



入選論文審查感言

2012 TOPCO 崇越論文大賞

評審一篇論文，其實和欣賞一齣電影或細讀一部小說一樣，客觀的判定中含有主觀的意識框架(framing)；而和原創的藝術作品相類似，論文也會呈現不同的品味，層次，與格局。有些入選的論文，其實看了題目和摘要，大概就可以知道故事的結局，並不需要去細查文獻和資料分析。有些題材，脫不了老套的忠奸善惡或浪漫的鴛鴦蝴蝶派，但劇情被重新操弄改編，雖雌雄莫辨或忠奸互換，但卻頗具管理意涵與人性智慧的啟發。有些創新的小品，無論是佈景，音樂，服裝，音響，視覺等都絢彩華麗、金碧輝煌，但讀完了這些超現實(surrealism)但倒果為因的夢囈作品，實在頓悟不出這些新科導演到底要傳達什麼主題。雖然今年沒有看到氣勢磅礴或萬世流芳的曠世巨作，但在入選論文的字裏行間中可以隱約地感受到大師(或未來大師)的風範。大師風範不外乎綿密的邏輯思維與架構，精緻的劇本剪輯，與言之有物的原創藝術呈現，並能一般化(generalizable)地對普羅大眾產生心理共鳴，進而開光與啟示，指點未來之軌跡。❧



Q. What to study? e.g., MSI 2018-2020 Research Priorities



1. **Cultivating the Customer Asset**
 - 1.1. Characterizing the Customer Journey along the Purchase Funnel and Strategies to Influence the Journey
 - 1.2. The Customer-Technology Interface
 - 1.3. Macro Trends Influencing Consumer Decision Making
2. **The Evolving Landscape of Martech and Advertising**
 - 2.1. Defining the Communication Message
 - 2.2. Optimizing Media Strategy
 - 2.3. Setting the Advertising Budget
 - 2.4. Measuring Media Efficacy
3. **The Rise of Omnichannel Promotion and Distribution**
 - 3.1. Managing Promotion across Channels
 - 3.2. Managing Distribution and Demand across Channels
 - 3.3. Channel Structure
4. **Capturing Information to Fuel Growth**
 - 4.1. Painting a 360-degree/Holistic View of the Customer
 - 4.2. What Key Performance Indices (KPIs)/Metrics Should Be Measured and How?
 - 4.3. Assessing Causality
 - 4.4. Approaches to Ingesting and Analyzing Data to Drive Marketing Insights
5. **Organizing for Marketing Agility**
 - 5.1. Internal Organization
 - 5.2. External Organization

Today's Agenda

- A. Concept, construct, and variable → Theory
- B. Research Design I (Research Methodology) – chapters 3, 4



Q. Why researcher needs to understand philosophy?

- 哲學（英語：philosophy）是研究普遍的、根本的問題的學科，包括存在、知識、價值、理智、心靈、語言等領域。哲學與其他學科的不同是其批判的方式、通常是系統化的方法，並以理性論證為基礎。在日常用語中，其也可被引申為個人或團體的最基本信仰、概念或態度。
- Philosophy (from Greek φιλοσοφία, philosophia, literally "love of wisdom") is the study of general and fundamental problems concerning matters such as existence, knowledge, values, reason, mind, and language



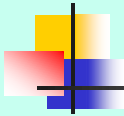
實證主義 (positivism)

- 實證主義 (positivism) 是一種以「實際驗證」為中心的哲學思想。廣義而言，任何種類的哲學體系，只要求知於經驗材料，拒絕、排斥先驗或形上學的思辨，都為實證主義。實證主義又稱實證論，其中心論點是：事實必須是透過觀察或感覺經驗，去認識每個人身處的客觀環境和外在事物。實證主義的目的，在希望建立知識的客觀性。
- Positivism is a philosophical theory stating that certain ("positive") knowledge is based on natural phenomena and their properties and relations. Thus, information derived from sensory experience, interpreted through reason and logic, forms the exclusive source of all certain knowledge. Positivism also holds that society, like the physical world, operates according to general laws. Introspective and intuitive knowledge is rejected, as are metaphysics and theology because metaphysical and theological claims cannot be verified by sense experience.



邏輯實證主義 (logical positivism)

- 邏輯實證主義和邏輯經驗主義 (logical empiricism)，共同形成了新實證主義，也被稱為科學經驗主義，是以確證主義為核心的西方哲學運動。1920年代後期開始，一群哲學觀點相似的哲學家、科學家和數學家等組成維也納學派，發展出邏輯實證主義。
- Logical positivism and logical empiricism, which together formed neo-positivism, was a movement in Western philosophy whose central thesis was verificationism, a theory of knowledge which asserted that only statements verifiable through empirical observation are cognitively meaningful. The movement flourished in the 1920s and 1930s in several European centers. Efforts to convert philosophy to this new "scientific philosophy", shared with empirical sciences' best examples, such as Albert Einstein's general theory of relativity, sought to prevent confusion rooted in unclear language and unverifiable claims.

