

Ron Berman

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Education	University of California, Berkeley – Haas School of Business Ph.D. in Business Administration, Marketing Dissertation Committee: Prof. Zsolt Katona (Chair), Prof. Ganesh Iyer, Prof. Shachar Kariv. Tel-Aviv University – Recanati Business School, Israel MBA, Strategy and Entrepreneurship, Magna Cum Laude Tel-Aviv University, Israel M.Sc., Computer Science, Magna Cum Laude Hebrew University of Jerusalem, Israel B.Sc., Computer Science, Physics, Mathematics Talpiot Excellence Program	May 2014 (Expected) 2007 2004 2000
Research Interests	Topics: Online Marketing, Social Media, Startups and Entrepreneurship, Marketing Analytics. Methods: Applied Game Theory, Optimal Learning Models, Large Scale Data Modeling.	
Dissertation	"Beyond the Last Touch: Attribution in Online Advertising" , Job Market Paper. (pdf)	
Publications	"The Role of Search Engine Optimization in Search Marketing" (with Zsolt Katona), <i>Marketing Science</i> 2013. (pdf) "Provable Unlinkability Against Traffic Analysis" (with Amos Fiat and Amnon Ta-Shma), Proceedings of <i>Financial Cryptography</i> , 2004 (FC '04). (pdf)	
Work in Progress	"Competitive Experimentation in New Markets". "Premature Scaling in Startups" (with Zsolt Katona). "Application of the Shapley Value to Online Advertising Campaigns". "Provable Unlinkability Against Traffic Analysis with Low Message Overhead" (with Amos Fiat, Marcin Gomulkiewicz, Marek Klonowski, Mirosław Kutylowski, Tomer Levinboim, Amnon Ta-Shma).	

Talks	“Beyond the Last Touch: Attribution in Online Advertising” <i>Marketing Science</i> , Istanbul, Turkey	2013
	<i>Marketing in Israel 12</i> , Haifa, Israel	2012
	“The Role of Search Engine Optimization in Search Marketing” <i>Marketing Seminar, Interdisciplinary Center</i> , Israel	2012
	<i>Trans-Atlantic Doctoral Conference</i> , London Business School, UK	2011
	<i>Marketing Science</i> , Cologne, Germany	2010
	“Provable Unlinkability Against Traffic Analysis” <i>Financial Cryptography '04</i> , Key West, Florida	2004
Reviewing (ad-hoc)	The B.E. Journal of Theoretical Economics, Journal of Economic & Management Strategy (JEMS), California Management Review (CMR), Web Search and Data Mining (WSDM) 2012.	
Teaching Experience	Haas School of Business, University of California, Berkeley	
	Head Teaching Assistant (Head GSI) Haas School of Business	2012 – 2014
	Teaching Assistant, Social Media Marketing	2011 – 2012
	Teaching Assistant, Marketing Strategy	2009 – 2011
	Hebrew University of Jerusalem, Israel	
	Teaching Assistant, Data Structures	2004
Professional Experience	Carmel Ventures Venture Capital, Israel	
	Principal	2006 – 2008
	Israel Defense Forces	
	Deputy Head of Unit	2005 – 2006
	Talpiot Military-Academy, Jerusalem, Israel	
	Chief Instructor	2003 – 2005
	Government of Israel, Tel-Aviv, Israel	
	Software Developer	2000 – 2003
Honors and Awards	UC Berkeley	
	Haas Dean’s Dissertation Fellowship	2013 – 2014
	California Management Review Fellowship	2012 – 2013
	Joe Shoong Foundation Scholarship	2012
	Haas Dean’s Research Fellowship	2011
	Benton C. Coit Scholarship	
	AMA Sheth Foundation Doctoral Consortium Fellow	
	Workshop on Quantitative Marketing and Structural Econometrics, Duke University, Fellow	2010
	Lam Research Fellowship	2009

Haas PhD Fellowship	2008 – 2012
Tel-Aviv University	
Dean's Award for Exceptional Students	2007
Hebrew University of Jerusalem, Israel	
Dean's List	1998
Talpiot Excellence Program	1997 – 2000

Abstracts:

"Beyond the Last Touch: Attribution in Online Advertising", Job Market Paper. ([pdf](#))

Advertisers who run online advertising campaigns often utilize multiple publishers concurrently to deliver ads. In these campaigns advertisers predominantly compensate publishers based on effort (CPM) or performance (CPA) and a process known as Last-Touch attribution. Using an analytical model of an online campaign we show that CPA schemes cause moral-hazard while existence of a baseline conversion rate by consumers may create adverse selection. The analysis identifies two strategies publishers may use in equilibrium – free-riding on other publishers and exploitation of the baseline conversion rate of consumers.

