ECONOMETRIC ASSESSMENT OF THE IMPACT OF MARKETING EXPENDITURE ALLOCATION ON SERVICE SALES AND PROFITABILITY IN TOURISM ENTERPRISES

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Abstract

The thesis examined how the split of marketing budgets between performance (paid search and affiliate) channels and brand building affected service sales and operating margins of tourism enterprises. Quarterly data of Booking Holdings for 2015-2019, taken from its SEC filings, were used to estimate log-log sales response models with quarter dummies and heteroskedasticity-robust errors. A 1% increase in performance marketing was associated with 0.51-0.70% higher revenue, and a 1% increase in brand marketing with 0.12-0.15% higher revenue. At sample means, one extra US dollar returned about 1.6 USD of revenue through performance channels and about 4.6 USD through brand channels. The brand share of the budget rose from 7.8% to 11.0% while the operating margin stayed near 35-37%. A measurement routine and budget rules were proposed for tour operators and hotels in Uzbekistan.

Keywords: tourism enterprises, marketing expenditure, performance marketing, brand marketing, advertising elasticity, sales response model, operating margin, online travel agencies.

Annotatsiya

Tezisda turizm korxonalarida marketing byudjetini natijaga yo‘naltirilgan (pullik qidiruv va hamkor saytlar) kanallar hamda brendni rivojlantirish o‘rtasida taqsimlash xizmatlar sotuvi va operatsion rentabellikka qanday ta’sir qilgani o‘rganilgan. Booking Holdings kompaniyasining AQSH Qimmatli qog‘ozlar va birjalar komissiyasiga topshirgan 2015-2019-yillar choraklik hisobotlari asosida chorak dummy o‘zgaruvchilari va geteroskedastiklikka chidamli xatolar bilan log-log sotuv javob modellari baholangan. Natijaviy marketing 1 foizga oshganda daromad 0,51-0,70 foizga, brend marketingi 1 foizga oshganda 0,12-0,15 foizga ko‘payishi aniqlangan. O‘rtacha qiymatlarda qo‘shimcha 1 AQSH dollari natijaviy kanalda taxminan 1,6 dollar, brend kanalida 4,6 dollar daromad bergan. Brend ulushi 7,8 foizdan 11,0 foizga oshgan, operatsion rentabellik 35-37 foiz atrofida saqlangan. O‘zbekistondagi turoperator va mehmonxonalar uchun o‘lchash tartibi va byudjet qoidalari taklif etilgan.

Kalit so‘zlar: turizm korxonalari, marketing xarajatlari, natijaviy marketing, brend marketingi, reklama elastikligi, sotuv javob modeli, operatsion rentabellik, onlayn sayyohlik agentliklari.

Аннотация

В тезисе исследовано, как распределение маркетингового бюджета между каналами, ориентированными на результат (платный поиск и партнерские сайты), и построением бренда влияло на продажи услуг и операционную рентабельность туристических предприятий. На квартальных данных Booking Holdings за 2015-2019 годы из отчетности, поданной в Комиссию по ценным бумагам и биржам США, оценены логарифмические модели отклика продаж с квартальными фиктивными переменными и робастными ошибками. Рост расходов на маркетинг результата на 1% сопровождался ростом выручки на 0,51-0,70%, а расходов на бренд - на 0,12-0,15%. При средних значениях дополнительный 1 доллар США приносил около 1,6 доллара выручки в каналах результата и около 4,6 доллара в брендовых каналах. Доля бренда выросла с

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7,8% до 11,0% при операционной рентабельности около 35-37%. Для туроператоров и гостиниц Узбекистана предложены порядок измерения и правила бюджета.

Ключевые слова: туристические предприятия, маркетинговые расходы, маркетинг результата, брендовый маркетинг, эластичность рекламы, модель отклика продаж, операционная рентабельность, онлайн-турагентства.

INTRODUCTION

A tourism company sells a promise: a room, a tour or a flight that the customer will use weeks later. Marketing is therefore one of its largest cost lines, and the hardest question is not how much to spend but where. Money can go to channels that capture a ready buyer at the moment of search, or to activities that make the name familiar and bring customers back directly. The two kinds of spending work on different time scales, and a manager who judges both by the same short-term click report tends to underfund the slower one.

Marketing scholars have long argued that spending should be judged by its measurable effect on sales and profit. R. Rust and co-authors described a chain that links marketing actions to customer behaviour, market results and firm value, and called for productivity metrics that follow this chain [1]. D. Hanssens, L. Parsons and R. Schultz showed how econometric sales response models turn this idea into numbers, with elasticities as the main yardstick [2].