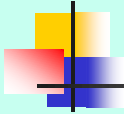
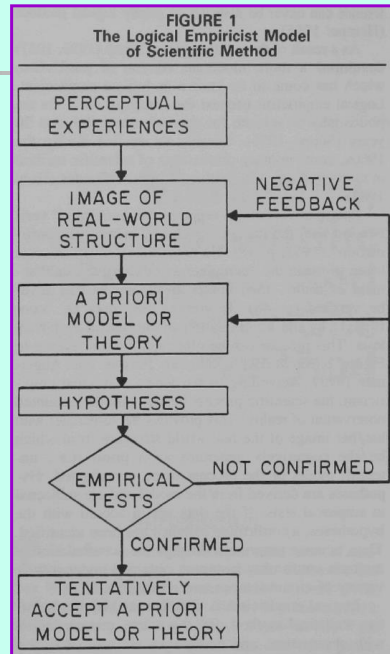


Paul F. Anderson

Marketing, Scientific Progress, and Scientific Method

Journal of Marketing, Fall 1983

3-7

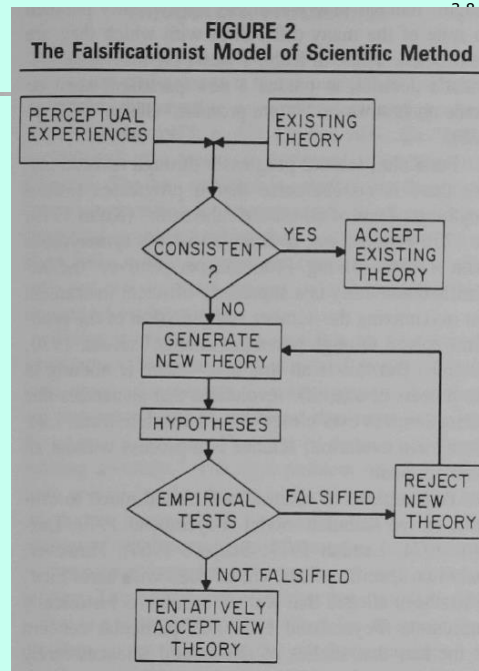


Paul F. Anderson

Marketing, Scientific Progress, and Scientific Method

Journal of Marketing, Fall 1983

3-8





Concept, construct, and variable

■ Concepts

- What is a concept?
- "... expresses an **abstraction** formed by generalization from particulars." (Kerlinger, 1975)
- Example
 - Scientific: weight, mass, energy, force, etc.
 - Emotions: happiness, sadness, fear
 - Psychology: IQ, EQ, achievement, aggressiveness
 - Chinese: 氣、陰、陽 ; "tiger mom" consumers
 - Marketing: Machiavellian, opportunism, relationship



The Prince, Niccolò Machiavelli (1513)

- Princes who rise to power through their own skill and resources (their "virtue") rather than luck tend to have a hard time rising to the top, but once they reach the top they are very secure in their position. This is because they effectively crush their opponents and earn great respect from everyone else. Because they are strong and more self-sufficient, they have to make fewer compromises with their allies.



君王論 - 馬基亞維利主義

- 「人類是忘恩負義的、容易變心的，是偽裝者、冒牌貨，是逃避危難、追逐利益的。」
- 「被人畏懼比受人愛戴是安全得多的」。
- 君主應當效法狐狸與獅子。「由於獅子不能夠防止自己落入陷阱，而狐狸則不能夠抵禦豺狼。因此，君主必須是一頭狐狸以便認識陷阱，同時又必須是一頭獅子，以便使豺狼驚駭。」
- 君主必須像提防暗礁一樣提防被人認為變幻無常、輕率淺薄、軟弱怯懦、優柔寡斷，他應該努力在行動中表現偉大、英勇、嚴肅莊重、堅忍不拔，使人們對自己抱有「誰都不要指望欺騙他或者瞞過他」的見解，這樣才能對抗一切陰謀，坐穩江山。

