

Spatial Models of Consumer Choice for Retail Outlets: Theory and Practice in Physics of Marketing

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Abstract

A theoretical review and an assessment of applications of the spatial models of consumer choice for retail outlets are presented here. As they are also called gravitational models in marketing, they remain relevant in today's retail world despite the explosion of e-commerce. The major objective here is to emphasize the theoretical significance of these models, analyze their practicality in the market, and refer to their validity today. The focus would be on the original Reilly's model of the early thirties of the last century, and the two most significant improvements over it, Converse's model of the late forties, and Huff's model of the early sixties. After a detailed exposition of these models and their applications, a critical analysis is introduced to address the retail site selection, radius of the trading area, limitations of the models, and some criticism.

Keywords: spatial models, gravitational models, Reilly's law, Huff's model, Converse's model

1. Introduction

In the last decade or so, e-commerce and consumer's online retail purchases have been astronomically increasing. In 2017, e-commerce has exploded to about half of the whole retail growth, although it constituted only 13% of total retail transactions. While consumer spending in 2017 reached \$453.5 billion on the web for retail purchases, which was an increase of 16% over the previous year, total retail sales reached to over five trillion dollars in the same year, representing a 4.4% increase over the 2016 figure (digitalcommerce36.com).

This significant growth in e-commerce has not yet indicated an all-out march towards replacing the traditional way of commerce and trade. Traditional retail outlets, large and small, continue to grow, and the so-called brick-and-mortar stores continue to be built and expand their commercial activities. On the other hand, consumers too, do not seem to be ready to give up what they have long gotten used to of old-fashioned methods of shopping. According to a 2017 Consumer View Report by the National Retail Federation (NRF), four out of five American consumers still prefer to shop at brick-and-mortar stores (Inc.com, October 2nd, 2017). Moreover, most retail companies tend to establish an on-line sale site only to enhance their store retail activities, rather than to replace them. This evidence supports the notion that consumer choice of where to shop is still in the heart of their top considerations as they seek the retail outlet that would yield the highest utility for them, economically and otherwise.

There have been a few major approaches to analyze consumer choice of retail outlet. Frisk and Choi (2013) list some of these theoretical frameworks: Analog models would depend on projecting sales using existing data and growth patterns of trade; Regression models utilize econometrical techniques and forecasting methods to estimate sales subject to major variables such as population size, consumer income, number of households and alike. Central Place theory attributes consumer travel for shopping to the extent of availability of a wide variety of consumer goods and services at certain retail outlets. Unlike these models, spatial models utilize the physical gravitational theory and rely on variables such as size of population, size of market, location of retail outlets, and distance between the competing outlets in order to delineate certain retail trading area, and explain consumer rationale to choose an area of shopping over other alternatives. In that sense too, these models can explain the rationale of trading company to choose their outlet locations.

The pioneering work in the area of spatial modeling in marketing has been credited to Professor William J. Reilly of Texas University, who in his studies of 1929, 1931, and 1953, came up with what we now know as the law of retail gravitation. It was inspired by Newton's law of gravity in physics. It was a study of retail activities

Consumer Spatial Theory

Raymond Hudson



Consumer Spatial Theory:

