

大數據行銷研究

Big Data Marketing Research



Tamkang
University
淡江大學

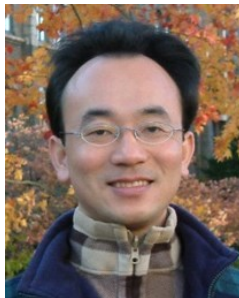
大數據行銷分析與研究

(Big Data Marketing Analytics and Research)

1051BDMR03

MIS EMBA (M2262) (8638)

Thu, 12,13,14 (19:20-22:10) (D409)



Min-Yuh Day

戴敏育

Assistant Professor

專任助理教授

Dept. of Information Management, Tamkang University

淡江大學 資訊管理學系

<http://mail.tku.edu.tw/myday/>

2016-10-07



課程大綱 (Syllabus)

| 週次 (Week) | 日期 (Date) | 內容 (Subject/Topics) |
|-----------|------------|---|
| 1 | 2016/09/16 | 中秋節 (調整放假一天) (Mid-Autumn Festival Holiday)(Day off) |
| 2 | 2016/09/23 | 大數據行銷研究課程介紹 (Course Orientation for Big Data Marketing Research) |
| 3 | 2016/09/30 | 資料科學與大數據行銷 (Data Science and Big Data Marketing) |
| 4 | 2016/10/07 | 大數據行銷分析與研究 (Big Data Marketing Analytics and Research) |
| 5 | 2016/10/14 | 測量構念 (Measuring the Construct) |
| 6 | 2016/10/21 | 測量與量表 (Measurement and Scaling) |

課程大綱 (Syllabus)

| 週次 (Week) | 日期 (Date) | 內容 (Subject/Topics) |
|-----------|------------|---|
| 7 | 2016/10/28 | 大數據行銷個案分析 I (Case Study on Big Data Marketing I) |
| 8 | 2016/11/04 | 探索性因素分析 (Exploratory Factor Analysis) |
| 9 | 2016/11/11 | 確認性因素分析 (Confirmatory Factor Analysis) |
| 10 | 2016/11/18 | 期中報告 (Midterm Presentation) |
| 11 | 2016/11/25 | 社群運算與大數據分析 (Social Computing and Big Data Analytics) |
| 12 | 2016/12/02 | 社會網路分析 (Social Network Analysis) |

課程大綱 (Syllabus)

| 週次 (Week) | 日期 (Date) | 內容 (Subject/Topics) |
|-----------|------------|--|
| 13 | 2016/12/09 | 大數據行銷個案分析 II (Case Study on Big Data Marketing II) |
| 14 | 2016/12/16 | 社會網絡分析量測與實務 (Measurements and Practices of Social Network Analysis) |
| 15 | 2016/12/23 | 大數據情感分析 (Big Data Sentiment Analysis) |
| 16 | 2016/12/30 | 金融科技行銷研究 (FinTech Marketing Research) |
| 17 | 2017/01/06 | 期末報告 I (Term Project Presentation I) |
| 18 | 2017/01/13 | 期末報告 II (Term Project Presentation II) |

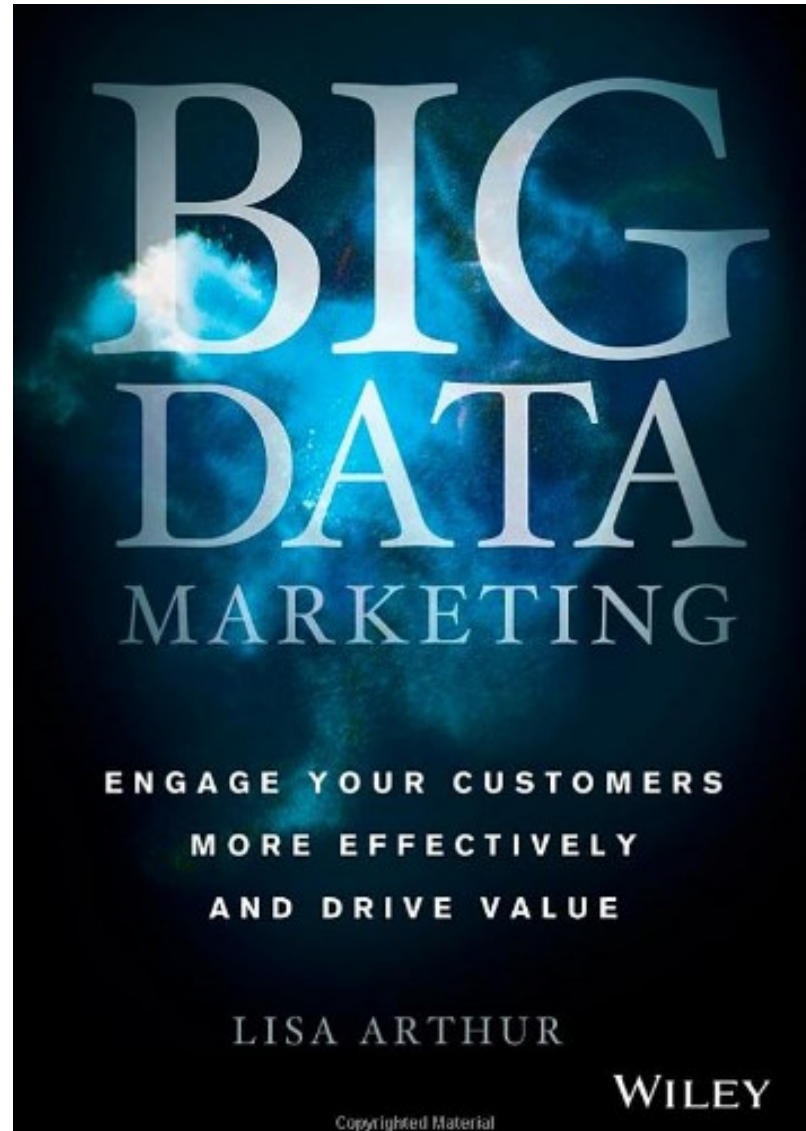
Outline

- Big Data Marketing Analytics
- Big Data Marketing Research

Big Data Marketing



Big Data Marketing:
Engage Your Customers More Effectively and Drive Value,
Lisa Arthur, Wiley, 2013.



