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Frequency Strategies and Double Jeopardy in Marketing: The Pitfall of Relying on Loyalty Programs

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by Michael Lynn

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Center for Hospitality Research
Cornell University
School of Hotel Administration
537 Statler Hall
Ithaca, NY 14853

Phone: 607-255-9780
Fax: 607-254-2292
www.chr.cornell.edu

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Frequency Strategies and Double Jeopardy in Marketing:

The Pitfall of Relying on Loyalty Programs

by Michael Lynn

ABOUT THE AUTHOR

Michael Lynn, Ph.D., is a professor at the Cornell University School of Hotel Administration (wml3@cornell.edu). His primary research focuses are tipping behavior, status consumption, and consumers' response to product scarcity. He has published over 50 articles, in journals such as *Cornell Hospitality Quarterly, Journal of Consumer Research, Journal of Applied Social Psychology, Journal of Personality and Social Psychology, American Psychologist,* and *Personality and Individual Differences.* The author gratefully acknowledges D.K. Shifflet, a corporate friend of the Center for Hospitality Research, for providing data for this study.

EXECUTIVE SUMMARY

Domestic airlines' reliance on frequent flier programs to improve sales is called into question by the double jeopardy effect. Data on airline travel from D.K. Shifflet indicate that small domestic airlines suffer from both weak penetration and a meager average purchase frequency, while large domestic airlines enjoy an advantage in both penetration and average purchase frequency. In addition, there is much more variance in penetration among domestic airlines than is found in average purchase frequency. Thus, differences between airlines in sales or market share are almost entirely due to differences in penetration rather than differences in purchase frequency. This "double jeopardy" pattern of data, in which small brands suffer in two ways, has been observed for many different product categories and in many different countries. The ubiquity of this effect suggests that average purchase frequency among brand users cannot be increased substantially without also increasing the brand's penetration. Thus, hospitality marketers who focus on loyalty programs for competitive advantage will be disappointed (although such programs constitute a defensive strategy at this point). Instead of targeting current users in an attempt to increase their frequency of purchase, hospitality and other marketers should focus on increasing the popularity of their brands among the market as a whole. Ultimately, successful marketing comes not from loyalty programs, but from creating value in the form of a superior product and service offering, communicating that value to all users of the product category, and capturing that value through pricing.

Frequency Strategies and Double Jeopardy in Marketing:

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by Michael Lynn, Ph.D.

Marketers can increase sales of their products in two ways. They can induce non-users of their product to try, buy, and use it (known as a penetration strategy), or they can induce current users of their product to buy and use it more often (called a frequency strategy). Retail companies have pursued frequency strategies for a long time based on the idea that existing, loyal customers are the most profitable. A classic example of a technique for increasing repeat purchases is trading stamps (notably, S&H Green Stamps), which offered merchandise as a reward for patronage.[1] Although Green Stamps began a long fade with the 1970s' petroleum-market turbulence, the focus on the frequency strategy has intensified in the past few years, with the rise of loyalty programs.

[1] "History of Loyalty Programs," www.frequentflier.com/ffp-005.htm, on 2/3/08. The Green Stamps concept still exists in electronic form, as S&H Green Points.

Marketers have focused on building loyalty because the proliferation of alternative media outlets in print, radio, television, and the internet has fractured the media market and made mass market penetration strategies costly and difficult to execute. Moreover, marketing data made available by information technology has revealed that a handful of "heavy users" accounts for a disproportionate share of most businesses' sales. Further, these heavy users tend not to be brand loyal, which suggests that the opportunity to promote increased patronage from these heavy users is a particularly promising one.[2] Together, these and other forces have led marketers to increasingly focus on frequency strategies.[3]

