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Quantitative Research Research Design in an Online Environment

Cihan Cobanoglu, PhD, CHTP

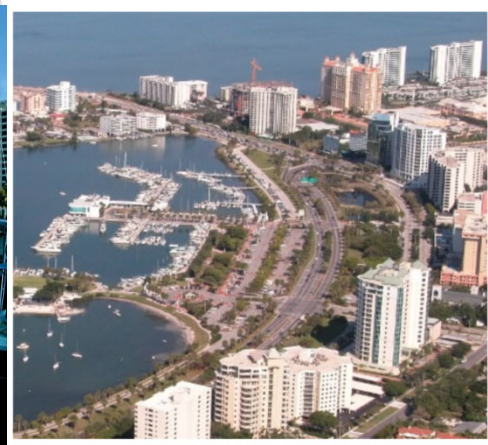
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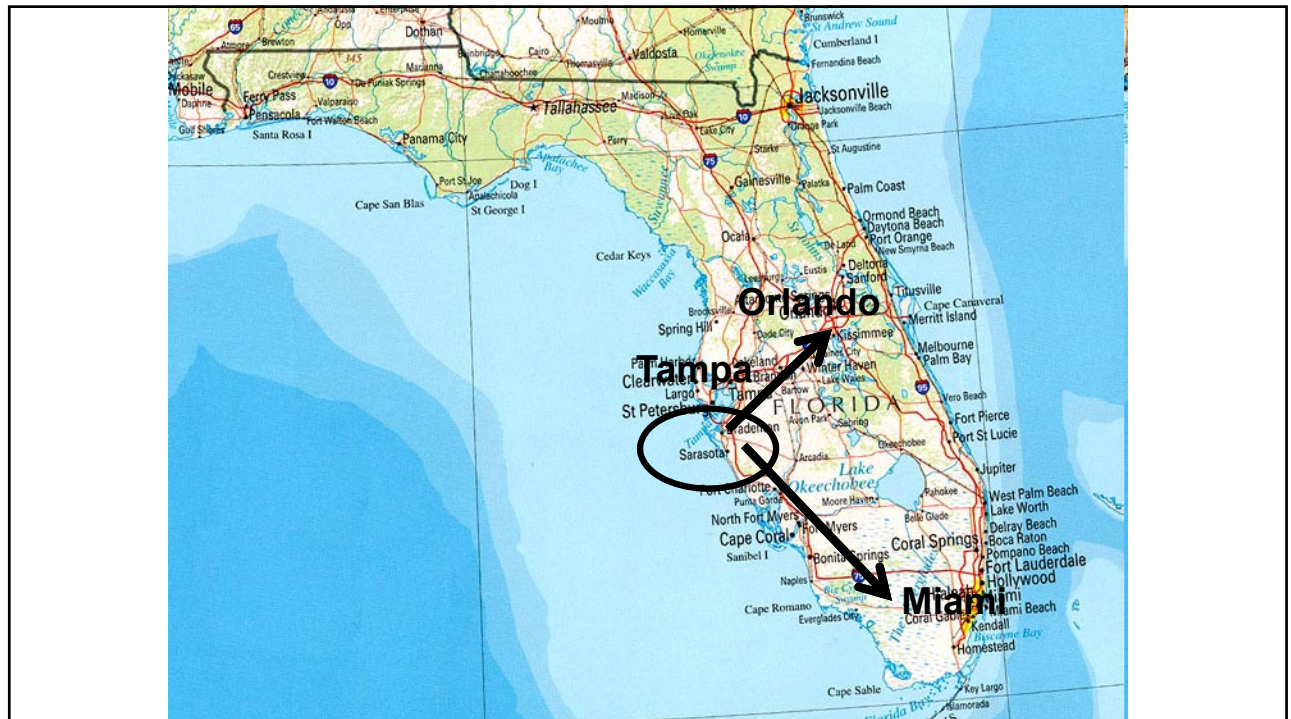
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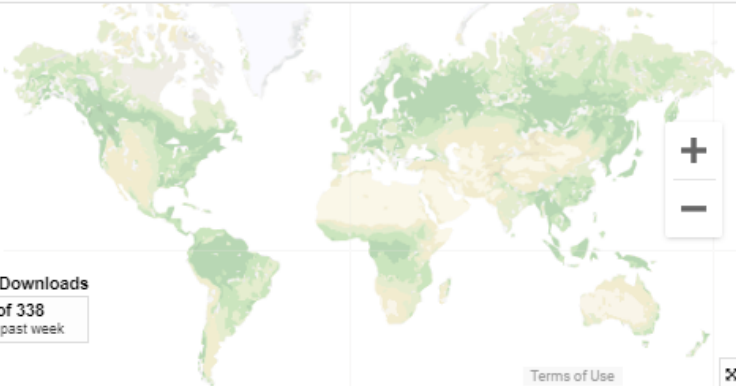
