The impact of brand health on customer equity

Abas Mirzaei [a,*], Chris Baumann [a,c], Lester W. Johnson [b], David Gray [a]

[a] *Macquarie University, Sydney, Australia*
[b] *Swinburne University, Melbourne, Australia*
[c] *Seoul National University, Republic of Korea*

A B S T R A C T

This paper aims at studying the interactions between brand and customer assets over the long-term. Through the application of a new behavioural measure called the brand health index (BHI) we examine the impact of brand health on customer equity, and its mediating impact on the advertising-customer equity relationship. Three services industries, department stores, airlines, and banking, were studied from 2001 to 2012. The results show that brand health has a positive impact on customer equity, although the magnitude of the BHI impact varies across different industries. Moreover it was demonstrated that brand health mediates the impact of advertising on customer equity.

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1. Introduction

Customers and brands are firms' primary intangible assets (Gupta and Lehmann, 2003). Firms spend their resources to acquire new customers and retain existing customers (Stahl, et al. 2012) in order to increase their current and future cash flows and ultimately firm value (Hanssens, Rust and Srivastava, 2009). A customer's contribution to firm value is not limited to the profit from just one single transaction, but also to the total profit gained from a customer throughout its relationship with the brand (Kumar and George, 2007). Therefore to maximize firm value, it is critical that managers can influence customers' decisions, and maximize customers' acquisition and retention rates, which are the two main drivers of customer lifetime value.

To capture all future margins generated by a customer, the concept of customer lifetime value (CLV) or in its aggregate level, customer equity (CE) (Kumar and Shah, 2009) has been proposed in recent years (Gupta and Lehmann, 2003). Previous research has shown a positive association between marketing actions (such as price, advertising, and promotion) and customer equity (see Blattberg et al., 2009 for a comprehensive review). In addition to marketing actions, customer lifetime value and customer equity can be affected by other intangible assets such as brand equity (Stahl et al., 2012). In theory it has been argued that a brand asset can affect customer equity through creating growth opportunities, and charging premium prices, thereby increasing customer loyalty. Therefore, in the current

competitive marketplace, monitoring the short-term and long-term influences of brand and customer equity as a predictor of customers' future behaviour is crucial (Vogel et al., 2008). Despite the conceptual papers developed on the brand–customer asset relationship, little research has studied this interaction empirically. In other words, the scholarly research has established a theoretical link between brand and customer assets, but the specific link has not been tested empirically. Moreover whilst considerable prior research has examined the relationship between marketing actions and brand performance, marketing actions and customer lifetime value and customer equity, little work has been done on the interaction between brand and customer assets with and without accounting for marketing actions (Stahl et al., 2012).

In this paper, we operationalize the theoretical link and empirically examine the impact of building a healthy brand on customer equity over the long-term. In doing so, we apply a new measure of customer equity, a macro model proposed by Lim and Lusch (2011). We also use a new long-term based behavioural measure of brand asset, termed the brand health index (BHI) as proposed by Mirzaei et al. (2015). Crucially we study the impact of advertising spending, as one of the key marketing actions (Buil et al., 2013), on customer equity. Finally, since brand asset may have a mediating impact on the marketing action-customer equity relationship (Stahl et al., 2012) we examine the mediating role of a healthy brand in the advertising-customer equity relationship by applying the Sobel (1982) test. Fig. 1 captures the essence of this paper since it shows how we propose the mediating effect of brand health between advertising and customer equity. We study

* Corresponding author.

A: Direct Effect
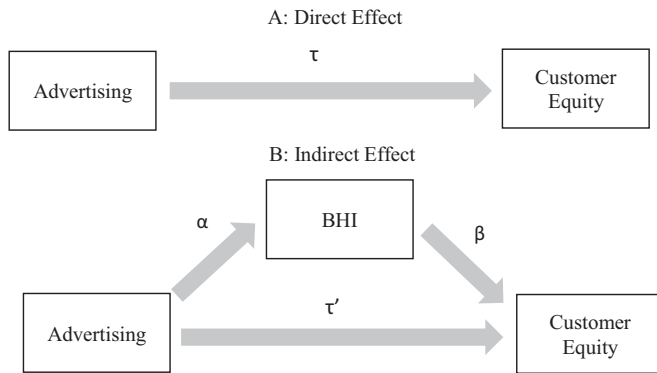
B: Indirect Effect

Fig. 1. Direct and indirect effects of advertising on customer equity via brand health. Note: the model specifications will be discussed in Section 6.2.

three industries, namely airlines, banking, and department stores in the U. S. market from 2001 to 2012.

This study contributes to the understanding of the relationship between brand oriented and customer oriented marketing actions. This is one of the first studies to empirically examine the interaction between two marketing assets, brand and customer assets, through studying the impact of brand health on customer equity. Managers in different industries can follow our approach in order to examine the contribution of brand building actions, namely advertising on customer equity, and the mediating role of healthy brands in the advertising-customer equity relationship.

In the next section, we provide a review and discussion of customer equity, its definition and measurement approaches. We then discuss the need for a behavioural measure of brand health, which captures the long-term dynamics of a brand. The Brand Health Index (BHI) is a new behavioural long-term based metric, and its theoretical grounding and methodology is discussed. We then discuss the customer–brand asset interactions and marketing actions–customer assets interactions before moving to the research methodology and findings.

