

# Do bookmaker loyalty-programmes cause problem gambling?

*Ammarah Marjan<sup>a</sup>, Charles Graham, Margaret Bruce & Andrew Mitchell*

Brandmovers Institute for Creative and Digital Economy  
London South Bank University Business School  
103 Borough Road London SE1 OAA

---

Working Paper Series 2020. Number 1

---

## Abstract

A popular conception of bookmaker loyalty programmes is that they lock in heavy punters to a single brand and entice them into ever greater spending there. By implication they cause problem gambling. Evidence from the retail and travel sectors shows however that loyalty schemes do not segment the market in this way. With competing schemes in place, the heaviest category users remain distributed across rival brands and their patronage remains stable. As yet, few consumer-behaviour studies have explicitly examined membership loyalty across the gambling industry. We report here on the behavioural outcomes of bookmaker loyalty programmes, extending two empirical generalisations that predict split-loyal, habitual consumer choice behaviour. Drawing on large scale social research datasets we conduct brand-user profiling and duplication of purchase analysis to show that the behaviour of scheme members is already established and therefore predictable – but it isn't loyal, either to brands or gambling formats. The criticism of loyalty programmes is that they exploit gamblers, but the evidence suggests exactly the reverse. Nevertheless, problem gambling is a serious social harm affecting just under one percent of people aged 16+. The findings suggest that most of this behaviour is already recorded in bookmaker loyalty data which could be better used to shape interventions.

**Keywords:** Loyalty Programmes, Gambling, Dirichlet, Duplication of Purchase, Brand-User Profiles

**Acknowledgements:** The authors would like to thank Dr. Andrew Mitchell - CEO Brandmovers Inc. and founding Chairman of Brandmovers Institute for co-funding this study, and the UK Data Service for allowing the use of survey dataset (NatCen, 2017).

**Reviewers:** The authors thank Dr Dag Bennett, Dr Katrin Franke & Professor Sharyn Rundle-Thiel for their helpful comments on earlier drafts.

<sup>a</sup> Corresponding author: Ammarah Marjan, [marjana@lsbu.ac.uk](mailto:marjana@lsbu.ac.uk)

## **Do bookmaker loyalty-programmes cause problem gambling?**

### **Introduction**

Gambling, according to the UK government, is a popular leisure activity that is enjoyed by many. It is also lucrative - for bookmakers if not punters. In the UK, consumer spending on gambling amounted to over £14 billion in 2018/19 across various activities including the National Lottery, bingo, sports betting, casino games and slot machines (Gambling Commission, 2019), accessed via high street bookmakers and their digital platforms, plus online-only gaming formats (Lopez-Gonzalez et al., 2017). As a consequence of its widespread appeal (almost three-quarters of UK adults participate in some way each year), and the potential for social harm through problem gambling, the industry is highly scrutinised regulated and taxed (Blaszczynski et al., 2004, Miller & Michelson, 2013).

The attention of the media and regulators has the potential for disruption. In April 2019 a reduction in the maximum stake on Fixed-Odds Betting Terminals (FOBTs) led to a 25% fall in revenues at one bookmaker and the closure of hundreds of betting shops. At the same time, the government increased duty on online betting to offset its own losses (Davies, 2019). Media attention is often drawn to brand marketing (Davies, 2020) in this industry, and particularly to the loyalty programmes operated by the bookmakers. The reason is its extreme Pareto distribution – one brand reporting over 80% of revenue from just 2% of customers.

The interpretation is frequently that brands are creating and exploiting problem gamblers with their loyalty schemes. But this assumes that by rewarding members, such programmes can influence the frequency of betting at individual brands and lock in customers. In fact, many studies challenge the idea that loyalty schemes can create differential advantage from behavioural outcomes alone. This is because rival brands have rival schemes (Verhoef & Langerak, 2002), the capacity of the heaviest users to increase purchasing is limited (Bolton et al., 2000; Lal & Bell 2003), the schemes appeal mainly to existing, loyal customers (Meyer-Waarden & Benavent, 2006) and loyalty strategies are in any case defensive, doing little to replace lost users (Sharp & Sharp, 1997). In other words, “*loyalty programmes are a poor marketing tool*” (Shugan, 2005) and reflect rather than change existing behaviours. Evidence for this has been accumulated in split-loyal FMCG markets (e.g. Uncles et al 2003), by modelling loyalty outcomes with the NBD-Dirichlet (Goodhardt et al., 1984) and its