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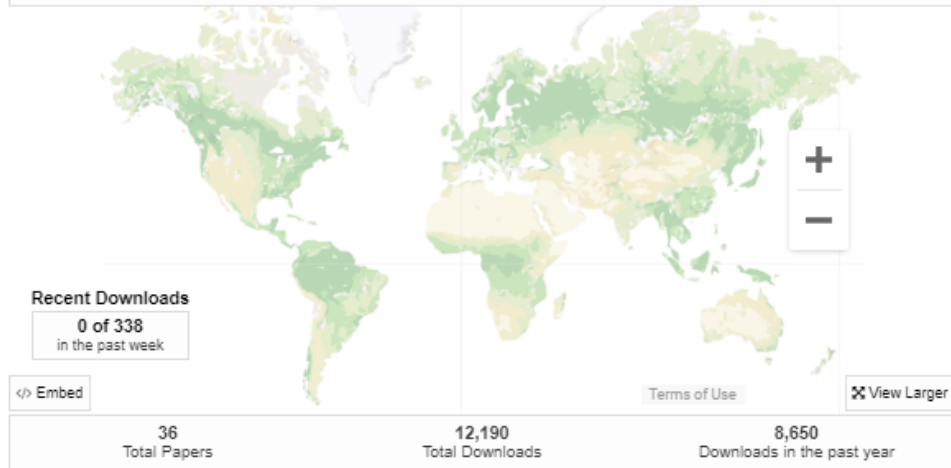
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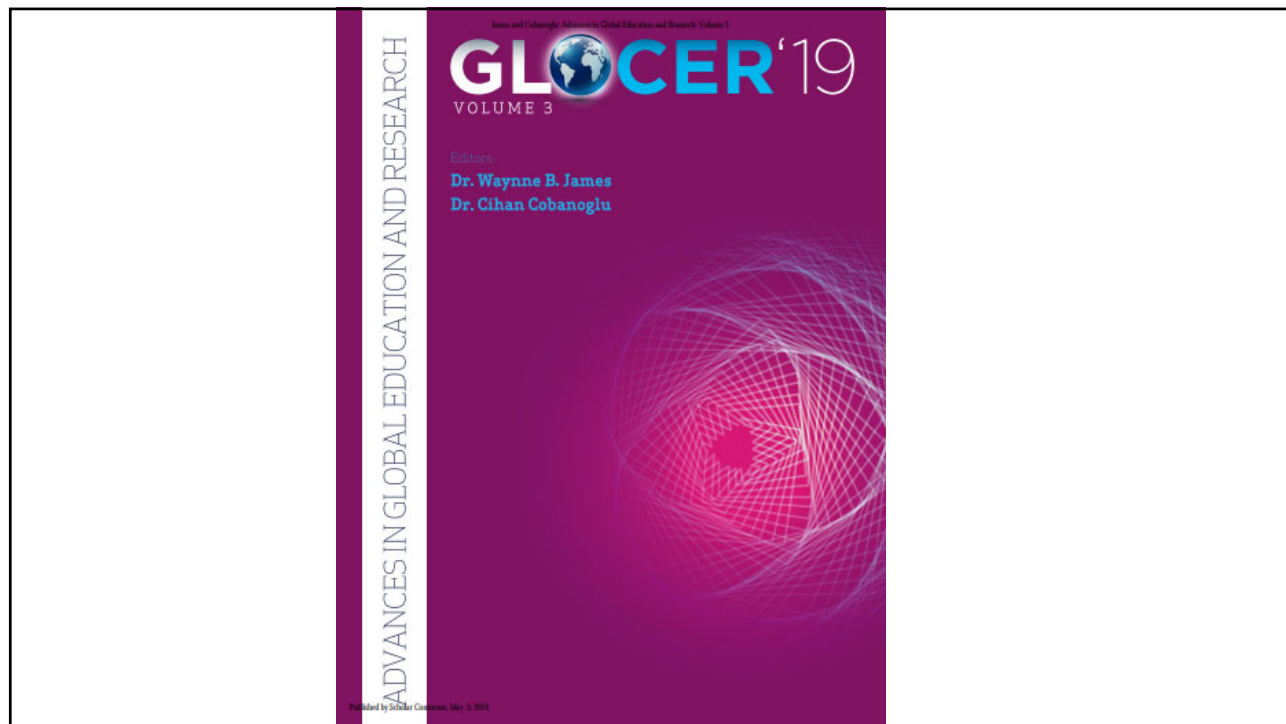
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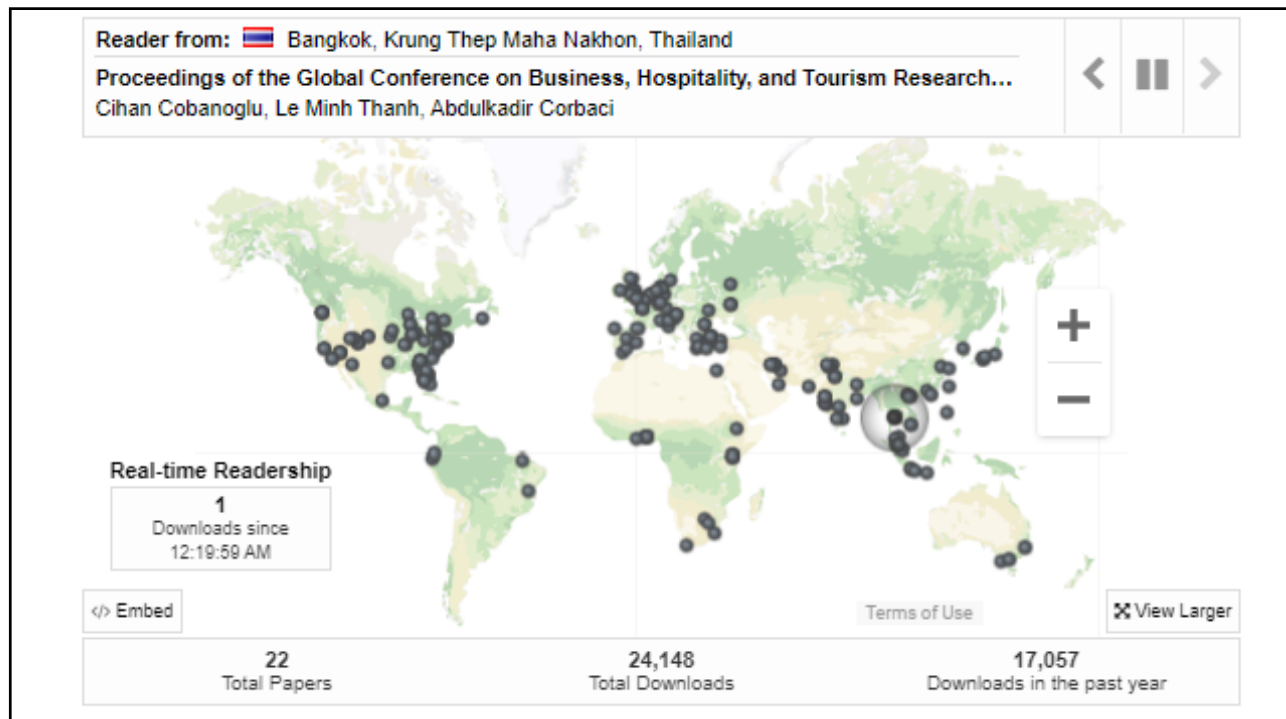
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Journal of Hospitality and Tourism Technology