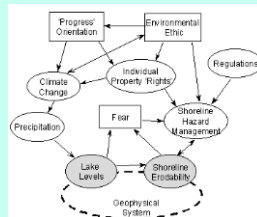
Concept, construct, and variable

■ Constructs

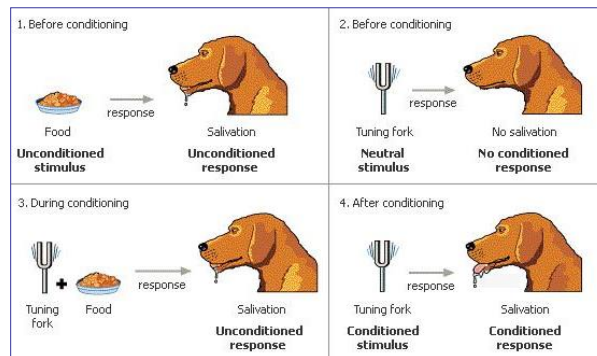
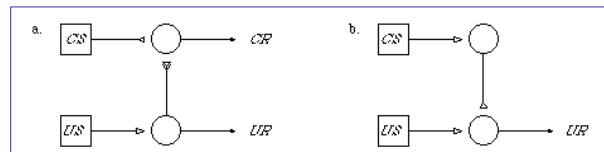
- "A construct is a concept. It has the added meaning, however, of having been deliberately and consciously invented or adopted for a special scientific purpose."
- "It enters into theoretical schemes and is related in various ways to other constructs" (Kerlinger 1975)
- Example
 - Concept: Intelligence, learning
 - Construct: "defined and specified [so] that it can be measured and observed"
 - Marketing constructs: psychological involvement, brand loyalty, AIDA, nostalgia, gratification, information overload, attribution

Commensurability

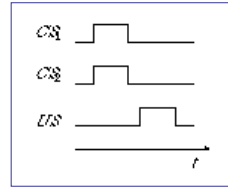
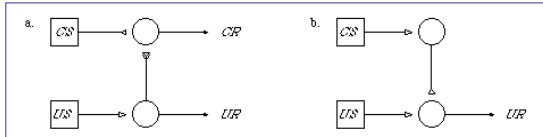
- 可通約性是科學哲學的概念。如果人們可以通過比較不同的幾種科學理論來確定哪種理論更準確，我們就說這幾種科學理論是可以通約的；反之，如果沒有辦法比較哪種理論更準確，則這幾種科學理論不可以通約。
- Commensurability is a concept, in philosophy of science, whereby scientific theories are commensurable if scientists can discuss using a shared nomenclature that allows direct comparison of theories to determine which theory is more valid or useful.



古典制約 (classical conditioning)



Blocking Effect in psychology



The "Blocking Effect" construct on Consumer Learning

- Information Overload (Blocking Effect)
- 資訊的多寡、正反順序效果對消費者臍帶血認知學習的影響(趙美蘭, 2007)
- 消費者產品品質判斷上的品牌阻礙效果(柯美瑜, 2007)
- 阻礙效應在消費者學習中對品牌權益與品牌延伸的影響(蔡宜樺, 2007)



Concept, construct, and variable

■ Variables

- 變數, something varies
- "A variable is a symbol (x, y, z) to which numerals or values are assigned."
(Kerlinger 1975)
 - Often a term requiring an **operational definition**
- examples: Weight, energy, intelligence, driver reaction time, stopping distance, etc.
- Marketing variables: sales, advertising, new product adoption rate, retail productivity, awareness, preference, AIDA, brand loyalty, etc.



Concept, construct, and variable

But, **operational definition** is often difficult, e.g.,

- Education quality of primary school
(some can't be measured)
- Taiwan's top 500 company's merge and acquisition
(diversify individual difference/causation)
- Cultural industry, country image, nostalgia, brand love, dual-process cognition
- Cause-related marketing, social responsibility
- Causal ambiguity of organizational configuration

Operational Definition

theory or idea



reality

self-esteem



I feel good about myself...

1	2	3	4	5
SD	D	N	A	SA

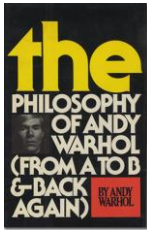
Concept, construct, and variable

■ Variables

- Independent vs. dependent variable
- Continuous vs. categorical variable
- Intervening variables – 'in-the-head' variable, cannot be seen, heard, felt
 - Examples: emotion, loyalty, preference, positioning, market-orientation, learning, etc.
- Latent variables – essentially the same as intervening variables (perhaps a more broadly used term)

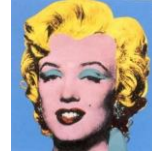


Constitutive constructs and Operational Definition



**Theory-
hypothesis-
construct**

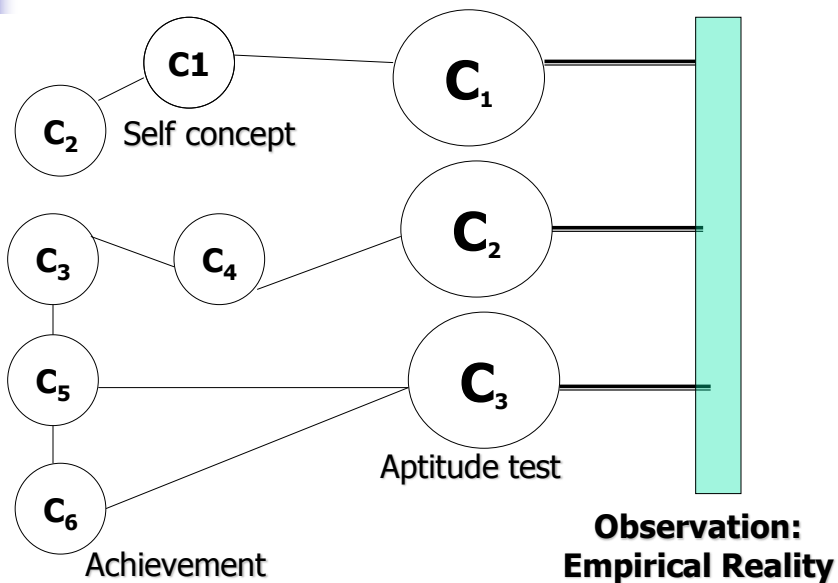
**Scenario-
Phenomenon-
Problem Issues-
TRUTH**