associated empirical generalisations. Several authors (e.g. Hand and Singh, 2014; Lam, 2006; Lam & Mizerski, 2009) have also now extended the same stochastic theory to gambling behaviours, to find that it too is split-loyal, habitual (i.e. already established) and predictable. But while these authors demonstrate that the distributions of heavy and light gambling are about normal across different forms of gaming and betting, there has been little investigation of loyalty programme outcomes. How effective are competing schemes at attracting and retaining the most valuable gamblers, and changing expected patterns of behaviour?

Following a call for further research in Wohl (2018), the aim of this study is to extend Dirichlet theory to the relative behavioural outcomes of members of different bookmaker schemes. Using a survey of UK bookmaker loyalty-programme members we assess behavioural brand loyalty against three established Dirichlet benchmarks. First, the theory suggests that heavy category users will have a wider than average repertoire of products and brands (Sharp et al., 2012). To establish how far loyalty programmes, appeal mainly to the heaviest gamblers we compare the behavioural characteristics of scheme members with those of all participants. Second, adopting a method proposed by Anesbury, Winchester & Kennedy (2017) we suggest that the demographic user-profiles of members of different schemes will be largely similar, implying that brand positioning strategies have not successfully segmented the market. Third, if as expected this is because many members of one brand programme also belong to others, the sharing of members between schemes should follow the Duplication of Purchase Law (Ehrenberg & Goodhardt, 1970), and we test this.

We find that loyalty programmes do little to promote brand loyalty in the gambling industry. In fact, loyalty programme members are much like heavy category users in any field – they are among the least loyal punters there are. They typically use a wider repertoire of products and are likely to belong to several loyalty programmes dividing their spending between them. In sum, they are loyal to gambling, not to any single activity or brand, and it is therefore more probable that they are exploiting loyalty schemes than being exploited by them. And yet, as Wohl (2018) suggests, loyalty programmes may still serve a useful management purpose in allowing firms to more easily fulfil their obligation to identify and support problem gamblers.

In the next sections, we review the literature framing the research questions, then describe the data and analysis, before summarising the results and discussing their implications.

## Theoretical framework

Loyalty programmes are defined as structured marketing efforts designed to encourage behavioural loyalty to a brand by rewarding members for repeat purchase (Uncles et al., 2003). In gambling, loyalty programmes are well established (Hlavinka & Sullivan, 2011; Shook, 2003) and members are incentivised with free bets and spins, matched deposits, cashback and other offers. The transition of loyalty programmes to the digital space has reduced management costs (Grewal et al., 2011) environmental impact (Leva & Zilani, 2017), but perhaps more importantly, brand marketers can now access consumer data (Breugelmans et al., 2015) and use it to target promotions on interactive platforms. Members benefit, easily integrating their on- and offline gambling activity and viewing accumulating rewards (Zilani, 2012). This is important because membership in brand loyalty programmes is a determinant of customer experience (Grewal et al., 2009; Verhoef et al., 2009). If participation in a certain scheme engenders higher emotional benefits (Dorotic., et al., 2012) then this may encourage more frequent engagement (Lucas, Dunn & Singh, 2005).

However, if as Lam & Mizersky (2009) demonstrate, gambling behaviours continue to be described by an *as-if* random model such as the NBD-Dirichlet, then loyalty programmes cannot change those behaviours without violating the model's stationarity and non-segmentation assumptions. It would not be the case for example that any single brand retained an unusually high proportion of sole-loyal customers or heavy gamblers in its scheme since habitual brand choices in a given period would continue to be split predictably across alternatives. Members' behaviours may differ from those of the general customer base though, so the aim of this research is to better understand the characteristics of loyalty programme members in particular and their relative distribution over competing brand schemes, to answer three research questions which we now develop.