Nowhere is the marketing emphasis on frequency strategies more intense than in the tourism industry. American Airlines led the tourism industry's interest in frequency strategies in the 1980s when its executives came to believe that they could increase their share of the lucrative but fickle heavy flyer segment by offering rewards tied to repeat patronage. Since then, the world's airlines have created over 70 frequent flyer programs that collectively have over 100 million members and give away 10 million rewards a year. Other travel-related companies, notably lodging chains, were quick to copy these efforts, so that frequency or loyalty programs have become commonplace in hotels, car rental firms, and even restaurants.[4]

Given the considerable effort and expense invested in frequency programs, hospitality marketers should critically examine the relative merits of penetration and frequency strategies. In this report, I examine one facet of this issue by describing a well established but little known empirical market regularity called market double jeopardy, which characterizes the correlation of penetration and purchase frequency. In that context, I discuss the implications of this phenomenon for the viability of relying on either penetration or frequency strategies in marketing.[5] I focus on airlines, using data provided by D.K. Shifflet, but the principle applies equally to other travel firms that employ frequency programs, including hotels.

Double Jeopardy in Marketing

When looking at the brands in a product category, brand penetration and buyers' average purchase frequency tend to be positively correlated. In other words, small brands suffer not only from a small penetration (since they are small brands), but also a relatively low average purchase frequency among those who do buy those brands. Conversely, large

[2] G. Hallberg, *All Consumers Are Not Created Equal* (New York: John Wiley & Sons, 1995).

[3] "History of Loyalty Programs," *loc.cit.*

[4] *Ibid.*

[5] A. Ehrenberg and G. Goodhardt, "Double Jeopardy Revisited, Again," *Marketing Research*, Spring 2002, pp. 40–42.

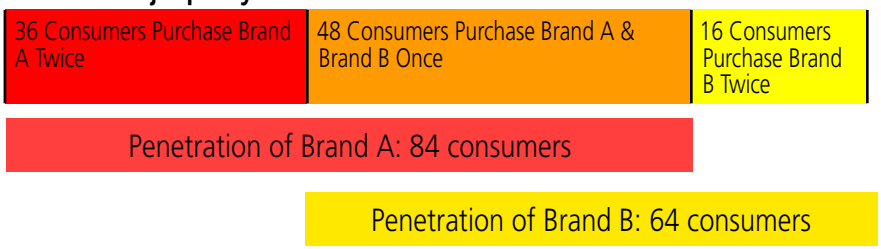
Explanation of the "Double Jeopardy" Effect

As mentioned in the text, mathematical analyses prove that double jeopardy will occur whenever **(1)** the proportion of consumers who buy a brand in any given time period is independent of whether they also buy another brand, and **(2)** brands do not differ substantially in how often their customers buy the product category (that is, no brands disproportionately attract heavy users). To understand why these conditions lead to double jeopardy, consider a hypothetical market in which 100 consumers buy a product twice a year and choose between one of two brands , A and B. The probability that a consumer will buy A is 0.6 and the probability of buying B is 0.4. This is an overly simplified (or restrictive) case in that there are no differences among consumers in either brand preferences or average number of purchases in the category. These unrealistic simplifications make it easier to see why double jeopardy occurs, but are not necessary for the effect. The critical elements of this case are that **(1)** the proportion of consumers who buy Brand A or Brand B is independent of which brand they purchased previously, and **(2)** the average category purchase frequency of consumers who buy Brand A is similar to that of consumers who buy Brand B.

In this case, Brand A will have:

- total yearly sales of 120 units (100 people x 2 purchases x .6 probability of purchase = 120 units),
- per-capita sales of 1.2 units (120 units/100 consumers = 1.2 units per consumer),
- 84 customers who buy it at least once [(100 consumers x .6 probability of purchase = 60 customers buying the brand for first purchase) + (40 consumers who bought Brand B first x .6 probability of purchase = 24 additional customers buying the brand for second purchase) = 84 customers buying the brand at least once],
- 36 customers who buy it twice (100 consumers x .6 probability of first purchase x .6 probability of second purchase = 36 customers buying the brand twice),
- 48 customers who buy it once and its competitor once (84 customers who buy it at least once – 36 customers who buy it twice = 48 customers who buy it only once), and
- an average of 1.43 yearly purchases per buyer of the brand (120 total sales/84 customers buying at least once = 1.43 purchases per buyer of the brand).

