconditional interaction effect of (GW * PBA) on BC was significant, (*b4* = 0.1363, *p* = 0.0126). This is also known as the test of highest order unconditional interaction. It signifies that the indirect effect of perceived greenwashing on green brand equity through brand credibility is dependent upon perceived brand age. As the evidence of moderation of one of the links in a mediation model is sufficient to claim moderation of mediation, therefore this analysis supports the conclusion that the indirect

effect of perceived greenwashing on green brand equity through brand credibility depends on perceived brand age; therefore presence of moderated mediation is supported.

The PROCESS macro divides the respondents with respect to moderator into three intervals or three categories artificially, which are valued at 1 standard deviation below mean, at mean and 1 SD above mean. In this case perceived brand age was moderator but its statements were worded in a manner that higher score of a respondent means younger brand age was perceived by respondents. Therefore mean minus 1SD implies those consumers who perceived brand was older. At mean brand age were the consumers who perceived brand age was neither too low nor too old. Mean plus 1SD was the score of those respondents who perceived brand age was low, meaning it was perceived as younger brand by the respondents. If the indirect effect is found moderated, then it is possible that at certain level of moderator conditional indirect effect is significant and at some other level of moderator the indirect effect is not significant. Therefore estimated conditional indirect effect at different values of the moderator was found significantly different from each other (Hayes, 2013).

It was found that the moderated mediation effect at the mean value of moderator PBA was significant (beta = -0.0906 ; CI = -0.2804 : -0.0658); and at mean minus 1SD value of moderator BA was also significant (beta = -0.1651 ; p = -0.2804 : -0.0658) and in this case this refers to perceived older brand age of moderator. These results are reported in Table 4.11.

The model was tested by running bootstrap of 5,000 samples; in other words 5,000 samples were drawn from the sample size of 282 respondents. That is done by including the same respondent more than once in a sample of 282 size, and in this manner 5,000 random samples of 282 respondents were drawn. On each sample the same regression of effect of perceived greenwashing on brand credibility when perceived brand age (PBA) is low, when PBA is at mean value, and when PBA is at high value was run; and lower and higher bound of those 5,000 estimated betas were calculated.

The rule for determining significance in bootstrapping method is not to have zero falling within LLCI (Lower Limit of Confidence Interval) and ULCI (Upper Limit of Confidence Interval). Our results suggest that path coefficients from perceived greenwashing (GW) to brand credibility (BC) for 2 groups of respondents, i.e., those who perceived high brand age for PSO brand and those who perceived average brand age for PSO brand were found

significant. While those respondents who perceived this PSO brand as younger (not old) no significant effect of GW on BC was found in this sample. The results are shown the following Table 4.11.

Table 4.11
Conditional Indirect Effects of Perceived Greenwashing on Brand Credibility at 3 levels of Moderator PBA

Level of Moderator Perceived Brand Age (PBA)	Estimates Conditional effect (beta) of GW (predictor) on BC (mediator)	Boot SE	Boot LLCI	Boot ULCI
(Mean minus 1 SD) Perceived High Brand Age (brand is perceived older by consumers)	-0.1651	0.0538	-0.2804	-0.0658
(Mean) Average BA	-0.0906	0.0403	-0.1766	-0.0191
(Mean plus 1 SD) Perceived Low Brand Age (brand is perceived younger by consumers)	-0.0162	0.0522	-0.1228	0.0798

Lastly, a bootstrap confidence interval for the index of moderated mediation was estimated. Index of Moderated Mediation is the slope of indirect effect function; and if its CI (confidence Interval after boot strapping) does not include zero then it provides more direct and definitive evidence of the presence of moderated mediation (Hayes, 2013). Table 4.12 below reports the value of the Index of Moderated Mediation. As the Index of Moderated Mediation is significant therefore it means that the overall moderated mediation model is significant, providing evidence in the support of Hypothesis of the presence of moderated mediation by PBA in the mediation model of GW to BC to PBE. Therefore it was found that perceived brand age moderated the negative indirect effect of perceived greenwashing on firm's green brand equity through brand credibility such that those respondents (consumers) who perceived this PSO brand as younger in age and those consumers who perceived this PSO brand as of average brand age were likely to view GW exerting significant negative impact on BC (brand credibility).