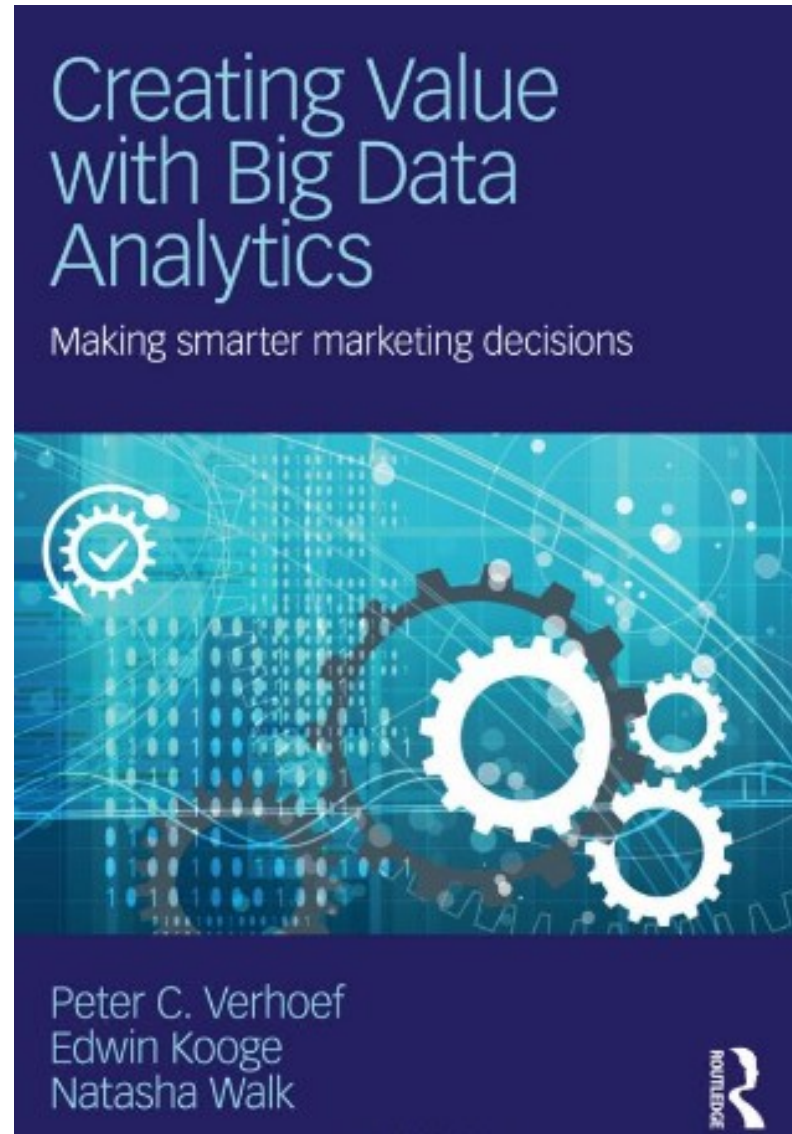
Big Data Marketing

Data-driven Marketing

Big Data Marketing

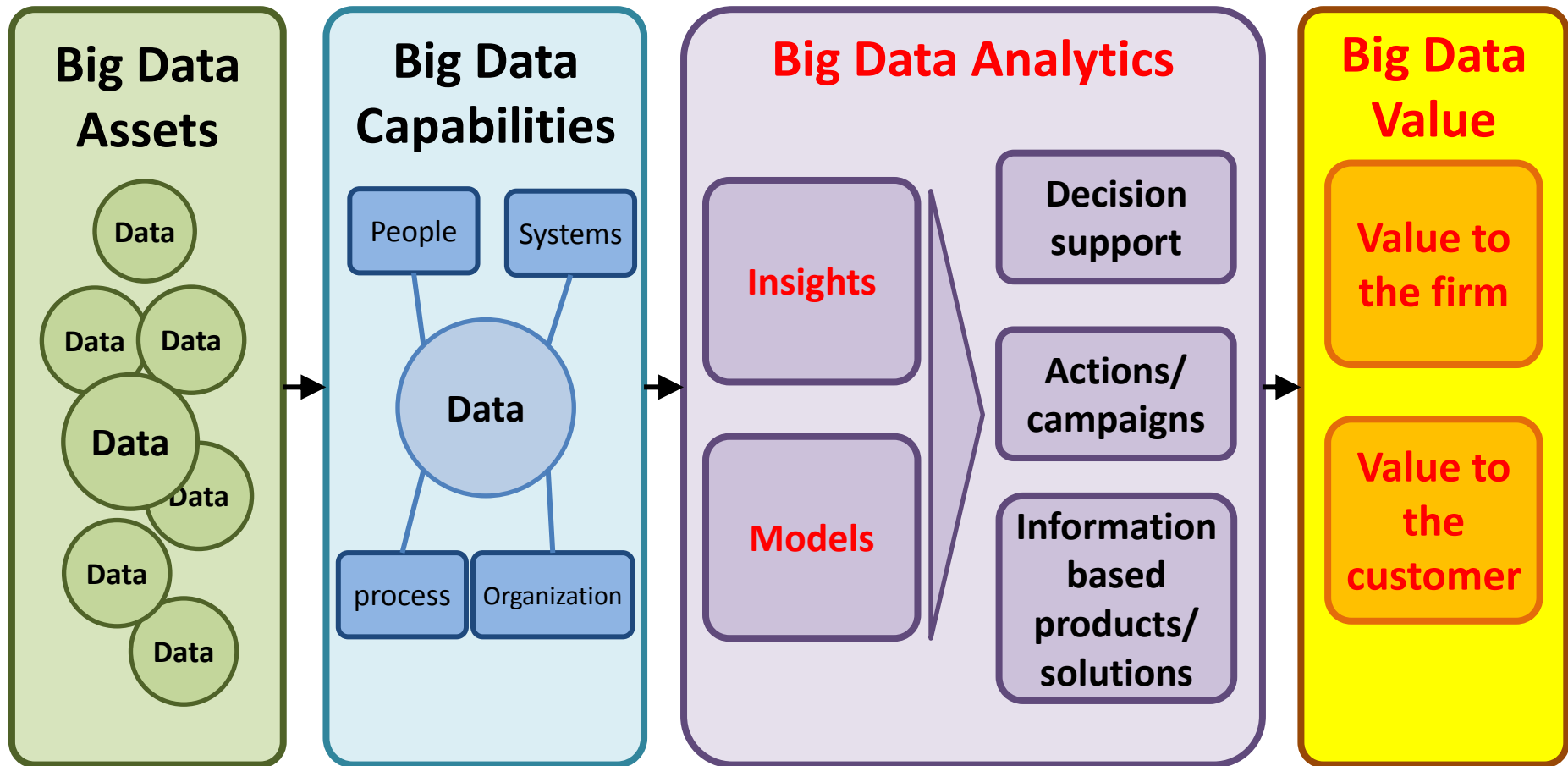
Big data marketing
is the process of
collecting, analyzing, and executing
on the **insights** you've derived from
big data to
encourage **customer engagement**
and improve **marketing results**

