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Patterns of buyer behavior and brand metrics in a "high loyalty" category: Liquor

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Patterns of buyer behavior and brand metrics in a 'high loyalty' category: liquor.

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Abstract

This study examines behavioral brand loyalty in a category that, based on industry evidence, is expected to exhibit high loyalty: liquor (distilled spirits). The study aims to extend knowledge of the factors that underly behavioral loyalty, including brand characteristics of price level and promotion incidence, and buyer characteristics of age and income. Drawing on theory and evidence relating to prospect theory, the 'smart shopper' concept, as well as literature pertaining to age and loyalty, we develop a series of hypotheses and test them using extensive consumer panel purchasing data for US households. The analysis confirms that liquor is indeed a high loyalty category in the context of consumer goods, evidenced via high Share of Category Requirements (SCR). The study also identifies that liquor brands follow the double jeopardy pattern, whereby larger-share brands enjoy somewhat higher loyalty, and that exceptions – brands with unusually high or low volume loyalty for their size - are related to volume purchased per occasion. In turn, there is a strong negative association between brand price and high average volume purchased per occasion (i.e. cheaper brands are bought in larger quantity or volume than expensive ones). The study also finds brands with a low price tend to be particularly attractive to low-income households, and that in turn, low-income households exhibit higher brand loyalty. These new findings contribute to the literature on brand loyalty and the links between loyalty, brand characteristics and demographics.

Keywords: behavioral brand loyalty, pricing, buyer behavior, demographics.

Patterns of buyer behavior and brand metrics in a 'high loyalty' category: liquor.

Introduction

This paper aims to generate insights about brand, buyer and category factors that explain variation in behavioral loyalty using liquor brands as the market context. The study examines liquor brands in the Vodka, Tequila, Rum and Bourbon categories using household-level US consumer purchasing data. Liquor is a managerially and academically interesting category to investigate for a range of reasons. First, the category offers an opportunity to examine behavioral brand loyalty towards a highly hedonic product (Sun et al., 2009). Hedonic products are consumed for pleasurable motivations (Hirschman and Holbrook, 1982; Wertenbroch and Dhar, 2000) rather than utilitarian motives (i.e. 'to get the job done'). Liquor consumption is motivated by anticipated rewards such as taste (Lanier et al., 2005), is both stimulating and sedating (Hendler et al., 2013), and is an adjunct to socialising (Niland et al., 2013). It is intertwined with social rituals such as food consumption and celebrations (Bartram et al., 2017). Alcohol is a distinct consumer product in that it is one of the few for which consumption can reduce short-term stress and improve mood (Sayette, 2017); is therefore arguably highly hedonic[1]. That said, it is also one that poses negative consequences from over-consumption (Jani et al., 2021). Examining the extent to which a product category with these sorts of qualities engenders high brand loyalty will be enlightening for managers and researchers. Industry reports suggest liquor is a product that does exhibit high brand loyalty (Statista, 2022), whereby consumers report they stay with certain brands over long periods of time.

[1] Note that the study does not examine whether some consumers see the category as more hedonic than others, and if those perceptions are linked to loyalty. Rather, the focus is on an overall examination of loyalty towards brands in a category with hedonic characteristics.

The focus of this study is to comprehensively examine the extent, and variation in share of category requirements (SCR) for liquor brands. SCR is a widely used loyalty metric (Farris et al., 2016), and is defined as the average proportion of a brand's buyers' category purchasing allocated to that brand, typically for a 12-month period (Bhattacharya et al., 1996; Uncles et al., 1994). SCR is a managerially relevant brand metric since it directly links to the brand's sales revenue. Sales revenue is a function of how many buy the brand, multiplied by how much of it they buy, and SCR closely reflects the latter.

A second motivation for this study is the opportunity to examine brand loyalty in a market context in which buyer behavior and brand popularity may differ across age groups (Kerr et al., 2004). To elaborate, distilled spirits were highly popular prior to the mid-1970's, waned in the subsequent twenty years, and have become more popular since the late 1990's (Nesin, 2020; Mosher, 2012). In addition, the market features many very old brands as well as comparatively new ones. This variation over time and brands could mean some brands are more popular among older drinkers, whereas others are more popular among younger drinkers. Mecredy et al (2022) point out that differences in brand market share across age groups may be linked to differences in brand loyalty across those age groups, via the double jeopardy effect (Ehrenberg et al., 1990; Pleshko and Heiens, 2022). Therefore, examining the interplay between age, buyer behavior and loyalty towards liquor brands may reveal insights relevant to broader work on the link between age and loyalty (e.g. Lambert-Pandraud and Laurent, 2010b; Mecredy et al., 2022). Lastly, an important aspect of past work on behavioral loyalty has been the inter-relationship between loyalty and brand price. A range of studies have determined (perhaps counter-intuitively) that *low*-priced brands tend to enjoy higher rates of repeat-purchase loyalty (e.g. Bhattacharya et al., 1996). However, the work on this area has been undertaken in grocery categories, where price differences between budget and premium brands are often only several dollars. By contrast, there are larger price differences

between competing liquor brands (Mulhern et al., 1998). Indeed, the liquor category has exhibited considerable premiumisation in recent years (Arthur, 2023) which has driven sales growth for higher-priced alcohol products. We document later in the study that liquor brand price differences are much larger than for grocery brands. Therefore, a study utilizing this category context also provides the opportunity to broaden our knowledge about how brand price level is associated with behavioral brand loyalty.

In the next section, we canvass past work, empirical and theoretical, on the topic of brand loyalty and the factors that influence it. This review forms the basis of a series of hypotheses relating to behavioral brand loyalty using liquor (distilled spirits) as the context of the study. We commence with a discussion about the extent of loyalty in the category, which forms the basis of H1, before canvassing the question of double jeopardy effects in a high-loyalty category (H2); we then turn to factors that prior theory and evidence suggest influence brand loyalty levels: brand price (H3 and 4), buyer income (H5-6), and age (H7 and 8).

We then undertake an empirical analysis utilizes consumer purchasing data (2019) from the NielsenIQ US consumer panel, which includes over 50,000 US households. The empirical analysis examines the top 20 brands of four popular liquor products: Vodka, Tequila, Rum and Bourbon. The analysis finds that liquor is indeed a high loyalty category compared to grocery goods as a benchmark. Next, we find liquor exhibits the well-known 'double jeopardy' pattern whereby smaller brands have fewer customers and lower loyalty. In turn, a prime factor underpinning this variation in brand loyalty is that some brands sell in much larger quantities per occasion than others, and this is linked to them having a low selling price. In addition, the analysis finds that lower average income level of the brand's buyer base is associated with higher levels of behavioral loyalty. Theory and related research are used to contextualise this finding. The study represents a distinct contribution to knowledge

about the factors that help explain why some brands show higher (or lower) behavioral loyalty compared to others.

Background and Literature Review

Brand loyalty is an important topic in industry as well as among academic researchers (Graham et al., 2017; Casteran et al., 2019; Khamitov et al., 2019). The focus of the current study is behavioural brand loyalty, defined as the repeated purchasing of a brand or several brands in a category (Ehrenberg, 2000). Behavioral loyalty is intuitively important for a brand, since a brand's sales depend on the number of buyers, multiplied by how much they buy of the brand (Uncles and Ellis, 1989). Therefore, behavioral loyalty is a source of ongoing revenue for a brand. Loyalty provides the advantage that it makes the brand more resilient to competitor attacks (Dekimpe et al., 1997), and high brand loyalty makes channel partners more dependent on the brand owner (Zhang et al., 2017), giving it negotiating power. For these reasons, both managers and academics are interested in the reasons why certain brands in a category may have higher loyalty than others.