2. Customer equity

One of the early papers on customer equity was Blattberg and Deighton's (1996) seminal paper on creating and maximizing customer equity. Since then it has been enriched by extensive research efforts (Bick, 2009). The core concept of customer equity is customer lifetime value (CLV) which is defined as "the present value of all future profits generated from a customer" (Gupta and Lehmann, 2003, p.10). It has also been defined as "the discounted future income stream derived from acquisition, retention, and expansion projections and their associated costs" (Gupta et al., 2004, p. 7). Simply stated, customer equity is the aggregate value of the customer lifetime value of all current and future customers (Blattberg and Deighton, 1996). Since not all customers are equally profitable for a firm, it is critical to allocate different resources to different customers (Gupta, et al. 2006). Customer lifetime value and customer equity as marketing assets (Hanssens et al., 2009) enable managers to find the profitable customers and manage the marketing actions for different groups of customers (Kumar and Reinartz, 2006). A wide range of tactics such as telemarketing, door-to-door selling, and direct mail have been used to engage more with customers and increase their lifetime value (Nguyen et al., 2014).

Customer lifetime value is driven by three major sources: customer acquisition, customer retention, and customer expansion (or cross-selling) (Gupta et al., 2006). A brand can spend on marketing actions such as advertising to acquire new customers, or to maintain current customers (Hanssens et al., 2008). A brand can

also develop relationship with its customers to introduce them its other products, and brands (cross selling) (Rust et al., 2004b). This is important especially when customers lose their interest in a brand. Instead of phasing out the brand and losing the customers, customers can be shifted to another brand of that company that is a better match for them (Rust et al., 2004b).

To measure the concept of customer lifetime value and customer equity, several models have been developed over the last three decades. Blattberg and Deighton (1996) proposed a mathematical framework of calculating customer equity based on acquisition and retention rates. In an effort to find the optimum acquisition and retention rate to maximize customer equity, Blattberg and Deighton (1996) suggested as guidelines a list of considerations such as investing in highest-value customers first. Their proposed measure has two main shortcomings. First, they haven't taken the expansion (cross-selling) rate into account, and second, their approach is only applicable in the direct marketing field (Bick, 2009).

Rust et al. (2000, 2004a) proposed a model of customer equity which is built on three main pillars, namely, value equity, brand equity and relational equity. Gupta and Lehmann (2003) and Gupta et al. (2004) tried to simplify the measurement of customer equity and CLV, and provided a simple model which measures customer lifetime value based on publicly available data. Although their proposed measure enables managers to calculate CLV with minimal and general information, their model is subject to several assumptions such as constant margin rates over time, constant retention rates over time, and infinite length of project.

Recently Kumar and his colleagues in a series of studies shed light on customer lifetime value, and customer equity (Reinartz and Kumar, 2003; Kumar and George 2007; Kumar and Shah 2009). Kumar and Shah (2009), applying what they called the *always-a-share* approach, proposed a framework to measure customer lifetime value. According to Kumar and Shah (2009), the always-a-share approach assumes that customers are always associated with the firm and never terminate their relationship.

Considering all the approaches discussed above as micro models of CLV and customer equity measurement, Lim and Lusch (2011) propose a new framework for measuring customer equity at the macro level. While all the micro models of customer equity are based on individual level customer data, the macro model of customer equity is a process model based on the entire firm readily available data in the standard financial statements. To compute customer equity based on micro level models, accessing customers' transactional records and purchase behaviour is required which is not publicly available.[1] Moreover, in some industries such as fastfood, where individual customers' information and purchase history is not recorded, individual level data does not exist. Tirenni et al. (2007) argue that managers in industries such as airlines continue to guess their customers' value, or inaccurately value them. In practice there are attempts to estimate customer equity through loyalty programs. Banking is clearly a "subscription-type" business (Baumann, Elliott and Burton, 2012, p. 149) where the service provider has a very clear idea of the value of the relationship even without the loyalty program. However in the other two industries we study here (airlines, and department stores) transactions are not always easily identified to a particular customer. Loyalty programs have been introduced to move these

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[1] Customer equity is a relatively new construct with only emerging understandings, conceptualisations and subsequent measurements. Admittedly, customer equity may ideally be measured at the actual individual customer level, calculated based on customer lifetime value (CLV). For practical reasons, however, and in order to move the discussion on customer equity research forward, we have decided to apply the macro level Lim and Lusch (2011) model as the closest proxy to empirically capture customer equity for 24 firms, in three industries, over 12 years.

"no-subscription type" businesses towards a "subscription-type" business with easier and more accurate identification of customer value and potential. At the same time many customers consume these services and remain undetected which suggests that regardless of these loyalty programs true customer equity remains a challenge to measure and our paper is designed to contribute to make such measurement more precise.

Therefore computing customer equity based on a micro bottom up approach, can be problematic since a great deal of guesswork is involved in estimating the factors such as retention rate and margin rate in order to compute the value of a customer. Instead macro models can be used as an alternative method when individual customer data is not available. The macro model of customer equity is consistent with the micro approaches since it is based on sales margin and margin capitalization (Lim and Lusch, 2011). Such a macro top down approach, considers changes in a firm's stock price, and market value to estimate customer equity, whereas micro models use customer equity to estimate an enterprise's market value. In this paper, we apply the macro model of customer equity to measure customer equity. We will discuss the model specifications in more detail later in the methodology section.