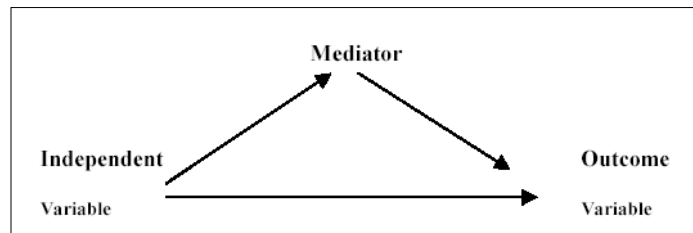
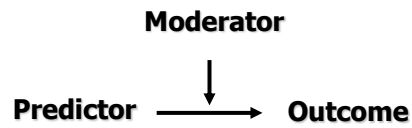
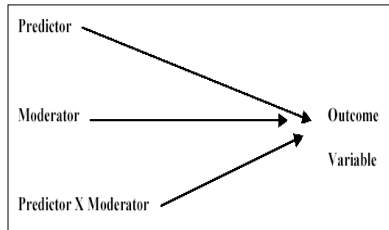
**Observation:
Empirical Reality**



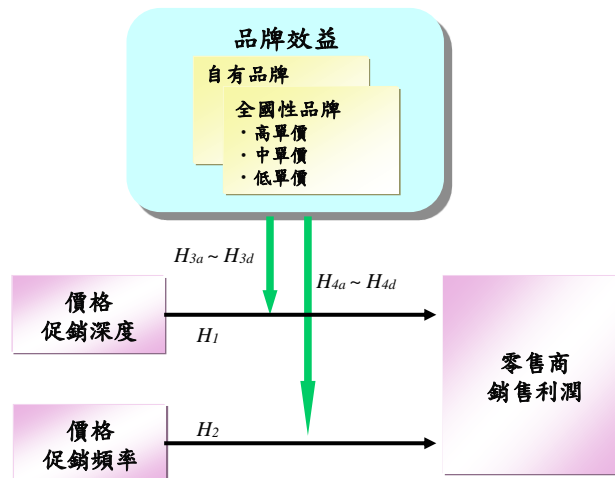
Constitutive constructs and Operational Definition



Intervening variables

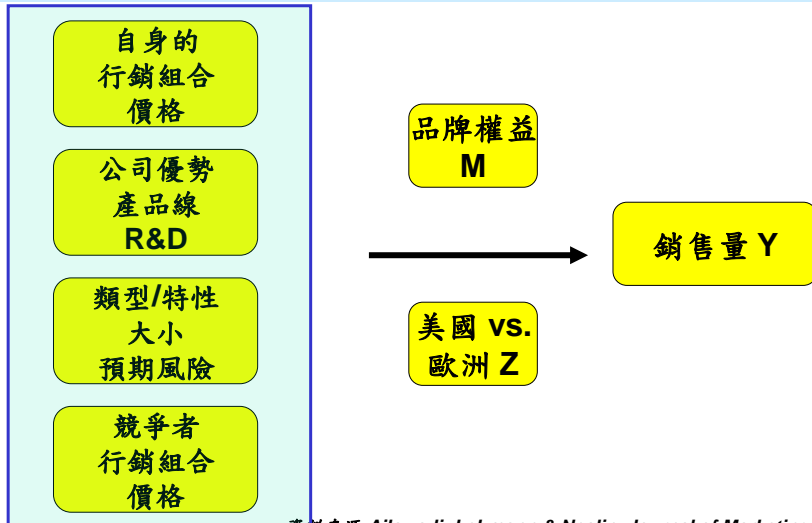


品牌效益對零售商價格促銷策略調節效果之研究（彭宜君 2007）



通路、產品與價值創造之關聯性

以國內禮品賀卡ODM廠商為例 (born global)



資料來源: Ailawadi, Lehmann & Neslin, *Journal of Marketing*, 2003

THEORY

- A set of interrelated constructs (concepts), definitions, and propositions that presents a systematic view of phenomena by specifying relations among variables, with the purpose of **explaining, predicting, and controlling** the phenomena.



3-27

Scientific Research

- The aims of science, **scientific explanation**, and theory
- Scientific research is systematic, controlled, empirical, and critical investigation of hypothetical propositions about presumed relation among natural phenomenon.