A fundamental factor to be examined prior to in-depth analysis of the loyalty towards specific brands within a category is the overall extent of loyalty in the *category*. One stream of research has distinguished between two broad category types (Sharp et al., 2002), one called a 'subscription' market in which buyers often use a brand exclusively for a particular need (such as homeowner's insurance, banking, telecommunications). The second type of market is a repertoire market, one in which buyers repetitively buy the category over time and are free to select any brand without switching cost (Sharp et al., 2002), such as is the case in consumer-packaged goods. These two sorts of categories are said to be distinguished by the typical level of loyalty. Buyers in subscription markets often exhibit 100% loyalty towards a

provider of a particular product or service for a time-period (a consumer with a car insurance policy does not need another policy for that same car while they have the first policy, for example). By contrast, behavioral loyalty is considerably lower in repertoire markets. A key metric in ascertaining loyalty towards brands, and the average level of loyalty in a category, is SCR. This metric is the brand's average rate of purchasing as a proportion of its buyer's rate of purchasing the category (Farris et al., 2016). SCR can be calculated for purchase occasions or volume. For example, if a brand is purchased 4.0 occasions per year on average and its buyers buy the category 10 occasions per year, its SCR (occasions) is 40%. Alternatively, if a brand's buyers on average purchase 3.0 kilos of it per year and 10 kilos of the category, the brand has an SCR (volume) of 30%. We identified the average SCR (occasions) for consumer-packaged goods from published studies. Uncles et al (1994) reported a figure of 29% in a multi-category study. Dawes et al (2015) reported 29%. Another study by Bhattacharya et al (1996) used SCR (volume) and reported a figure of 25% from a very large sample of brands. Given that liquor is a consumer packaged good, the figures from these studies form a benchmark for the category under study.

While there is a lack of academic research on loyalty relating to liquor, several pieces of industry research suggest loyalty levels within the category are high. According to Statista, a large proportion of consumers say they stay with one liquor brand over long periods of time (Statista, 2019). Second, 'brand' is reportedly the key choice factor for consumers purchasing liquor: Kiely (2016) reports that 78% of whisky buyers and 90% of Tequila buyers state they have a specific preferred brand. Therefore, there is certainly anecdotal evidence suggesting that liquor is a high loyalty category. However, a literature search revealed no evidence pertaining to loyalty levels in this category based on consumer's actual purchase data. Nor is there peer-reviewed (or industry) evidence that uses common loyalty metrics used by managers, market research analysts or academics – such as purchase frequency or share of

category requirements (Farris et al., 2016). Understanding overall levels of brand loyalty in this category is the first step towards uncovering insights relating to how much, and why, brands in the liquor category might vary in loyalty. Accordingly, we pose H1.

H1. Liquor product categories (such as Bourbon, Tequila, Rum, Vodka) exhibit high behavioral-loyalty – considerably higher than the 25-29% reported in studies of other consumer packaged goods.

Variation in loyalty

We next consider the range of factors that explain the variation in behavioral loyalty among brands in a category. We firstly, though explain the concept of *expected* levels of brand loyalty.

Over a period of decades, a generalized pattern has been found, namely that brands with a bigger customer base also enjoy higher loyalty, while smaller brands are 'punished twice,' with fewer buyers but also somewhat lower loyalty. This effect is referred to as double jeopardy (Ehrenberg et al., 1990), and has been reported in numerous market contexts: consumer goods (Ehrenberg et al., 2004) (Uncles et al., 1994), durables (Colombo and Sabavala, 2013), services (Mundt et al., 2006), quick service restaurants (Pleshko and Heiens, 2022) and even politicians (Ehrenberg, 1991). A key benefit of double jeopardy is that it provides a benchmark to assess a brand's loyalty: a brand has an expected level of loyalty given the category it competes within, and its market share (Ehrenberg, 2000). We use the terms 'higher than expected' or 'lower than expected' to mean loyalty relative to a brand's theoretical level of loyalty derived from the NDB-Dirichlet model (Fader and Schmittlein, 1993; Pare and Dawes, 2011).

It could be argued that liquor is a category in which we may not necessarily see the double jeopardy effect. First, liquor is purchased for sensory (taste, aroma) pleasure as well as inebriation or social relaxation (Niland et al., 2013) and can therefore, as mentioned above, be considered a highly hedonic good. Hedonic value is associated with stronger self-stated loyalty (Kuikka and Laukkanen, 2012). It is therefore conceivable that small liquor brands, for example, may attract a particular buyer base who enjoy a distinctive taste; resulting in high loyalty that runs counter to the double jeopardy pattern. Next, alcohol plays a role in social rituals such as dining with friends or family (Bartram et al., 2017). It may be that buyers come to associate not only liquor itself with such social rituals, but begin to associate them with a particular brand of liquor. The plausible outcome could be high behavioral loyalty for many brands, thereby disrupting the double jeopardy pattern. Lastly, as mentioned earlier, many liquor buyers report they stay with one brand for extended periods of time according to Statista (2019). This behavior could mean small brands enjoy as much loyalty as large brands in this category.

Therefore, the presence of double jeopardy in the liquor category should not necessarily be assumed. However, given that the double jeopardy pattern has been noted in numerous other markets, it is reasonable to hypothesise that it should. Identifying whether the double jeopardy pattern is in evidence or not in this market has theoretical implications beyond the specific category examined. First, it could identify that there are conditions under which double jeopardy does not hold (such as a market with considerable price variation between brands, or high levels of promotion activity), and point towards what those conditions might be. Furthermore, if double jeopardy is not seen, this could suggest there are alternative ways for a small brand to become bigger: either to focus on cultivating a highly loyal buyer base, *or* focus primarily on a larger customer base that has divided, 'split-brand' loyalties. The

presence of the double jeopardy pattern is posed to either confirm or rebut this line of logic, as well as a precursor to subsequent hypotheses. Therefore, H2 is as follows.

H2. Liquor brands will exhibit the Double Jeopardy pattern.

Departures from Double Jeopardy – excess and deficit loyalty

While there is a generalizable pattern that large brands in a category usually obtain higher loyalty and smaller brands obtain less, departures from this general pattern have been reported. Kahn et al (1988) and Bhattacharya (1997) suggested certain brands can accommodate the needs of a market segment ('niche' brands), thus enjoy comparatively high loyalty for their penetration level, while other brands can accommodate buyer's desire for variety seeking and will have comparatively low loyalty for their penetration level ('change of pace' brands). Fader and Schmittlein (1993) investigated what they called the market share premium, namely excess loyalty for large-share brands; they also reported that small-share brands tend to exhibit a deficit of loyalty compared to theoretical norms based on the NBD-Dirichlet model (Goodhardt et al., 1984). Pare and Dawes (2011) found many but not all high-share brands showed excess loyalty, Jung, et al (2010) reported broadly similar results. Franke et al (2017) found approximately two-thirds of large brands tended to show excess loyalty and 50% of smaller brands showed a deficit loyalty; the differences were even more apparent in a sub-sample of manufacturer brands. Barker (2021) found many small brands had either niche or change of pace tendencies, defined as differences greater than 10% compared to Dirichet norms.