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1.	International Journal of Hospitality Management	<u>72</u>	99
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Quantitative Research Research Design in an Online Environment

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Quantitative Methods



- Allows for a broader study, involving a greater number of subjects, and enhancing the generalization of the results;
- Allows for greater objectivity and accuracy of results.
- Few variables and many cases, and employs prescribed procedures to ensure validity and reliability;
- The research can be replicated, and then analyzed and compared with similar studies;
- You can summarize vast sources of information
- Personal bias can be avoided by keeping a 'distance'

<https://libguides.usc.edu/writingguide/quantitative>

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Quantitative Methods



- Quantitative data is more efficient and able to test hypotheses, but may miss contextual detail;
- Uses a static and rigid approach and so employs an inflexible process of discovery;
- The development of standard questions by researchers can lead to "structural bias" and false representation,
- Results provide less detail on behavior, attitudes, and motivation;
- Preset answers will not necessarily reflect how people really feel about a subject

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Mail Surveys

Very Good	Good	Not Sure	Poor	Very Poor
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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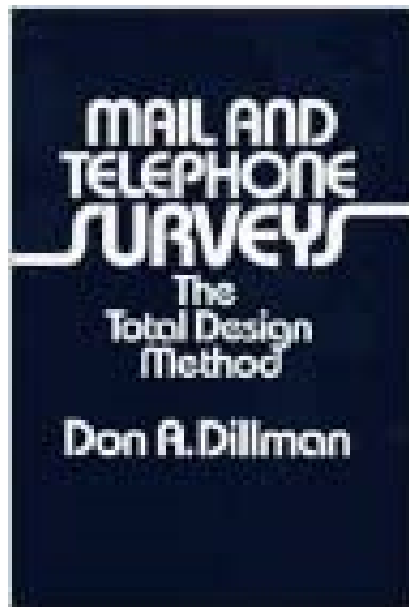
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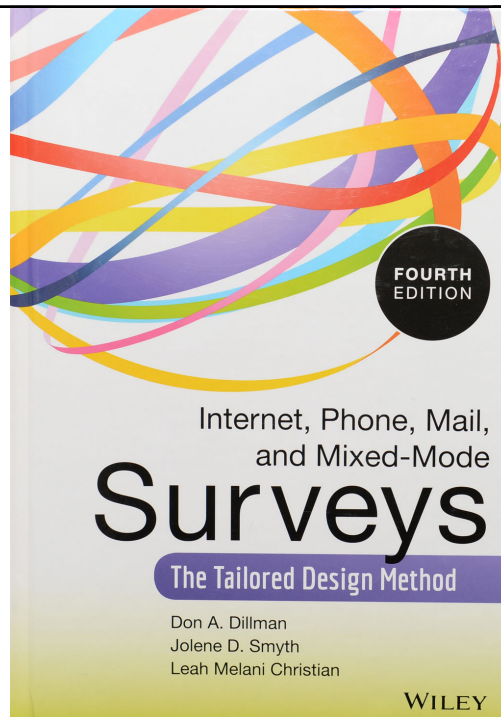
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Trends in Quantitative Analysis