3. Brand and customer assets; building brands to maximize customer equity

The debate on being brand-focused or customer-focused has been around for a long time. On one hand, brand-oriented managers focus on building strong brands over the long-term by spending on brand building actions (Lodish and Mela, 2007). On the other hand, customer-oriented managers argue that since the value of a brand depends on customers, brands must be put in the service of growing customer equity, thus a customer-centred brand management approach is suggested (Rust et al., 2004b). Despite the differences in approach, brand and customer assets are associated in many ways. Customer loyalty, for instance, is the focus of both brand equity and customer equity (Leone et al., 2006). Consumers see more value in a product if it is associated with a familiar brand (Pappu and Quester, 2006). Both brands and customer oriented marketing actions can affect a firm through acquiring new customers, encouraging cross-buying, charging a premium price and reducing the marketing costs (Ambler et al., 2002). Brand and customer assets must be seen as two sides of a coin (Ambler et al., 2002). While brands can help customers to make purchase decisions with lower information cost, and perceived risk (Shankar et al., 2008), customer oriented marketing actions such as telemarketing, door-to-door selling, and direct mail can be employed to develop long-term relationship with customers, and increase their lifetime value (Nguyen et al., 2014). Factors such as industry characteristics can also influence the extent to which a company is brand-oriented or customer-oriented. For instance, in some industries, especially where customers are easily addressable, the customer relationship development can be focused in parallel with brand building efforts (Bick, 2009).

Despite all the similarities and overlaps, however, brand and customer assets differ in several aspects. Firstly, while a brand is an asset, customer equity is the value of an asset (Ambler et al., 2002). Secondly, customer equity focuses on the bottom-line, but brand building efforts emphasise the effectiveness of marketing actions in creating brand awareness and image and, eventually, the bottom-line (Leone et al., 2006). Thirdly, a brand asset is more effective in extending to new products and acquiring new customers, while customer equity is more effective in increasing the purchase of current products by existing customers (Ambler et al., 2002).

Regardless of being brand-oriented or customer-oriented, brand building marketing actions can influence customer equity

and vice versa. Developing strong relationships with customers can result in strong brand association which in return contributes to brand equity (Chen, 2001). More and more forward-looking marketers are incorporating customer relationship strategies into their brand management by developing strategies that focus on building trust and social bonds with customers (Esch et al., 2006). The relationship process can cause cognitive and emotional benefits which result in a strong social bond between brand and customers (Fournier, 1998). Developing a strong relationship with customers as a main driver of brand equity, can positively influence current and future purchase (Esch et al., 2006), and ultimately customer equity. Brands are very important in the firm-customer relationship, and can cause customer retention (Sweeney and Swait. 2008). Therefore spending on marketing actions, whether on brand building, or customer relationship development, can be beneficial for both brand and customer equity over the long-term. So instead of choosing between being brand-oriented or customer-oriented, it is critical to take both brand and customer assets into account when making optimal marketing decisions (Ambler et al., 2002). Considering the interactions between brand and customer assets, in order to optimize the resource allocation for effective brand and customer management, there is a need to examine and monitor the interactions between the two marketing assets, brands and customers.

Although previous research has established a theoretical link between brand and customer assets, such a relationship has not been examined empirically. Moreover whilst considerable prior research has examined the relationship between marketing actions and brand performance, marketing actions and customer lifetime value and customer equity, little work has been done on the interaction between brand and customer assets with and without accounting for marketing actions. Only recently has the impact of brand equity on customer retention, acquisition, and profit margin been examined as key components of customer lifetime value in the US automobile industry (Stahl et al., 2012).

In this paper, we empirically examine the association between brand and customer assets. We also demonstrate the role of a brand in the advertising-customer equity relationship.

4. Brand health index: an objective long-term based measure

Brand equity has been defined from different perspectives. Aaker (1991) defines brand equity as "a set of assets and liabilities linked to a brand, its name and symbol, which add to or subtract from the value provided by a product or service to a firm and/or that firm's customers" (p.15). From a psychological perspective, Keller (1993) stresses the role of brand knowledge and defines brand equity as "the differential effect of brand knowledge on consumer response to the marketing of the brand" (p.2). Depending on the extent to which a brand can recognise its current equity, and future potential, a brand can maximize its long-term value. A wide range of measures have been proposed in the literature to capture the equity of a brand. In line with brand value chain, brand equity measures can be classified into consumer mindset, market performance and financial performance measures. Brand awareness, brand associations, perceived quality, and customer loyalty are among the common consumer mindset measures of brand performance (Yoo and Donthu, 2001; Srinivasan et al., 2005; Pappu et al., 2005; Buil et al., 2008). While in order to measure brand equity from a market performance, price premium, revenue premium and market share have been used in the literature (Holbrook, 1992; Ailawadi et al., 2003; Sriram et al., 2007), financial measures of brand equity have used metrics such as market capitalization (Simon and Sullivan, 1993). The above categories of brand equity measures can be further classified into

subjective/attitudinal (e.g., awareness, association) and behavioural measures (e.g., market capital, market to book ratio, price and revenue premium).