Table 4.12
Index of Moderated Mediation

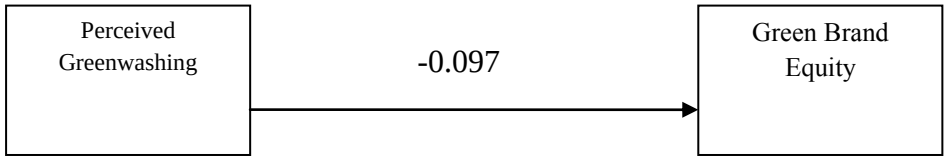
Perceived Brand Age	Index	Boot SE	Boot LLCI	Boot ULCI
	b3*b4 = 0.5462 *0.1363 = 0.0744	0.0345	0.0084	0.1428

Significant Index of Moderated Mediation is proof of the presence of conditional process that is presence of mediation which is moderated. Therefore it is not simply brand credibility that mediated relationship between perceived greenwashing (GW) and green brand equity (GBE), rather the mediated relationship depends on the value taken by moderator, perceived brand age (PBA).

Research Question Four: explored whether relationship between perceived greenwashing (GW) and green brand equity (GBE) was mediated by green brand image (GBI).

The total effect from perceived greenwashing (IV) to green brand equity (DV) was found insignificant (b= -0.097 and p value = 0.1043).

Figure 4.4
Bivariate Regression

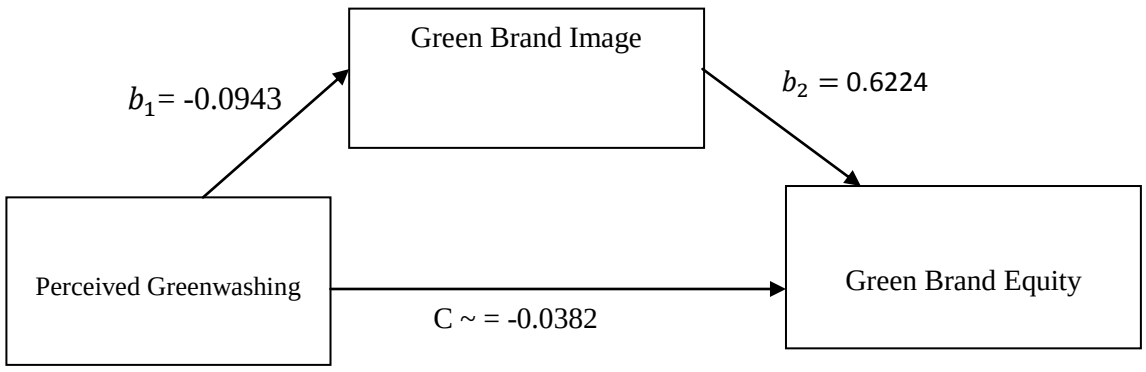


The total effect is insignificant with p value of 0.1043. Direct effect (C~) that is effect of perceived greenwashing on green brand equity in the presence of mediator (p value = 0.4153) was found insignificant. The indirect effect that includes path from perceived greenwashing to green brand image to green brand equity was also found insignificant with upper and lower bounds value of CI ranging from -0.1413 to 0.0278. As zero lies within these bounds it is concluded that green brand image does not mediate the relationship between perceived greenwashing and green brand equity. According to Zhao et al (2010) such case is referred to as "no mediation" where (C~) the direct effect and (a*b) the indirect effect both are insignificant. Total effect, direct effect and indirect effect results are presented in the table 4.13 below.

Table 4.13
GBI mediating relationship between GW and GBE

Relationship		**Coefficients**	**95% CI**
Perceived Greenwashing → Green Brand Equity	C~	-0.0382 (p = 0.4153)	(-0.1304 , 0.0540)
Perceived Greenwashing → Green Brand Image	b_1	-0.0943 (p = 0.1140)	(-0.2114 , 0.0228)
Green Brand Image → Green Brand Equity	b_2	0.6224*** (p = 0.000)	(0.5302 , 0.7146)
Indirect Effect	b_1 * b_2 = -0.0943 * 0.6224 = -0.0587		(-0.1422 , 0.0264)
Total Effect = Indirect effect + Direct effect	(b_1* b_2) + c~ = -0.0587 + (-0.0382) = -0.0969 rounded to = ~ 0.097		
****p<0.01, ***p<0.001**			

Figure 4.5
Green Brand Image mediating relationship between Perceived Greenwashing and Green Brand Equity



Research Question Five explored whether perceived brand age (PBA) moderates the in direct path from perceived greenwashing (GW) to green brand image (GBI) to green brand equity (GBE).

This type of analysis is also called testing the first stage moderated mediation, which is a conditional mediation process wherein different values of moderator (PBA) act as boundary conditions. Therefore in such analysis mediation or presence of significant indirect effect depends on what value the moderator takes; for certain values of moderator the mediation effect would be present as statistically significant; and for some other value (s) of moderator the mediation effect may not be significant. Therefore levels of moderating variable act as boundary condition, hence the name conditional process analysis.