Towards a Theory of Consumer Spatial Behaviour Raymond Hudson, 1971 **Social Psychology and Theories of Consumer Culture** Matthew McDonald, Stephen Wearing, 2013-04-02 Social Psychology and Theories of Consumer Culture A Political Economy Perspective presents a critical analysis of the leading positions in social psychology from the perspective of classical and contemporary theories of consumer culture The analysis seeks to expand social psychological theory by focusing on the interface between modern western culture consumer culture and social behaviour McDonald and Wearing argue that if social psychology is to play a meaningful role in solving some of society's most pressing problems e.g. global warming obesity addiction alienation and exclusion then it needs to incorporate a more comprehensive understanding and analysis of consumer culture Wide ranging and challenging the book offers a fresh insight into critical social psychology appropriate for upper undergraduate and postgraduate courses in personality social psychology critical and applied psychology It will also appeal to those working in clinical counselling abnormal and environmental psychology and anyone with an interest in the integration of social psychology and theories of consumer culture **Consumers' Spatial Choice Behavior** Angelika Eymann, 2012-12-06 Migration commuting and tourism are prominent phenomena demonstrating the political and economic relevance of the spatial choice behavior of households The identification of the determinants and effects of the households location choice is necessary for both entrepreneurial and policy planners who attempt to predict or regulate the future demand for location specific commodities such as infrastructure land or housing and the supply of labor Microeconomic studies of the spatial behavior of individuals have typically focused upon the demand for a single homogeneous yet location specific commodity such as land or housing or their supply of labor³ and investigated the formation of location specific prices and wages in the presence of transportation and migration costs or analyzed the individual and location specific characteristics triggering spatial rather than quantitative or temporal adjustments In contrast to many theoretical analyses empirical studies of the causes or consequences of individual demand for location specific commodities have often considered several brands of a heterogeneous good that are offered at various locations are perfect substitutes and may be produced by varying production technologies 1 Cf Alonso 1964 2 Cf Muth 1969 3 Cf Sjaastad 1962 and Greenwood 1975 Consumer Spatial Behaviour Robert William Bacon, 1984 A theoretical book on the locational aspects of consumer behaviour **History of Spatial Economic Theory** C. Ponsard, 2012-12-06 The concept of space has always been a fundamental element in various branches of knowledge The concept often appears in the evolution of knowledge either as a basis of theory or as a factor in research It is associated more or less directly with all the history of scientific thought At the level of simple common sense the importance of the concept of space is only equaled by its lack of precision It was part of legend before becoming part of history To indicate the founding of Rome Romulus started by drawing the boundaries locating its landmarks in a discontinuous space after having cut the limits of a continuous space However

neither geographical explorations nor mathematico logical speculations have ever completely removed the mystery from the concept of space For all its simple common sense its mystique remains intact The privileged position occupied by the concept of space in the history of science and the vagueness of its meaning in the current use of the term far from constituting a paradox are mutually explanatory Every concept of space is necessarily the result of an abstraction whether the process by which it is reached is through mathematics psychology biology or any other discipline At the level of common knowledge the space time concept is the base upon which are arranged individual experiences It is thus easy to understand how the concept of space can be understood only through an orderly arrangement of these experiences and their integration into a logical scheme

Spatial Theories of Education Kalervo N. Gulson, Colin Symes, 2007-11-21 This collection of original work within the sociology of education draws on the spatial turn in contemporary social theory The premise of this book is that drawing on theories of space allows for a more sophisticated understanding of the competing rationalities underlying educational policy change social inequality and cultural practices The contributors work a spatial dimension into the consideration of educational phenomena and illustrate its explanatory potential in a range of domains urban renewal globalisation race markets and school choice suburbanisation regional and rural settings and youth and student culture

Retail Geography (RLE Retailing and Distribution) John Dawson, 2012-08-09 This title surveys and sets in context the wide range of research work that has been done on retailing It concentrates on western industrial societies particularly Britain and the USA and considers empirical research theory and theoretical applications

Handbook of Qualitative and Visual Methods in Spatial Research Anna Juliane Heinrich, Séverine Marguin, Angela Million, Jörg Stollmann, 2024-07-08 Listening experiencing drawing or interpreting spaces narratives experiences visualizations and discourses can be helpful for the empirical investigation of spaces This interdisciplinary handbook presents a broad spectrum of established methods and innovative method development to capture and understand different facets of spaces Instructive explanations and concrete examples make the varied qualitative methods of spatial research understandable and applicable across disciplines The theoretical and methodological aspects of qualitative spatial research form the framework of this handbook

Consuming Space Michael K. Goodman, David Goodman, 2016-05-23 An examination of the relationship between space place and consumption offers important insights into some of the most powerful forces constructing contemporary societies Space and place are made and remade through consumption Yet how do cultures of consumption discover space and how do they construct place This book addresses these questions by exploring the implications of conceptualizing consumption as a spatial increasingly global yet intensely localized activity The work develops integrative approaches that articulate the processes involved in the production and consumption of space and place The result is a varied engaging and innovative study of consumption and its role in structuring contemporary capitalist political economies