Research has identified that one factor which helps explain this variation in brand loyalty, particularly excess loyalty (aside from market share) is brand price: low-priced brands tend to enjoy higher than expected behavioral loyalty (Bhattacharya, 1997; Danaher et al., 2003;

Dawes, 2013). There are several theoretical rationale as to why. First is the phenomena of *asymmetric switching* between low-price and high-price brands (Bhattacharya, 1997; Blattberg and Wisniewski, 1989). That is, buyers of low-price brands in a category occasionally 'switch up' to buy high-priced brands, in some cases to take advantage of a temporary price cut. This switching up increases the size of the customer base for the high-priced brand but since it is only occasional, does not increase behavioral loyalty. Second is the psychological phenomena of loss aversion (Gächter et al., 2022), a component of prospect theory (Kahneman and Tversky, 1979; Wang, 2018). That is, buyers are more averse to losses from a reference point compared to gains. In this context, the reference point is the price level of the brand(s) they typically buy (e.g. Mayhew and Winer, 1992). Buyers of lower-priced brands see the prices of higher priced brands as a 'loss' from their price referent and tend to confine their purchases to those lower-priced brands (Klapper et al., 2005). The third rationale is income effects: lower-income households find the price levels of higher price brands a barrier, therefore confine their purchases to low-price brands, which heightens their loyalty levels, as per Allenby & Rossi (1991).

Evidence on the behavioral loyalty difference between low and high-priced brands tends to be confined to grocery categories, where the prices of competing brands varies by a few dollars. The prices of mainstream liquor brands are shown to vary far more (Mulhern et al., 1998) than in grocery, which arguably makes it a useful contrast to examine the differences between brands. We verified this price difference for liquor versus grocery by visiting the Walmart web site three times between July-September 2022. We inspected prices of popular brands of canned fish, yoghurt, laundry detergent and toothpaste. The average price difference between leading brands of these products (for the same pack size) was between $1 and $2. By contrast, the average price difference between leading brands of Bourbon in 750 ml bottles was $10, for Vodka it was also $10, for Tequila $8 and for Rum, a smaller difference of

$4.00. It is a reasonable conjecture that these larger price differences between brands may influence differences in behavioral loyalty in this category, as per the arguments outlined above. Lastly, the appeal of low price for a brand may be analogous to the impact of temporary price promotions, and evidence shows that price promotions tend to attract people who have already bought the brand in the past (Ehrenberg et al., 1994; Dawes, 2018). Accordingly, we pose H3.

H3. Lower-priced brands will exhibit higher than expected behavioral loyalty

In this section we identified several theoretical mechanisms by which lower brand price could be positively associated with higher behavioral loyalty: asymmetric switching (Allenby and Rossi, 1991; Sivakumar, 2002), which is itself derived from loss aversion (Hardie et al., 1993; Mrkva et al., 2019); and income effects (Allenby and Rossi, 1991). A supplementary mechanism pertains to the notion that low brand price also encourages higher average quantity purchased per occasion. From a rational viewpoint, buyers can choose low-price brands to fulfil their household requirements, arguably making a trade-off between quality and price in some cases. However, low prices also enable a shopper to purchase a larger quantity of a good at the time. By doing so they obtain a dual benefit: they bought a brand that is cheaper than others, *and* secured a large quantity of it at the low price. This behavior reflects an aspect of what has been called the 'smart shopper' mindset (Atkins et al., 2016). According to this concept, buyers derive psychological as well as economic benefits from what they see as clever purchasing decisions (Gómez-Suárez et al., 2020). The link between purchase quantity and behavioral loyalty is that purchasing a large quantity on an occasion can markedly raise the brand's share of that buyer's category requirements. If, for example, a buyer purchases 5 liters of liquor per year on average, one purchase of a 1.75 liter bottle has already accounted for 35% of their annual requirements, whereas a 750 ml bottle would

represent only 17.5%. If a brand's low price encourages higher quantity per occasion, the outcome should be high behavioral loyalty for the brand. Corroborating evidence for this idea comes from two studies of grocery goods. Jung et al (2010) and Dawes (2022) both found brands with larger than average volume per occasion tended to enjoy higher than expected SCR. Therefore, part of the effect of low price on behavioral loyalty is via encouraging larger quantity bought per occasion.

Based on the preceding arguments we hypothesise:

H4. The association between low brand price and behavioral loyalty will be mediated by an association between low brand price and high average quantity per occasion.

Link between income levels and brand choice

As indicated above, a household's income level may influence the type of brands it buys. Aside from low income simply being a barrier to purchasing expensive brands, the opportunity cost of time is lower for low-income households (Becker, 1965). Therefore, the argument has been made that low-income household are more prepared to peruse or search for bargains (Urbany et al., 1996), with the result being that they tend to buy lower priced brands.

While this logic appears sound, there is mixed evidence to support it. Positive support comes from Kalyanam and Putler (1997) that found low income was related to heightened price sensitivity in a choice model. Ailawadi et al (2001) found higher income buyers were less price sensitive. Studies by Hoch (1996), Akbay and Jones (2005), and Griffith et al (2009) found evidence that (low-priced) store brand market shares tend to be higher in low-income neighborhoods, implying a negative correlation between a brands' price and the income levels of its buyers. Wakefield and Inman (2003) found non-significant results linking income to

self-stated price sensitivity, but did find that higher income consumers bought more expensive pizzas in one of several experiments. However, there is also some evidence indicating income levels may not be related to preference for low or high-priced brands. Analyses across dozens of product categories indicate that competing brands tend to have rather similar buyer bases in terms of demographics (Hammond et al., 1996; Uncles et al., 2012). Baltas & Argouslidis (2007) and Diallo (2013) found preference for (generally, low priced) store brands was not related to income. Lastly, Murthi and Rao (2012) found an absence of a relationship between income and price awareness of grocery brands, suggesting low-income households do not particularly seek out low-priced brands.

In sum, there is mixed evidence as to whether that a brand's price level is associated with it having a buyer base that is on-average higher or lower income. However, again much of the evidence pertaining to this question, as discussed above, is derived from grocery categories in which many items are priced for only a few dollars. The higher prices exhibited in the liquor category (compared to grocery goods) should arguably result in a stronger barrier to purchase to low-income households, possibly strengthening their preference for inexpensive brands. Determining if this is indeed the case would broaden the knowledge base relating brand price and brand buyer characteristics. Therefore, we pose H5.

H5. Lower-priced liquor brands will tend to have a buyer base that is, on average, lower income.

Next, we consider the relationship between buyer's income and brand loyalty. We first consider this relationship at the individual household level. A buyer's (or household's) income level may have two opposing effects on loyalty. One argument is that lower-income buyers have more financial motivation to seek out better value options (Urbany et al., 1996),

or switch between brands to take advantage of temporary price cuts or other special offers, therefore brand loyalty will be lower among low-income households. An opposing line of argument is that lower income buyers face affordability constraints and therefore confine their purchases to cheaper brands. The outcome will be a smaller repertoire and correspondingly high share of requirements for the brand(s) they buy. Also, evidence suggests higher-income households are better able to take advantage of temporary price cuts, having more disposable income available to spend (Orhun and Palazzolo, 2019). This behavior could arguably result in lower brand loyalty among high-income households. There is mixed empirical evidence on this issue, for example East et al (1995b) found low-income consumers were more loyal, and Kwon and Kwon (2007) found low-income consumers were surprisingly less 'deal prone' suggesting they could be more brand loyal. However, McGoldrick and Andre (1997) and Cowie, Swift and Borland (2014) found lower income buyers were less brand-loyal; and Koll and Planck (2022) found no relationship between social class and loyalty. Given the mixed empirical evidence on this question, we turn to established theory. Based on theoretical arguments relating to asymmetric switching (Bhattacharya, 1997; Blattberg and Wisniewski, 1989) and income effects (Allenby and Rossi, 1991) that imply a negative association between income and loyalty, we pose H6.

H6. Lower-income households will exhibit higher brand loyalty.