*Characteristics of scheme participants.* First, marketers use loyalty programmes to retain their most valuable existing members. Since the gambling Pareto ratio appears extreme, any bookmaker would be concerned to implement strategies that retain existing customers. Whether it is then possible to *increase* their gambling frequency with rewards is not clear although Sharp & Sharp (1997) examined repeat purchase pre and post the introduction of a loyalty programme and found very limited evidence of "excess" behavioural loyalty when measured against NBD-Dirichlet norms. If, then, as Meyer-Waarden & Benavent (2006) conclude, loyalty schemes are simply more attractive to heavier rather than lighter users, they

become a cost of doing business without further segmenting the market. But in that case, the evidence from other Dirichlet markets suggests that the heaviest category users are *the least* loyal, spreading a higher number of category choices over a wide selection of alternatives. The bigger the difference in behaviour between scheme members and category participants, the stronger the evidence that loyalty schemes are attracting only the few heaviest gamblers. Thus, to provide a context to this study, it is necessary to establish the behavioural characteristics of scheme participants *vis-à-vis* all gamblers. The first research question is, therefore:

***RQ1. To describe the gambling behaviour of member's relative to non-members.***

*User profiles of competing membership.* Evidence presented by Hand & Singh (2014) and McCarthy et al., (2018) identifies some demographic segmentation between users of different gambling activities, so it may be that a differentiated brand positioning strategy activated by a loyalty programme could be effective in leveraging a specific and valuable brand user profile. Some bookmaker brands appear to target certain customers based on demographic and benefit segments. For example, the irreverent tone and messaging of brand communications adopted by Paddy Power might seem to target young men, and particularly sports fans. Services and rewards offered in their loyalty programme are a potential means of brand differentiation, therefore we might reasonably expect to find significant differences between membership profiles that would indicate brand-level segmentation. User profile analysis is a generalised technique that reveals managerially significant differences in the distributions of customer attributes between competing brands (Anesbury et al., 2017; Uncles et al., 2012) and between rival retailers (Kennedy & Ehrenberg, 2001). Accordingly, RQ2 is:

***RQ2: Do certain bookmaker brands display actionable differences in membership profiles?***

*Loyalty to loyalty programmes.* Finally, if a loyalty programme encourages exceptional behavioural loyalty, then its membership should encapsulate that segment of the customer base that is approaching 100% sole-brand loyalty. Rationally, membership of one scheme should preclude membership of any rival scheme, because dividing the bets placed between brands would limit the rewards obtained from either. But in Dirichlet markets, individual behavioural loyalty is found to be both habitual and divided (Sharp et al., 2012). This says that the market views all competing offers as close substitutes, but many more people use the

bigger brands a little more often on average, the phenomenon known as Double Jeopardy (DJ) (Ehrenberg et al.,1990) which characterises Dirichlet buying. It is likely, but not yet shown, that far from encouraging exceptional retention, rival gambling brand loyalty schemes share members. Benchmarking can be achieved by applying the Duplication of Purchase Law (Ehrenberg, 1988) to a sharing matrix. The law states that “buyers of one brand will buy a second brand in proportion to the penetration of that second brand” Hence, RQ3:

***Q3. Does bookmaker loyalty scheme membership follow the duplication of purchase law?***

### **Data and method**

The main research data were drawn from *The Gaming and Betting Study: Survey of Loyalty Card Customers*, conducted by The National Centre for Social Research (NatCen, 2017) on behalf of Gamble Aware. The study surveyed loyalty cardholders of leading UK bookmakers to assess the incidence of problem gambling based on participation and attitudes. We draw data from its second (2016) wave consisting of around 1400 respondents. Although the survey was developed for a different purpose, it contains self-reported behavioural measures and demographic profile data. Self-reported behavioural data are prone to memory bias, but frequency questions were framed non-specifically, and in the short term on a single variable – “how often do you gamble on  $x$ ” (daily, two or three times per week, weekly, less than once per week). Membership itself is easily validated from physical loyalty cards.

In response to RQ1, descriptive statistics were cross-tabulated to enable a comparison on a range of gambling activities between scheme members and all gamblers, reported in a second NatCen gambling prevalence survey with a random sample of just under 5,000 UK adults. In response to RQ2, the distribution of demographic variables in the memberships of five leading brands was compared. Following Kennedy & Ehrenberg (2001) this analysis identifies absolute deviations from the average brand user profile on each variable, where  $> 5$  points are considered to be managerially actionable. Finally, for RQ3 the membership data were examined in a sharing matrix (the proportion of members of Brand X who also hold membership of Brand Y, Brand Z... across all pairs) to derive a sharing coefficient (D) for the category and apply the Duplication of Purchase Law.

