COMPETITION AMONG INTERNATIONAL TOURIST DESTINATIONS: APPLYING THE DUPLICATION OF PURCHASE LAW

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Abstract

Here we apply the Duplication of Purchase Law to the international tourism market. Using countries as brands, we examine the fit of this empirical generalisation to assess how international tourism destinations compete. Typically, competition will vary in line with penetration, which means that destinations with similar penetrations will tend to compete more directly with each other.

We present results over 3 consecutive years (1998, 1999, 2000) for both the Japanese and US markets. This allows us to test the Duplication of Purchase law across time, between culturally different markets and international borders. Using a theoretical duplication co-efficient, we also compare the expected and observed duplications, to assess the overall fit of the pattern. Deviations (partitions) to the pattern are also analysed.

The core finding is that the Duplication of Purchase Law does hold, showing similar patterns and partitions across time, in both the Japanese and US markets. Market partitions, or the excess sharing of customers, appear to be driven by 'location' (either by the end destinations being neighbours, and/or the end destinations being close to the point of origin). Some evidence also suggests that partitions in the Japanese tourist market might be driven by 'package holidays'. This research succeeds in replicating and extending the preliminary research by Mansfield & Romaniuk (2003). It will allow tourism destinations to better understand their competitive position in the dynamic international tourism market, and essentially help direct their marketing campaigns.

Introduction

Tourism is a major source of economic revenue for countries all around the world. It sustains 200 million jobs, earns over US $1.3 billion per day, and is the biggest export earner worldwide (World Tourism Organization). Destinations invest millions of dollars into tourism research to understand their market, their competitive positioning and most importantly, how they can use this knowledge to successfully attract tourists.

Yet, on September 11, 2001, everything changed. The tourism industry was dealt a mighty blow as the world reeled in the aftermath of the terrorist attacks in New York (and Bali the following year). People lacked the confidence to travel, flights were cut back, businesses closed, and jobs were lost. And the effects not only hit the immediate players of the tourism industry, but also resounded across other industries that the tourist dollar would normally support. The severity of this situation was only compounded by the War on Iraq and the existence of the SARS virus in 2003, so much so, that for the first time in over 20 years, international tourism arrivals worldwide suffered a negative growth of 0.6% or 4 million arrivals (World Tourism Organization).

Now, as the tourism industry attempts to recover, the need to understand the core market dynamics is pertinent. In such times of uncertainty, destinations will need to encourage tourists to travel, and to do so in the most efficient and effective way, they will need to understand who their real competitors are.

Background and purpose of this study

To understand how tourism destinations compete, we utilise prior knowledge established in other competitive markets. We specifically draw upon the Duplication of Purchase Law. The Duplication of Purchase Law is an empirical generalisation, which states that brands share customers in line with their penetration (Sharp & Wright 1999). Essentially it is a simple pattern of repeat purchase, captured within the Dirichlet model of buyer behaviour. It states, that brands share customers far more with the bigger brands, and far less with the smaller brands (Ehrenberg 1988). Tested over 30 years, it has been shown to hold across different categories, countries, and time (Uncles, Hammond, Ehrenberg and Davies 1994).

The Duplication of Purchase Law works on the premise that brands are typically substitutable, and that this 'substitution' is directly proportional to their penetration (Ehrenberg & Uncles 2000) (ie, big brands compete more closely with other big brands than with smaller brands). Consequently, it allows us to see the competitiveness of specific brands, and has the potential to establish *how* competitive or complementary these brands might be (Ehrenberg 1988).