Age, brand choice and brand loyalty

Another characteristic of buyers in the liquor category that is particularly relevant for this study is their age. Liquor (distilled spirits) is a product that was highly popular prior to the 1970's, its popularity waned between the early 1980's and 2000, and recovered since then (Nesin, 2020). This means that there may be older buyers who developed preferences for liquor, and liquor brands, at times when the category was far more popular forty to fifty years

ago. By contrast, buyers who are presently middle-aged were forming their alcohol preferences when liquor was less popular, therefore their liquor consumption might be less (perhaps with greater preference for wine). Finally, younger buyers have more recently commenced purchasing liquor following its resurgence; possibly meaning that liquor is more prominent in their overall consumption of alcohol. These points all suggest that behavior towards the category may differ across ages. Given that heavier category purchasing is related to lower behavioral brand loyalty (Banelis et al., 2013), we may expect loyalty to brands to differ across age groups. Coupled with the cycle of higher-to-lower category popularity over past decades, the liquor category also contains a mix of old and new brands. For example, the Jack Daniel's bourbon brand is 150+ years old, while another bourbon brand, Bulleitt, is less than 30 years old at the time of writing. This variation in brand age may mean that some brands have a larger proportion of older buyers than others. Moreover, there is evidence, albeit not unanimous, that older buyers are more brand-loyal. There are several theoretical rationale for expecting this effect, including heightened prominence for previously bought brands in memory, slower cognitive processing and aversion to change (Lambert-Pandraud and Laurent, 2010a). Uncles and Ehrenberg found older households had slightly smaller repertoires of brands (Uncles and Ehrenberg, 1990) but that it was likely attributable to lower levels of category purchasing. Lambert-Pandraud et al (2005) found older consumers were more behaviourally loyal towards cars (i.e. higher brand re-purchase rates) as well as considering fewer brands and preferring older brands. Lambert-Pandraud (2010b) similarly found that older consumers tended to stay attached for longer periods to the brands they use. However, Yang, Zhou and Chen (2005) found mixed results in relation to age and behavioral loyalty, Singh et al found little age-related differences in brand loyalty in a survey-based study of Japanese consumers (Singh et al., 2012) and Phua et al (2020) found no clear association between age and behavioral brand loyalty in a study using UK household

purchasing panel data. Most recently, Mecredy et al (2022) in a survey-based study controlled for lower category purchase rates among older buyers by using the Dirichlet-derived polarisation index (Li et al., 2009). The study concluded that older buyers were *slightly* more loyal in two of the three market contexts studies. Taking account of past work relating to age and loyalty and the characteristics of this category, we pose the following.

H7. Older brand buyers will be more brand-loyal (controlling for the rate at which they purchase the category).

We now consider how to translate any resultant finding from H4 relating to age and buyer loyalty at the household level, to brand loyalty metrics. If H4 is confirmed, the question then arises as to whether there will be a link between a brand's buyer age profile and the level of loyalty the brand enjoys. Studies generally conclude that competing brands tend to have similar profiles of buyers in terms of demographics, including age (Uncles et al., 2012). However, brands in the liquor category may be different in this regard, due to the fact its popularity waned between the 1980's and 2000, coupled with the fact that some liquor brands are very old, while others are newer. As stated earlier, industry evidence suggests liquor buyers stay with a preferred brand over a long time period (Statista, 2022). It may therefore be the case that older buyers developed a preference for certain brands decades ago, and still prefer them, in other words, are highly behaviorally loyal. By contrast, younger buyers, who have entered the category in more recent years, may be comparatively less familiar with, or less attached to, the older well-established brands. The outcome may be that they therefore spread their requirements across a broader repertoire, in other words show lower behavioral loyalty. These behaviors will lead to a link between the age profile of a brand's buyers and the level of behavioural loyalty enjoyed by it. This line of enquiry may lead to useful new

knowledge linking past findings about age and loyalty to the body of knowledge on why some brands exhibit different levels of behavioural brand loyalty. Therefore, we pose H8.

H8. Brands with an older buyer age profile will exhibit higher behavioral loyalty (measured as SCR relative to expected levels).

We now explain the data and analysis method that will be used to test the hypotheses.

The dependent variable is the brand's SCR relative to the expected level of share of requirements derived from the Dirichlet model. SCR is a well-established measure of behavioral loyalty, being the customer's brand purchasing as a proportion of category purchasing (e.g. Bowman and Narayandas, 2001). We calculate each brand's expected SCR using the NBD-Dirichlet model (Kearns, 2010). We then calculate excess or deficit loyalty by subtracting the expected level of loyalty from the brand's actual level of loyalty (Bhattacharya, 1997; Jung et al., 2010). Excess/deficit loyalty can therefore take on positive or negative values. We use do not use a cut-off or threshold to classify brands as having excess/deficit loyalty or not, as per Franke et al (2017). This is because the goal of the analysis is to explain why brands exhibit varying extents of excess/deficit loyalty (some to a small extent, others to a great extent) in a manner similar to Bhattacharya et al (1996) and Jung et al (2010).

The variables used in the analysis are explained in Table 1.

Table 1. Variables in the Analysis

Dependent Variable	**Description**	**Precedent reference**
Excess/Deficit brand loyalty (Volume)	The brand's average SCR (volume) minus its theoretically expected SCR requirements derived from the NBD-Dirichlet model.	Jung et al 2010 (2010), Dawes (2022)
Independent variables		
Brand average price-per-unit	The brand's average $USD per ml at normal, un-promoted price.	Bhattacharya (1996)
Brand average age of buyer	The average age of the adults that purchase the brand, averaged across the brand's buyers. (Nielsen provides age of M and F head of household).	Adapted from Phua et al (2020)
Brand buyer's average income level	Household income level of the brand's buyers, as provided by NielsenIQ, averaged across all the households that buy the brand in the 12-month period.	Adapted from Kukar-Kinney et al (2012)
Average volume of brand bought per occasion	Number of items purchased per occasion multiplied by their size (ml) by households who buy the brand, aggregated to the brand level.	Adapted from Ailawadi et al (2007)
Control variables		
Number of States the brand is sold in	The number of geographic US states the brand has non-zero sales in.	Adapted from Bronnenberg et al (2011)
Brand penetration	The proportion of panel households that buy the brand once in the 12-month period.	Farris et al (2016)
Brand buyers' average number of adults in household	The number of persons aged 21+ residing in the household	Harries et al (2013)
Product Category	A dummy variable to indicate product category relative to the base category (Bourbon)	Eisenbeiss et al (2015)
Price promotion incidence	Brand promotion purchases as a proportion of all purchases of the brand in the year.	Jung et al (2010)
Variables created in order to calculate independent or dependent variables		
Brand SCR (Occasions)	The average number of occasions a brand's buyers buy it, divided by the average number of occasions they buy the product category.	Ehrenberg et al (2004)
Brand SCR (Volume)	The average amount of volume a brand's buyers buy of it, divided by the average volume they buy of the product category.	Jung et al (2010), Dawes (2022)

Product category here means the specific product such as Bourbon, Vodka, Rum or Tequila.