Graphic presentation of hypothetical case illustrating the statistical basis for double jeopardy effects



Similarly, Brand B will have:

- total yearly sales of 80 units (100 people x 2 purchases x .4 probability of purchase = 80 units),
- per-capita sales of 0.8 units (80 units/100 consumers = 0.80 units per consumer),

brands enjoy their penetration advantage but also have a greater average purchase frequency than do small brands. This tendency for small brands to suffer in two ways is known as double jeopardy. As Ehrenberg, Goodhardt, and Barwise point out, evidence of double jeopardy extends to over 50 different common product categories, including breakfast cereals, gasoline, and toilet soap. It has been documented in many international markets, including the United Kingdom, continental Europe, and Japan, as well as in the United States.[6] Importantly, data showing double jeopardy also indicate that brand differences in penetration are much larger than brand differences in average purchase frequency.

Double jeopardy is a statistical consequence of two fairly common conditions. Mathematical analyses prove that double jeopardy will occur whenever the following conditions exist: **(1)** the proportion of consumers who buy a brand in any given time period is independent of whether they also buy another brand, and **(2)** brands do not differ substantially in how often their customers buy the product category—that is, no brand disproportionately attracts heavy users. The box on this page and the next offers a more detailed discussion of this point. Both assumptions of that mathematical model—that is, of independent probabilities of brand purchase and of equivalent proportions of heavy users across brands—hold in real life.[7]

[6] A.A.C. Ehrenberg, G.J. Goodhardt, T.P. and Barwise, "Double Jeopardy Revisited," *Journal of Marketing*, Vol. 54 (July 1990), p. 83.

[7] *Ibid.*

- 64 customers who buy it at least once [(100 consumers x .4 probability of purchase = 40 customers buying the brand for first purchase) + (60 consumers who bought Brand B first x .4 probability of purchase = 24 additional customers buying the brand for second purchase) = 64 customers buying the brand at least once],
- 16 customers who buy it twice (100 consumers x .4 probability of first purchase x .4 probability of second purchase = 16 customers buying the brand twice),
- 48 customers who buy it once and its competitor once (64 customers who buy it at least once – 16 customers who buy it twice = 48 customers who buy it only once), and

Hypothetical case illustrating the statistical basis for double jeopardy effects

Brand	No. of Consumers	Yearly Purchases of Each Consumer	Probability of Purchasing	Total Sales	Per-Capita Sales	No. Buying at Least Once	No. Buying Twice	No. Splitting Purchases Between Brands	Average Yearly Purchases Per Buyer of Brand
A	100	2	.6	120	1.2	84	36	48	1.43
B	100	2	.4	80	0.8	64	16	48	1.25

Note: This hypothetical example is modified from: A.A.C. Ehrenberg, G.J. Goodhardt, T.P. and Barwise, "Double Jeopardy Revisited," *Journal of Marketing*, Vol. 54 (July 1990), pp. 82–91.

- an average of 1.25 yearly purchases per buyer of the brand (80 total sales/64 customers buying at least once = 1.25 purchases per buyer of the brand).

These calculations are summarized in the table above. Notice that Brand B, with the lower probability of purchase, has both the lower number of customers buying it at least once (penetration) and the lower average yearly purchases per buyer of the brand (average purchase frequency among its buyers), thereby exhibiting a double jeopardy effect. Furthermore, Brand B's penetration is only 76 percent of Brand A's while Brand B's average purchase frequency among its buyers is 87 percent of Brand A's, reflecting greater variability across brands in penetration than in average purchase frequency among brand buyers.