A Survey of Papers for the Year 1946

FREDERICK C. STRONG, Villanova College, Villanova, Pa.

In order to help decide what methods of quantitative analysis will be important in the future and to compare future use of classical and newer instrumental methods, all research papers published in 1946 and covered in *Chemical Abstracts* prior to September 1947 were studied. Though the largest number of papers is on titrimetry (volumetric analysis), the number on colorimetry is almost as great; 56% of all papers are on instrumental methods of analysis, principally colorimetry, spectrophotometry, emission spectrography, instrumental titrimetry, and polarography; among preliminary steps described by research papers, chromatography is numerically outstanding; next to English, more 1946 papers are written in Russian than in any other language; 58% of the papers devoted to quantitative analysis during 1946 are concerned with the determination of organic compounds.

<https://pubs.acs.org/doi/pdf/10.1021/ac60012a008>

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REX YUXING DU and WAGNER A. KAMAKURA*

Trendspotting has become an important marketing intelligence tool for identifying and tracking general tendencies in consumer interest and behavior. Currently, trendspotting is done either qualitatively by trend hunters, who comb through everyday life in search of signs indicating major shifts in consumer needs and wants, or quantitatively by analysts, who monitor individual indicators, such as how many times a keyword has been searched, blogged, or tweeted online. In this study, the authors demonstrate how the latter can be improved by uncovering common trajectories hidden behind the coevolution of a large array of indicators. The authors propose a structural dynamic factor-analytic model that can be applied for simultaneously analyzing tens or even hundreds of time series, distilling them into a few key latent dynamic factors that isolate seasonal cyclic movements from nonseasonal, nonstationary trend lines. The authors demonstrate this novel multivariate approach to quantitative trendspotting in one application involving a promising new source of marketing intelligence—online keyword search data from Google Insights for Search—in which they analyze search volume patterns across 38 major makes of light vehicles over an 81-month period to uncover key common trends in consumer vehicle shopping interest.

Keywords: marketing intelligence, market sensing, quantitative trendspotting, online searches, factor analysis, multivariate time-series analysis, common trends

Quantitative Trendspotting

<https://www.bauer.uh.edu/rexdu/quantitative%20trendspotting.pdf>

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JOURNAL OF ORGANIZATIONAL BEHAVIOR, VOL. 12, 87-107 (1991)

Quantitative methods in cross-national management research: trends and equivalence issues

T. K. PENG, MARK F. PETERSON, AND YUH-PING SHYI

Area of Management, College of Business Administration, Texas Tech University, Lubbock, TX 79409-4320, U.S.A.

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Table. 7 Data collection

	Uni-cultural	Comparative	Intercultural	General
Means of data collection(%)	U	C	I	G
Questionnaire	55.78	69.51	60	100
Interview	6.53	4.88	0	0
Mix	14.07	17.07	30	0
Archival	4.02	2.44	0	0
Lab or field experiment	19.60	6.10	10	0
Total (%):	100.00 (N=199)	100.00 (N=82)	100 (N=10)	100 (N=1)

<https://onlinelibrary.wiley.com/doi/epdf/10.1002/job.4030120203>

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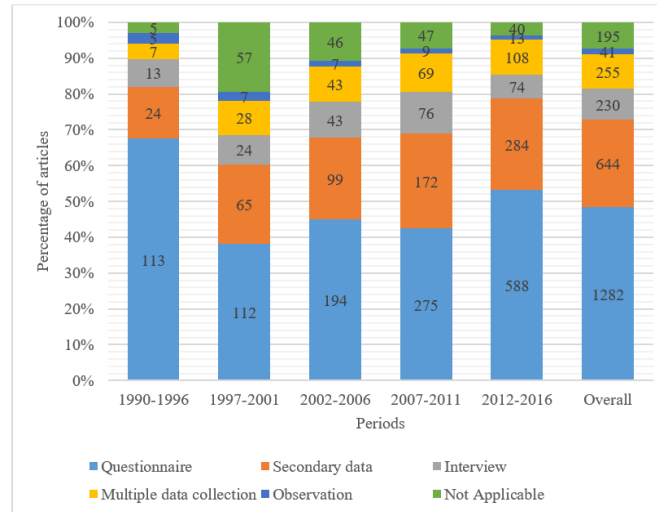
Table 10. Analytical method

Analytical method	Frequency of use*
Correlation	102 (8)
Multiple regression	65 (6)
ANOVA	63 (5)
Factor analysis	40 (4)
MANOVA	15 (1)
DISCRIMINANT	11 (1)
T-test	22 (3)
Chi-square	16 (3)
Descriptive statistics	37 (11)
Mann-Whitney <i>U</i> -test	9 (0)
Others	40 (7)
Total:	420(49)

*Numbers in parentheses refer to frequency of use in macro-level articles.