Although subjective, or attitudinal measures are useful in capturing the consumer preferences and expectations, one major shortcoming of attitudinal measures is that they are subject to respondents' ability to express their preferences (Park and Srinivasan, 1994). On the other hand, behavioural measures are popular among managers since they are objective. Managers tend to use behavioural measures to judge the contribution of marketing actions because they can be easily linked to sales, revenue, and return (Kumar et al., 2013), terms and concepts which are the common language of CFOs and CEOs. Despite their popularity, the existing objective behavioural measures are short-term oriented. Such a myopic view has been increasingly criticised because of possible detriment to a firm's long-term goals (Lodish and Mela, 2007; Mizik and Jacobson 2007). It has been well acknowledged in the literature that the impact of some marketing actions such as advertising can go beyond the current term and last for years (Clarke, 1976; Mizik and Jacobson 2008; Ataman et al., 2010). For that reason it has been argued that short-term measures of brand performance evaluation are not rich enough to capture the lagged impacts of marketing actions on building healthy brands (Mirzaei et al., 2011). Therefore it is crucial to have a long-term vision on evaluating a brand's performance. In other words, there is a need for a behavioural, objective, long-term measure of brand performance to evaluate and monitor the health of a brand over the long-term.

In response to this call, Mirzaei et al. (2015) propose a new long-term based behavioural measure of brand evaluation called the Brand Health Index (BHI). Brand health is defined as the extent to which a brand has been able to experience a consistent sales growth over long-term (Mirzaei et al. 2015). In other words, a brand is defined as *healthy* if it is able to adopt effective marketing strategies in response to the customers' changing tastes over time and as a result to keep the sales growth persistently high over the long-run. A brand can increase its short-term sales by introducing temporary price cuts, and promotional offerings. Short-term sales increase can also be due to extra purchases made by existing customers who stock the product for the next round of price discounts (Madden et al., 2006). However over the long-term, if a brand can persistently experience sales growth, not for one or two periods, but for several years, it implies that a brand is continuously appealing to its customers and performing well (Keller and Lehmann, 2009). "Companies get onto the fortune 50 by growing quickly, but it is like winning the Nobel Prize: their performance falls off afterward" (Laurie et al., 2006, p. 83). Therefore a healthy brand is a brand with a high growth rate and low growth rate volatility over the long-term.

BHI is in line with the two components of the long-term brand value model, proposed by Keller and Lehmann (2009, p.10); *growth* ("the extent to which current customers increase their spending and new customers are attracted to the brand with either existing or new products") and *persistence* ("the extent to which a current customer franchise and its spending level can be sustained over time"). In order to maximize the inherent brand equity potential in adding value to products and services and increasing consumers' willingness to pay, charging higher prices, brands need to be persistent in creating growth over time. Therefore, brand health index captures the long-term potential of a brand.

In this paper we take a long-term approach and apply the brand health index proposed by Mirzaei et al. (2015). We compute brand health as follows:

$$BHI_{it} = \left(\frac{\text{Sum of Growth}}{\text{Standard Deviation of Growth}} \right) \quad (1)$$

$$BHI_{it} = \left(\frac{\sum_{t-T}^{T} \text{Growth}}{SD_{gi(t-T,t)}} \right) \quad (2)$$

$$\text{Growth}_{it} = \frac{(\text{Sales}_{it} - \text{Sales}_{it-1})}{\text{Sales}_{it-1}} \quad (3)$$

$$SD_{gi(t-T,t)} = \sqrt{\frac{\sum_{t-T}^{t} (\text{Growth}_{it} - \overline{\text{Growth}}_{i(t-T,t)})^2}{T-1}} \quad (4)$$

Where growth$_{it}$ is the growth of brand i at time t, SD$_{gi(t-T,\ t)}$ denotes the growth standard deviation of brand i for a period of T years from t-T to t. Growth is calculated as the relative difference between current period sales and the last period sales. BHI is objective, based on publically available data, and has a long-term perspective. It can be estimated at different firm levels from corporate to brand, and sub-brand level. BHI is applicable across most, if not all, industries.

5. Marketing actions and marketing assets

Marketing actions can influence customers' attitudes, perceptions, and ultimately customers' purchase behaviour (Keller and Lehmann, 2009). To maximize customer equity, different marketing actions must be employed targeting different drivers of customer equity such as customer retention and acquisition. For instance, developing a knowledge infrastructure to manage customer relationship and to monitor customer lifetime value (Hansotia, 2004). Burger and Bechwati (2001) argue that different budget allocation settings are required for customer acquisition and retention in different markets. Rust et al. (2000) develop a framework that links marketing actions such as advertising to customers' preferences, brand choice, and customer value. A higher probability of brand choice means higher customer value, which is a main driver of customer lifetime value and customer equity (Vogel et al., 2008). Marketing actions can also affect customer-brand relationship. Overall, according to the marketing value chain, marketing actions influence brand and customer assets (Keller and Lehmann, 2006; Gupta and Lehmann 2003). One of the key marketing actions that can influence the performance of a brand is advertising spending (Buil et al., 2013). Previous studies examining the impact of advertising on brand equity found positive relationships (Chaudhuri, 2002; Shankar et al., 2008). Moreover, advertising can have an impact on customer lifetime value and customer equity (Stahl et al., 2012). Advertising can influence consumers' knowledge about the brand by creating brand awareness and associations and ultimately it can influence consumer purchase (Stahl et al., 2012). While previous research has examined the role of advertising on brand performance, they all have used short-term oriented measures of brand performance. In this study we use brand health index as a long-term measure that captures the brand's potential over time.

Moreover, the impact of advertising is not limited to the short-term. Advertising has a lagged impact that can go beyond the short-term and appear in the long-term (Ataman et al., 2010). Therefore to evaluate the advertising contribution to brand and customer assets, it is crucial to capture its current and lagged impacts over the long-term. One of the popular models to capture the lagged advertising impact is Koyck (1954) model. It uses the geometric decay rate for lagged advertising spending impact (Jedidi et al., 1999). In this study, focusing on advertising as a key marketing action, we apply the Koyck model, and create an

Adstock variable to capture the impact of advertising spending on customer equity and brand health.