The results show whether or not effect of perceived greenwashing (GW) on green brand image (GBI) is influenced by the level of perceived brand age (PBA) of the PSO brand as perceived by consumers. In other words: whether the first leg of indirect effect from perceived greenwashing (GW) to green brand image (GBI) was moderated by perceived brand age (PBA).

Figure 4.6
Moderated Mediation Model: Relationship between GW and GBE is mediated by GBI; and relationship between GW and BC is moderated by perceived PBA

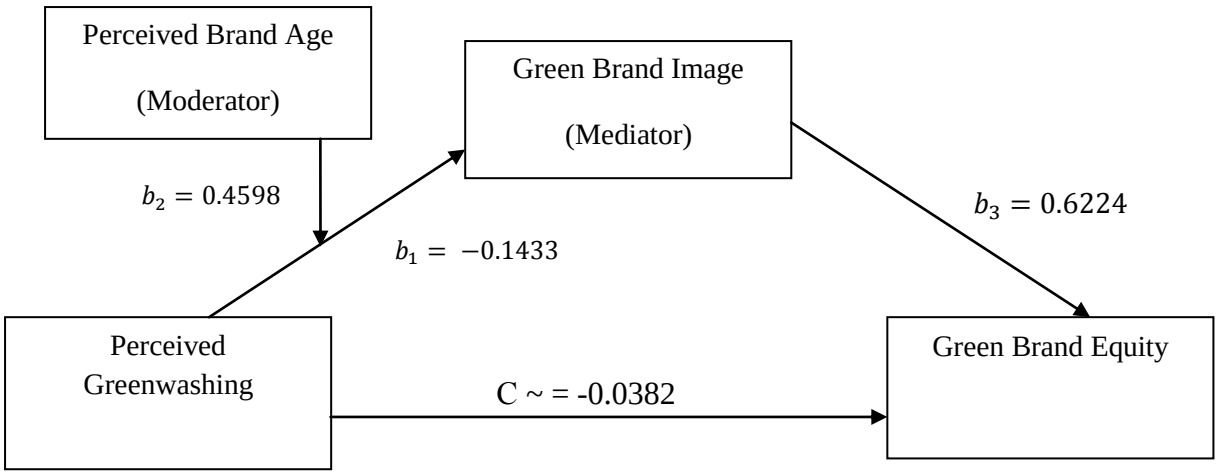


Table 4.14
Relationship of GW with GBE mediated by GBI and moderated by PBA

Relationship	**Beta**	**Path Coefficient**	**95% CI**
Perceived Greenwashing → Green Brand Image	b_1	-0.1433** (p = 0.0067)	(-0.2466 , -0.0400)
Perceived Brand Age → Green Brand Image	b_2	0.4598 *** (p = 0.000)	(0.3559 , 0.5636)
Green Brand Image → Green Brand Equity	b_3	0.6224*** (p = 0.000)	(0.5301 , 0.7146)
Perceived Greenwashing*Perceived Brand Age → Green Brand Image	b_4	0.1161** (p = 0.0175)	(0.0205 , 0.2116)
Perceived Greenwashing → Green Brand Equity	C~	-0.0382 (p = 0.4153)	(-0.0916 , 0.0916)
****p<0.01, ***p<0.001**			

Here the most important component of results is the combined impact of moderator and mediator on firm's green brand equity. The beta coefficient for the interaction effect of moderator and mediator (Perceived greenwashing * Perceived brand age) on green brand image was found significant (*b4* = 0.1161, *p* = 0.0175). This is also known as the test of highest order unconditional interaction. It signifies that the indirect effect of perceived greenwashing on green brand equity through green brand image is dependent upon the level of perceived brand age. If there is evidence of moderation of one of the paths in a mediation model then it is sufficient to claim presence of moderation of mediation. This analysis supports the conclusion that the indirect effect of perceived greenwashing on green brand equity through green brand image depends on the level of perceived brand age, therefore Hypothesis of moderated mediation is supported.

As per the PROCESS macro, the values of moderator perceived brand age can be divided into three intervals artificially, which are valued at 1 standard deviation below mean (perceived older brand age value or in other words brands perceived as older in age by consumers), at mean (average perceived brand age value) and 1 standard deviation above mean (perceived younger brand age value or in other words brands perceived as younger in age by consumers) (Hayes, 2013). If the indirect effect is moderated, then any two conditional indirect effects

estimated at different values of the moderator are significantly different from each other (Hayes, 2013). It has been established that the moderated mediation at 1 standard deviation below mean and at mean are significant. The significance of the betas of path coefficients in the model was tested by running bootstrap of 5,000 samples. The rule for determining significance in bootstrapping method is not to have zero falling within LLCI and ULCI and results show that path coefficients for perceived greenwashing to green brand image for 2 groups, (i.e., respondents who perceived older brand age and responding consumers who perceived medium or mean brand age for the shown PSO brand) were found significant. The results are shown the following Table 4.15.