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Hospitality Papers



(Ali, et al, 2020)

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Hospitality Papers

Table 3: Article type based on the data analysis method.

Methods	Percentage of articles					
	1990–1996	1997–2001	2002–2006	2007–2011	2012–2016	Overall
Descriptive statistics	43.38	36.46	42.95	39.46	37.36	39.04
Regression	13.24	25.41	30.82	34.03	34.73	31.68
Analysis of variance (ANOVA, ANCOVA, MANOVA)	11.03	17.68	17.70	19.42	15.60	16.66
Structural equation model	2.21	0.55	1.97	13.15	26.48	15.56
Correlation analysis	11.03	8.84	14.75	17.12	16.26	15.22
Confirmatory factor analysis	1.47	6.63	6.56	14.82	20.66	14.57
Exploratory factor analysis	4.41	13.26	12.79	12.94	13.41	12.58
t-test	5.88	7.73	11.15	11.48	6.04	8.25
Reliability	0.00	4.97	7.87	9.19	8.57	7.71
Validity	0.00	1.66	2.95	6.26	7.91	5.67
Chi-square	0.74	3.31	3.93	3.55	0.88	2.19
Data envelopment analysis (DEA)	0.00	1.10	2.62	2.51	1.98	1.99
Cluster analysis	0.00	2.76	2.62	1.04	2.09	1.84
Total articles (quantitative and hybrid)	136	181	305	479	910	2011
Number of papers = 2,011						

(Ali, et al, 2020)

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Quantitative methods in tourism and hospitality: a perspective article

Davide Provenzano and Rodolfo Baggio

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Main quantitative methods in tourism and hospitality research

• Statistical techniques

- Exploratory factor analysis (EFA) → Main application is of finding tourism information value
- Confirmatory factor analysis (CFA) → Main application is of finding tourists' perception of a destination
- Autoregressive (AR)
- Integrated (I)
- Moving average (MA)
- Autoregressive integrated moving average (ARIMA)
- Autoregressive fractionally integrated moving average (ARFIRMA)
- Generalized autoregressive conditional heteroskedasticity (GARCH)

Used for modelling and forecasting of tourist arrivals and departure as well as all aspect of Revenue management and cost control

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- Econometric techniques

- Gravity models Tourist's behavior → Used for tourist' behavior
 - Almost ideal demand system (AIDS)
 - Vector autoregressive models (VAR)
 - Time varying parameter models (TVP)
 - Error correction models (ECM)
- Used for tourism and demand forecasting

- Artificial intelligence (AI)

- Neural networks → Used for predicting tourists' behavior
 - Genetic algorithms → Used for determining tourists' perception of destination
 - Machine learning algorithms
 - Fuzzy time series
 - Rough set theory
- Used for tourism and demand forecasting

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- Complexity science

- Complex systems analysis
 - Network analysis
 - Visibility graph
- Destination structure and dynamics

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New Statistical Methods

The importance of the factors when shopping online?

Outlet

Price

Seller Rating (1=Low 5-High)

of Reviews

Item Rating (1=Low 5-High)

Shipping

Return Policy

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Matrix- Likert Scale

How satisfied are you with the following:

	Very Dissatisfied	Not Satisfied	Neutral	Satisfied	Very Satisfied
Website	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Customer Service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Conjoint Analysis

Imagine that you are buying an electronic device (i.e. tablet, gaming console) in the online store below. Which of these options would you choose?

Step 1 of 4

Outlet	Walmart	Amazon
Price	USD 100	USD 120
Seller Rating (1=Low 5-High)	4 star	5 star
# of Reviews	5000 people	50 people
Item Rating (1=Low 5-High)	3 star	5 star
Shipping	Shipping Extra (Buyer pays)	Free shipping
Return Policy	No return policy	100% return policy
	<input type="radio"/>	<input type="radio"/>

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DOI: 10.30519/ahtr. 528150

Advances in Hospitality and Tourism Research (AHTR)	2020
An International Journal of Akdeniz University Tourism Faculty	Vol. 8 (1)
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Webpage: http://www.ahtrjournal.org/	

WINNING THE BATTLE: THE IMPORTANCE OF PRICE AND ONLINE REVIEWS FOR HOTEL SELECTION

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Table 1. *Conjoint attributes and levels*