Creating Value with Big Data Analytics:
Making Smarter Marketing Decisions,
Peter C. Verhoef and Edwin Kooge, Routledge, 2016

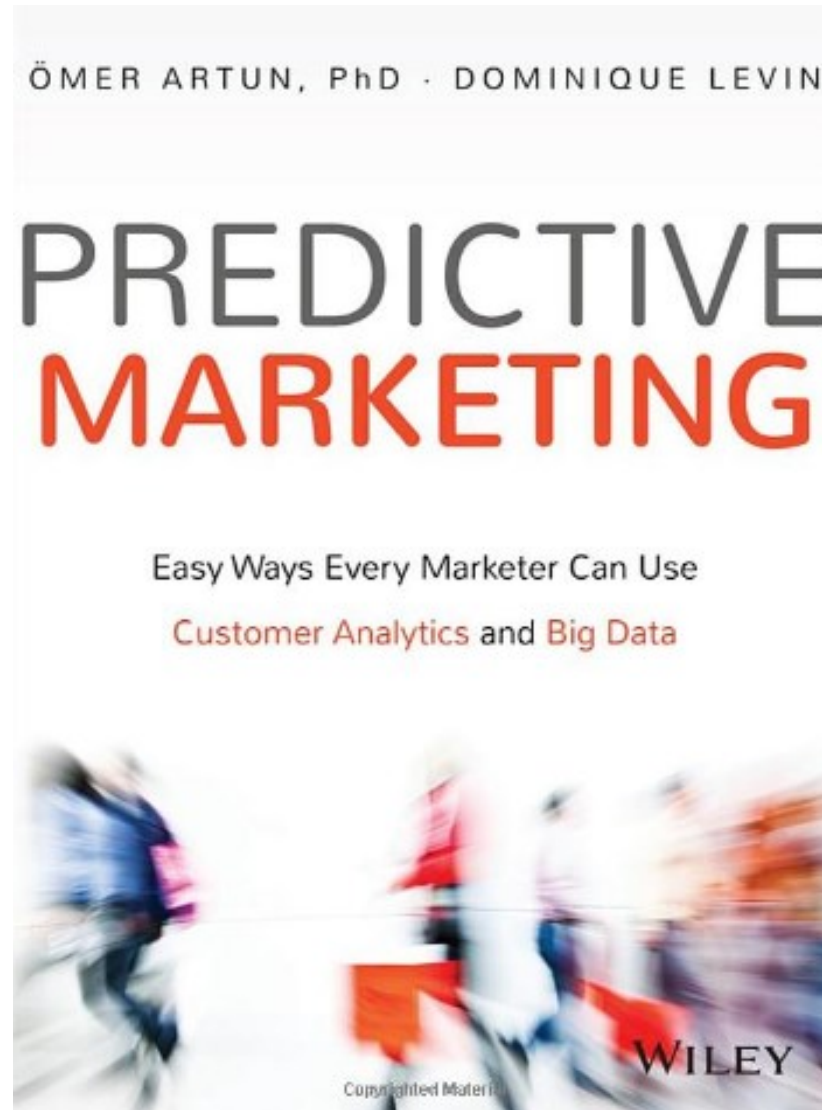


Big Data Value Creation Model

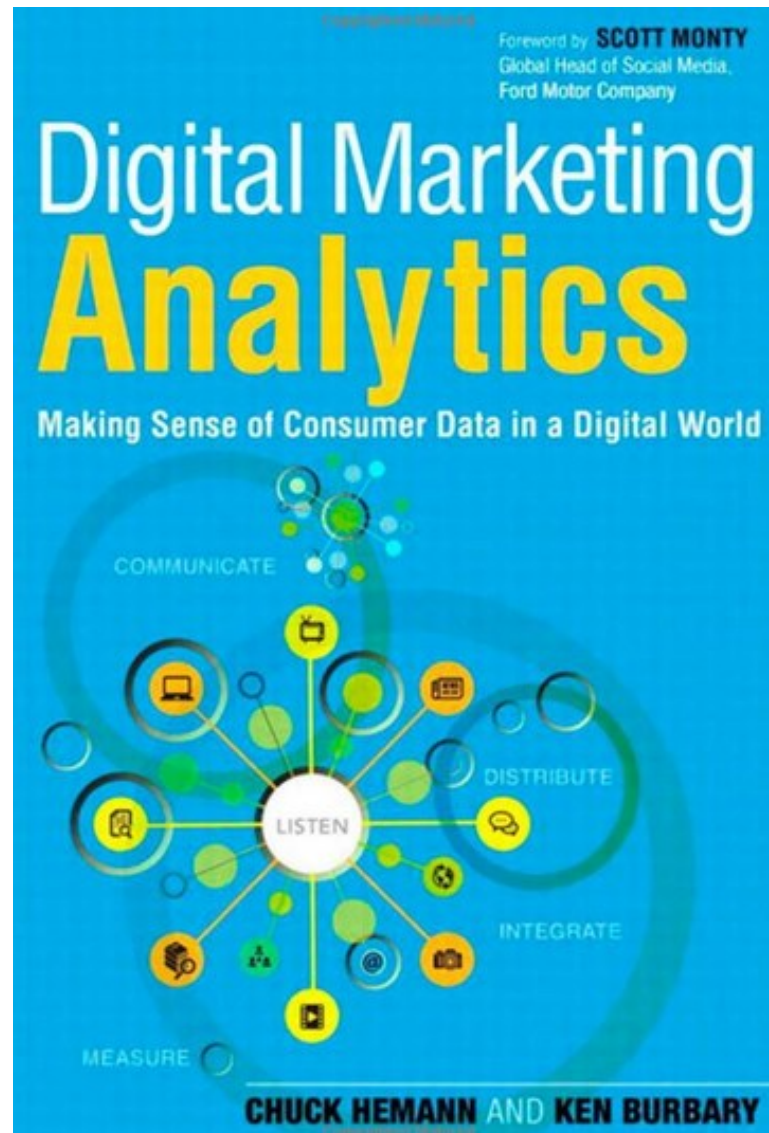
Creating Value with Big Data Analytics:
Making Smarter Marketing Decisions