The graphical presentation of the same hypothetical case demonstrates the relative size of the two brands' markets. You can see from this graph that Brand B, which has the smallest penetration will also have the smallest average purchase frequency among its buyers—the double jeopardy effect—because a smaller percentage of its customers buy it twice.—*W.M.L.*

Practical Implications

The widely observed positive correlation between brand penetration and average purchase frequency among brand users together with the greater variability in penetration than in purchase frequency implies to some marketers that average purchase frequency among brand users cannot be increased substantially without also increasing the brands' penetration.[8] By this logic, increases in brand penetration are unlikely to occur without accompanying small increases in average purchase frequency among users. Thus, according to proponents of this view, neither exclusive frequency strategies nor exclusive penetration strategies are possible. These marketers claim that marketing efforts should be directed at increasing the popularity of the brand among users and non-users alike.

Proponents of frequency programs may counter-argue that widespread evidence of marketing double jeopardy means only that few brands *have achieved* a disproportionate share of heavy users. Double jeopardy results from that failure to attract disproportionate numbers of heavy users, but it does not mean that brands are unable to attract those heavy users. By that logic, judicious use of frequency programs *should* attract a disproportionate share of heavy users. The problem with this counterargument is in its implication that double jeopardy should not be found in industry segments with strong frequency programs, because the phenomenon remains in those industries. In the sections that follow, I demonstrate that airlines which serve the U.S. market have

[8] *Ibid.*

Exhibit 1

Purchase data from twenty-three airlines.

Airline	Number of Customers	Penetration	Purchase Frequency	Market Share	Travel Frequency
A	5100	.172	1.41	.156	1.70
B	4740	.160	1.42	.147	1.74
C	4290	.145	1.34	.125	1.62
D	3621	.122	1.50	.119	1.84
E	3016	.102	1.40	.092	1.65
F	2785	.094	1.33	.081	1.63
G	2165	.073	1.40	.066	1.73
H	1068	.036	1.29	.030	1.66
I	862	.029	1.32	.025	1.68
J	643	.022	1.26	.018	1.62
K	588	.020	1.22	.016	1.52
L	526	.018	1.33	.015	1.61
M	307	.010	1.18	.008	1.59
N	272	.009	1.27	.008	1.46
O	227	.008	1.30	.006	1.65
P*	191	.006	1.77	.007	2.07
Q	149	.005	1.15	.004	1.48
R*	141	.005	2.12	.007	2.60
S	112	.004	1.14	.003	1.32
T*	100	.003	1.60	.003	2.23
U*	87	.003	1.86	.004	2.30
V	79	.003	1.24	.002	1.61
W	78	.003	1.19	.002	1.56

* *Note:* These airlines are foreign flag carriers.

not been able to offset the double jeopardy effect despite their heavy use of frequency programs.

Data

D.K. Shifflet, a friend of the Cornell Center for Hospitality Research, provided data from surveys it sends to 45,000 households each month asking for information about each overnight and day trip (over 50 miles from home) completed in the prior three months. When a household was included in the survey more than once, I used only the data from its most recent survey record. I excluded from the analysis airlines with records from fewer than 75 customers, leaving a total of twenty-three airlines serving domestic airports. The resulting data set comprised 59,882 air trips completed in 2002, 2003, or 2004 by a sample of 29,620 U.S. consumers. This information was used to calculate the following variables for each of the twenty-three airlines in the final data set:

- penetration (the proportion of all airline customers who had flown on that airline at least once),
- purchase frequency (the average number of times that particular airline's customers had flown on the airline),
- market share (the airline's proportionate share of all flights taken), and
- travel frequency (the average number of trips involving airplane travel taken by the airline's customers).

These data are listed in Exhibit 1. Airlines are identified only by letter because disguising the data was a condition for obtaining the data from D.K. Shifflet. While I cannot link the names with any performance measure, I am allowed to state the set of airlines. They are Air Canada, Air France, Alaska, American, America Trans Air, America West, British Air, Continental, Delta, Frontier, Hawaiian, Horizon, Jet Blue, Lufthansa, Midwest Express, Northwest, Song, Southwest, Spirit, Sun Country, United, US Airways, and Value Jet. (Again, this is not the order presented in the table.)