Encyclopedia of Consumer Culture Dale Southerton, 2011-09-15 The Encyclopedia of Consumer Culture is the first reference work to outline the

parameters of consumer culture and provide a critical scholarly resource on consumption and consumerism

Recent Advances in Modeling and Forecasting Kaiyu Saburo Saito, Kenichi Ishibashi, Kosuke Yamashiro, 2023-09-08 This book is the first comprehensive presentation of a Kaiyu Markov model with covariates and a multivariate Poisson model with competitive destinations These two models are core techniques when the authors and colleagues conduct their Kaiyu studies The two models are usually used to forecast the effects of specific urban redevelopment on both the number of visitors and consumer shop around or Kaiyu movements Their Kaiyu studies originated from the constructions of a Kaiyu Markov model and the disaggregated hierarchical decision Huff model almost simultaneously around the early 1980s This book retrospectively reviews how these models have evolved from the start to the present state and previews the ongoing efforts to make further extensions of these models The extension of the Huff model started from the disaggregated hierarchical decision Huff model with shop arounds In retrospect the model formulated the consumer's simultaneous choice of destinations as a joint probability The mechanism to determine this joint probability was a recursive conditional probability system Now the Huff model has shifted from joint probability to multivariate frequency Poisson with competitive destinations On the other hand the Kaiyu Markov model started from a descriptive model Because it cannot forecast changes in shop arounds or consumer Kaiyu behaviors the Kaiyu Markov model with covariates was developed in which entrance and shop around choice probabilities are explained by the respective two logit models with covariates such as distances and shop floor areas The noticeable point is that it can explain consumers probability of quitting their shop arounds Thus the model enables one to evaluate the effects of urban revitalization policy that promotes consumers shop arounds or Kaiyu behaviors Furthermore if the Kaiyu Markov model can estimate the actual numbers of flows of consumers shop arounds among shopping sites the corresponding money flows also can be estimated as economic effects This book discusses from scratch the evolution of all these topics Thus this book provides the basics of the Kaiyu Markov model a tutorial for the theory and estimation of the conditional logit model and a chapter serving as a practical research manual for forecasting changes caused by urban development based on consumers Kaiyu behaviors

Cities In Space Prof David Herbert, Dr Colin Thomas, 2013-11-26 This is the third major revision of a text first published in 1982 with the title Urban Geography A First Approach and in 1990 as Cities in Space City as Place The study of urban geography remains an important part of the geographical curriculum both in schools and in higher education This book analyses life in an urban society and in a world which is being transformed by the processes of urbanization to study urban geography is to study environments and phenomena significant to our everyday lives This is an introductory text which aims to present both more traditional and newer approaches to urban geography in an accessible and educational way

Urban Consumer Theory Geoffrey K. Turnbull, 1995 Urban consumer theory focuses on the spatial dimension of household work residence decisions and provides the intellectual foundation for much of what constitutes urban and real estate economics This book provides the first

complete exposition of consumer location theory bringing together various models scattered throughout the literature into a single comprehensive framework Because urban households can move in response to changes in their income prices of housing and other goods transportation costs etc urban consumer theory adds a spatial dimension to the analysis of behavior This text begins with an exposition of these responses using a simple unified model that is then extended to cover a variety of rather advanced issues For example the effects of household labor leisure choices government tax and housing subsidy programs and recent developments in effects of uncertainty are all analyzed using simple extensions of the basic model In all cases the exposition includes graphical demonstration of the household's responses which makes the results accessible to those with less mathematical preparation The second in the series of monographs sponsored by the American Real Estate and Urban Economics Association AREUEA Series editor Anthony M J Yezer It should be invaluable as a core text for students of urban and real estate economics and a valuable reference for those involved in applications of consumer location theory