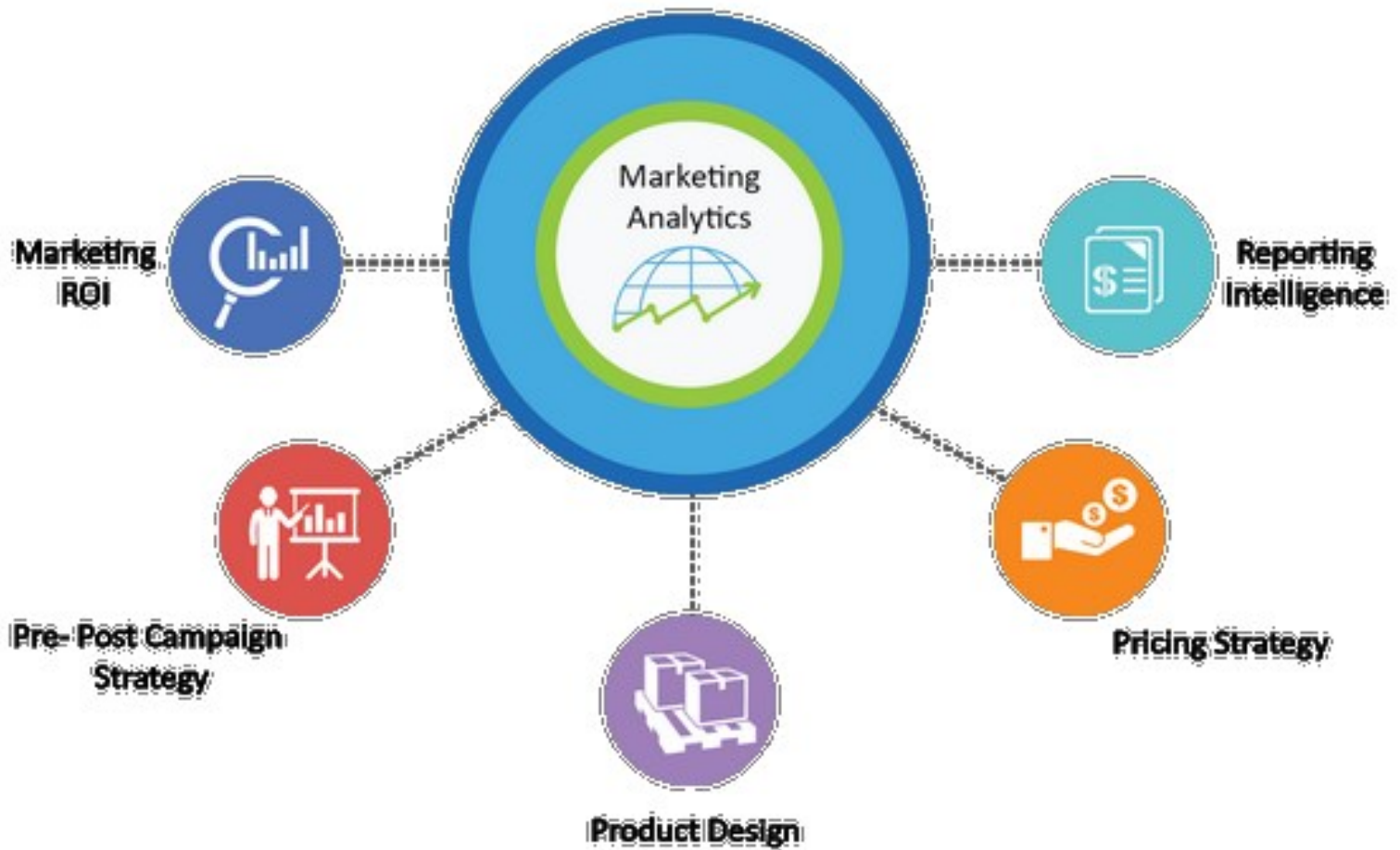
Predictive Marketing: Easy Ways Every Marketer Can Use
Customer Analytics and Big Data,
Omer Artun and Dominique Levin, Wiley, 2015



Digital Marketing Analytics: Making Sense of Consumer Data in a Digital World, Chuck Hemann and Ken Burbary, Que. 2013