## Findings

To answer RQ1, loyalty programme members are not typical of the general gambling population; they play very much more frequently, and they gamble on a different and far wider repertoire of activities. Table 1 compares the betting behaviour of the loyalty programme membership sample with that of the wider UK population, and in particular the proportions that play on a given activity at all, in a week and over a year. The table is ordered by the proportion of loyalty cardholders that gamble on a particular activity – from which it is clear that Fixed Odds Betting Terminals attracted 66% of all members with over half (52%) playing at least once per week. However, comparing this with the population data, we see that it is not representative of the population at all; just 4% of all gamblers used the terminals in the past year, and just 1% in the past week. By contrast, the National Lottery is exceptional in sharing a similar penetration (almost 60%) and frequency across both groups.

**Table 1: Uptake of gambling activities in the population and in loyalty programmes**

Gambling activity	<i>Programme Members</i>		<i>Population</i>	
	% gambling	% <i>more than</i>	% gambling	% gambling
	on...	once/week	last year	last week
Fixed Odds Betting Terminals	66	52	4	1
National Lottery	57	46	59	36
Horse Racing	54	43	16	3
Sports Betting	48	37	9	2
Scratch cards	36	26	24	6
Slot machines	31	20	13	2
Dog Racing	28	22	4	1
Private Betting	24	18	11	2
Another Lottery	22	16	2	5
Football Pools	13	12	4	2
Betting on non-sports	13	8	4	1
Online slot machines	13	8	3	0
Bingo	10	7	9	3
Casino	10	5	5	1
Spread Betting	3	3	1	0
Poker	2	1	2	0
<b>Average</b>	<b>27</b>	<b>20</b>	<b>11</b>	<b>4</b>

Data Source: NatCen (2017); Wardle et al., (2010)

In the population as a whole, and over a single year, scratch-cards are the second most used gambling format (24%) followed by horse racing (16%). Since penetration metrics are individually low for every activity, the proportion of the population gambling on the lottery and any one or more *other* formats is also likely to be low. Further, the three-fold difference between the “in the last year” and “last week” column averages is also very similar to the way that FMCG brand penetrations accumulate with lighter buyers over time (Ehrenberg, 1988). The difference demonstrates a low propensity across the population to gamble at all (again, with the exception of the National Lottery), since it implies that it may take a year for the lightest punters to place a bet on anything.

By contrast, loyalty programme members are more likely to favour: (1) a far wider repertoire of gambling activities (since individual penetrations are all high there is a greater amount of duplication); (2) to gamble far more frequently (the difference between “*at least once a week*” and “*at all*” is just 50%); and (3), since their penetration and frequency metrics replicate a characteristic Double Jeopardy pattern ( $r = 0.99$ ), there is an underlying theoretical implication that loyalty scheme members see little difference between formats (Graham et al, 2017) – smaller formats just have fewer gamblers who choose to gamble on them a bit less often. Gambling itself may be more important than either the activity or brand chosen.

*RQ2 asks for a brand level segmentation analysis.* Table 2 shows the distribution of each demographic measure for UK gamblers, UK gambling loyalty scheme members, and for each brand, to enable comparison. The Mean Absolute Deviations (MAD) are then identified at the base of the table as a measure of any possible segmentation – for example, if a brand deviates by more than 5 points from its column mean on a particular demographic variable then there may be an actionable difference in that brand’s customer base, and one that separates it from its rivals (Uncles et al., 2012).

At the top and base of the table comparison is illustrated between the profiles of the UK gambling population and loyalty scheme membership in the NatCen samples. The most obvious finding from the analysis is the middle-aged (35-54) and male (85%) bias in the user profile of loyalty scheme members. These deviations (DEV) are bigger than any difference between *brand* user profiles, for which MADs are all low (<5 points), although several borderline discrepancies (<10 points) are highlighted. This amounts to a slightly older membership at Ladbrokes and slightly younger at Coral and Betfred. By and large, although

the user profile of any membership scheme is very different from the typical gambling adult, they tend not to differ very much *between* loyalty schemes, indicating no real segmentation.