Note that the panel data pertains to household purchasing, and there is no information on whom in the household makes a purchase. Therefore, we use the average age of the head(s) of the household to derive the brand's buyer age variable. We also include the number of adults in the household in the model to control for possible multi-brand purchasing, which can

occur to accommodate the tastes of different individuals in the household (Dawes, 2016). Several other covariates are used in the model. Brand penetration is included, because high-penetration brands tend to exhibit excess loyalty (Fader and Schmittlein, 1993). We also include price promotion incidence (Jung et al., 2010) on the basis that high levels of promotion may inflate brand's purchase frequency since promotion purchases appeal unduly to existing brand buyers (Ehrenberg et al., 1994). A measure of distribution breadth is also included, being the number of geographic states the brand is sold in. This is because one the one hand, there is a well-known association between broad distribution and market share (Farris et al., 1989; Hirche et al., 2021); and bigger-share brands enjoy higher behavioral loyalty (Ehrenberg and Goodhardt, 2002; Klepek and Kvíčala, 2022; Tarkiainen et al., 2014; Wilson and Winchester, 2019). However, a brand with low market share overall but high market share in a restricted part of the country could arguably have higher than expected loyalty because of the double jeopardy effect. We therefore include geographic coverage as a control variable. Lastly, we also created dummy variables for each category (with bourbon as the base) which control for the different level of excess/deficit loyalty across the four liquor product types.

Method: Data and Analysis.

The dataset contains household purchasing records for the calendar year 2019, for the four liquor product types. The total number of households that purchased at least one of the four types of liquor was 12,662, for a total of 68,689 purchases. We calculated the category and brand metrics for brands with at least 40 purchases made in the year to avoid undue random sampling error from small brands with very few purchases (Baldinger et al., 2002; Pare and Dawes, 2011). This produced a sample of 107 brands. Table 2 presents the descriptive statistics. A correlation matrix of the model variables is shown in the Appendix, as Table 7.

Table 2 Descriptive statistics

Category	No. of brands analyzed	Avg. Category Purchase occasions per 12-month	Average SCR (occasions)	Average SCR (volume)	Average price per ml. (non-promoted)	Average brand volume bought per occasion	Average no. states each brand is sold in	Proportion of sales sold on deal
Bourbon	25	4.9	40.4	53.9	0.029	1258	32	15.7
Vodka	25	7.2	35.0	30.2	0.016	1532	37.5	20.5
Rum	22	3.9	51.2	67.1	0.014	1478	28.8	17.3
Tequila	16	3.8	46.8	41.4	0.029	1053	28.5	19.9
Tot / Avg.	**107**	**5.0**	**41.1**	**45.6**	**0.022**	**1330**	**31.8**	**18.3**

Results

Hypothesis 1 was that liquor is a 'high-loyalty' category. We consider SCR in terms of occasions first, then volume. We first calculated the average SCR (occasions) across the four liquor product categories to be 41% (n=107, s.e. 1.25), albeit this figure is lower for Vodka, at 35%. The overall average is certainly higher than the average SCR (occasions) reported in past work: 29% in Uncles and Hammond (1994) that used a sample of 313 brands, and similarly Dawes et al (2015) reported 29% in a study of 300 brands. The mean from those studies, comprising 613 brands, is 25%. To formally test H1, we compare the mean SCR from those past studies to the SCR for liquor brands. SCR in this sample of liquor brands is not normally distributed, with a wide standard deviation of 13 (1/3 of the mean). We created a simulated sample of 613 brands with a mean SCR of 25% with a standard deviation of 8.0, to compare to the sample of liquor brands (mean SCR 41%), then ran an independent samples t-test. The test was statistically significant ($t=-17.2$, df 720, $p<0.001$). This confirms H1 – liquor is a category with higher loyalty than the average consumer goods category by approximately 16 points of SCR (occasions). We then did the same for SCR (volume), using the sample of 7,633 brands from Bhattacharya (1996) which had an average SCR of 25%, compared to our liquor brands with an average of 45%. In that case the test was also statistically significant, confirming liquor has higher SCR (volume) than the average from

packaged goods (t=25.5, df 7,739, p<0.001). H1 is confirmed for both SCR (occasions) and SCR (volume)[2].

Hypothesis 2 is that liquor brands will follow the double jeopardy pattern. We show graphs for each of the four product categories – refer to Figure 1,2,3 and 4. All show the pattern quite clearly: large brands tend to exhibit higher behavioural loyalty, small brands show less. The correlations between brand penetration and SCR (volume) are: for bourbon r=0.56, vodka r=0.30, rum r=0.61 and tequila r=0.41 respectively, all correlations are statistically significant at p<0.05[3]. That said, we see considerable 'scatter' in the relationship between penetration and SCR (volume). The tests of hypotheses 3-7 will help to identify the factors that are related to this variation in behavioral loyalty. It is worth noting that even though many of the brands exhibit low penetration, the largest brands are between 20-30 times the penetration of the smaller ones, but the variation in loyalty is far less – some have SCR of approximately 60%, others have approximately 20% therefore a 2 to 3-fold variation.

[2] It should be noted that average brand SCR is influenced by category purchase frequency. SCR will be higher in less-frequently bought categories and lower in frequently bought categories. SCR's for brands in categories with similar purchase frequency to the present study (average category p.f. of 5.0 over the four liquor categories) are, as per Dawes, Driesener and Meyer-Waarden (2015): toothpaste (cat p.f. 6, SCR 23), bodysprays/deodorant (cat p.f. 7, SCR 22), shampoo (cat p.f. 4, SCR 25), margarine (cat p.f. 6, 33), paper towels (cat p.f. 5, SCR 41), laundry detergent (cat p.f. 5, SCR 43). The average category purchase frequency across these is 5.3, average SCR is 32. That said, SCR is comparable in paper towels and laundry detergent to the four liquor categories examined here.

[3] The correlations between brand penetration and SCR (Occasions) are: bourbon r=0.64, vodka r=0.50, rum r=0.64 and tequila r=050 (the similarity in correlations across certain categories is co-incidental) respectively. All correlations are statistically significant at p<0.05. Therefore H2, that the double jeopardy pattern is present in alcohol categories, is supported for occasions as well as volume SCR.