3-28

Interpretation v.s. Explanation.

- Interpret (經驗陳述)

“無言獨上西樓，月如鉤，
寂寞梧桐深院鎖清秋。”

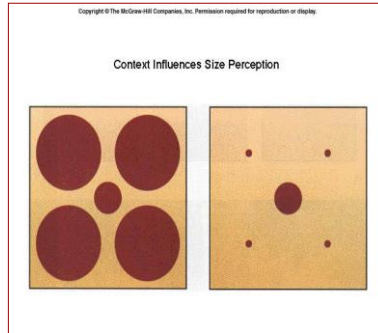
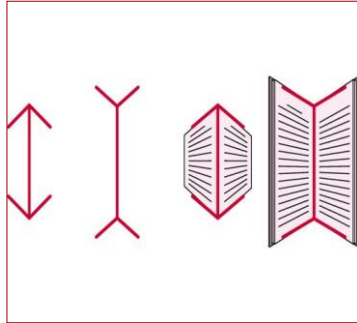
- Explain

- 展望理論Prospect Theory, Kahneman, D., and A. Tversky (1979),
- The theory says that people make decisions based on the potential value of losses and gains rather than the final outcome, and that people evaluate these losses and gains using interesting heuristics.

Contextual Distortion

Muller-Lyer Illusion

3-29



Mental Accounting

3-30

- One of the blind spots of traditional economic theory is that it can't explain why people do generous things with their money, such as leaving large tips for waitresses in restaurants they'll never visit again.
- "While it is true that people prefer more money to less, we also like to be treated fairly -- and like to treat others fairly," "To the extent these objectives are contradictory, people make trade-offs where their behavior appears to vary widely, depending on the context." (Thaler 1985)



The Compromise Effect

3-31



WorkCentre Pro 35 shown with High-Capacity Feeder and Offsetting Catch Tray options.



WorkCentre Pro 45 shown with High-Capacity Feeder and Office Finisher options.



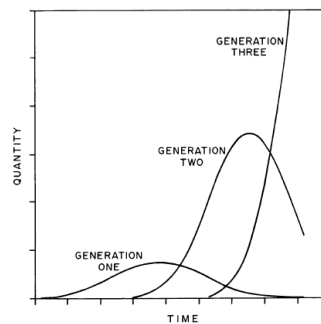
WorkCentre Pro 55 shown with High-Capacity Feeder and Office Finisher options.

WorkCentre® Pro 35 Advanced Multifunction System	WorkCentre® Pro 45 Advanced Multifunction System	WorkCentre® Pro 55 Advanced Multifunction System
OUTPUT SPEED—printing and copying		
35 images per minute (ipm) letter (8.5 x 11"/216 x 279 mm/A4)	45 images per minute (ipm) letter (8.5 x 11"/216 x 279 mm/A4)	55 images per minute (ipm) letter (8.5 x 11"/216 x 279 mm/A4)
25 ipm legal (8.5 x 14"/216 x 356 mm)	36 ipm legal (8.5 x 14"/216 x 356 mm)	36 ipm legal (8.5 x 14"/216 x 356 mm)
22 ipm ledger (11 x 17"/279 x 432 mm/A3)	31 ipm ledger (11 x 17"/279 x 432 mm/A3)	31 ipm ledger (11 x 17"/279 x 432 mm/A3)
FIRST-IMAGE-OUT TIME—letter size, from platen to offsetting catch tray		
4.6 seconds	3.4 seconds	3.4 seconds



Product Evolutionary Cycle

3-32





Chapter Three

Research Design



Chapter Outline

3-34

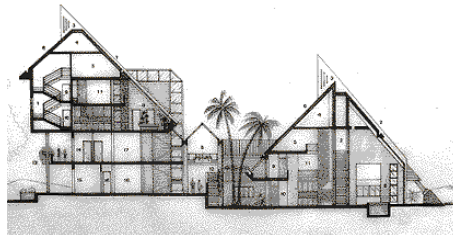
- 1) Overview
- 2) Research Design: Definition
- 3) Research Design: Classification
- 4) **Exploratory** Research
- 5) **Descriptive** Research
- 6) **Causal** Research
- 7) Relationships Among Exploratory, Descriptive, and Causal Research
- 8) Potential Sources of Error
 - i. Random Sampling Error
 - ii. Non-sampling Error
 - a. Non-response Error
 - b. Response Error





Research Design: Definition (p. 74)

- A **research design** is a framework or blueprint for conducting the marketing research project. It details the procedures necessary for obtaining the information needed to structure or solve marketing research problems.