**Table 2: Brand User-Profiles of Loyalty Scheme Members**

	Gender		Proportion of membership by age (years)						
	M	F	18-24	25-34	35-44	45-54	55-64	65-74	75+
<b>Average participant (%)**</b>	<b>54</b>	<b>46</b>	<b>14</b>	<b>16</b>	<b>19</b>	<b>18</b>	<b>16</b>	<b>10</b>	<b>8</b>
<b>Average brand membership (%)</b>	<b>89</b>	<b>11</b>	<b>11</b>	<b>19</b>	<b>20</b>	<b>27</b>	<b>15</b>	<b>7</b>	<b>1</b>
Ladbrokes 'The Grid' card	0	0	0	<b>-6</b>	0	1	4	1	0
William Hill 'Linked' card	0	0	4	1	-4	-4	0	1	0
Coral 'Connect' card	3	-3	1	1	<b>7</b>	-2	-1	-5	0
Paddy Power 'VIP' card	2	-2	-1	3	0	0	-4	0	0
Betfred 'VIP' card	-3	3	<b>6</b>	2	-1	3	-1	4	1
<b>MAD (Brand User Profiles)</b>	2	2	2	3	2	2	2	2	0
<b>DEV (Membership vs Participant)</b>	<b>35</b>	<b>-35</b>	3	3	1	<b>9</b>	1	3	<b>-7</b>

\* Mintel (2019) \*\* Wardle et al., (2010)

Finally, in response to RQ3, we examined the cross-membership of loyalty programmes by constructing a sharing matrix and applying the Duplication of Purchase Law (Ehrenberg & Goodhardt, 1970; Sharp, 2010). Table 3 shows the duplication of loyalty-programme memberships across the five leading UK bookmaker brands, that is, the proportion of the membership at one brand that holds membership at any other. For example, we can see in the first column that almost half (49%) of William Hill “*Linked*” cardholders also hold a Ladbrokes “*The Grid*” membership. From the table, it is therefore quite clear that a *prime facie* case for marketing investment in a loyalty scheme is simply not supported – all brands share members substantially with rivals - over half (57%) of the membership of any brand programme also typically holds a Ladbrokes card.

Customer sharing between competing brands is a generalised behavioural pattern in Dirichlet markets, where it is predictable from relative brand size (e.g. Dawes, 2016). It has already been extended to participation by *forms* of gambling (Hand & Singh, 2014; Lam, 2006) and, to predict participation in exercise activities, the Duplication of *Behaviour* Law (Wilson et al., 2019). Our analysis in Table 3 shows that the same Law is supported here, in a category sub-sample. The table is organised by brand size, and it is clear to see that mean duplication

of members are highly correlated with scheme penetrations ( $r = 0.98$ ). An expected level of sharing between any pair of brands is derived from the product of the penetration of the second brand and the category duplication coefficient ( $D = \text{mean duplication}/\text{mean penetration}$ ). The Law implies that column values in the matrix will be similar, and close to the predicted value, so deviations for any pair of brands can then be highlighted.

**Table 3: The Effectiveness of Betting-Brand Loyalty Programmes**

<i>Of loyalty scheme members at:</i>	<i>The % that also belong to....</i>					<i>Avg.</i>
	Lad.	WH	Cor.	BF	PP	
Ladbrokes		23	21	12	11	
William Hill	49		26	20	21	
Coral	61	36		21	18	
Betfred	62	46	37		23	
Paddy Power	54	47	31	22		
Avg. Dupe	57	38	29	19	18	<b>32</b>
Penetration	71	33	24	14	14	<b>31</b>
Predicted ( $D=1.03$ )	<b>73</b>	<b>34</b>	<b>25</b>	<b>14</b>	<b>14</b>	<b>32</b>
MAD	17	9	6	6	6	

Data Source: NatCen (2017).  $n = 1420$

In applying the Law, two partitions, or exceptional sharing patterns, are exposed. We note that for Ladbrokes, with far and away the biggest loyalty scheme membership, duplication values are consistently far *lower* than predicted (a MAD of 17%), but this is a known systematic deviation for very high penetration brands (Scriven et al., 2017) In the centre of the table William Hill and Coral are sharing members in line with expectation, while the smallest brands, Paddy Power and Betfred, are over-duplicating against the norm – in other words, far from reflecting unusual allegiance (perhaps to a more generous reward scheme), loyalty to any loyalty schemes remains divided, and more of any membership holds cards from bigger brands and fewer from the smallest.