Figure 1. Double Jeopardy pattern, Bourbon

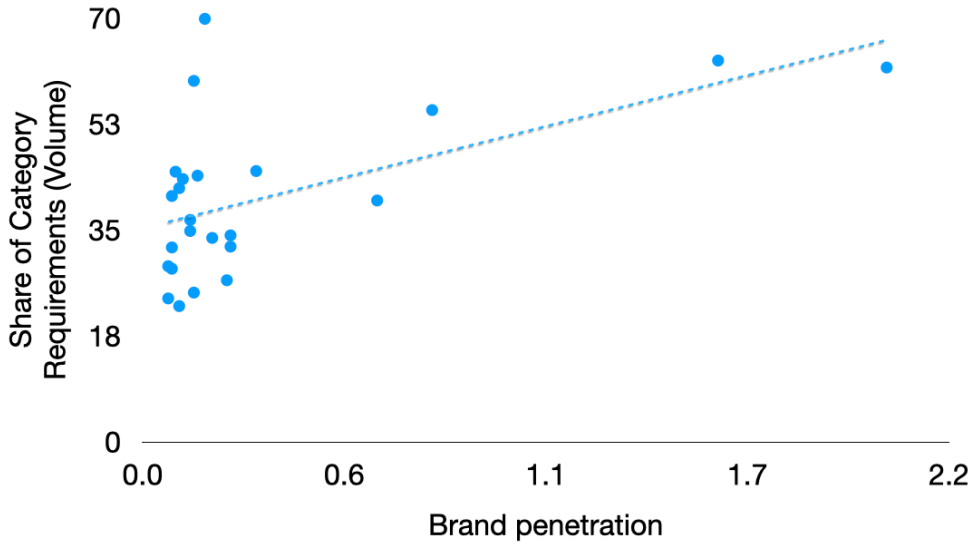


Figure 2. Double Jeopardy pattern, Rum

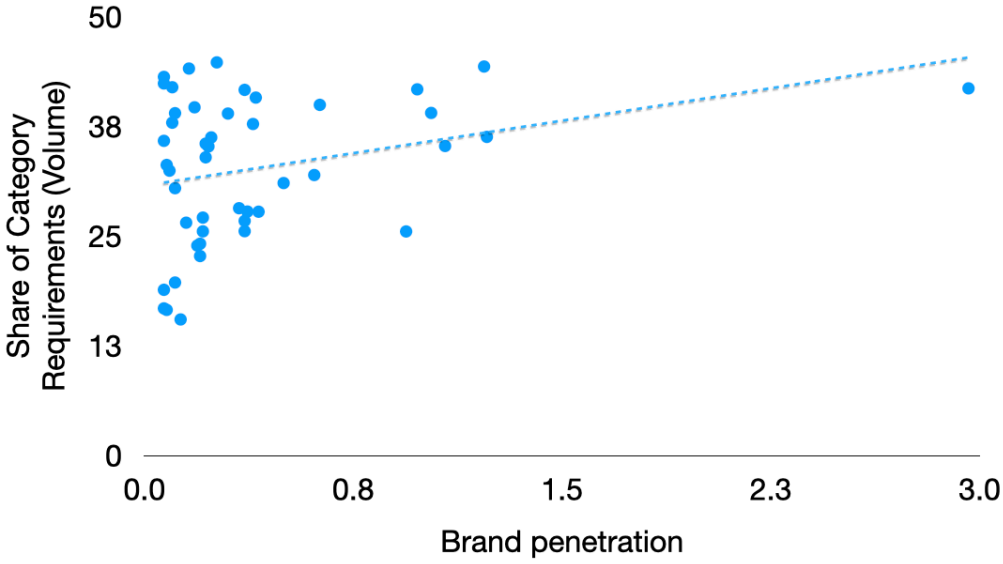


Figure 3. Double Jeopardy pattern, Vodka

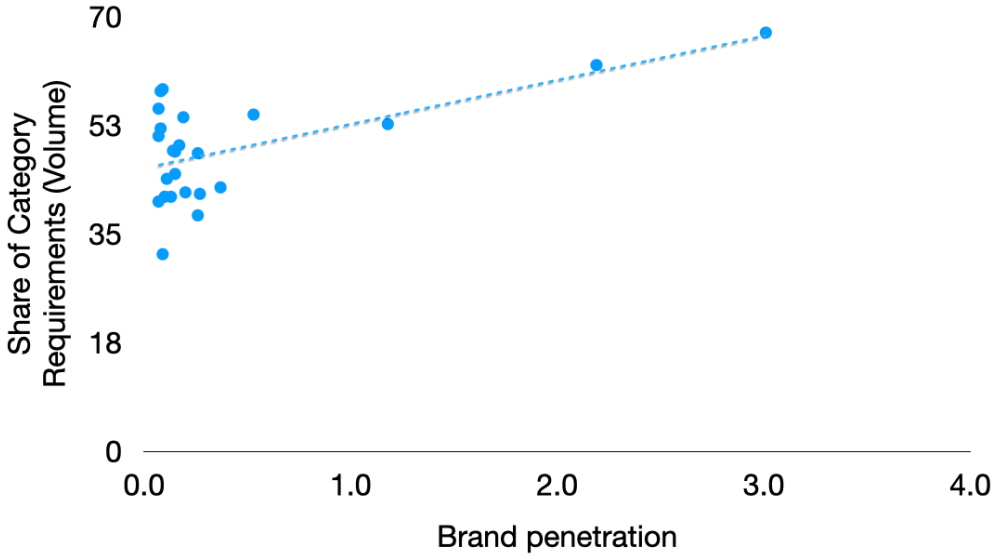
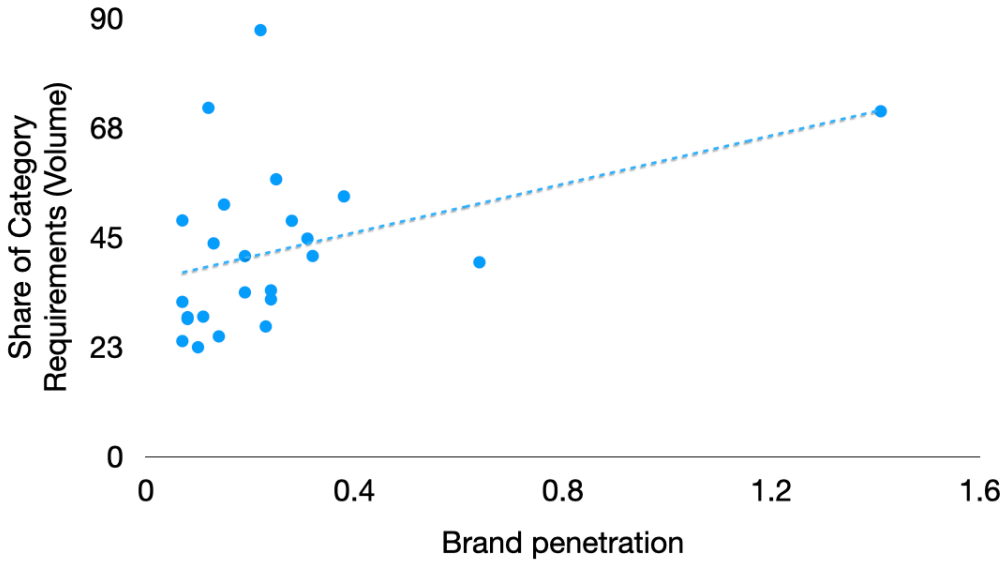


Figure 4. Double Jeopardy pattern, Tequila



To test H3 we employ a regression model with Excess-Deficit loyalty as the dependent variable. The independent variables (and other control variables) are detailed in Table 1. The model results are shown in Table 3.

Table 3 Regression Model results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
	.79	0.62	0.59	0.63		
ANOVA		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Model	Regression	63.022	8	7.878	19.604	.000b
	Residual	38.978	97	0.402		
	Total	102	105			
	Dependent variable: Excess/Deficit Loyalty					
	Coefficient	**B**	**Std. Error**	**t**	**Sig.**	
	Constant	-0.011	0.062	-0.18	0.86	
	Brand penetration	0.156	0.068	2.30	0.02	
	Brand buyer's Avg Income per person in HH	-0.338	0.095	-3.56	0.001	
	Brand buyer's Avg HH Age	-0.037	0.080	-0.47	0.64	
	Brand price per ml.	0.121	0.108	1.13	0.26	
	Promotion incidence	-0.063	0.069	-0.91	0.37	
	Number of States the brand is sold in	0.157	0.094	1.67	0.10	
	Brand average volume per occasion	0.620	0.103	6.02	0.001	
	Brand buyers' avg. number adults in HH	-0.402	0.076	-5.26	0.001	

In relation to H3, the coefficient for brand price in the model is positive (indicating lower price is associated with lower levels of Excess-Deficit loyalty, contrary to H3) but non-significant, at p=0.26. Therefore, H3 is not supported. That said, we refer to the correlation matrix that shows the bivariate correlation between brand price and loyalty is negative and significant, r=-0.48, p=0.001. This result suggests that the relationship between price and loyalty could be mediated by another factor or factors, which is the subject of the next hypothesis, H4.

H4 posed that the association between low brand price and behavioral loyalty will be mediated by an association between low brand price and high average volume per occasion. To test this, we ran a mediation analysis using the SEM program in Stata (Bellavia, 2021).