6. Methodology

6.1. Variable operationalization

6.1.1. Customer equity

Following Lim and Lusch (2011) we compute customer equity as a process model. As shown in Fig. 2, such a process model consists of four steps: 1) annual sales generate sales margins, 2) annual sales margins generate stock returns, 3) annual stock returns reflect sales margin capitalization, and 4) finally customer equity can be approximated from "sales margin capitalization" (Lim and Lusch, 2011, p. 650). In other words, customer equity is the percentage of sales-supported earnings that is expected to be continued in the future.

To formalize the model, the margin capitalization rate must be computed. In order to do so, first we need to compute the sale-supported earnings (see appendix A). By regressing the annual stock return (R_{it}) on changes in the sales-supported margins ($\Delta SMAR$), and changes in residuals from sales ($\Delta ERFS$), one can estimate the margin capitalization rate (b_1) as follows:

$$R_{it} = b_0 + b_1 \Delta SMAR_{it} + b_2 \Delta ERFS_{it} + \theta_{it} \tag{5}$$

Assuming that brand sales are generated from marketing actions, the margin capitalization rate (b_1) can be seen as the net present value of all future profits. Considering i as the risk adjusted discount rate, the present value of one dollar change in earnings would be $(1 + 1/i)$, where $1/i$ is the current value of revision in all future periods earnings (Lim and Lusch, 2011, p. 659).

Customer equity as the revisions in market expectation of all future periods earning can be computed as $(b_1 - 1)*i$ (Lim and Lusch, 2011, p. 659). Following Lim and Lusch (2011) we consider i, the discount rate, equal to 0.125 (12.5%). Lim and Lusch (2011) argue that "many security analysts estimated the debt equivalent value of operating leases by multiplying the annual rent by a factor of 8" (p. 659).

6.1.2. Advertising spending

To estimate the direct impact of advertising spending on customer equity and also its indirect impact via brand health, following Broadbent (1979) and Shankar et al. (2008), we first apply the Koyck model, and create the Adstock variable as follows:

$$ADSTOCK_t = (1 - \lambda)AD_t + \lambda ADSTOCK_{t-1} \tag{6}$$

In Eq. (6), the current Adstock is a function of current term advertising spending and the Adstock of the last year (t-1). Adstock

captures the distributed lag impact of the past advertising spending considering a decay rate of λ for the past advertising spending. Koyck (1954) argues that the impact of advertising spending decays geometrically, therefore the impact of one year spending on the next three years would be decayed with the rate of λ, λ^2, and λ^3 respectively. Since our data interval is annual, we consider λ equal to 0.2 following Shankar et al. (2008) which is in line with $\lambda = 0.6$ of Clarke (1976) for quarterly data, and the $\lambda = 0.97$ of Jedidi et al. (1999) for weekly data (Considering λ equal to 0.97 for weekly data, the annual rate of λ would be 0.97 (52) = 0.2).

6.2. Model specification

To capture the impact of brand health on customer equity, we run a regression on time series data for each firm. Following Lim and Lusch (2011) in this study we provide firm-specific analysis. We specify the model structure as follows:

$$CE_{it} = \alpha_{CE,t} + \gamma BHI_{it} + \omega_{CE,t} \tag{7}$$

In Eq. (7), CE_{it} denotes the customer equity of brand i at time t. similarly, BHI_{it} represents the health index of brand i at time t. In order to examine the impacts of a firm's Adstock on customer equity both directly and also indirectly through brand health, following Stahl et al. (2012) we employ the Sobel (1982) test.

As illustrated in Fig. 1, A represents the total impact of Adstock on customer equity which is an unstandardized coefficient of path τ. Fig. 1B, represents both the direct effect of Adstock on customer equity (path τ') and the indirect impact of Adstock on customer equity via brand health as mediator. The indirect impact of Adstock on customer equity via brand health is defined as the product of two paths linking Adstock to customer equity via brand health ($\tau - \tau' = \alpha\beta$) (Preacher and Hayes, 2008).

To quantify the coefficients, three different regression models need to be examined. First, the direct impact of advertising on customer equity (Eq. (8)). Second, the impact of advertising on brand health is measured (Eq. (9)). Finally, the combined impact of advertising and brand health on customer equity is examined (Eq. (10)) as follows:

$$CE_{it} = \alpha_{CE,t} + \tau \Delta Adstock_{it} + \omega_{CE,t} \tag{8}$$

$$BHI_{it} = \alpha_{BHI,t} + \alpha_1 \Delta Adstock_{it} + \omega_{BHI,t} \tag{9}$$

$$CE_{it} = \alpha_{CE,t} + \tau' \Delta Adstock_{it} + \beta_1 \Delta BHI_{it} + \omega_{CE,t} \tag{10}$$

In the above equations, CE_{it}, represents the customer equity of brand i at time t, BHI_{it} denotes the brand health index of brand i at time t. Also $\Delta Adstock_{it}$ represents the changes in Adstock of brand i at time t from t-1. Moreover ω represents the error term.

6.3. Data description

The data to empirically test our model is based on the COMPUSTAT database, with the aforementioned variables computed over a period of twelve years from 2001 to 2012.