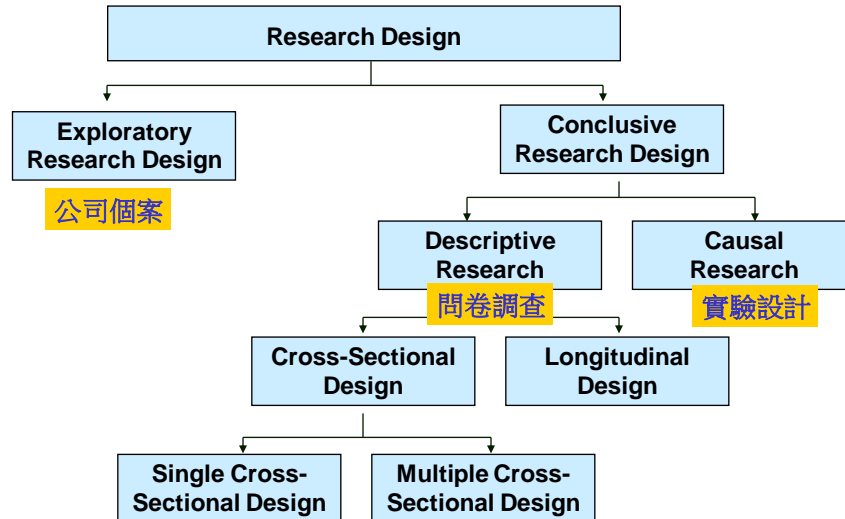


Components of a Research Design

- Define the information needed (Chapter 2)
- Design the exploratory, descriptive, and/or causal phases of the research (Chapters 3 - 7)
- Specify the measurement and scaling procedures (Chapters 8 and 9)
- Construct and pretest a questionnaire (interviewing form) or an appropriate form for data collection (Chapter 10)
- Specify the sampling process and sample size (Chapters 11 and 12)
- Develop a plan of data analysis (Chapter 14)

A Classification of Marketing Research Designs

Fig. 3.1

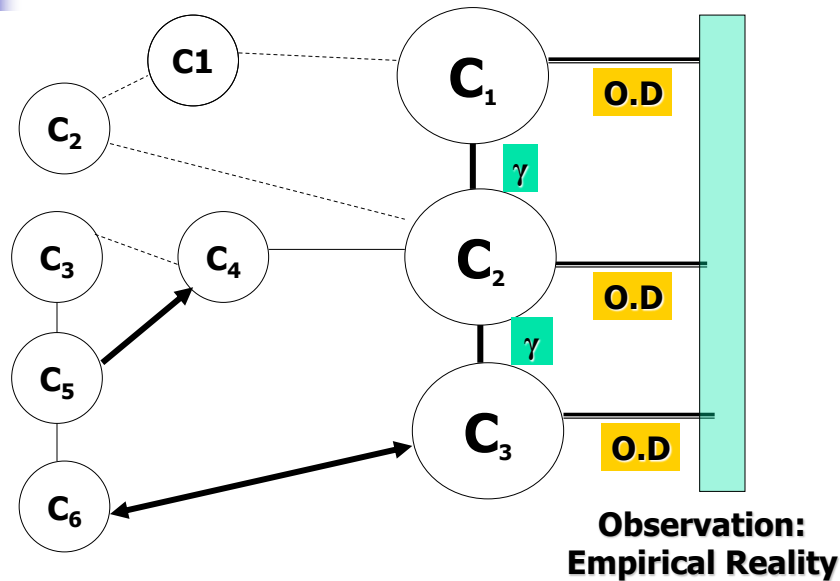


A Comparison of Basic Research Designs

Table 3.2


	Exploratory	Descriptive	Causal
Objective:	Discovery of ideas and insights	Describe market characteristics or functions	Determine cause and effect relationships
Characteristics:	Flexible, versatile	Marked by the prior formulation of specific hypotheses	Manipulation of one or more independent variables
	Often the front end of total research design	Preplanned and structured design	Control of other mediating variables
Methods:	Expert surveys Pilot surveys Secondary data Qualitative research	Secondary data Surveys Panels Observation and other data	Experiments

Causation Levels of Constitutive constructs



2. Cross-sectional Designs (p. 80)

- Involve the collection of information from any given sample of population elements only once.
- In **single cross-sectional designs**, there is only one sample of respondents and information is obtained from this sample only once.
- In **multiple cross-sectional designs**, there are two or more samples of respondents, and information from each sample is obtained only once. Often, information from different samples is obtained at different times.
- **Cohort analysis** consists of a series of surveys conducted at appropriate time intervals, where the cohort serves as the basic unit of analysis. A cohort is a group of respondents who experience the same event within the same time interval.