The output of the analysis is shown in Table 4. The results show a non-significant association between brand price per ml. and excess/deficit loyalty, but a strong, significant positive association between brand volume per occasion and excess/deficit loyalty ($p<0.001$). Furthermore, brand price per ml. is strongly negatively associated with brand volume per occasion (i.e. higher price, less volume per occasion, $p<0.001$). The test of indirect effects indicated a strong, negative association of price per ml. on volume per occasion, and via that variable, an association with excess/deficit loyalty. This mediation effect is statistically significant at $p<0.001$ as per the bottom row of Table 4. H4 is therefore supported: low-priced brands tend to be bought in larger volume per occasion, which then raises the brand's SCR.

Table 4 Mediation analysis: Brand volume purchased per occasion

	Observed Information Matrix			
	Coefficient	**Std. Err.**	**z**	**P>z**
Structural				
Excess/deficit loyalty				
Brand volume per occasion	0.64	0.11	5.95	0.001
Brand price per ml	-0.02	0.11	-0.17	0.87
Constant	-0.01	0.07	-0.08	0.93
Brand volume per occasion				
Brand price per ml.	-0.73	0.07	-10.77	0.001
Constant	0.002	0.07	-0.04	0.97
Variance (Excess/deficit loyalty)	0.56	0.08		
Variance (Brand volume per occasion)	0.06	0.35		
Estimates	**Delta**	**Sobel**	**Monte Carlo**	
Indirect effect (of price per ml. on loyalty, via volume per occasion)	-0.46	-0.46	-0.47	
Std Error	0.089	0.089	0.088	
Z	-5.21	-5.21	-5.36	
p-value	0.0001	0.0001	0.0001	

H5 posed that low-priced brands would have a buyer base that is on-average lower income. We address this hypothesis using the correlation matrix, (refer Appendix, Table 7). The bivariate correlation between brand price and the income level of the brand's buyer base is positive and quite strong, at r=0.63 (p=0.01). This supports H5: lower priced brands in this category do have a buyer base that is, on average, lower income.

H6 posed that low-income buyers will be more brand-loyal. To test this, we use the individual-level household data. We calculate the average SCR (volume) for each household, within each product category. For example, if a household purchases 4 litres of Vodka and buys 2 litres of brand A and 2 litres of brand B, its average SCR (volume) is 50%. We then employed a household-level regression model with the household's average SCR (volume) as the dependent variable, with household income as the dependent variable along with household age (to test H6) and the amount of the product category purchased by the household, since past research has established that heavy-buying households purchase more brands, hence are less behaviorally loyal to any one brand (Ehrenberg, 2000; Sharp, 2010). The number of adults in the household is also included as a control variable since more people in a household may induce a larger brand repertoire to accommodate diverse tastes (Dawes, 2016). We employed a regression model in Stata with robust errors clustered by household, to accommodate the multiple observations of SCR (volume) for each household (i.e. SCR observations for up to four different alcohol categories purchased). The results for H6 are shown in Table 5. The overall model is significant with an R^2 of 0.10. We see that higher category purchasing is associated with lower behavioral loyalty. In relation to H6, income is significantly and negatively associated with household-level brand loyalty, i.e. lower income households are more brand loyal, controlling for purchasing level, age, and the total number of adults in the household. H6 is therefore supported.

To address H7, we examine the regression model results in Table 5. The age of the household (average age of the household head or heads) is directionally associated with higher loyalty but is non-significant (p=0.61). This means there is a lack of evidence for a household-level link between age and brand loyalty in these categories once category purchasing is factored in. H7 is therefore not supported.

Table 5. Regression analysis: Age and Behavioral Loyalty

	Number of obs	18,695			
	F (3, 12624)	72.9			
	Prob > F	0.000001			
	R-Squared	0.10			
	Root MSE	26.16			
		Unstandardized Coefficients	**Robust Std Error**	**t**	**Sig.**
	Constant	88.6	1.24	71.1	0.0001
	Household average age	0.008	0.01	0.52	0.61
	Total volume of product purchased by HH in the year	-0.0006	0.00004	-14.1	0.0001
	Household income	-0.13	0.037	-3.7	0.0001

The final hypothesis, H8, is that brands with an older age profile will exhibit higher (than expected) behavioral loyalty. Given the null result for H7 relating to age and loyalty at the household level, this is unlikely to be the case. We refer to the regression model in Table 3, which shows the coefficient for age (of the brand's buyer base) is non-significant (p= 0.64). This indicates a lack of support for H9. We did note that the bivariate correlation between brand's average age profile and excess/deficit loyalty is significant at r=0.30, but it appears that once the effects of the other variables in the model are accounted for, the association between age and loyalty becomes non-significant.

We also note that in Table 3 a control variable, the number of states the brand is sold in, has a positive sign and is marginally statistically significant (p=0.10). We interpret this as tentatively indicating large national brands with wide distribution do tend to enjoy excess loyalty, since such brands also will exhibit high brand penetration (itself marginally significant at p=0.07). Past studies have found results consistent with this finding (Fader and Schmittlein, 1993; Pare and Dawes, 2011). Lastly, we found a non-significant association

between the incidence of price promotion activity for a brand and excess/deficit loyalty (p=0.37). While several past studies have found promotions are related to lower behavioral loyalty (Bhattacharya, 1997; Jung et al., 2010), one found a non-significant association (Dawes, 2022). We infer that price promotions induce both current brand buyers to buy the brand instead of a competitor, which could increase the brand's behavioral loyalty metrics, but they also induce some non-current brand buyers to occasionally buy a brand they have not bought for some time. This will raise that brand's penetration, but not its behavioral loyalty metrics. These two effects may, therefore, cancel each other out in terms of affecting behavioral loyalty.

A summary of the hypothesis tests is shown in Table 6.

Table 6 Summary of hypotheses and findings

	Hypothesis	**Outcome**
H1	Liquor is a high-loyalty category	Supported
H2	Liquor products follow the double jeopardy pattern	Supported
H3	Low-price liquor brands will show higher than expected behavioral loyalty	Not Supported
H4	The association between low brand price and loyalty is mediated by high volume bought per occasion	Supported
H5	Low-priced brands will have a buyer base that is lower income	Supported
H6	Low-income buyers will be more brand loyal	Supported
H7	Older buyers will be more brand loyal	Not Supported
H8	Brands with an older buyer age profile will show higher than expected behavioral loyalty	Not Supported

Discussion

We identified that liquor is a 'high loyalty' category. The purpose of doing so was to investigate buyer behavior, and reasons for variation in loyalty across brands, in a category with this characteristic. We find that even in a category that appears to exhibit high levels of behavioral loyalty, the principal difference between market-leading brands and small brands is their penetration, rather than their behavioral loyalty. For brand marketers in such

categories, the findings reaffirm that the primary route to brand growth is via expanding the size of the customer base (Sharp and Romaniuk, 2021; Sharp, 2010).

The study also identifies an important reason why brands differ in their behavioral loyalty: some are purchased in larger amounts of volume per occasion, and this pushes up their behavioral loyalty in terms of SCR. This result is not obvious, because a large quantity per occasion may merely mean the buyer takes longer to return to buy the brand again. However, given that buyers in consumer goods markets tend to have a 'repertoire' of brands they buy from over time, the result here suggests a large volume purchase on an occasion for one brand takes away some of those other brand's share of requirements for the time period, to the benefit of the purchased brand's SCR.