Deviations from the Duplication of Purchase Law are also known to exist, where brands share more or fewer customers than expected. Where such excess (or under) sharing occurs, the market is deemed a 'sub-market' or a 'partitioned' market (Sharp and Sharp 1997). Such partitions have been observed in the leaded and unleaded petrol market (Ehrenberg & Uncles 2000), the children's cereal market (Hammond, Ehrenberg and Goodhardt 1996), and the luxury car market (Ehrenberg, Bound and Pouilleau 1999). In each of these instances, the brands in the 'sub-market', shared some 'functional' difference, which resulted in higher than expected duplications, and hence market partitions.
There is also evidence for partitions based on 'location'. Sharp & Sharp (1997) found that store proximity influenced the partitions shown between retail department stores. Location-based partitions were also evidenced in a study by Mansfield & Romaniuk (2003), on which this paper is replicating and extending. They found the Duplication of Purchase Law to hold in the UK (2000), USA (2000) and Japanese (1998) international tourism markets, with customer sharing declining in line with each brand's (ie, each country's) penetration. Partitions were also found in each of the markets, most of which appeared to result from the end-destinations being 'neighbours', that is they shared borders or regions, (eg, UK tourists visiting the USA and Canada); and/or end-destinations being close to the point of origin (eg, Japanese tourists visiting Singapore and Hong Kong) (Mansfield & Romaniuk 2003).

The findings of Mansfield & Romaniuk (2003) provide much needed insight into how the international tourism market competes. That is, in light of the data sets tested (UK 2000, USA 2000 & Japan 1998), their research indicates that the tourism market appears to behave much like other competitive markets: brands share customers in line with their penetration (Ehrenberg 1988). This is an important finding, as much of the tourism literature focuses on complex motivation, positioning and segmentation studies (eg, Yiannakis & Gibson 1992; Holloway & Robinson 1995; McGuigan & Foo 2002), rather than the broader patterns that underlie how they really compete. For example, if a country knows it is competing more closely with the bigger brands, why would it bother to respond to a smaller or similarly

positioned brand's offer? Yet, at present, this reactive (and often time consuming and expensive) behaviour is not an uncommon event.

Research Method

This study extends and replicates the findings of Mansfield & Romaniuk (2003). Replication and extension are important as they validate the original study and certify reliability; they reduce sampling error (through additional samples); and help establish the range of conditions under which the findings hold (different years, different countries) (Hubbard and Armstrong 1994). This research uses a 'many sets of data' approach (MSoD), which looks for 'significant sameness' over a range of conditions, and aims to find some degree of generalisability (Barwise 1995). This study aims to replicate the findings of Mansfield & Romaniuk (2003) using 3 consecutive years of Japanese and US data, and extends the research to test patterns across time. It is essential that markets be tested at different time periods to observe if patterns and partitions are replicated. This ensures that the original findings were not just a single phenomena observed a set point in time, but in fact a repeating pattern that is not just incidental to environmental conditions or marketplace activities.

The data we used for this analysis was collected as part of a brand tracking research project for a tourism body. The respondents were randomly recruited, and screened to meet certain sampling criteria, specifically that they had some probability of travelling outside of their region in the 3 or 4 years following the survey. As part of a larger questionnaire, respondents were asked "*Which countries or destinations outside XXX have you ever visited for a holiday or sightseeing*?" They could then name as many, or as few destinations as they wished, based on their past experiences. Only people who had travelled to more than one destination were included in our analysis.

The Japanese data was collected via face-to-face questionnaires, and the US data by telephone. The sample sizes for each of the studies were: Japan (1998) = 278; Japan (1999) = 333; Japan (2000) = 318; US (1998) = 434; US (1999) = 951; and US (2000) = 491. Our analysis approach was to create Duplication of Purchase tables for each data set. These tables show the percentages of buyers of one brand, who also bought each of the other brands. The brands are ordered by size so that any patterns or deviations are easy to spot. The diagonal element of the table consists of cells of 100% (eg, buyers of Brand A, who also bought Brand A), but are shown as blank, so as not to distort any patterns. The countries selected for analysis were chosen at a specific cut-off point depending on sample size.

The first step of the analysis identifies if the Duplication of Purchase Law holds in general, that is: *Does brand sharing decline in line with penetration*? This general pattern is easily identified, and holds if the average duplication declines as penetration declines (Ehrenberg 1988). We also compare this with the 'expected duplication', which is calculated by multiplying the individual penetration figures by a theoretical coefficient "*D*". The *D*-coefficient is calculated from the ratio of the average penetration to the average duplication, and effectively shows how likely a buyer in the market is to buy another brand (Ehrenberg 1988). The degree of fit can be determined by comparing the residual deviations between the observed duplications and theoretical predictions. Generally the fit is good, with a slight overestimation for brands with high penetrations (Ehrenberg 1988). Any deviations to the expected pattern are said to "stand out very clearly to the naked eye" (Ehrenberg 1988: 193), and since the figures in the columns tend to be fairly constant, this is generally the case.