This study focuses on the brand level, and due to the fact that COMPUSTAT provides only corporate level data, we chose those firms and brands that, firstly, operate under corporate branding (e.g., their corporate name is their brand name) and, secondly have available sales, income, stock return, and advertising data for 12 years from 2001 to 2012. The brands studied in each industry are the major brands that count for over 80% of the market share.[2]

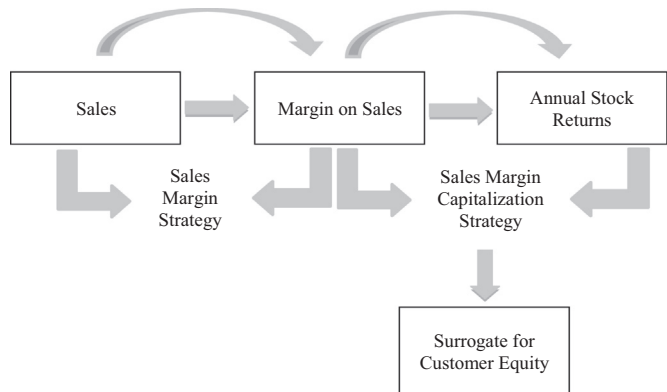Focusing on service-providing sector with almost 85%

Fig. 2. The macro model of customer equity.
Source: Adapted from Lim and Lusch (2011).

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[2] The advertising spending data item available on COMPUSTAT database represents the cost of advertising media (i.e., radio, television, and periodicals). Thus, it contains all media.

contribution to GDP (Bureau of Economic Analysis, 2013), three industries in the US market were studied over 12 years.

- airlines (7 brands, 84 observations),
- banking (10 brands, 120 observations), and
- department stores (7 brands, 84 observations).

The aforementioned industries are among the top 15 major GDP contributing service industries (Bureau of Economic Analysis, 2013). We chose the U.S. market, since it is a dynamic marketplace with multiple major brands in each industry. Moreover branding efforts are more established in the U.S. market compared to other markets. Focusing on U.S. brands, we retrieve the annual sales records, income and stock returns of brands with advertising spending data available for the study period.

7. Empirical analysis

Fig. 3 illustrates the descriptive statistics for our three main variables, Adstock, brand health, and customer equity. On average, the Adstock intensity in the airline category is 0.007 which is the lowest as opposed to the department store category with the highest Adstock intensity at 0.043. Adstock is also high in the banking industry with 0.017. With regards to BHI magnitude, the average BHI ranges from 5.42 in banking to 7.37 in the airlines industry.

Customer equity ranges from 0.26 in the airlines industry to 0.47 in the banking category. This also means that on average 26 and 47 cents of sales supported earnings will be continued in the future respectively for airlines and banking industries.

The results of the Eq. (5), and the sales capitalization rate have been reported in Table 1. In Table 1, b_1 represents the sales-supported earnings and b_2 reflects the ratio of changes in earnings residual from sales. It is evident that across all three industries the impact of sales-supported earnings (b_1) on stock return is greater than the non-sales related earnings (b_2). This means that revenue is mainly driven by customers' purchase than by other factors. While the ratio of sales-supported earnings to non-sales related earnings in the department store and airline industries is 1.28, this ratio in the banking industry is 2.07. In other words, the contribution of the sales-supported component (b_1) of stock return is more than twice the non-sales related component (b_2). The average R-square for Eq. (5) varies from 0.31 to 0.48 for banking and department stores industries.

Table 1
Regression results of Eq. (5) (sales-supported income).

	Airlines	Banking	Department Stores
b_0	−0.001	0.02	−0.21
b_1	3.09	4.79	8.86
b_2	2.4	2.31	6.89
$b_{1/}\, b_2$	1.28	2.07	1.28
R-square	**0.43**	**0.31**	**0.48**

Table 2
The association between brand health and customer equity.

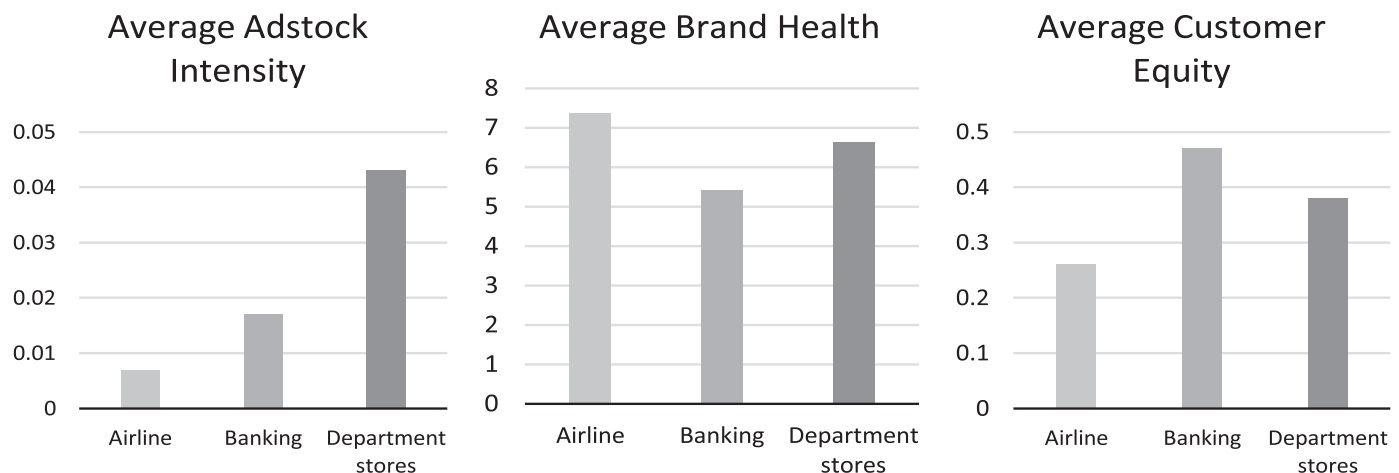|	Brand Health Standardised Coefficient	R-square
Airline	0.11	0.17
Banking	0.20	0.22
Department stores	0.40	0.21