The study also concludes that a strong correlate of high average volume per occasion is a low brand price. By contrast, expensive brands tend to be bought in smaller volume per occasion and consequently tend to have lower than expected levels of behavioral loyalty. Firstly, these findings help marketers to understand the loyalty metrics for their own brand. It has been known for decades that behavioral loyalty is strongly related to the brand's penetration level the Double Jeopardy effect (e.g. Graham et al., 2017). This study adds additional knowledge about variation in loyalty: brand price is systematically related to volume per occasion, and via that, to behavioural loyalty. A brand manager for an inexpensive or expensive brand now has more knowledge about what to generally expect from their brand in terms of behavioral loyalty, and more about the mechanisms linking price to loyalty. Managers of high-priced brands should realise that they are less likely to achieve high average volume per occasion (therefore understand not to chase an unachievable goal); whereas managers of inexpensive brands should understand the importance of volume per occasion to their overall sales.

For academic researchers studying brand loyalty, this study shows that the direct link between low price and high loyalty identified in past work (Bhattacharya, 1997; Danaher et al., 2003; Jung et al., 2010) may not always be in evidence. If a new study did not find such an effect, the findings could be questioned or considered incorrect. However, the results here indicate the link between price and loyalty may be subject to a mediating effect via volume per occasion. This is a theoretical advance, and future research should endeavor to conclude if the price-volume-SCR mediating effect occurs in other market contexts. Volume per occasion has received relatively little attention in the literature compared to metrics such as penetration and purchase frequency. This study informs researchers that volume per occasion is an important metric, as it strongly underpins the extent to which brands show excess or deficit volume SCR.

The results relating low price to high volume per occasion are consistent with the notion of the 'smart shopper' phenomenon (Atkins et al., 2016), whereby buyers derive psychological benefits as well as economic benefits from making smart purchase decisions (Quinones et al., 2022; Gómez-Suárez et al., 2020). Here, the buyer not only decides to take advantage of a brand's low price by purchasing it, but also takes additional advantage by purchasing *more* of the brand at the time. It could also be the case that buyers show behavioral learning in this regard, in other words they learn to enjoy the psychological payoff from making 'smart' money-saving decisions (Bicen and Madhavaram, 2013), and repetitively buy inexpensive brands, and buy more per occasion.

The study also finds a theoretically appealing and managerially relevant link between income and brand loyalty. Furthermore, it has translated a *consumer*-based link, namely that lower

income households tend to exhibit higher loyalty, to a *brand*-based link, that *brands* with a lower on-average income buyer base will exhibit higher loyalty than those with a higher income buyer base. This translation is useful and important to researchers who study brand loyalty, and bridges a gap between consumer research and brand metrics research.

Furthermore, the finding relating to lower income to high loyalty is not necessarily intuitive, since there is an argument that low-income buyers have more of an economic incentive to search for bargains (Akbay and Jones, 2005; Griffith et al., 2009), which should reduce their brand loyalty. The finding provides a complementary viewpoint to findings from Orhun and Palazzo (2019) and Kwon & Kwon (2007), among others, who that find higher-income buyers avail themselves of temporary promotions more than low-income buyers, because they have the financial resources to take advantage of temporary low prices as they arise. This heightened promotion buying (seen among higher income households) will reduce brand loyalty if those buyers switch across more brands to take advantage of promotions. From this study, we infer that low-income buyers develop a preference for (permanently) cheaper low price brands, *and* tend to buy them in larger quantity so that their consumption over a future time period is ensured to be at a low price per unit of volume – both factors contributing to higher than expected behavioral loyalty for inexpensive brands.

The study finds lower-priced brands tend to have a buyer base that is on-average lower income; while higher-priced brands tend to have buyers with higher on-average income. This finding provides additional insight into a question for which there has been mixed evidence: certain studies have found there *is* a link between income and preference for low price brands (Akbay and Jones, 2005; Griffith et al., 2009), others find a lack of evidence that demographic variables are linked to brand choice (Anesbury et al., 2017; Hammond et al., 1996; Uncles et al., 2012). That said, much of the existing evidence on this issue has come

from grocery categories in which items often sell for only a few dollars. We reason that the higher average prices for the market context in this study, compared to grocery items used in many past studies, has resulted in a more apparent link between the average income level of a brand's buyers and its price. Of course, these findings suggest a tendency or skew in brand's buyer profile according to price level, it does not mean low-income households simply do not buy expensive brands or that high income households do not buy cheap brands. For retailers, the findings represent useful knowledge in that they give empirical support for why certain brands perform better in some stores than others – this performance may relate to the local-area income level of the store. In turn this knowledge is informative for stocking decisions, such as in the case where not all brands can be carried in all stores, then one would favor more cheap or more expensive brands according to local area income. Moreover, given that brand marketers and retailers have access to customer demographics data (Pascucci et al., 2022), the findings suggest scope for customised campaigns based on income level. For example, campaigns to induce brand-switching might match the tendency of higher-income households to be less brand loyal, while campaigns to preserve or re-inforce behavioral loyalty via buying larger amounts would appear to match the tendency of low-income households to be more brand loyal (to lower priced brands, at least).

Next, the study did not find a direct association between age and loyalty. While a null result is not necessarily as interesting as a positive result, this finding still represents another piece of evidence for the body of work on age and loyalty: some other studies have found older buyers tend to be more brand-loyal (East et al., 1995a; Lambert-Pandraud et al., 2005) while others find very little difference (Mecredy et al., 2022). It may be that the age-loyalty link exists in some product categories and not others; a question for future research is to identify when, and why, an age-loyalty association is observed or not.

Conclusion

This study has identified a range of factors that help explain why some brands exhibit unusually high or low behavioral loyalty measured as SCR (volume), relative to expected loyalty levels given the double jeopardy pattern. Principal among these factors was low brand price, which appears to operate via encouraging larger volume purchases of the brand per occasion, raising SCR.

A limitation of this study is that the data were cross-sectional, therefore we have been circumspect in making causal statements (preferring to talk of 'association' between variables rather than one 'causes' or 'drives' some other variable). Future work could utilise longitudinal data to better determine how changes in factors such as brand price and average volume per occasion influence changes in behavioral loyalty over time.

Disclaimer

Appendix: Table 7. Correlation matrix.

					Correlation								
		Mean	S.D.		1	2	3	4	5	6	7	8	9
1	Excess-Deficit SCR (Volume)	18.5	19.3		1.00	0.15	-.369**	.396**	-.478**	-.260**	-0.05	.649**	-.328**
2	Brand penetration	0.4	0.5		0.15	1.00	0.01	-0.14	0.09	0.16	.671**	-0.12	0.18
3	Brand buyer's average HH income per member	11.3	1.1		-.369**	0.01	1.00	-.245*	.617**	0.19	0.19	-.447**	-.316**
4	Brand buyer's average age of buyer	57.0	3.5		.396**	-0.136	-.245*	1.00	-.447**	-.196*	-.311**	.601**	-.228*
5	Brand average non-promoted price-per-ml	0.02	0.01		-.478**	0.089	.617**	-.447**	1.00	0.129	.317**	-.725**	0.065
6	Brand proportion of purchases on deal	0.2	0.1		-.260**	0.164	0.189	-.196*	0.129	1.00	.260**	-.235*	.222*
7	Number of states brand sold in	30.1	11.1		-0.054	.671**	0.189	-.311**	.317**	.260**	1.00	-.336**	.236*
8	Brand average volume purchased per occasion	1437.2	464.4		.649**	-0.124	-.447**	.601**	-.725**	-.235*	-.336**	1.00	-0.138
10	No. Adults in HH	1.9	0.15		-.328**	0.18	-.316**	-.228*	0.065	.222*	.236*	-0.138	1.00

Notes. Mean and S.D. are of the unstandardized variables; correlations are of the standardized variables. *p<=0.05 **p<=0.01

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