Results

Penetration for the twenty-three airlines as a group was not correlated with purchase frequency ($r = -.02$, $p = .95$). However, as can be seen in Exhibit 2, except for four outlying values these airlines display a positive relationship between these variables. Those four outlying cases all involve foreign airlines, Airlines P, R, T, and U, that primarily serve international travelers and enjoy advantages in serving those markets that the domestic airlines do not. Among the nineteen domestic airlines, on the other hand, penetration was strongly and positively correlated with purchase frequency ($r = .80$, $p < .001$). In addition, there was much more variance in penetration, which ranged from .003 to

.172 among domestic airlines, than in purchase frequency, which ranged from 1.14 to 1.50. Thus, double jeopardy exists among domestic airlines in the United States, despite their widespread use of loyalty programs.

To restate the case, double jeopardy is possible when brands do not differ substantially in how often their customers buy the product category. That is, if no brands disproportionately attract heavy users the foundation is set for double jeopardy. An examination of the table in Exhibit 1 reveals that condition to be largely met in the case of U.S. domestic airlines. The average travel frequency among the domestic airlines was 1.61 with a standard deviation of only 0.11 and a range from 1.32 to 1.84. Data for two airlines fall outside those averages. Airline D attracts a slightly higher proportion of heavy users than does its competitors, as reflected in an average travel frequency among its passengers of 1.84 (1.96 standard deviations above the mean), and airline S attracts a slightly smaller than typical proportion of heavy users, as reflected in an average travel frequency among its passengers of 1.32 (2.56 standard deviations below the mean). However, apart from these cases, the differences between domestic airlines in average travel frequency among each airline's passengers are minuscule.

By contrast, the considerable variability in airlines' penetration as compared to average purchase frequency, suggests that differences in airlines' market share are more strongly affected by penetration than by purchase frequency. Indeed, these data show that market share among the domestic airlines was more highly correlated with penetration ($r = .999$, $p < .001$) than with purchase frequency ($r = .80$, $p < .001$). A regression of market share on penetration and purchase frequency indicated that although each accounted for unique variance in market share, penetration was by far responsible for more variance (penetration: part $r = .59$, ß= .97, $t(16) = 53.74$, $p < .001$; purchase frequency: part $r = .03$, ß = .04, $t(16) = 2.29$, $p < .04$). A graph of the relationship between market share and penetration (Exhibit 3) shows that only Airline D has a noticeably larger market share than its penetration would predict and even that deviation from expectations is small. Clearly, differences in market share between domestic airlines in the U.S. are primarily attributable to differences in penetration.

Conclusions

Despite longstanding and strong frequency programs in the airline industry, the domestic airlines in the United States are subject to double jeopardy. Airlines with small penetration levels also suffer from lower average purchase frequencies among buyers. The fairly small differences between airlines in average purchase frequencies are what one would expect, given their large differences in penetration levels. No airline, with the possible exception of Airline D, has been successful in attracting a disproportionate share of frequent fliers. As a result, differences between airlines in sales or market share are almost entirely attributable to differences in penetration. Even Airline D, which has the largest proportion of frequent flyers among its customers, has market share only 5 percent greater than expected given its penetration level. I must conclude that despite the wide distribution of frequent flier programs, those loyalty programs have failed to improve domestic airlines' traffic. In short, a frequency strategy has not been successful in expanding sales for United States-based carriers.