Marketing Analytics



Digital Data Platform for Enterprises

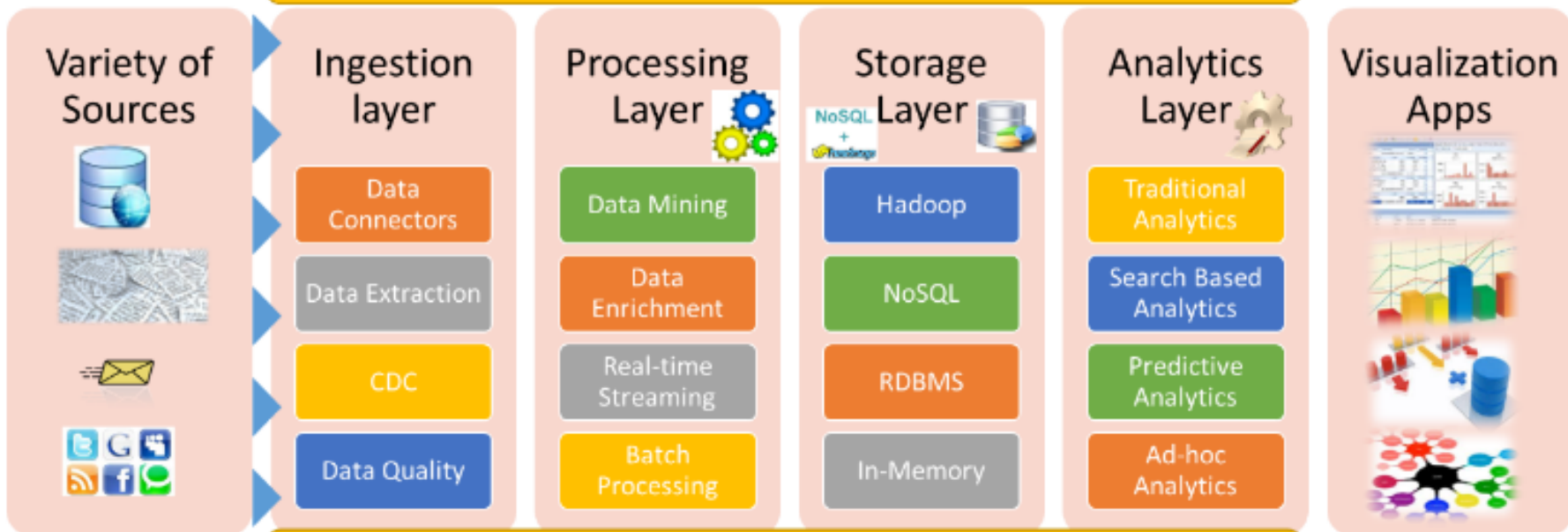
Big Data Analytics

Enterprise Applications



Operational Benchmark Customer focus Organization Connections Document Search Sales Forecast

Security (Authentication, Authorization, Auditing, Encryption, Protection)



Data Governance and Monitoring (Workflow, lifecycle management, scheduler, manage)