Table 4.15
Conditional Indirect Effects of Perceived Greenwashing on Green Brand Equity

Level of Moderator Perceived Brand Age (PBA)	Estimates Conditional effect (beta) of GW (predictor) on GBI (mediator)	Boot SE	Boot LLCI	Boot ULCI
-1 SD (brand perceived as old in age)	-0.1614	0.0557	-0.2720	-0.0516
Mean (average perceived age of brand)	-0.0892	0.0377	-0.1640	-0.0170
+1 SD (brand perceived young in age)	-0.0169	0.0476	-0.1126	0.0787

Lastly, a bootstrap confidence interval for the index of moderated mediation was estimated. This is the slope of indirect effect function and if its CI does not include zero then it provides more direct and definitive evidence of presence of moderated mediation (Hayes, 2013). Table 4.16 below exhibits the value of the index of moderated mediation and reports 95% CI. As the CI does not include zero, therefore index is different from zero, meaning it is significant. The index of moderated mediation reveals that the overall model is significant, providing evidence in the support of the research question five of the study. Significant Index of Moderated Mediation is proof of the presence of conditional process, that is, presence of moderated mediation. Therefore it is not simply green brand image (GBI) that mediated relationship between perceived greenwashing (GW) and green brand equity (GBE), rather the mediated relationship depends on the value taken by moderator, perceived brand age (PBA).

Table 4.16
Index of Moderated Mediation

Perceived Brand Age	Index	Boot SE	Boot LLCI	Boot ULCI
	b3 * b4 = 0.6224 * 0.1161 =0.0722	0.0356	0.0033	0.1409

This chapter reports the results of data analysis done in this research study to answer the research questions. CFA was performed to check reliability and validity of latent constructs used in this study. Later on Factor score were saved for all latent factors used in this study. Path analysis was conducted using theses factor scores thus factors were treated as measured variables to answer research questions about presence of mediation and moderated mediation between GW to GBE. Two mediators, namely BC and GBI were separately tested. BC was found significant mediator, while GBI was not found significantly mediating the impact of GW on GBE. Thereafter Moderation by GBA was tested on path from GW to BC and also on path from GW to GBI. In both cases moderator (GBA) was found to act as boundary condition. Therefore indirect path GW to BC to GBE was found moderated by GBA. Also the indirect path from GW to GBI to GBE was found moderated by GBA. In both cases index of moderated mediation was significantly different from zero. Consumers who perceived the shown PSO brand's age as old or average were found likely to show significant impact of GW on BC in one case and significant impact of GW on GBI in the other case.

The current study explored five research questions in total. Results for research question one indicate that there perceived brand age does not moderate the relationship between perceived greenwashing and green brand equity of the firm. Research question two, the analysis shows that perceived greenwashing has an indirect effect on firm's green brand equity through brand credibility, providing evidence for presence of mediation between GW and GBE by BC. The research question three, regarding the moderated mediating effect of perceived brand age on the relationship between perceived greenwashing and green brand equity through brand credibility is also supported for which the empirical evidence is presented in table 4.10, 4.11 and 4.12.

Furthermore, the analysis for research question four shows that perceived greenwashing does not have an indirect effect on firm's green brand equity through green brand image, providing evidence for rejection of mediation. Lastly, the research question five regarding the

moderated mediating effect of perceived brand age on the relationship between perceived greenwashing and green brand equity through green brand image is also supported for which the empirical evidence is presented in table 4.14, 4.15 and 4.16.

CHAPTER V

5. Conclusion & Discussion

5.1 Conclusion:

The results presented in chapter IV show that brand credibility mediates the relationship between perceived greenwashing and green brand equity of the firm (research question 2). Furthermore, this study tested for moderated mediation using perceived brand age as moderator and brand credibility and green brand image as two separate mediators to influence the relationship between perceived greenwashing and green brand equity (research question 3 and 5). Results conclude that the negative relationship between greenwashing perceived as present in advertisements and green brand equity of the firm is mediated by both brand credibility and green brand image when perceived brand age is used as boundary condition. The impact of perceived greenwashing on green brand equity through brand credibility and through green brand image varies based on their perceived brand age such that brands perceived as older and of mean age, the negative impact of perceived greenwashing on green brand equity is different from brands perceived as younger in age by consumers. To gauge consumer's perceived greenwashing level in the advertisement, printed advertisement of the product category (petroleum brand; PSO) was used which, by its nature, is considered to be non environmental friendly. But due to pressures coming from environmentalist groups, and due to the fact that consumers are getting more environmentally friendly (trying to reduce their carbon footprint) such brands have started producing advertisements with green messages highlighting environmental friendliness of the brand. A similar practice was evident in the PSO advertisement used in the study. Following paragraphs discuss the findings of the study in light of the previous literature and how the findings of the current study contribute towards the domain of green branding and green marketing.