Exhibit 2

Relationship of penetration and average pruchase frequency for 23 airlines

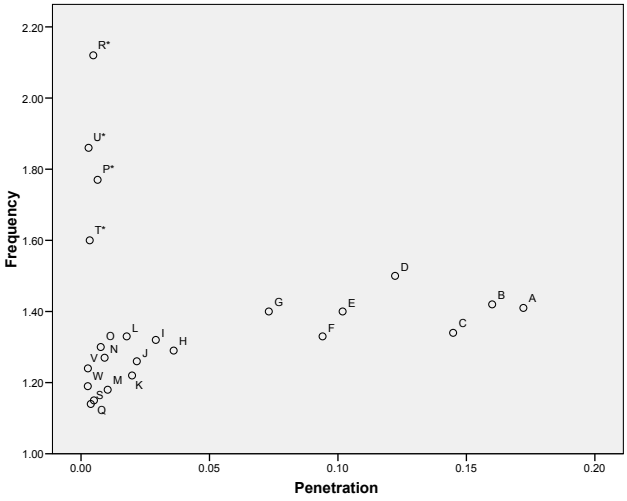
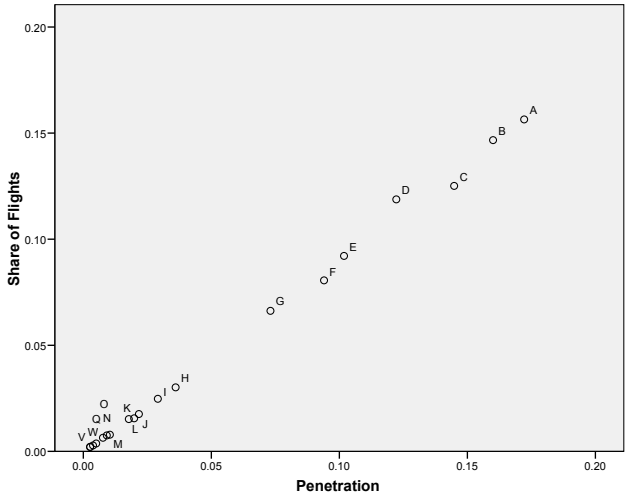


Exhibit 3

Relationship of share of flights and penetration for 19 U.S.-based airlines



The ubiquity of marketing double jeopardy suggests that frequency strategies alone are impractical as a means of gaining disproportionate market share.

Drawing conclusions about the relative merits of penetration and frequency strategies from these findings would be perilous if they stood alone. However, these findings reflect those of other industries. As previously mentioned, marketing double jeopardy is an empirical regularity that has been observed for over fifty different product categories and in several different nations. The ubiquity of double jeopardy, which is evident even in the face of frequent customer programs offered by retail and airline industries, suggests that frequency strategies are impractical as a means of gaining disproportionate market share. That is to say, marketers have not substantially increased their current buyers' frequency of purchase in the long term without also increasing the penetration of their brands.

I am not, however, saying that hospitality marketers should abandon their loyalty programs. It seems likely that loyalty programs may be necessary as defensive measures to prevent the loss of market share to competitors with similar programs.[9] In competitive markets, frequency programs can and will be copied so that they are unlikely to provide a substantial, long-term increase in average purchase frequency or market share. Thus, my point is that loyalty programs should not be a primary focus of marketing efforts, even though they also should not be abandoned.

The two ways to increase sales that I have discussed here—namely, increasing penetration and increasing purchase frequency among current users—cannot be effectively pursued independently. Marketing success comes from increasing a brand's popularity, which can be expected to have a large effect on penetration and a smaller effect on average purchase frequency. Thus, rather than focus on targeting current users in an attempt to increase their frequency of purchase, hospitality and other marketers should focus on increasing the popularity of their brands among the market as a whole. The lesson of this study is that successful marketing comes not from loyalty programs, but from creating value in the form of a superior product and service offering, communicating that value to all users of the product category, and capturing that value through pricing.[10] ■

[9] "History of Loyalty Programs," *loc.cit.*

[10] This language borrows from a Harvard Business School model of marketing that can be found in: A.J. Silk, *What Is Marketing* (Boston: Harvard Business School Press, 2006).

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Index

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2008 Reports

Vol. 8, No. 10 Private Equity Investment in Public Hotel Companies: Recent Past, Long-term Future, by John B. Corgel, Ph.D.

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Vol. 7, No. 9 Compendium 2007

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.
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