Digital Data Driven Platform for Enterprises

Social Media Marketing Analytics

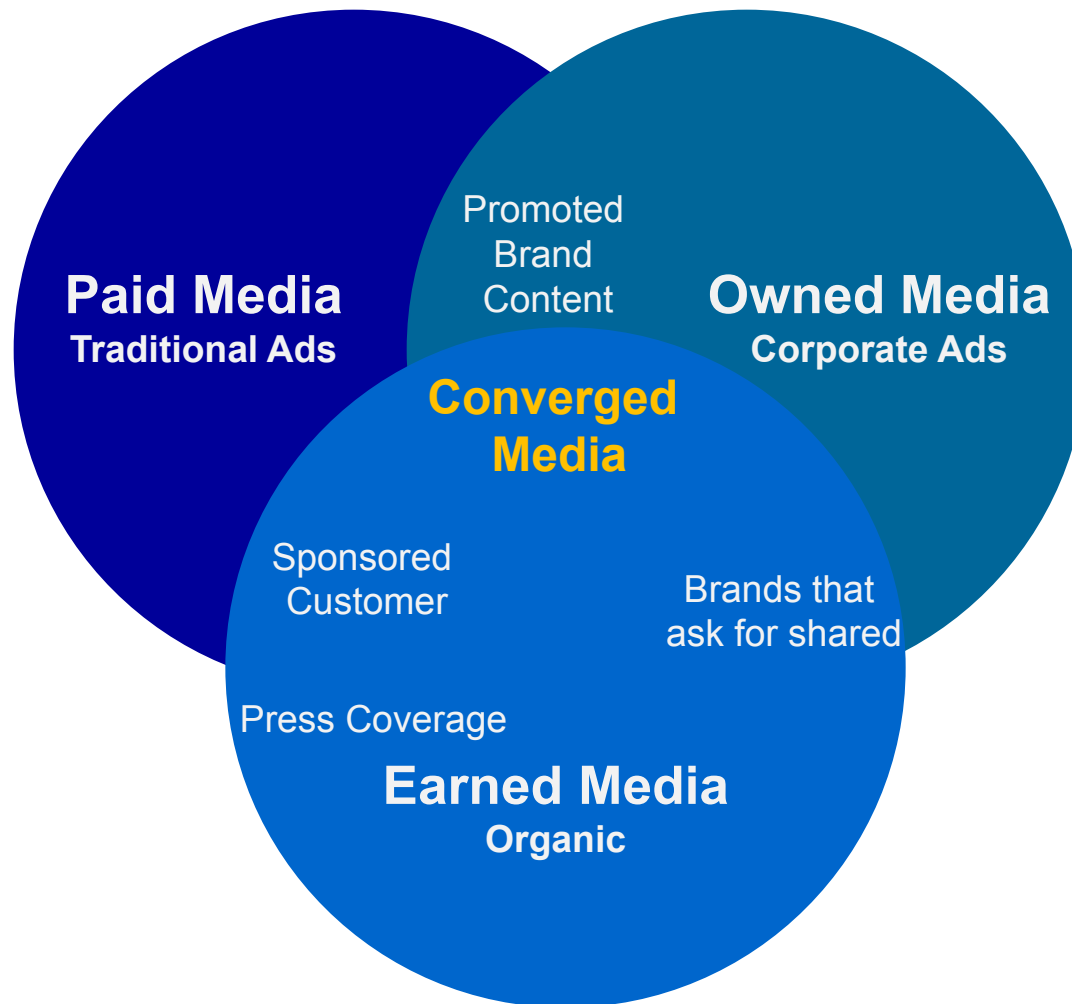
Social Media Listening

Search Analytics

Content Analytics

Engagement Analytics

The Convergence of Paid, Owned & Earned Media



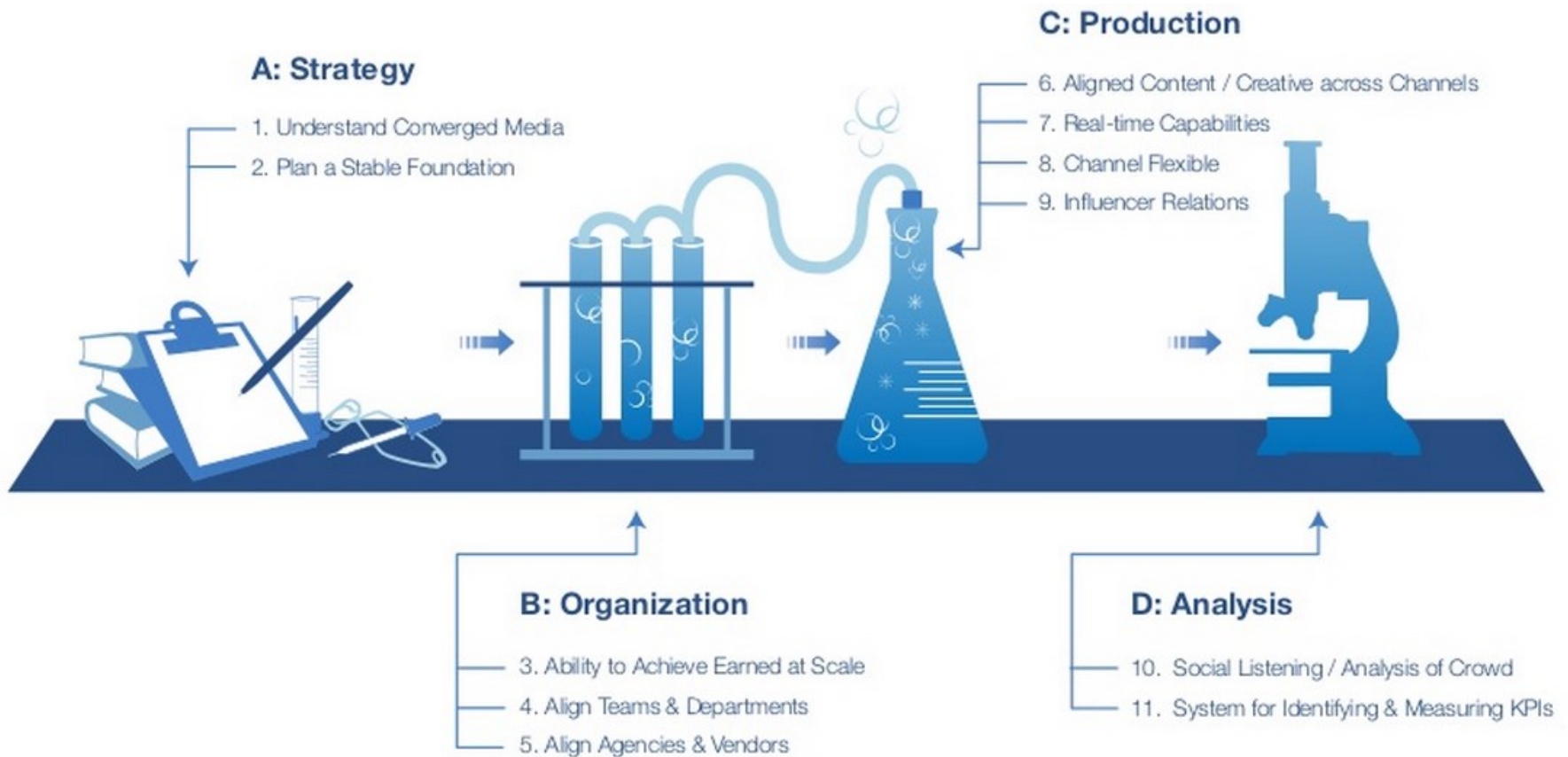
Source: "The Converged Media Imperative: How Brands Will Combine Paid, Owned and Earned Media",
Altimeter Group, July 19, 2012)

<http://www.altimetergroup.com/2012/07/the-converged-media-imperative/>

Converged Media

Top 11 Success Criteria

Social Listening / Analysis of Crowd



Source: "The Converged Media Imperative: How Brands Will Combine Paid, Owned and Earned Media",
Altimeter Group, July 19, 2012)

<http://www.altimetergroup.com/2012/07/the-converged-media-imperative/>

Competitive Intelligence

- Gather competitive intelligence data

Competitive Intelligence

- Facebook competitive analysis
- Facebook content analysis
- YouTube competitive analysis
- YouTube channel analysis
- Twitter profile analysis

Web Analytics (Clickstream)

- Content Analytics
- Mobile Analytics

Mobile Analytics

- Where is my mobile traffic coming from?
- What content are mobile users most interested in?
- How is my mobile app being used?
What's working?
What isn't?
- Which mobile platforms work best with my site?
- How does mobile user's engagement with my site compare to traditional web users' engagement?

Identifying a Social Media Listening Tool

- Data Capture
- Spam Prevention
- Integration with Other Data Sources
- Cost
- Mobile Capability
- API Access
- Consistent User Interface
- Workflow Functionality
- Historical Data

Search Analytics

- Free Tools for Collecting Insights Through
 - Search Data
 - Google Trends
 - YouTube Trends
 - The Google AdWords Keyword Tool
 - Yahoo! Clues
- Paid Tools for Collecting Insights Through Search Data
- The BrightEdge SEO Platform

Owned Social Metrics

- Facebook page
- Twitter account
- YouTube channel

Own Social Media Metrics: Facebook

- Total likes
- Reach
 - Organic
 - Paid reach
 - Viral reach
- Engaged users
- People talking about this (PTAT)
- Likes, comments, and shares by post

Own Social Media Metrics: Twitter

- Followers
- Retweets
- Replies
- Clicks and click-through rate (CTR)
- Impressions