7.1. Linking brand health to customer equity

As shown in Table 2, brand health is positively associated with customer equity across all three industries. The standardised coefficients suggest that on average, a 1-unit increase in brand health results in an 11% increase in customer equity in the airlines industry. Similarly, building healthy brands has a positive 20% impact on customer equity in the banking industry. The positive impact of brand health on customer equity is even stronger in the department stores. A 1 unit increase in brand health results in 0.4 unit increase in customer equity in the department store industry. This implies the importance of building healthy brands to secure a greater future cash flow and customer equity.

7.2. The impact of advertising on customer equity

In this section we study the impact of advertising spending on customer equity both directly and also indirectly via brand health.

7.2.1. Direct impact

As reported in Table 3, advertising which here is operationalized as Adstock has a strong positive impact (τ) on customer equity across all three industries. On average in the banking industry, advertising has a 9% positive direct impact on customer equity. Advertising is also crucial in the department store and airline industries to create customer equity. Advertising is positively associated with customer equity with 28% and 25% impact respectively in department stores and airline industries. The

Fig. 3. The average adstock, brand health, and customer equity across industries.

Table 3
Direct impact of advertising on customer equity.

	Advertising (Direct) Standardised Coefficient	R-square
Airline	0.25	0.31
Banking	0.09	0.26
Department stores	0.28	0.28

Table 4
Indirect impact of advertising on customer equity.

	Advertising (Indirect) Standardised Coefficient	R-square
Airline	0.068	0.40
Banking	0.074	0.38
Department stores	0.081	0.42

average R-square of 0.26-0.31 across brands suggests a strong linear relationship between advertising and customer equity.

7.2.2. Indirect impact through brand health

To capture the indirect impact of advertising on customer equity, considering the mediating role of brand health, we apply the Sobel (1982) test. The findings of this test, reported in Table 4, show that not only advertising can positively influence customer equity directly, it can also affect customer equity indirectly via brand health.

On average the indirect impact of Adstock on customer equity via brand health is 6.8% in the airlines industry with a 40% R-square. The positive indirect impact of Adstock on customer equity is even stronger in the banking and department store categories with 7.4% and 8.1%, respectively. In other words, the additional effect of advertising on customer equity through BHI is 8.1% which means customers react more strongly to advertisements of healthy brands compared unhealthy brands.

Applying the Sobel test to capture the mediating role of brand health on the advertising-customer equity relationship, it was evident that not only brand health has a positive impact on customer equity, but it can also positively mediate the impact of advertising on customer equity. The findings of the Sobel test show that brand health can increase the impact of advertising on customer equity. Without including brand health, the association between advertising and customer equity is 0.25. Adding brand health to the model resulted in an increase in the overall impact of advertising on customer equity. Brand health can increase the impact of advertising on customer equity by up to 8.1% in the department store industry. In other words, creating a healthy brand can leverage the impact of marketing actions such as advertising on customer equity across all three industries and more importantly in the department stores industry.

The findings of this study empirically demonstrate the impact of brand health on customer equity creation, and also the mediating role of brand health in the advertising-customer equity relationship. In other words, building healthy brands can increase the effectiveness of advertising efforts in creating a greater customer equity.

8. Discussion

8.1. Summary of main findings

Applying a new measure of brand health (BHI) (Mirzaei et al., 2015), we studied the impact of building healthy brands on customer equity over the long run from 2001 to 2012 across three industries. Moreover the direct impact of advertising on customer equity was examined along with its indirect impact via brand health. We applied a macro measure of customer equity proposed by Lim and Lusch (2011). We demonstrated that building healthy brands can increase customer equity since the BHI is positively associated with customer equity across all three industries. The magnitude of the BHI impact on customer equity varies from 0.11 in the airlines industry to 0.4 in the department stores industry. This means a one unit change in brand health resulted in a 0.11 unit change in customer equity in the airlines and a 0.40 unit change in department stores. Examining the impact of advertising on customer equity, we demonstrated that not only does advertising influence customer equity directly, but advertising also has an indirect positive impact on customer equity via brand health. In other words building healthy brands can positively influence and facilitate the advertising impact on customer equity.

8.2. Theoretical and managerial implications

The theoretical contribution of this research is classified as explicating, and delineating, following the MacInnis (2011) categorisation. This paper empirically examined the association between the two marketing assets, brand and customer assets. It also demonstrated the mediating role of brands on the advertising-customer equity relationship.

The findings of this research also provide several implications for managers. Applying two behavioural, objective, and easy to compute measures of customer equity and brand health, we developed a platform to evaluate the interaction between marketing actions, (i.e., advertising), and brand and customer assets. To optimize budget and resource allocation, managers can apply our framework to examine the effectiveness of different marketing actions in creating greater customer lifetime value and customer equity. Our framework also enables managers to examine the mediating impact of brand health on customer equity. In other words, it enables managers to compute objectively the brand health index, and then quantitatively estimate the contribution of building healthy brands to customer equity. Brand-orientated or customer-orientated companies can follow our approach to monitor the interaction between their marketing actions and marketing assets over the long-term.