## Discussion and Conclusion

Bookmaker loyalty programmes have attracted critical media attention on the basis that they reward the highest spenders, particularly following a loss, to retain them in the brand. They are linked to problem gambling in the popular view. Evidence from other industries nevertheless suggests that loyalty programmes are not effective in this way and the aim of this study was to extend this theory to a novel context. The main finding is that loyalty programme members are not typical gamblers demographically or behaviourally. They are predominantly older males, participating more frequently across an atypically wide range of gambling activities with multiple but predictable brand membership duplication. However, within the membership segment, brand user-profiles barely differ, thus the popular view is not supported. We now briefly discuss the implications of the findings.

For managers, the main implication of the study is that expectations of a loyalty programme should be realistic. Members are more likely to be heavy gamblers than members of the general gambling population, but this evidence does not imply that membership has made them so; prior evidence suggests that the schemes simply attract those with a heavier than average gambling propensity. Membership loyalty is also split predictably between brands by brand size, not scheme positioning so that the market remains unsegmented. Since there is no competitive advantage in a loyalty programme beyond existing brand size, its cost has simply become a (necessary) table stake. But digital platforms provide additional brand touchpoints, so creative marketers might now find ways to leverage advantages from this more effectively to drive customer experience, brand salience and word of mouth.

The findings extend behavioural theory in the gambling category. We have successfully tested two known laws of marketing to the customer analysis of five competing bookmaker brands. What is novel here is that the analysis considered not the entire customer base, but simply that portion holding membership of a loyalty programme. The findings promote our understanding of habitual behaviour in established split-loyal categories and extend the ability of Dirichlet theory to describe and predict outcomes. The evidence that the heaviest category and brand users are almost inevitably members of several loyalty programmes and divide their loyalty across brands and products are entirely what would be expected from an analysis of the heaviest users of *any* brand or category by those with knowledge of the theory.

The social and regulatory implications are also clear. If there are more people in a loyalty programme, there is simply a higher chance that its membership will include more problem gamblers. Since those at risk are the heaviest of the heavy gamblers, they are almost inevitably in one or more schemes. A clear advantage of a data-driven loyalty programme is that vulnerable individuals can be identified, and interventions more readily made. But there is little evidence to suggest that such schemes are systematically *creating* problem gamblers. Although problem gambling is undoubtedly a devastating social harm for those affected, almost 70% of the UK population gamble at least once during any year, while less than 1% were classified as problem gamblers in 2016 (Gambling Commission, 2017). The study is however limited by the nature of the survey data. A full Dirichlet model fitting to behavioural data is now desirable, and further research is prompted in larger behavioural data sets that would enable comparison of scheme members with the population and confirm the extent of habitual stationary split loyalties on a wider range of metrics, and in a more finely calibrated time scale.

## References

- Anesbury, Z., Winchester, M., & Kennedy, R. (2017). Brand user profiles seldom change and seldom differ. *Marketing Letters*, 28(4), 523-535.
- Blaszczynski, A., Ladouceur, R., & Shaffer, H. J. (2004). A science-based framework for responsible gambling: The Reno model. *Journal of Gambling studies*, 20(3), 301-317.
- Bolton, R.N., Kannan, P.K. & Bramlett, M.D. (2000). 'Implications of loyalty program membership Customer Lifetime Value Concept to Casino Table Gaming 101 and service experiences for customer retention and value', *Journal of the Academy of Marketing Science*, 28, pp. 95–108.
- Breugelmans, E., Bijmolt, T. H., Zhang, J., Basso, L. J., Dorotic, M., Kopalle, P. & Wunderlich N V. (2015). Advancing research on loyalty programs: a future research agenda. *Marketing business review*, 1(2), 282-289
- Davies, R (2019). William Hill posts £63.5 million loss after FOBT stake is cut. *Guardian online* 9.9.19. Available from <https://www.theguardian.com/business/2019/aug/09/william-hill-posts-loss-after-fobt-stake-is-cut>
- Davies, R (2020). Report shows gambling industry's reliance on problem gamblers *Guardian online* 02.01.2020. Available from <https://www.theguardian.com/society/2020/jan/02/gambling-report-shows-industrys-reliance-on-loss-making-customers>
- Dawes, J. G. (2016). Testing the robustness of brand partitions identified from purchase duplication analysis. *Journal of Marketing Management*, 32(7-8), 695-715.