Attributes	Levels
Online review rating score (out of 5.0)	1.8
	2.3
	2.8
	3.3
	3.8
	4.3
	4.8
Number of reviews by other travelers	4
	24
	107
	256
	547
	1256
	2689
Price (per night) (\$)	\$90
	\$100
	\$110
	\$120
	\$130
	\$140
	\$150
	\$200

49

Table 3. *Relative attribute importance and the levels' part-worths*

Attributes	Relative Importance	Levels	Part-worth
Online review rating score (out of 5.0)	49%	1.8	-1.37
		2.3	-1.04
		2.8	-0.64
		3.3	0.08
		3.8	0.54
		4.3	1.08
		4.8	1.35
Number of reviews by other travelers	22%	4	-0.82
		24	-0.30
		107	-0.01
		256	0.33
		547	0.14
		1256	0.30
		2689	0.36
Price (per night) (\$)	29%	\$90	0.65
		\$100	0.78
		\$110	0.42
		\$120	0.03
		\$130	0.01
		\$140	-0.43
		\$150	-0.49
		\$200	-0.97

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Table 5. Market share simulation results for the best profile combination of price and number of online reviews

Price	Number of Online Reviews	Online Rating Score of Concept 1	Online Rating Score of Concept 2	Market Share of Concept 1	Market Share of Concept 2	Difference in Market Share
\$100	1254	1.8	2.8	44.05%	55.95%	11.90%
		2.8	3.8	32.63%	67.37%	34.74%
		3.8	4.8	44.29%	55.71%	11.42%

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CiteScore 2019

Scopus[®]
3.6

CiteScore Tracker
2020
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Clarivate
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2.796

2019 Impact Factor

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The structural topic model for online review analysis: Comparison between green and non-green restaurants

Eunhye (Olivia) Park, Bongsug (Kevin) Chae, Junehee Kwon

The purpose of this study was to explore influences of review-related information on topical proportions and the pattern of word appearances in each topic (topical...

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Karen L. Xie, Young Jin Lee

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Sanjay Nadkarni, Florian Kriechbaumer, Marcus Rothenberger, Natasa Christodoulidou

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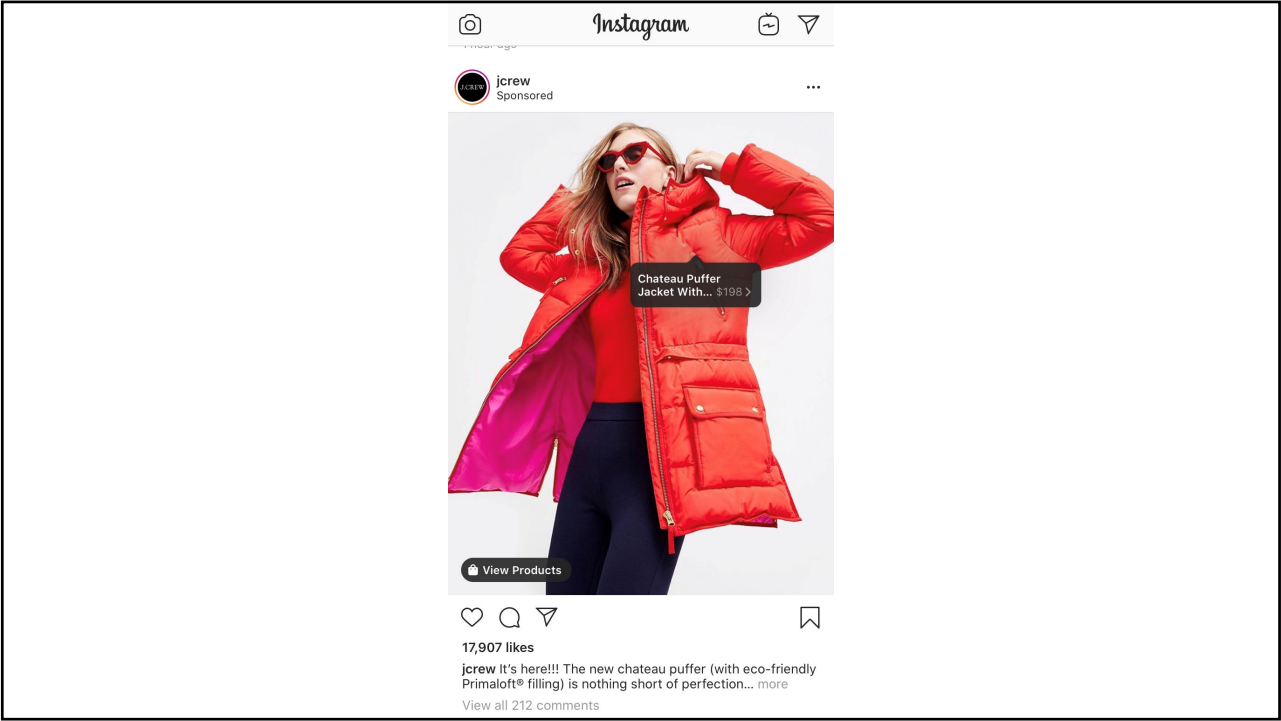
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New Trends