Consumption of Various Soft Drinks by Various Age Cohorts (p. 81)


Table 3.3

Percentage consuming on a typical day

Age	1950	1960	1969	1979	
8-19	52.9	62.6	73.2	81.0	
20-29	45.2	60.7	76.0	75.8	C8
30-39	33.9	46.6	67.7	71.4	C7
40-49	23.2	40.8	58.6	67.8	C6
50+	18.1	28.8	50.0	51.9	C5
		C1	C2	C3	C4



C1: cohort born prior to 1900
C2: cohort born 1901-10
C3: cohort born 1911-20
C4: cohort born 1921-30

C5: cohort born 1931-40
C6: cohort born 1940-49
C7: cohort born 1950-59
C8: cohort born 1960-69



Longitudinal Designs

- A fixed sample (or samples) of population elements is measured repeatedly on the same variables
- A longitudinal design differs from a cross-sectional design in that the sample or samples remain the same over time



Cross-Sectional Data May Not Show Change

Table 3.5

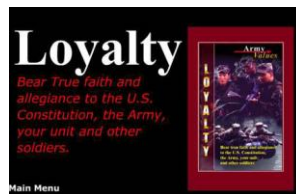
Brand Purchased	Time Period	
	Period 1 Survey	Period 2 Survey
Brand A	200	200
Brand B	300	300
Brand C	500	500
Total	1000	1000



Longitudinal Data May Show Substantial Change

Table 3.6

Brand Purchased in Period 1	Brand Purchased in Period 2			
	Brand A	Brand B	Brand C	Total
Brand A	100	50	50	200
Brand B	25	100	175	300
Brand C	75	150	275	500
Total	200	300	500	1000





3. Casual Research (p. 85)

- To understand which variables are the cause (independent variables) and which variables are the effect (dependent variables) of a phenomenon
- To determine the nature of the relationship between the causal variables and the effect to be predicted
- METHOD: Experiments (or, *a priori* model)



Chapter Four

Exploratory Research Design: Secondary Data





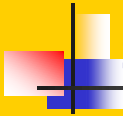
Criteria for Evaluating Secondary Data

- **Specifications:** Methodology Used to Collect the Data
- **Error:** Accuracy of the Data
- **Currency:** When the Data Were Collected
- **Objective(s):** The Purpose for Which the Data Were Collected
- **Nature:** The Content of the Data
- **Dependability:** Overall, How Dependable Are the Data



Syndicated Services (p. 114)

- Companies that collect and sell common pools of data of known commercial value designed to serve a number of clients.
- Syndicated sources can be classified based on the unit of measurement (households/consumers or institutions).
- Household/consumer data may be obtained from surveys, diary panels, or electronic scanner services.
- Institutional data may be obtained from retailers, wholesalers, or industrial firms.



Single-Source Data (p. 124)

Single-source data provide integrated information on household variables, including media consumption and purchases, and marketing variables, such as product sales, price, advertising, promotion, and in-store marketing effort.

- Recruit a test panel of households and meter each home's TV sets.
- Survey households periodically on what they read.
- Grocery purchases are tracked by UPC scanners.
- Track retail data, such as sales, advertising, and promotion.

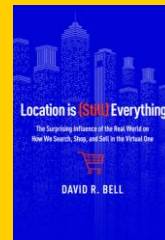


Typical channel & retail Data

- Sales by product line
- Sales by major departments (e.g., men's wear, house wares) or components
- Sales by specific stores (customers)
- Sales by geographical region
- Sales by cash versus credit purchases
- Sales in specific time periods (gain or loss)
- Sales by size of purchase (in units or \$)
- Price and profit margins

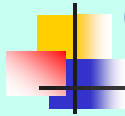
Marketing Research Dataset

- Channel distribution (MP3 data)
- Pharm. Market segmentation (MD database)
- CRM and e-Customization (Duke Teradata)
- Category management (AC Nielsen scanner data)
- Uncovering Clickstream (Telecom Log file)
- New Product Diffusion (Docomo/3G)
- China GIS data (3Cs product)
- Markops/eStrat game data



CRM, Churn and Retention Analysis

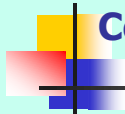
- 影響電信業無線通訊客戶流失因素之探討-以美國杜克大學研究A電信公司客戶為例 (葉政憲, 2007)
- 運用資料採礦技術探討客戶流失之區隔研究--以電信產業為例 (溫心眉, 2007)
- 運用存活模型研究顧客地緣分布與收入對顧客終身價值的影響 - 以通訊網路產業為例(周哲如, 2007)
- ADSL客戶流失原因探討(吳大珉, 2007)



Consumer Decision, Stochastic Choice, Database Marketing, and RFM Analysis

3-53

- Customer Base Analysis: A Non-contractual Online Retail Purchase Process Application (江品儀, 2007)
- Customer Active Probability and Customer Lifetime Value Analysis (林姿璇, 2007)
- 台灣網路購物重複購買行為預測模型之探討-以線上光碟購物網站為例(吳全益, 2008)
- 不孕症自費市場銷售預估與顧客價值分析之研究—以A藥廠為例(吳惠華, 2008)