Our results show that when no attribution is being used CPM compensation is more beneficial to the advertiser than CPA payment as a result of free-riding on other's efforts. When an attribution process is added to the campaign, it creates a contest between the publishers and as a result has potential to improve the advertiser's profits when no baseline exists. Specifically, we show that last-touch attribution can be beneficial for CPA campaigns when the process is not too accurate or when advertising exhibits concavity in its effects on consumers. As the process breaks down for lower noise, however, we develop an attribution method based on the Shapley value that can be beneficial under flexible campaign specifications.

To resolve adverse selection created by the baseline we propose that the advertiser will require publishers to run an experiment as proof of effectiveness. Although this experiment trades-off gaining additional information about the baseline with loss of revenue from reduced advertising, we find that using experimentation and the Shapley value outperforms campaigns using CPM payment or Last-Touch attribution.

Using data from a large-scale online campaign we apply the model's insights and show evidence for baseline exploitation. An estimate of the publishers' Shapley value is then used to distinguish effective publishers from the exploiting ones, and can be used to aid advertisers to better optimize their campaigns.

"The Role of Search Engine Optimization in Search Marketing" (with Zsolt Katona), forthcoming, *Marketing Science*. ([pdf](#))

This paper examines the impact of search engine optimization (SEO) on the competition between advertisers for organic and sponsored search results. The results show that a positive level of search engine optimization may improve the search engine's ranking quality and thus the satisfaction of its visitors. In the absence of sponsored links, the organic ranking is improved by SEO if and only if the quality provided by a website is sufficiently positively correlated with its valuation for consumers. In the presence of sponsored links, the results are accentuated and hold regardless of the correlation.

When sponsored links serve as a second chance to acquire clicks from the search engine, low quality websites have a reduced incentive to invest in SEO, giving an advantage to their high quality counterparts. As a result of the high expected quality on the organic side, consumers begin their search with an organic click.

Although SEO can improve consumer welfare and the payoff of high quality sites, we find that the search engine's revenues are typically lower when advertisers spend more on SEO and thus less on sponsored links. Modeling the impact of the minimum bid set by the search engine reveals an inverse-U shaped relationship between the minimum bid and search engine profits, suggesting an optimal minimum bid that is decreasing in the level of SEO activity.

"Competitive Experimentation in New Markets"

Firms can engage in experimentation when they face uncertainty about market demand. Experimentation trades off myopic profit for an increase in future knowledge about market demand, which in turn results in higher expected future profits.

When competitors enter a market, experimentation by first movers may impact the entry choice of second movers. The impact of endogenous entry on first mover experimentation is explored using a dynamic model of an uncertain Cournot duopoly. The model is then extended to the case of firm actions in other markets that impact knowledge in the incumbent's market. The model is equivalent to a two-dimensional two-armed-bandit problem.

The results show that experimentation can mitigate the impact of entry in a single market scenario. In a two-market scenario, the results show that a strategic effect exists in experimentation of both the incumbent and the entrant.

This research is motivated by early stage startup firms. Such firms exhibit experimentation behavior, yet in many markets seem to suffer from a second mover advantage phenomenon.

"Premature Scaling in Startups" (with Zsolt Katona)

Joint work with the Startup Genome project (through <https://www.startupcompass.co/>) on the analysis of data from over 5,000 startups indicates that premature scaling may be a leading cause for startup failure in early stages. Premature scaling happens when firms decide to scale their operations in terms of marketing and product development based on incorrect analysis of market response for early products.

When comparing firms in different stages of development, firms who prematurely scale exhibit inconsistency in their actions with the stage of the company, resulting in prolonged periods of muted growth.

We use an analytical model to explore when premature scaling might happen and whether it is a competitive response to other firms or incorrect inference about the state of the market.

To motivate the results we make use of an analysis of data from a panel of startup firms supplied to the Startup Genome project and other sources.

"Application of the Shapley Value to Online Advertising Campaigns"

Online advertising campaigns that utilize multiple channels create externalities among the channels and are thus a cooperative effort to influence consumers. We use this observation to model online campaigns as a cooperative game, and apply the Shapley value to allocate the output created by the online campaign.

The Shapley value is a cooperative game theory solution concept for allocation of value created by coalitions of players that maintains a principle of marginality among players' contributions. We apply this value to large-scale online advertising campaigns to perform attribution of the output of the campaign, and observe that it can be used to identify channels that operate at non-efficient levels.

We show that the value is unique over the set of campaign games, and develop an efficient algorithm for calculation of the value when many channels are present. To deal with effects of baseline conversion rates and state dependence we modify the value to operate in stages. Consumer heterogeneity is handled using propensity score matching and regularization to correct for selection bias among the channels.

References:**Dissertation Chair:**

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