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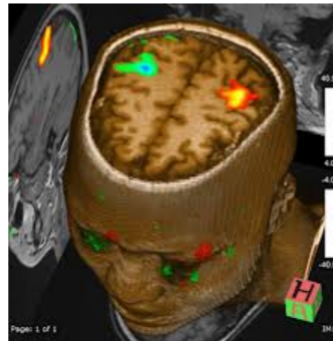


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4. Biometric Market Research Techniques: New biometric research methods that measure a subject's physical response to stimuli (e.g., television commercial) provide valuable data that a subject might not be able or willing to express verbally. Examples of biometric market research methods include heart rate monitoring, respiration monitoring, skin and muscle activity, brain activity (using functional MRI) and eye tracking. A good article on the subject can be found [here](#). Campbell Soup has used such methods in their market research.



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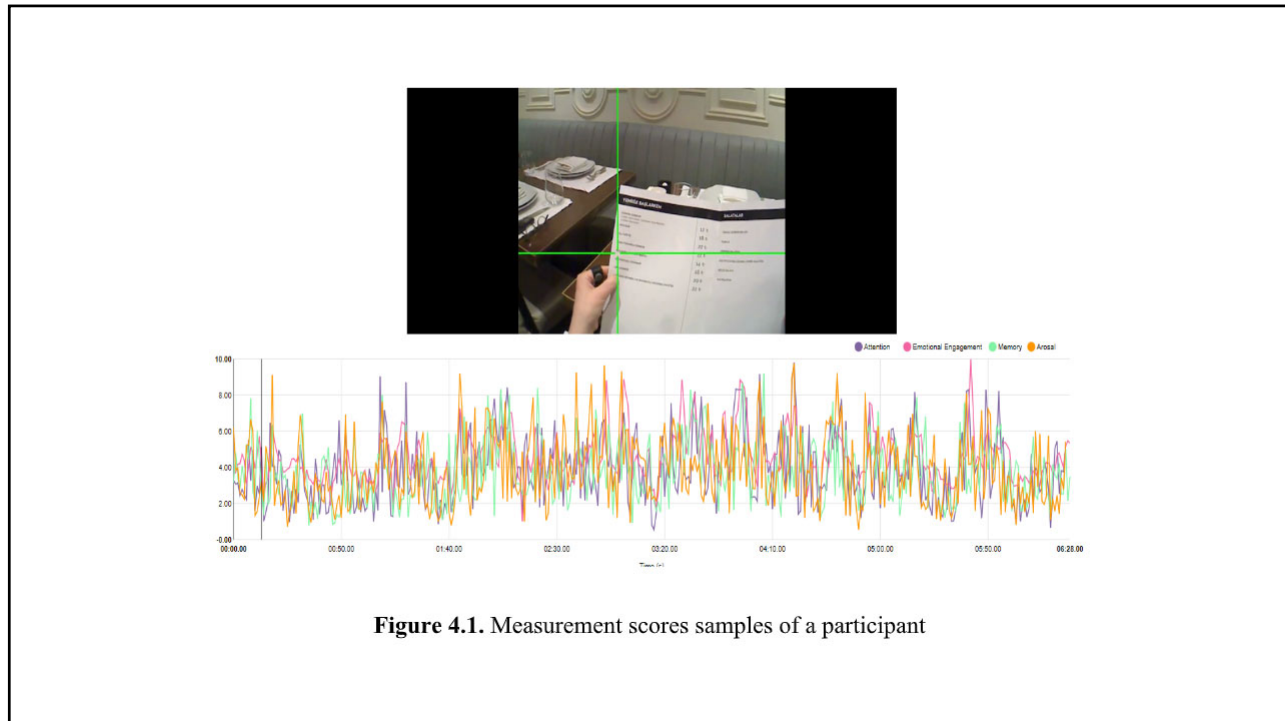
Menu design strategies: An experimental research using neuromarketing