Major results and discussion

Table 1: Duplication of Purchase - Japan 2000 (D = 29/28 = 1.0)

n=278	%	% Who also visited…								
		Hawaii	USA	Guam	HK	Italy	UK	Thai	Taiwan	Ave
Hawaii	**53**		38	**40**	30	15	11	13	13	23
USA	**37**	53		29	28	18	17	13	8	25
Guam	**32**	**66**	34		25	8	16	19	7	25
Hong Kong	**28**	56	37	28		19	18	21	21	31
Italy	**18**	43	36	14	29		**43**	14	9	32
UK	**17**	34	38	30	30	**47**		19	15	34
Thailand	**16**	44	30	38	38	16	20		16	33
Taiwan	**15**	45	21	15	40	11	17	17		27
Total Average	**28**	**47**	**33**	**28**	**32**	**21**	**21**	**18**	**14**	**29**
Expected Dupe (E) = D* penetration		55	38	33	29	19	17	16	15	29

Due to limited space, only the top and bottom four countries are shown in this table.

The data in Table 1 is a good application of the Duplication of Purchase Law. For example, we can see that of the 37% of Japanese tourists who visited the USA, 53% also visited Hawaii; 29% also visited Guam; 28% also visited the Hong Kong and so on, with average sharing declining in line with penetration. This pattern repeats throughout the table, and is what we expect to see when the Duplication of Purchase Law holds. When looking at the data more closely, we see that some countries clearly share more customers than we would expect (eg, Hawaii & Guam, UK & Italy). These deviations are much easier to observe separately, hence we used the theoretical *D*-value, (average duplication/average penetration), to compare the observed and predicted duplications. These results are shown in Table 2.

Table 2: Deviations from the Expected Duplication – Japan 2000 (D = 1.0)
* = deviations from theoretical +20% or more; ** = deviations from theoretical +100% or more

n=278	%	% Who also visited…							
		Hawaii	USA	Guam	HK	Italy	UK	Thai	Taiwan
Hawaii	**53**		4	12	-3	-7	-11	-5	-2
USA	**37**	6		1	-5	-4	-4	-6	-6
Guam	**32**	19*	0		-8	-14	-5	0	-7
Hong Kong	**28**	9	3	0		-3	-3	3*	7*
Italy	**18**	-4	3	-14	-3		22**	-5	-6
UK	**17**	-13	4	3	-2	26**		0	1
Thailand	**16**	-3	-3	10	6*	-5	-1		2
Taiwan	**15**	-2	-12	-13	8*	-11	-4	-1	
Total Average	**28**	**47**	**33**	**28**	**32**	**21**	**21**	**18**	**14**
Expected Dupe (E) = D* penetration		55	38	33	29	19	17	16	15

Due to limited space, only the top and bottom four countries are shown.

The data in Table 2 shows several deviations, with the most obvious *positive* deviations being Guam and Hawaii, and the reciprocal sharing between Italy and UK. In the example of Guam

and Hawaii, the table reads: of the 32% of Japanese tourists who visited Guam, 19% more people than we would expect, also visited Hawaii. In this instance, both Guam and Hawaii share more tourists than we expect, a finding that was consistent across the 1999 and 1998 data sets. The cause of the partition is somewhat obscured; it may be caused by location (ie, both islands are in the Pacific Ocean), or perhaps orientation (ie, both are linked to the US – Hawaii as a state and Guam as a territory), but further investigation will be required to establish if any *meaningful* cause can be attributed.