Own Social Media Metrics: YouTube

- Views
- Subscribers
- Likes/dislikes
- Comments
- Favorites
- Sharing

Own Social Media Metrics: SlideShare

- Followers
- Views
- Comments
- Shares

Own Social Media Metrics: Pinterest

- Followers
- Number of boards
- Number of pins
- Likes
- Repins
- Comments

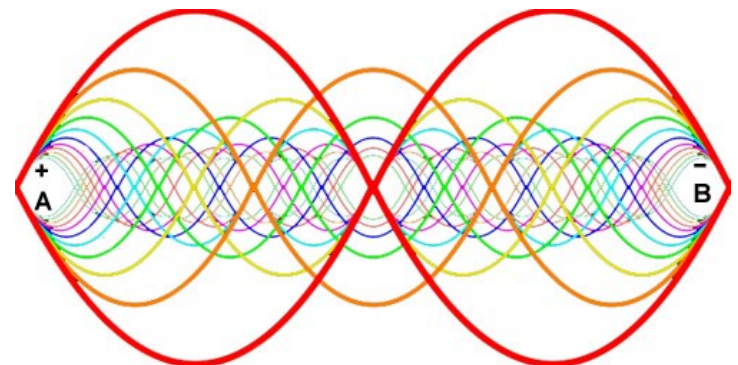
Earned Social Media Metrics

- Earned conversations
- In-network conversations

Earned Social Media Metrics:

Earned conversations

- Share of voice
- Share of conversation
- Sentiment
- Message resonance
- Overall conversation volume



Source: <http://www.elvtd.com/elevation/p/beings-of-resonance>

Demystifying Web Data

- Visits
- Unique page views
- Bounce rate
- Pages per visit
- Traffic sources
- Conversion

Searching for the Right Metrics



Paid Searches

- Impressions
- Clicks
- Click-through rate (CTR)
- Cost per click (CPC)
- Impression share
- Sales or revenue per click
- Average position

Organic Searches

- Known and unknown keywords
- Known and unknown branded keywords
- Total visits
- Total conversions from known keywords
- Average search position

Aligning Digital and Traditional Analytics

- Primary Research
 - Brand reputation
 - Message resonance
 - Executive reputation
 - Advertising performance
- Traditional Media Monitoring
- Traditional CRM Data

Social Media Listening Evolution

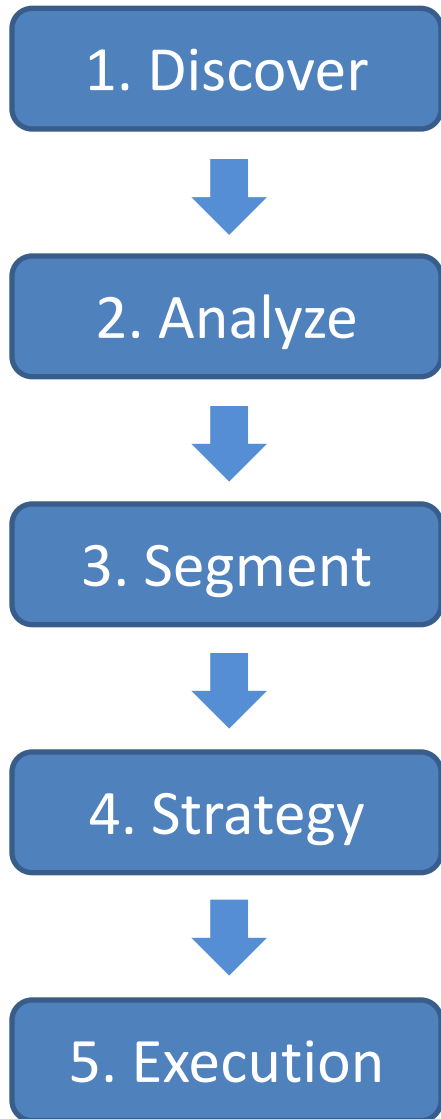
Location of conversations

Sentiment

Key message penetration

Key influencers

Social Analytics Lifecycle (5 Stages)



Social Analytics Lifecycle (5 Stages)