The question has practical weight for Uzbekistan. In 2025 the country received 11.7 million foreign visitors, 46.8% more than a year earlier [3]. Resolution PQ-348 of 19 November 2025 set the goal of raising tourism's share of GDP from 3.5% to 7% and the annual number of foreign tourists from 10 million to 20 million by 2030 [4]. Reaching these targets means that domestic hotels and tour operators will compete for foreign customers on the same online platforms as global firms, and their marketing budgets will need careful allocation.

The aim of the thesis is to estimate, on verified firm-level data, how the allocation of marketing expenditure between performance and brand channels relates to service sales and operating margin in tourism enterprises, and to draw practical rules for tourism businesses in Uzbekistan.

MAIN PART

Data And Method

Evidence on advertising response is broad but uneven. R. Sethuraman, G. Tellis and R. Briesch pooled 751 short-term brand advertising elasticities and found an average of about 0.12, with higher values in the long run [5]. A. Joshi and D. Hanssens showed that advertising also raises firm value beyond its effect on current sales [6]. For online channels, T. Blake, C. Nosko and S. Tadelis found in a field experiment at eBay that paid search on brand keywords brought little extra revenue, because most of those buyers would have come anyway [7]. In hospitality, A. Assaf and co-authors reported a positive but moderate link between advertising spending and hotel sales [8].

Most tourism firms do not publish how they divide their marketing budget, which makes direct tests rare. Booking Holdings, the largest online travel company, is an exception. From 2015 to 2019 it reported performance marketing (paid search, metasearch and affiliates) and brand marketing (television, online video and other brand channels) as separate lines in its income statement [9] [10]. From 2020 onwards only the total is shown on the face of the statement, so the split sample ends in 2019. Quarterly values were taken from the 10-Q reports, and fourth-quarter values were obtained as the annual figure minus the nine-month figure. In 2018 the company reclassified some costs; quarters from 2017 onwards follow the new definitions, and a classification dummy captures the shift. The 940.7 million USD goodwill impairment in the third quarter of 2016 was added back to operating income. For comparison, annual figures of Expedia Group for 2016-2025 were also collected [11]. Table 1 summarises the main series.

Table 1

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Marketing expenditure, revenue and margin of Booking Holdings, 2015-2019[1]

Year	Revenue, mln USD	Performance marketing, mln USD	Brand marketing, mln USD	Brand share, %	Marketing to revenue, %	Operating margin, %
2015	9,224	2,738	274	9.1	32.7	35.3
2016	10,743	3,479	296	7.8	35.1	35.8*
2017	12,681	4,161	435	9.5	36.2	35.8
2018	14,527	4,447	509	10.3	34.1	36.8
2019	15,066	4,419	548	11.0	33.0	35.5
Quarterly mean, N = 20 (min - max)	3,112 (1,841 - 5,040)	962 (561 - 1,314)	103 (41 - 175)	9.5 (5.2 - 13.7)	35.0 (27.5 - 43.9)	34.0 (19.6 - 48.1)

Note: * operating income before the goodwill impairment of 940.7 million USD in 2016; reported margin was 27.1%. The last row shows quarterly means with the range in brackets.

Table 1 shows a company that grew quickly while shifting its marketing mix. Revenue rose from 9,224 million USD in 2015 to 15,066 million USD in 2019, an increase of 63%. Performance marketing still made up the bulk of the budget, yet brand marketing doubled from 274 to 548 million USD, and its share of total marketing rose from 9.1% to 11.0%. Marketing intensity peaked at 36.2% of revenue in 2017 and then fell to 33.0%, while the operating margin held between 35.3% and 36.8%. Quarterly data are far more volatile: the brand share ranged from 5.2% to 13.7%, and margins move with the strong summer peak in travel.

The sales response to the two kinds of spending was estimated with a log-log model:

$$\ln R_t = \alpha + \beta_P \ln P_{t-k} + \beta_B \ln B_{t-k} + \sum \gamma_s D_{st} + \delta C_t + \varepsilon_t \quad (1)$$

where R_t is revenue in quarter t; P_{t-k} and B_{t-k} are performance and brand marketing expenses with lag k = 0 or k = 1; D_{st} are dummies for quarters 2-4; C_t is the classification dummy (1 from 2017); β_P and β_B are revenue elasticities; ε_t is the error term.

Model (1) reads simply: the coefficients show by what percentage revenue changes when a given type of spending rises by 1%, all else equal. The one-quarter lag reflects the business model of online travel agencies, which earn most of their revenue when the trip takes place, often weeks after the booking that marketing generated. The quarter dummies remove the seasonal pattern, so the elasticities are not driven by the summer peak.