- Dorotic, M., Bijmolt, T. H., & Verhoef, P. C. (2012). Loyalty programmes: Current knowledge and research directions. *International Journal of Management Reviews*, 14(3), 217-237.
- Ehrenberg, A. S. (1988). *Repeat buying: Facts, Theory and Applications*. Oxford University, London.
- Ehrenberg, A. S., & Goodhardt, G. J. (1970). A model of multi-brand buying. *Journal of Marketing Research*, 7(1), 77-84.
- Ehrenberg, A. S., Goodhardt, G. J., & Barwise, T. P. (1990). Double jeopardy revisited. *Journal of marketing*, 54(3), 82-91.
- Gambling Commission (2017). *Gambling participation in 2016: behaviour, awareness and attitudes: Annual report*. UK. Available from <https://www.gamblingcommission.gov.uk/PDF/survey-data/Gambling-participation-in-2016-behaviour-awareness-and-attitudes.pdf>
- Gambling Commission (2019). *Industry statistics: April 2016 to March 2019*. UK. Available from <https://www.gamblingcommission.gov.uk/PDF/survey-data/Gambling-industry-statistics.pdf>
- Goodhardt, G. J., Ehrenberg, A. S., & Chatfield, C. (1984). The Dirichlet: a comprehensive model of buying behaviour. *Journal of the Royal Statistical Society. Series A (General)*, 621-655.
- Graham, C., Bennett, D., Franke, K., Henfrey, C. L., & Nagy-Hamada, M. (2017). Double Jeopardy—50 years on. Reviving a forgotten tool that still predicts brand loyalty. *Australasian Marketing Journal (AMJ)*, 25(4), 278-287.
- Grewal, D., Ailawadi, K. L., Gauri, D., Hall, K., Kopalle, P., & Robertson, J. R. (2011). Innovations in retail pricing and promotions. *Journal of Retailing*, 87, S43-S52.
- Grewal, D., Levy, M., & Kumar, V. (2009). Customer experience management in retailing: an organizing framework. *Journal of retailing*, 85(1), 1-14
- Hand, C., & Singh, J. (2014). Segmenting the betting market in England. *International Journal of Market Research*, 56(1), 111-127.
- Hlavinka, K., & Sullivan, J. (2011). The billion-member march: The 2011 COLLOQUY loyalty census: Growth and trends in loyalty program membership and activity. *COLLOQUYTalk white paper, available from www.colloquy.com*.
- Kennedy, R., & Ehrenberg, A. S. (2001). Competing retailers generally have the same sorts of shoppers. *Journal of Marketing Communications*, 7(1), 19-26.
- Lal, R., & Bell, D. E. (2003). The impact of frequent shopper programs in grocery retailing. *Quantitative marketing and economics*, 1(2), 179-202.
- Lam, D. (2006). Applicability of the duplication of purchase law to gaming. *UNLV Gaming Research and Review Journal*, 10(2), 4.
- Lam, D., & Mizerski, R. (2009). An investigation into gambling purchases using the NBD and NBD–Dirichlet models. *Marketing Letters*, 20(3), 263-276.
- Leva, M & Zilani, C. (2017) "Towards digital loyalty programs: insights from customer marketing (pp. 89-89). Springer, Berlin, Heidelberg. medium preference segmentation", 56 *International Journal of Retail and Distribution Management*, Vol. 45 Issue: 2, pp.195-210