Abstract

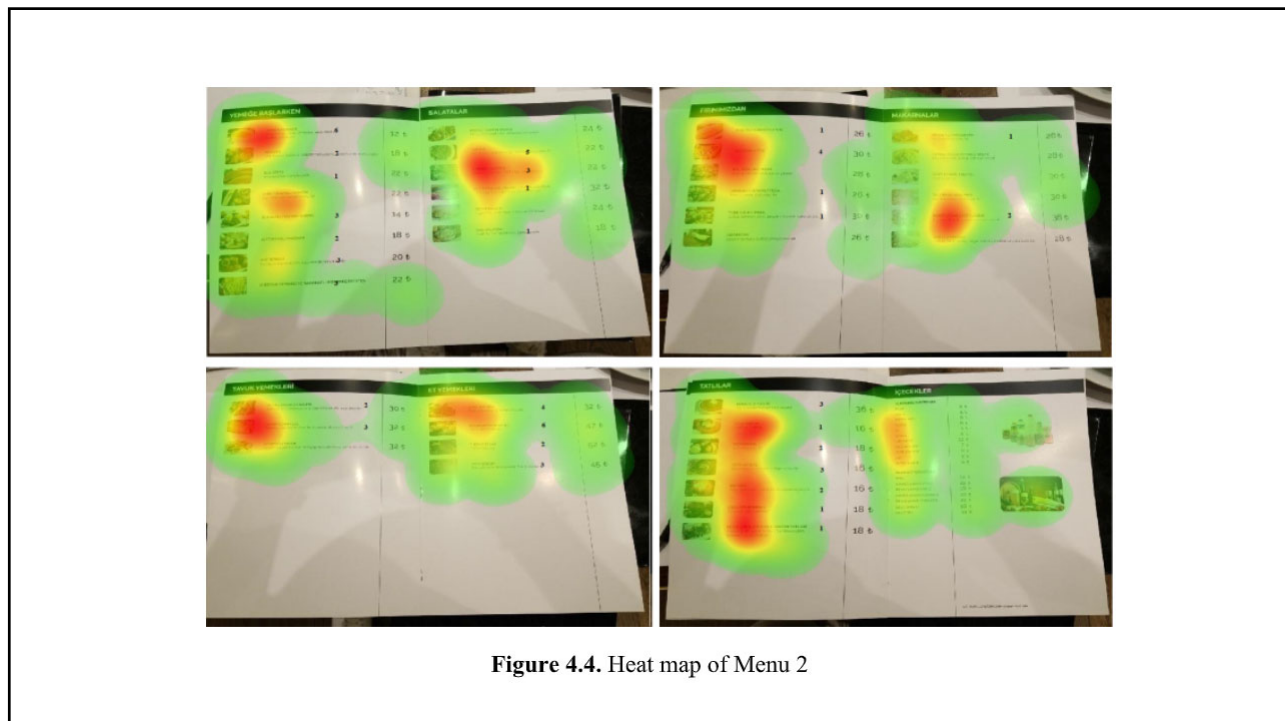
It's a controversial issue whether there are strategical areas in menu for product placement or not. Research on the effect of the placement and visuals of a product on costumer choices is scant. The main objective of this study is to test the effects of Serial Position Effect, Gaze Motion Effect and use of visuals on menu design strategies and thus contributing to the related literature. For this experimental study, three different types of menu are used. The research came up with results by combining the data obtained through a pioneering approach via EEG, GSR and eye tracking devices. The participants' emotional engagement, attention, memory and cognitive load scores and heat maps are evaluated together. The results are supported with statistical analysis. It is found that sweet spot and primacy effect on menu is affected by the visuals and this case could be taken into consideration by businesses. Research results make the generally accepted approaches on menu design questionable and offer effective solutions for businesses to develop strategies.

Keywords: Menu design; Neuromarketing; Eye tracking; Sweet spot; Menu pictures; Consumer behavior

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The use of Virtual Reality

6. Virtual Shopping: This involves the use of virtual store simulation to mimic a shopping experience for participants—a good way to test things retail issues like product placement, store layout, packaging, etc. Once again, the idea is to replicate a real situation for research subjects and observe behavior, as opposed to asking them what they think they will do. Virtual Reality is certainly a new market research method to keep an eye on.

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	Rank	Labels	In Use	Under Consideration	Total Interest
Mainstream	1	Mobile Surveys	75%	16%	91%
	2	Online Communities	59%	23%	82%
	3	Social Media Analytics	52%	24%	76%
	4	Text Analytics	46%	30%	76%
	5	Webcam-Based Interviews	43%	22%	65%
Wide Adoption	6	Mobile Qualitative	42%	26%	68%
	7	Big Data Analytics	38%	31%	69%

<https://www.greenbook.org/mr/grit-report/the-top-21-emerging-research-methods-of-2016-a-grit-sneak-peek/>

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	8	Micro-surveys	35% 25%	60%
	9	Eye Tracking	35% 21%	56%
	10	Mobile Ethnography	33% 27%	60%
	11	Behavioral Economics Models	29% 25%	54%
	12	Research Gamification	25% 29%	53%
	13	Prediction Markets	24% 23%	47%
	14	Facial analysis	24% 21%	45%
	15	Crowdsourcing	16% 21%	37%
	16	Neuromarketing	16% 19%	35%

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Niche	17	Virtual Environments/Virtual Reality	14% 24%	38%
	18	Internet of Things	14% 26%	39%
	19	Biometric Response	12% 19%	31%
	20	Sensor/Usage/Telemetry Data	11% 19%	31%
	21	Wearables Based Research	10% 27%	37%

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Research is amazing!

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