The link between the marketing mix and profitability was tested with a second equation:

$$M_t = \alpha + \theta S_t + \varphi I_t + \sum \gamma_s D_{st} + \delta C_t + u_t, \quad S_t = \frac{B_t}{P_t + B_t} \cdot 100 \quad (2)$$

where M_t is operating margin, %; S_t is the brand share of marketing, %; I_t is marketing intensity (marketing expenses to revenue), %; θ and φ are the effects of the mix and the scale of spending on margin; u_t is the error term.

Equation (2) separates two decisions that managers often mix up: how much of revenue to spend on marketing and how to divide that amount. Holding intensity fixed, the coefficient θ shows how margin changes when one percentage point of the budget moves from performance to brand channels. All models were estimated by ordinary least squares with heteroskedasticity-consistent standard errors [12].

[1] Source: author's calculations based on Booking Holdings Forms 10-Q and 10-K [9] [10].

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RESULTS AND DISCUSSION

The estimates are reported in Table 2.

Table 2

Estimates of the sales response and margin models, Booking Holdings, 2015-2019[2]

Variable	(1) ln R, same quarter	(2) ln R, one-quarter lag	(3) Operating margin, %
ln P (performance marketing)	0.699*** (0.089)	0.508*** (0.093)	-
ln B (brand marketing)	0.123* (0.071)	0.154*** (0.053)	-
S (brand share, %)	-	-	-0.471** (0.219)
I (marketing intensity, %)	-	-	-0.582*** (0.132)
Quarter dummies / classification dummy	Yes / Yes	Yes / Yes	Yes / Yes
Observations	20	19	20
R^2	0.972	0.970	0.985

Note: HC1 robust standard errors in brackets; *** p < 0.01, ** p < 0.05, * p < 0.10. Column (2) uses marketing of the previous quarter.

Table 2 confirms that both channels move sales. In the same-quarter model, revenue rises by 0.70% for each 1% increase in performance marketing and by 0.12% for brand marketing, the latter close to the meta-analytic mean reported in [5]. With a one-quarter lag the brand effect becomes stronger and more precise (0.154, significant at 1%), while the performance elasticity falls to 0.51. The sum of the lagged elasticities, 0.66, is clearly below one (p = 0.002), which signals diminishing returns: doubling the whole budget would not double revenue.

Elasticities alone can mislead, because the two budgets differ in size by about ten times. Converted into money at sample means (revenue 3,112 million USD, performance 962 million USD and brand 103 million USD per quarter), the lagged model implies that an additional dollar returned about 1.6 USD of revenue through performance channels and about 4.6 USD through brand channels. By the rule of equal marginal returns, money should move toward brand building until the gap closes. Booking Holdings did exactly this over the period: its brand share rose by about two percentage points.

The margin model gives a more sober picture. Marketing intensity has a strong negative effect: one point more of revenue spent on marketing cuts the margin of the same quarter by 0.58 points. The brand share coefficient is also negative (-0.47), but it is weaker and loses significance with the stricter HC3 errors. Our reading is that brand spending is paid at once while its revenue arrives later, so it looks costly in the quarter it is booked. Over whole years the shift toward brand did not hurt profitability, since the annual margin stayed at 35-37%. When a linear time trend is added to model (1), the performance elasticity falls to 0.32, which reminds us that with 20 observations these numbers are best read as orders of magnitude, not exact values.

Figure 1 sets the two largest online travel groups side by side over a longer span.

[2] Source: author's calculations based on Table 1 data [9] [10].