5.2 Discussion:

This study focused on the dark side of green marketing i.e. greenwashing in advertisements which is an unethical practice, yet many firms are involved in such practices to appear more environmental friendly to its consumers. Sometimes due to pressure from environmentalist groups and other stakeholders, but researchers have explored impact of greenwashing in advertisements on firm's green brand equity (Delmas, & Burbano, 2011; Aggarwal, & Kadyan, 2014). Unlike previous studies; current study explored green marketing through the

lens of consumer's perception about green messages and how these messages alter their attitude towards brand and ultimately affects firm's branding. Previous studies on greenwashing which have extensively used Theory of Planned Behavior by Ajzen (1985) to explain consumer attitude and behavior change towards brands, this study focused on impact of such practice on green branding, and attempted to capture the impact concretely on certain variable of great interest for the marketers, namely, brand equity. Instead of using general attitude change theories from psychology, marketing, and advertising literature like the Hierarchy of Effects model (Colley, 1961) and the Elaboration Likelihood Model (Petty and Cacioppo 1986), this study point of departure was Attribution Theory (Harvey & Weary 1984; Heider 1944; Kelley 1971; Kelley & Michela 1980).

Attribution theory suggests that consumers try to give meaning to the attributes that they come across in events (products/ advertisement). According to the theory, people gather information about attributes and try to form a causal judgment about products or advertisement (Harvey and Weary 1984; Heider 1944; Kelley 1971; Kelley and Michela 1980). In this study, attribution theory was used to explain the relationship between perceived greenwashing (difference between talk and action of firm) and brand evaluation in form of green brand equity, brand credibility and green brand image of the firm in the perception of consumers. Based on this rationale, this study concluded that perceived greenwashing in advertisement (event) encourages the consumers to form a picture of the brand in their minds, and this picture negatively affects brand credibility and green brand image (reaction), which in turn affects the green brand equity (subsequent effect of the reaction).

Here the current study made twofold contributions in the literature; first the previous research on impact of perceived greenwashing on green branding (such as green brand equity) is limited, and empirical evidence reported in those studies suggests there is only scant evidence that other branding variables such as green brand image and brand credibility mediate the relationship between perceived greenwashing and green brand equity. Second, very few studies until recently have used attribution theory (Harvey & Weary 1984; Heider 1944; Kelley 1971; Kelley & Michela 1980) to explain process of consumers' attitude formation and its impact on firm's green brand equity. Specifically, this research reported presence of significant negative effects of greenwashing on brand credibility and on green brand image,

and ultimately on green brand equity whereas perceived brand age was found acting as boundary condition.

The results of the research contribute to the advancement of theoretical viewpoints in green branding literature; where this study explored the direct and indirect relationships between conventional and green branding constructs such as brand credibility (conventional), green brand image and green brand equity (green branding). In the current study, brand credibility and green brand image have direct and positive impact on green brand equity of the firm; which is in contradiction to the recent findings presented by Ng et al., (2014) where brand credibility does not directly affect green brand equity but rather have an indirect effect through green brand image and green brand perceived value. However, the results of the study are in line with the conventional branding literature (Papasolomou & Vrontis, 2006) which suggests that brand credibility is the key component in building customer based brand equity (Keller, 2001) as it summarizes the relationship with the brand (Sweeney & Swait, 2008). Thus similar to findings of Ng et al., (2014) organizations with established credibility have every possibility to leverage their success in getting a significant share of green markets and reflect it in their green brand equity.

This study contributes to marketing practice by incorporating the concept of green brand equity into consumer research. Previous literature suggests that, creating a greener image helps brand to build green brand equity of the firm where this type of brand equity can play a vital role in differentiating a green brand from its competitors (Chen 2018, Brady, Cronin, Fox, & Roehm, 2008; Jalilvand, Samiei, & Mahdavinia, 2011). Furthermore, many studies have suggested that high brand equity is enjoyed by firms who are perceived more credible by consumers (Hur, Kim, & Woo, 2014; Spry, Pappu, & Cornwell, 2011). In the current study, perceived greenwashing negatively affects green brand image and brand credibility, resulting in negative indirect effect on green brand equity of the firm. These findings are similar to the finding of Akturan (2018) where greenwashing has indirect negative impact on green brand equity through brand credibility and green brand associations for high and low involvement products. Furthermore, study by Chen et al., (2016) suggests that greenwash and green brand equity are negatively related and reduction of greenwash is an effective way to enhance green brand equity via two partial mediators, green brand image and green satisfaction. These findings are similar to the findings of this study where perceived greenwashing and green brand equity are negatively related but on contrary green brand

image was not found to be a significant mediator between perceived greenwashing and green brand equity.