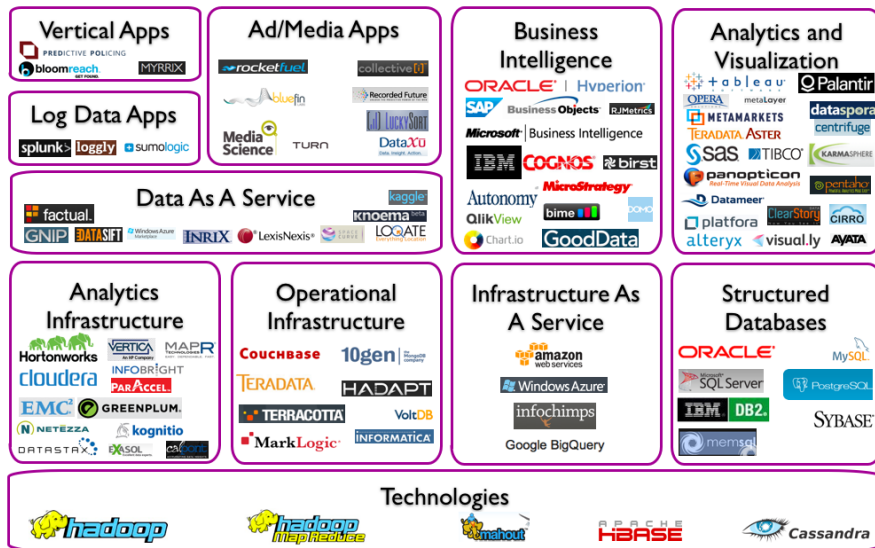


Compustat: Sustainable Competitive Advantage, financial performance, Industry Analysis

3-54

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4. 趙彥棠(2009)，全球半導體產業營運策略族群分析，國立交通大學 管理科學研究所 碩士論文
5. 呂柏蓉(2009)，生物科技業競爭優勢之經營策略分析，國立交通大學 管理科學研究所碩士論文
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Big Data Landscape



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Predictive analytics

Analytical Techniques [\[edit\]](#)

The approaches and techniques used to conduct predictive

Regression techniques [\[edit\]](#)

Regression models are the mainstay of predictive analytics. The different variables in consideration. Depending on the s them are briefly discussed below.

Linear regression model [\[edit\]](#)

The linear regression model analyzes the relationship between expressed as an equation that predicts the response variable optimized. Much of the effort in model fitting is focused on predictions.

The goal of regression is to select the parameters of the model estimation and results in best linear unbiased estimates (BLUE). Once the model has been estimated we would be interested in how reliable? To do this we can check the statistical significance coefficient is significantly different from zero. How well the model is using the R^2 statistic. It measures predictive power of the model variation in the independent variables.

Discrete choice models [\[edit\]](#)

Multivariate regression (above) is generally used when the continuous but rather discrete. While mathematically it is based behind the theory of multivariate linear regression no longer analysis. If the dependent variable is discrete, some of these models are used when the dependent variable is binary.

Logistic regression [\[edit\]](#)

For more details on this topic, see [logistic regression](#). In a classification setting, assigning outcome probabilities to

Logit versus probit [\[edit\]](#)

The Probit model has been around longer than the logit model was formulated but reasons the logit model has made this computation to interpret in the logit model.

Practical reasons for choosing the probit model

- There is a strong belief that the underlying
- The actual event is not a binary outcome

Time series models [\[edit\]](#)

Time series models are used for predicting an internal structure (such as autocorrelation) time series data and methodology has been can improve forecasts since the predictable

Time series models estimate difference equations moving average (MA) models. The Box-Jenkins ARIMA (autoregressive moving average) model on the other hand are used to describe non-stochastic an ARMA model can be applied. Non Box and Jenkins proposed a three stage model series is stationary or not and the presence models are estimated using non-linear time plotting the residuals to detect outliers and in recent years time series models have become conditional heteroskedasticity and GARCH series models are also used to understand structural VAR models.

Survival or duration analysis [\[edit\]](#)

Survival analysis is another name for time to used in the social sciences like economics, censoring and non-normality, which are characterized by

Neural networks [\[edit\]](#)

Neural networks are nonlinear models or control in a wide spectrum of fields

Neural networks are used when the relationship between inputs and output training, reinforcement learning, with supervised

Some examples of neural network training Some unsupervised network architecture

Multilayer Perceptron (MLP) [\[edit\]](#)

The Multilayer Perceptron (MLP) consists determined by the weight vector and it between the network output values and in the weight to get the desired values

Radial basis functions [\[edit\]](#)

A radial basis function (RBF) is a function and for smoothing of data. Radial basis function. Such networks have 3 layers, linearity is the Gaussian. RBF network:

Support vector machines [\[edit\]](#)

Support Vector Machines (SVM) are used are used to perform binary classification classification problems. There are many

Naive Bayes [\[edit\]](#)

Naive Bayes based on Bayes conditional which makes it an effective classification of predictors is very high.

k-nearest neighbours [\[edit\]](#)