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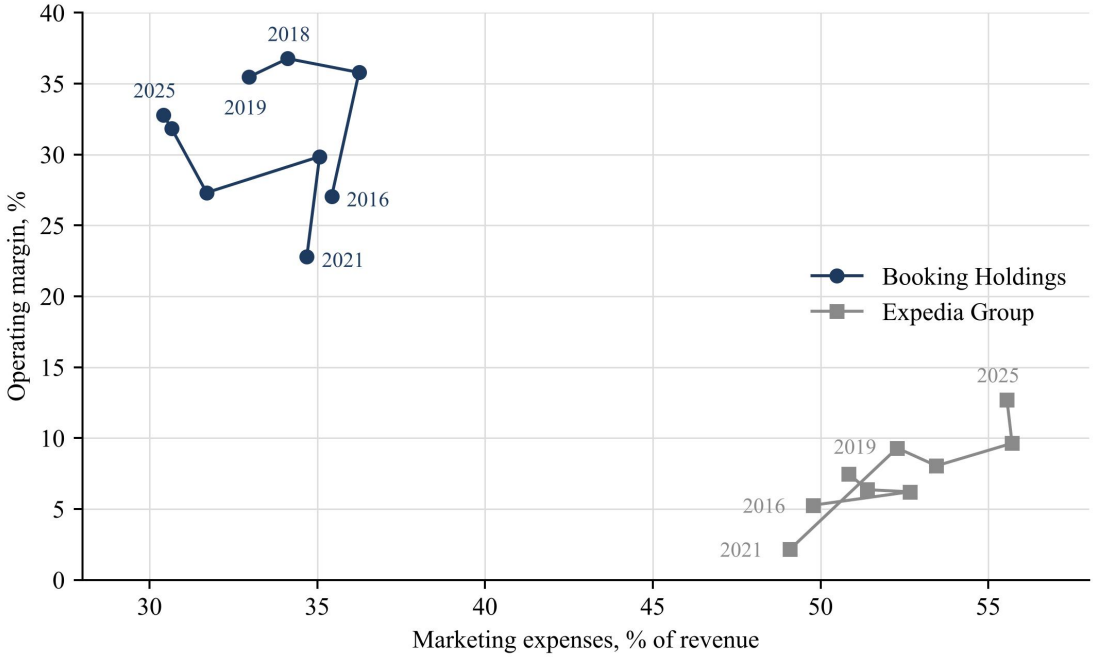


Figure 1. Marketing intensity and operating margin, 2016-2025[3]

Note: 2020 is omitted because of pandemic losses. Booking: marketing expenses; Expedia: total selling and marketing, including staff costs; reported operating income.

Figure 1 shows two different paths. Booking Holdings lowered its marketing intensity from 35.4% of revenue in 2016 to 30.4% in 2025 while its operating margin, after the dip to 22.8% in 2021, recovered to 32.8% in 2025. Expedia Group spent 49.1-55.7% of revenue on selling and marketing and earned margins of 2.2-12.7%, although its margin has been improving since 2021 and reached 12.7% in 2025. The comparison is not causal, and the cost definitions differ, but it fits the quarterly results: a firm that depends less on paid traffic and more on its own brand and direct customers can keep a larger share of each dollar of revenue.

These lessons are directly usable in Uzbekistan, where many hotels and tour operators receive a large share of foreign bookings through global platforms and pay for each one through commissions or clicks. We propose a simple three-step routine. First, every enterprise records marketing costs monthly in two lines, performance (commissions, paid search, metasearch) and brand (website, social media content, video, fairs, loyalty programmes). Second, once 24-36 monthly observations are available, the firm or its association estimates a small marketing mix model of the type (1) to obtain its own elasticities and the revenue per extra dollar in each channel. Third, the budget is shifted gradually, by 2-3 percentage points a year, toward the channel with the higher marginal return, while marketing intensity, the brand share, the share of direct bookings and the operating margin are tracked as key performance indicators. For a regional hotel the first steps toward a stronger brand may be modest: a fast booking page with the best direct price, regular content in several languages, and a loyalty offer that rewards repeat guests.

CONCLUSION AND SUGGESTIONS

The analysis of verified SEC data showed that both performance and brand marketing raise the sales of a large tourism enterprise, but at different rates and with different timing. Revenue elasticities were 0.51-0.70 for performance marketing and 0.12-0.15 for brand marketing; at sample means an extra dollar returned about 1.6 USD in revenue through performance channels and about 4.6 USD through brand channels. Booking Holdings raised the brand share of its budget from 7.8% to 11.0% in 2016-

[3] Source: author's calculations based on Forms 10-K of Booking Holdings and Expedia Group [10] [11].

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2019 and later cut its marketing intensity to 30.4% of revenue, while its operating margin recovered to 32.8% in 2025. Given the small sample, the estimates should be read as illustrative evidence.

Based on the results, the following recommendations are made:

1) tourism enterprises in Uzbekistan should record marketing costs separately for performance and brand channels and report marketing intensity, brand share and the share of direct bookings as key indicators;

2) budgets should be reallocated gradually toward the channel with the higher revenue per extra dollar, with brand and direct channels given room to grow even when their effect shows up a quarter later;

3) industry associations and universities could build shared marketing mix models for hotels and tour operators, so that small firms can use benchmark elasticities until their own data series are long enough;

4) future research should extend the sample with monthly data of domestic tourism firms and test long-run effects of brand spending on repeat purchases and customer value.

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