Markets, Risk and Money Bertrand Munier, 2012-12-06 Most of the writings of Maurice Allais 1988 Nobel Laureate in Economics have only been published in French Thus to date economists management scientists and operations researchers have been severely restricted in gaining access to his work *Markets Risk and Money* presents for the first time in English Allais unconventional views on economic competition the significance of free markets and overlapping generations risk psychology central banking taxation systems monetary dynamics and reform The volume provides a consistent vision of our society and offers readers an evaluation of the impact of Allais work on our present body of knowledge *Markets Risk and Money* contains contributions from a number of distinguished European and American scholars including Bertrand Munier Thierry Montbrial J Lesourne Claude Ponsard Edmond Malinvaud Andr Babeau Marcel Boiteux Lola L Lopes Mark J Machina James B Ramsey Xavier Freixas B Roy and D Bouyssou Werner Leinfellner and Jean Jacques Durand A biographical sketch and complete bibliography of the author are also included

The Psychology of Consumer Behavior Brian Mullen, Craig Johnson, 2013-06-17 After years of study in the area of consumer behavior Mullen and Johnson bring together a broad survey of small answers to a big question Why do consumers do what they do This book provides an expansive accessible presentation of current psychological theory and research as it illuminates fundamental issues regarding the psychology of consumer behavior The authors hypothesize that an improved understanding of consumer behavior could be employed to more successfully influence consumers use of products goods and services At the same time an improved understanding of consumer behavior might be used to serve as an advocate for consumers in their interactions in the marketplace

Handbook of Regional and Peter Nijkamp, Edwin S. Mills, 1986 This second volume of the Handbook presents professional surveys of all the important topics in urban economics The first section contains 6 surveys on locational analysis the second 5 surveys of specific urban markets and the third part presents 5 surveys of government policy issues The book brings together exhaustive research by distinguished scholars from many countries It is the only complete survey volume of

urban economics and should serve as a reference volume to scholars and graduate students for many years For more information on the Handbooks in Economics series please see our home page on <http://www.elsevier.nl> locate hes

Spaces of Consumption Jon Stobart, Andrew Hann, Victoria Morgan, 2013-01-11 Consumption is well established as a key theme in the study of the eighteenth century Spaces of Consumption brings a new dimension to this subject by looking at it spatially Taking English towns as its scene this inspiring study focuses on moments of consumption selecting and purchasing goods attending plays promenading and explores the ways in which these were related together through the spaces of the town the shop the theatre and the street Using this fresh form of analysis it has much to say about sociability politeness and respectability in the eighteenth century

FUSION: PAPERS ON LANGUAGE AND LITERATURE Larry Javier Ambion, PhD, 2023-10-23 This compilation of several research papers is an important material for those who wish to conduct papers about the English language and literature The volume contains ten papers about discussions on speech and articulations phonetics English language roles in the linguistic landscapes as well as some Asian fiction and gay language I have been particularly fortunate to produce and present these papers internationally because of the grants given to me by several offices and institutions This is my way of sharing these blessings I have received with my students who in turn will be writing their research papers

Gender and Food in Transnational East Asias Eric Ping Hung Li, Chikako Nagayama, Jooyeon Rhee, 2021-10-12 Gender and Food in Transnational East Asias illustrates how the production and consumption of food impacts the changing social positions of individuals and their relationships with their families the state and their work as well as shapes their gender sexual ethnic and national identities The transnational movement of food and people between East Asia and the rest of the world is increasingly visible forming various forces behind the cultural and political constructions of gender politics among and beyond Asian diasporas It argues that a critical engagement with practices and representations of food from gender perspectives can enhance our understanding of the society and culture of transnational East Asia

Consumer Vulnerability Susan Dunnett, Kathy Hamilton, Maria Piacentini, 2018-10-18 This book demonstrates that marketing scholarship has much to contribute to our understanding of consumer vulnerability and potential solutions It brings to the fore ways in which so called vulnerable consumers navigate various marketplace and service interactions and develop specific consumer skills in order to empower themselves in such exchanges It does so by exploring how consumer vulnerability is experienced across a range of different contexts such as poverty and disability and the potential impact of vulnerability from childhood to old age Other chapters extend focus from the consumer to the organisational perspective or consider more macro issues such as socio spatial disadvantages The fundamental aim of many of the contributors is to produce work that can benefit individual and societal well being They draw on various methodological approaches that generate both marketing management and policy focused implications A series of commentaries are also included to stimulate critical reflection and new insights into consumer vulnerability This book was originally published as a special issue

of the Journal of Marketing Management

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