Moreover, given the strong effects demonstrated in our study's model, an increased focus for advertising agencies and advertising departments on the effectiveness of not only increasing sales, but also to build brands (represented by BHI in our study) and indeed customer equity over time is advisable. Such intensified efforts and the new long term perspective are even more crucial in times of intensified competitiveness, yet decreased customer loyalty in the industries under investigation in this study, and to make things worse, also in times when customer loyalty programs are terminated (e.g., in the airline industry in the USA).

For our framework to materialize, the foundation is that advertising and brand building 'tango', in other words, advertising is the first part of the equation where the consumer is drawn (or 'glued') to the brand, and the second part is the actual brand experience where the customer consumes the brand such as the flight experience with an airline, financial services for banks, and the in-store experience for department stores.

The basic premise for our study, and indeed for probably all advertising branding customer equity paradigms, is always the underlying assumption of customer loyalty (i.e., customer equity is only valid if customers are and remain loyal). Customer loyalty is determined by consumers' perception of switching costs in relation to switching benefits. Switching costs for airlines and department stores are very low compared to banking. Brands need to build a protective shield based on these two switching dimensions (costs and benefits) as our study demonstrates that BHI is positively associated with greater customer equity and serves as a

mediator between advertising and customer equity over time.

8.3. Research limitations and future directions

As with all academic research there are some limitations with the current study. Data availability is the main limitation of this study. Our sample was limited to major corporate brands with available sales, income, stock return and, advertising spending data over a period of 12 years. However we had a reasonable sample size for each category, but having a larger sample size with more brands across different industries could improve the model generalizability. These limitations, however, create opportunities for additional research to explore a wider range of industries and contexts as compared to those explored in this study. For instance, future research could be directed to replicate the current study focusing on other databases with available data for advertising spending, income, stock return and sales for more firms and also across a wider range of industries. And, since this study was limited to corporate brands, future research can replicate the current study across firms with multiple brands or at the individual brand level. Moreover in addition to advertising, future research can study a firm's other marketing actions such as price promotion and also product innovation to compare the overall impact of each marketing action on customer equity and brand health. Indeed a recent study established the importance of both exposure (i.e., advertising effects) and experience (i.e., actual product usage) on brand recall, mediated by trust (Baumann et al., 2015), and such mechanisms could also be probed in the context of this new study's findings. In particular, our framework presented in Fig. 1 could be extended by the incorporation of a consumer's actual experience with the brand. Future research can also be focused on applying other measures of brand health and customer equity to examine the brand–customer asset interrelationship. Lastly our measure of customer equity was at the macro level and sales–based, but future work could separate sales and customer equity when the latter construct is micro customer lifetime value-based.

9. Conclusion

Practitioners and marketing scholars have long had a strong focus on advertising effect on short-term sales, and that is very understandable given that originally, advertising was clearly geared towards those short term sales of products and services. However there are two dimensions that have been slightly over-looked, especially in light of intensified battles among brands for share of mind, or in other words, for advertising not only to sell short term, but also to build brand equity with a long term horizon. Firstly then, the long-term impact of advertising on customer equity has not received the attention in the marketing literature it deserves, and secondly, the role of advertising on customer equity with and without the mediating role of brand health warrants investigation given that such effects emerged as likely from our literature review, and also make practical sense.

Our study has assumed such a long-term perspective since we examine the interactions among advertising, brand health and customer equity over a time period of 12 years (i.e., from 2001 to 2012), applying a long-term oriented measure of brand health, BHI. Our study is the first to probe these associations. Specifically, BHI as a mediator is a relatively new construct that was only introduced in 2015. The mediating effect of brand health between advertising and customer equity means that not only advertising can influence the short-term sales, but crucially, we demonstrate the advertising can and should be designed in a way that influences the long-term purchase behaviour of customers. Moreover, since it was found that sales-supported earnings are greater than non-sales supported

earnings, it demonstrated the importance of customer relationship development to increase future earnings. Finally, the findings of this research shed light on the brand–customer asset relationship. Overall, the findings of this study enable mangers to objectively monitor the contribution of brand building efforts, such as advertising spending on brand health, customer equity and all future profits.

Appendix A

Computing the sales-supported margins, first starts with the estimation of sales-related earnings. By regressing annual changes in income (ΔY_{it}) (changes in earnings before tax) on annual changes in sales (ΔS_{it}), we estimate the association between earnings and sales for each firm as follows:

$$\Delta Y_{it} = a_0 + a_1 \Delta S_{it} + \varepsilon_{it} \tag{A.1}$$

Both variables are deflated by the market value of equity. According to Lim and Lusch (2011) a_1 in equation A.1 represents the sales margin ("how sales changes are translated into changes in earnings", p. 648, or "the profits generated from additional sales of one dollar", p. 651). In the next stage, and after obtaining a_0, and a_1 from equation A.1, two components of the annual changes in earnings, we compute the changes in sales supported margins ($\Delta SMAR$),[3] and changes in earnings residual from sales ($\Delta ERFS$)[4] as Eqs. (A.2) and (A.3) respectively:

$$\Delta SMAR_{it} = a_0 + a_1 \Delta S_{it} \tag{A.2}$$

$$\Delta ERFS_{it} = \Delta Y_{it} - a_0 - a_1 \Delta S_{it} \tag{A.3}$$

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[3] That portion of changes in earnings that is supported by changes in sales
[4] That portion of changes in earnings that is supported by changes in other factors

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