One important variable in branding and advertisement literature that has been overlooked in past is the use of brand age in advertisements and to test how it empirically effects brand evaluations of firm by consumers. Furthermore, whether brand age can provide buffer to the firms to recover from the negative impact of their unethical practices is a question that needs exploration. To answer this question, this study used perceived brand age of the firm as boundary condition to test moderated mediation models. The current study made a theoretical contribution by proposing inter linkages and then testing those inter linkages between antecedents of brand equity (brand credibility and green brand image) and perceived greenwashing in the presence of perceived brand age as a boundary condition with attribution theory providing theoretical explanation. Based on best knowledge, the current study is among the very few researches (Zhang, Kashmiri & Cinelli, 2017) that identified and examined the importance of brand age in consumer attitudes toward the brand, especially in context of green branding and green marketing. Results of the current study indicate that the brands perceived as older and of mean age by consumers can buffer the negative effects incurred due to unethical practice (greenwashing) of the firm. The current research contributes to branding literature in general and as well as specifically in the domain of green branding by identifying a new perspective to study in form of influence of perceived brand age. This study also made a methodological contribution by studying the process through which consumer's level of perceived greenwashing effect green brand equity of the firm using mediation model, where this technique isolated the impact of mediators; brand credibility and green brand image separately between perceived greenwashing and green brand equity.

5.2.1 Implications for Marketer:

The findings of the study suggest that perceived greenwashing effects green brand equity of the firm negatively in the presence of mediator; brand credibility. Firms must understand that greenwashing attempts in their advertisements negatively impacts firm's brand credibility and which in turn affect the green brand equity of the firm. Furthermore, that negative impact of perceived greenwashing on brand credibility suggests that consumers will lack trust on brand and would doubt its expertise to deliver what it promises. As suggested by Keller

(2001) brand credibility is one important building block that helps construct high brand equity in green branding same is true as depicted by the results of the study.

The importance of brand age to impact consumers brand evaluations and providing room to firms to recover from the negative impact of its unethical practices (in this case perceived greenwashing in advertisement) has been taken for granted in the literature. It has been noted that consumers respond differently to marketing efforts of brands based on their difference in perceptions about brand personalities. One reason for such differences is that consumers relate to the brand which they feel are similar in personalities to their own, furthermore research with respect to brand personalities suggests that consumers are more forgiving towards brands that have young, exciting and cheerful personalities as compared to brands they perceived to have rugged and old personalities (Mulyanegara, Tsarenko, & Anderson, 2009). Based on the similar lines role of brand age was tested in this study to explore if the negative impact of perceived greenwashing on green brand equity through brand credibility and green brand image be different for brands perceived as older in age as compared to brands perceived as younger by consumers. As the results of the study indicate that perceived brand age does have an impact on brand evaluation; as people who perceived PSO as an older brand or having mean age were different from those who perceived it as younger. Inclusion of perception of brand being older or mean age by consumers with greenwashing perceptions changed the negative impact of perceived greenwashing alone on brand credibility (b= -0.1666) to positive (b= 0.1363). Furthermore, the model using green brand image as mediator also found similar results where inclusion of perception of brand being older or mean age by consumers along with greenwashing perceptions changed the negative impact of perceived greenwashing alone on green brand image (b= -0.1433) to positive (b= 0.1161). These findings are similar to the findings of Simon and Sullivan (1993) where they highlight the advantages of being older. Findings with respect to brand age suggest that older brands are considered more credible which is in line with the findings of Zhang, Kashmiri & Cinelli (2017), where older brands were considered credible and their products being of high quality. Also participants were more forgiving towards older brands as compared to younger ones after an ethical transgression by the brand (Zhang, Kashmiri & Cinelli, 2017). Similar results were found in the current study when perceived brand age was used as boundary condition, which positively impacted brand credibility and green brand image of the firm and ultimately positively improved brand equity for brand perceived as older or at mean age. Hence it is suggested that the age factor can help reduce the negative impact because people

might associate/attribute old age of the brand with more experience and authenticity in claims as compared to a brand that is perceived younger by consumers. Results of the study infer that marketers must include brand's age in their advertising messages as it is a powerful tool to shape consumer's perceptions of the brand which may enhance brand credibility in eyes of consumers and that in turn may help firm to establish stronger green brand equity. For older brands, marketers must strongly communicate their brand age as part of building their brand image; as it not only builds a favorable image in general but it also creates a buffer in case the firm is involved in unethical practices (Zhang, Kashmiri & Cinelli, 2017). Moreover, because the findings of the current study show that older brands seems more credible to the consumers than the younger ones; negative effects of greenwashing in advertisements can be mitigated by the strategy that emphasizes on firm's credibility.