- Lopez-Gonzalez, H., Estévez, A., & Griffiths, M. D. (2017). Marketing and advertising online sports betting: A problem gambling perspective. *Journal of Sport and Social Issues*, 41(3), 256-272.
- Lucas, A. F., Dunn, W. T., & Singh, A. K. (2005). Estimating the short-term effect of free-play offers in a Las Vegas hotel casino. *Journal of Travel and Tourism Marketing*, 18(2), 53-68.
- McCarthy, S., Thomas, S. L., Randle, M., Bestman, A., Pitt, H., Cowlishaw, S., & Daube, M. (2018). Women's gambling behaviour, product preferences, and perceptions of product harm: differences by age and gambling risk status. *Harm reduction journal*, 15(1), 22.
- Mintel (2019). *Gambling Review June 2019*. UK: Mintel Group Ltd. Available at <https://academic.mintel.com/display/919626/>
- Meyer-Waarden, L., & Benavent, C. (2006). The impact of loyalty programmes on repeat purchase behaviour. *Journal of marketing management*, 22(1-2), 61-88.
- Miller, R., & Michelson, G. (2013). Fixing the game? Legitimacy, morality policy and research in gambling. *Journal of Business Ethics*, 116(3), 601-614.
- NatCen Social Research (2017), *Gaming & Betting Study: Survey of Loyalty Card Customers, Waves 1 and 2, 2014-2016*, [data collection], UK Data Service, SN: 8191, <http://doi.org/10.5255/UKDA-SN-8191-1>
- Scriven, J., Bound, J., & Graham, C. (2017). Making sense of common Dirichlet deviations. *Australasian Marketing Journal (AMJ)*, 25(4), 294-308.
- Sharp, B. (2010). *How brands grow*. Melbourne; Oxford
- Sharp, B., & Sharp, A. (1997). Loyalty programs and their impact on repeat-purchase loyalty patterns. *International journal of Research in Marketing*, 14(5), 473-486.
- Sharp, B., Wright, M., Dawes, J., Driesener, C., Meyer-Waarden, L., Stocchi, L., & Stern, P. (2012). It's a Dirichlet world: Modeling individuals' loyalties reveals how brands compete, grow, and decline. *Journal of Advertising Research*, 52(2), 203-213.
- Shook, R. L. (2003). *Jackpot! Harrah's winning secrets for customer loyalty*. John Wiley and Sons Inc.
- Shugan, S. M. (2005). Brand loyalty programs: Are they shams? *Marketing Science*, 24, 185-193.
- Uncles, M. D., Dowling, G. R., & Hammond, K. (2003). Customer loyalty and customer loyalty programs. *Journal of consumer marketing*, 20(4), 294-316.
- Uncles, M., Kennedy, R., Nenycz-Thiel, M., Singh, J., & Kwok, S. (2012). User profiles for directly competing brands seldom differ: re-examining the evidence. *Journal of Advertising Research*, 52(2), 252-261.
- Verhoef, P. C., & Langerak, F. (2002). Eleven misconceptions about customer relationship management. *Business Strategy Review*, 13(4), 70-76.
- Verhoef, P. C., Lemon, K. N., Parasuraman, A., Roggeveen, A., Tsiros, M., & Schlesinger, L. A. (2009). Customer experience creation: Determinants, dynamics and management strategies. *Journal of retailing*, 85(1), 31-41
- Wardle, H. Moody, A, Spence, S. Orford, J. Volberg, R. Jotangia, D, Griffiths, M. Hussey, D & Dobbie, F (2010). *British Gambling Prevalence Survey 2010*, UK: Prepared by

NatCen for The Gambling Commission. Available at [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/243515/9780108509636.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/243515/9780108509636.pdf)

- Wilson, A. L., Nguyen, C., Bogomolova, S., Sharp, B., & Olds, T. (2019). Analysing how physical activity competes: a cross-disciplinary application of the Duplication of Behaviour Law. *International Journal of Behavioral Nutrition and Physical Activity*, 16(1), 123.
- Wohl, M. J. (2018). Loyalty programmes in the gambling industry: potentials for harm and possibilities for harm-minimization. *International Gambling Studies*, 18(3), 495-511.
- Ziliani, C. (2012). I loyalty programs per il presidio dei canali di vendita: sfide e opportunità tra crisi economica e new media. In Proceedings of the 11th International Marketing Trends Conference, ed. Jean-Claude Andreani and Umberto Collesei, Marketing Trends Association, January 19-21, Venice (pp. 1-32).