It is also important to note the negative deviations, which indicate lesser sharing than expected. Such partitions suggest a 'distance' between countries, and whether this distance is geographical, psychological or otherwise, will depend on the country pairs. Due to space limitation, this paper focuses on positive deviations. In the case of the excess sharing between the UK and Italy, location-based partitioning can easily be attributed, with both end destinations being close neighbours. Yet, it is also possible, that this sharing is also influenced by 'package holidays'. The nature of Japanese tourists is that they tend to buy package holidays, which for Europe would typically include Italy, France and the UK. This 'European partition' is confirmed just as strongly in the 1999 and 1998 data sets (which as a full data set also include France in the partition).

To assess the potential strength of these partitions, we calculated deviations of 20%-100% above the theoretical values. In doing this we further identified reciprocal partitions between Thailand and Hong Kong, and Taiwan and Hong Kong. These partitions can easily be explained by geographical location (the destinations are both close neighbours, and in near proximity to the point of origin). The 1998 data also supports the reciprocal partition between Hong Kong and Taiwan, yet selected sample size restricts us from confirming this for remaining country pairs. When this data was analysed for the USA markets (1998, 1999 & 2000) we also found several deviations. Overall, the Duplication of Purchase pattern held particularly well, evidenced by the very close match with the theoretical predictions (observed in the penultimate row of Table 3).

Table 3: Deviations from the Expected Duplication – USA 1999 (D=1.0)
* = deviations from theoretical +20% or more; ** = deviations from theoretical +100% or more

n=951	**%**	**% Who also visited…**							
		Aust.	Italy	France	UK	Brazil	Israel	Austria	Turkey
Australia	**53**		-7	-5	2	0	1	-2	-2
Italy	**37**	-9		10*	1	-1	1	1	-1
France	**32**	-8	12*		6*	0	1	0	-1
UK	**28**	3	2	8*		-2	2	1	0
Brazil	**18**	1	-5	0	-7		3	-4	-2
Israel	**17**	5	5	6*	6*	3		-2	9**
Austria	**16**	-11	3	1	3	-4	-2		-1
Turkey	**15**	-14	-7	-6	-1	-2	11**	-2	
Total Average	**28**	**36**	**29**	**25**	**21**	**6**	**7**	**5**	**6**
Expected Dupe (E) = D* penetration		38	30	25	21	6	6	6	5
Deviations = E – Ave. Duplication		-3	0	0	0	0	1	-1	1

Due to limited space, only the top and bottom four countries are shown.

Table 3 shows the fit of the Duplication of Purchase Law to be very good; the theoretical predictions almost match the observed duplications. Again there are some deviations. For example, of the 32% of US tourists who visited France, 12% more than predicted, also visited Italy. This is a consistent 'location-based' deviation, which has shown up strongly in each of the Japanese data sets, as well as the US 1998 and 1999 data sets (yet interestingly, only as a 'one-way' partition, as 'France and UK', in the US 2000 data set). Other reciprocal location-based partitions include Turkey and Israel, UK and France. And, although deviations appear between Israel and Brazil/ UK/ France, there is no claim for location-based partitioning. The commonality that exists is with 'Israel' and may indeed be due to sampling error.

Implications

This study has successfully replicated and extended the findings of Mansfield & Romaniuk (2003) showing the Duplication of Purchase Law to hold for the tourism industry (both across time and countries). It confirms the empirical generalisation, that brand sharing declines in line with market penetration, that is, bigger brands will tend to compete more closely with each other, than with smaller brands. It therefore provides a much-needed insight as to how tourism destinations compete, allowing them to more easily identify potential competitors and thereby direct their marketing strategies more accurately. This knowledge is significant, as it allows destinations to initially identify competitors based on market share, rather than time consuming and often-costly motivation studies. Furthermore, reliable market share information is readily available, and is frequently collected and updated.

This research also identifies market partitions, showing greater (or lesser) sharing between countries than we would expect. Such partitions tend to indicate heightened competition, and are often influenced by geographical location. Even so, other aspects such as cultural, religious or political orientations may also hold sway, which then raises the question of whether the partition is of a competitive or complementary nature. And if 'complementary', then valuable joint marketing opportunities are potentially available. At this stage, the nature of the partitions is subject to interpretation, requiring further research to clarify this position.

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