5.2.2 Limitations & Future Directions

The limitation and future direction of this study is that the study uses a survey design methodology by employing one greenwashed product advertisement (i.e. the same greenwashed advertisement was shown to all the participants) to highlight the process through which perceived greenwashing affects green brand equity of the firm. In this study PSO green advertisement which had both elements (claim and executional) of greenwashing was shown to respondents, so it cannot be established through this research if there will be difference in process of how perceived greenwashing effects green brand equity of the firm if advertisements having claim greenwashing and executional greenwashing elements separately or which of the type of greenwashing will be identified more by the respondents and which form will impact green brand equity more of the firms more.

This study aimed at making initial contribution to the understanding of the role o brand age in marketing communication and if it can help firms recover from the negative consequences of unethical practices, hence only basic knowledge about brand age by consumers was gathered in this research. Studying how presence of brand age symbols or numbers on print green advertisements can alter the process and can be a future avenue of research. Furthermore, future researchers may want to analyze how different brand personalities affect the green brand equity of the firm involved in greenwashing practice. New moderators; consumer environmental knowledge and environmental concern can also be added to the established relationships in the study. Lastly, impact of these relationships can also be investigated on different outcome variables such as purchase intention.

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Appendix A: Questionnaire & Stimulus for the Study

Dear Participant ,

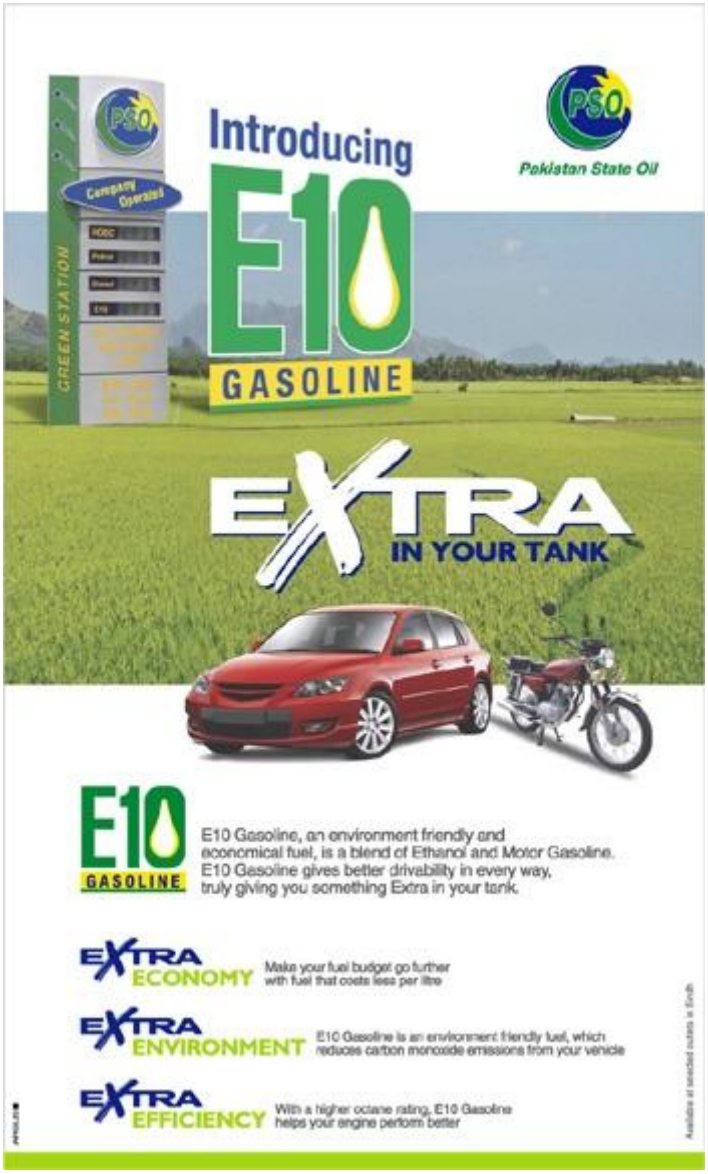
I am a student at 'Lahore School of Economics" and as a requirement for the degree of MPhil (Business Administration Research) I am conducting this survey. The following questionnaire will require approximately 5- 10 minutes of your time. In order to ensure that all information will remain confidential, please do not include your name. Copies of the questionnaire will be provided to my supervisor. If you choose to participate in this project, please answer all questions as honestly as possible and return the completed survey. Participation is strictly voluntary and you may refuse to participate at any time. Thank you for taking the time to assist me in my educational endeavors. Completion and return of the questionnaire will indicate your willingness to participate in this study .

Sincerely ,

Aqsa Sultan.

Part 1: Stimulus for the Study:

Instructions: Please look at this print advertisement of Pakistan State Oil (PSO) for some time, and read everything mentioned in this advertisement very slowly while paying attention to the images (pictures) as well. After analyzing the advertisement, please answer the attached questionnaire.



Part 2: Please answer the questions based on your feelings after seeing the printed advertisement shown to you earlier.

Statements	Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree
This ad misleads with words in its environmental features.	1	2	3	4	5
This ad misleads with visuals or graphics in its environmental features.	1	2	3	4	5
This ad possesses a green claim that is vague.	1	2	3	4	5
This ad exaggerates what the product's green functionality actually is.	1	2	3	4	5
This ad masks important information, which makes the green claim sound better than it is.	1	2	3	4	5

This brand reminds me of someone who is competent and knows what s/he is doing	1	2	3	4	5
This brand has the ability to deliver what it promises	1	2	3	4	5
This brand delivers what it promises	1	2	3	4	5
This brand's product claims are believable	1	2	3	4	5
Over time, my experiences with this brand have led me to expect it to keep its promises, no more and no less	1	2	3	4	5
This brand has a name you can trust	1	2	3	4	5

The brand is considered as the best benchmark of sustainable development	1	2	3	4	5
The brand is specialized in green reputation	1	2	3	4	5
The brand is excellent about environmental features	1	2	3	4	5
The brand is outstanding about environmental performance	1	2	3	4	5
The brand is reliable about sustainable development.	1	2	3	4	5

PSO is a younger brand	1	2	3	4	5
PSO is a new brand	1	2	3	4	5
PSO advertisements target the young	1	2	3	4	5

It makes sense to buy this brand instead of other brands because of its environmental commitments even if they are the same	**1**	**2**	**3**	**4**	**5**
Even if another brand has the same environmental features as this brand I would prefer to buy this brand	**1**	**2**	**3**	**4**	**5**
If there is another brand's environmental performances as good as this brand's, I would prefer to buy this brand	**1**	**2**	**3**	**4**	**5**
If the environmental concern of another brand is not different from that of this brand in any way, it seems smarter to purchase this brand	**1**	**2**	**3**	**4**	**5**

Demographic Information

1) Age: Please Identify your approximate age: _____ years (e.g. 36years)

2) Years of formal education: _____ years (e.g. 16 years)

3) You are:

- A Male or
- A Female

4) You were raised in which area:

- Rural
- Urban

5) Your Occupation: _____ (e.g. School Teacher)

6) Your Self Perception about lifestyle is:

- Modern
- Conservative

Thank you ☺

Appendix B

Summary Table Literature Review

Author	IV	DV	Mediator/ Moderator
Chen and Chang (2012)	Greenwash	Green Trust	Green Consumer Confusion, Green Perceived risk
Avcilar, M. Y., & Demirgunes, B. K. (2017)	Greenwash	Green Brand Equity	Green Confusion, Green trust, Green perceived risk
Jong et al., (2018)	Greenwashing Organization	Purchase Intention	Perception of Environmental Performance, Organizational Credibility
Akturan (2018)	Greenwashing	Purchase Intention	Green Brand Association, Brad Credibility, Green Brand Image
Chen (2018)	Greenwash	Green Purchase Behavior	Green Brand image, Green Brand Loyalty
Chen (2019)	Greenwashing	Intention to revisit, Negative WOM, intention to participate	Green trust, Prior experience with the green hotel
Chen (2010)	Green Brand Image	Green Brand Equity	Green Trust, green Satisfaction
Kang and Hur (2012)	Green Satisfaction	Green Brand Equity	Green Trust, Green Affect, Green Loyalty
Erdem and Swait (2004)	Brand Credibility	Perceived quality, Perceived risk, Information Cost saved	N/A
Guillory (2012)	Perceived brand age, proffered brand age	Choice	Attitude towards brand
Zhang, Kashmiri and Cinelli, (2019)	Brand Age	Consumer attitude towards unethical behavior	Perceived quality, brand credibility