1. Discover



2. Analyze



3. Segment

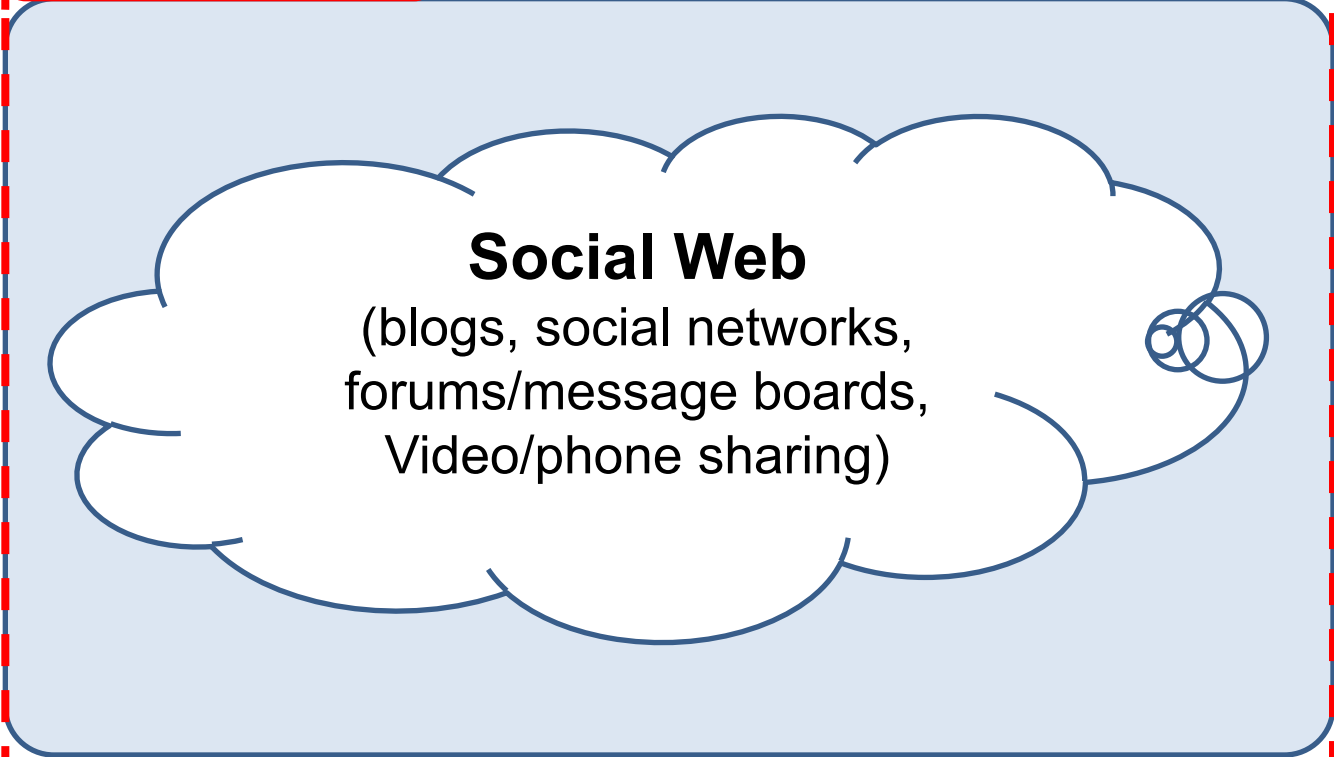


4. Strategy



5. Execution

1. Discover



Social Analytics Lifecycle (5 Stages)

1. Discover



2. Analyze



3. Segment



4. Strategy



5. Execution

Social Web

(blogs, social networks, forums/message boards,
Video/phone sharing)

Distill relevant signal from social noise

Social Analytics Lifecycle (5 Stages)

1. Discover



2. Analyze



3. Segment



4. Strategy



5. Execution

Social Web

(blogs, social networks, forums/message boards, Video/phone sharing)

Distill relevant signal from social noise

Data Segmentation
(Filter, Group, Tag, Assign)

Strategic
Planning

Corps
Communication

Customer Care

Product
Development

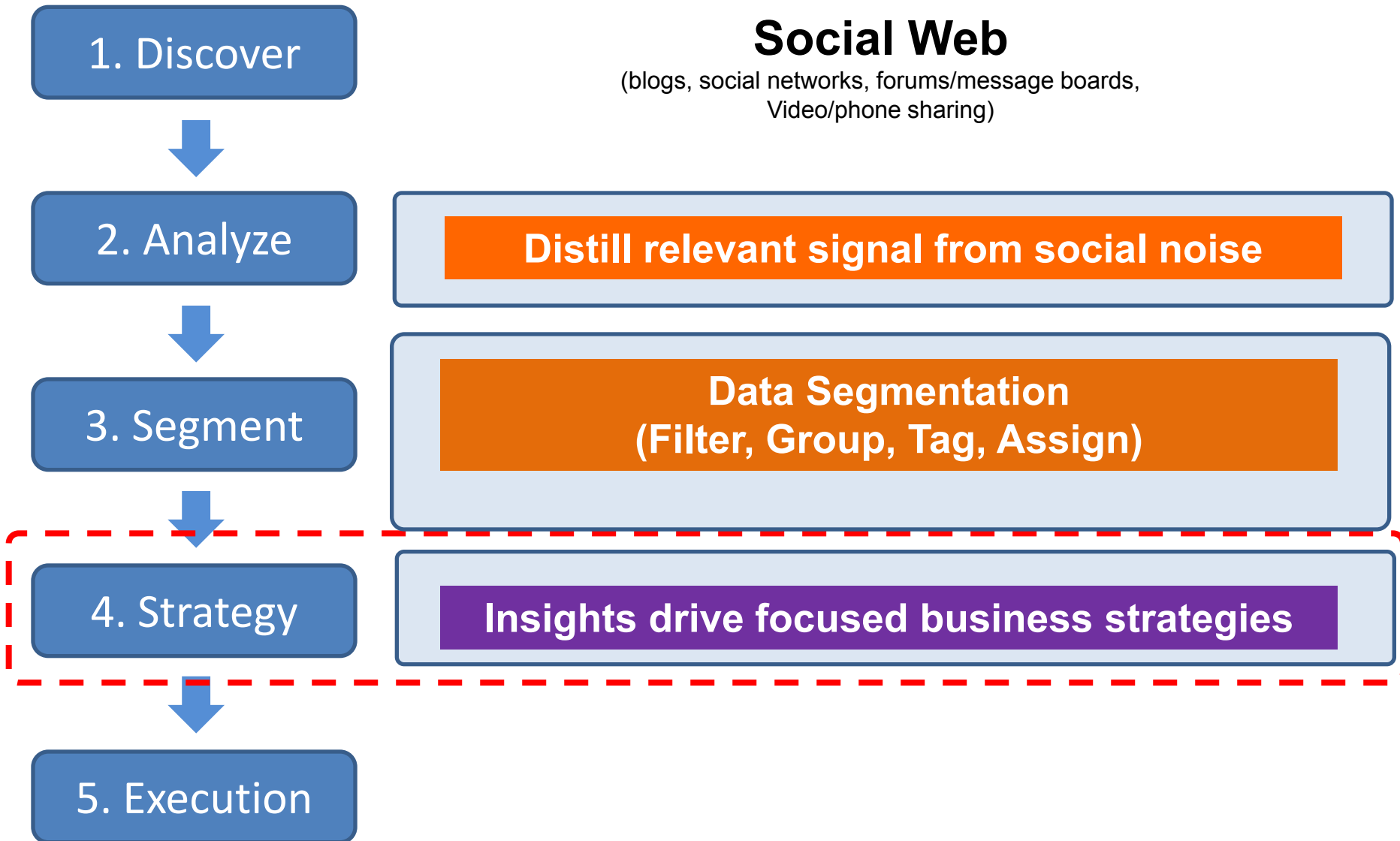
Marketing &
Advertising

Sales

Strategic

Tactical

Social Analytics Lifecycle (5 Stages)



Social Analytics Lifecycle (5 Stages)

1. Discover



2. Analyze



3. Segment



4. Strategy



5. Execution

Social Web

(blogs, social networks, forums/message boards, Video/phone sharing)

Distill relevant signal from social noise

**Data Segmentation
(Filter, Group, Tag, Assign)**

Insights drive focused business strategies

Innovation

Future
Direction

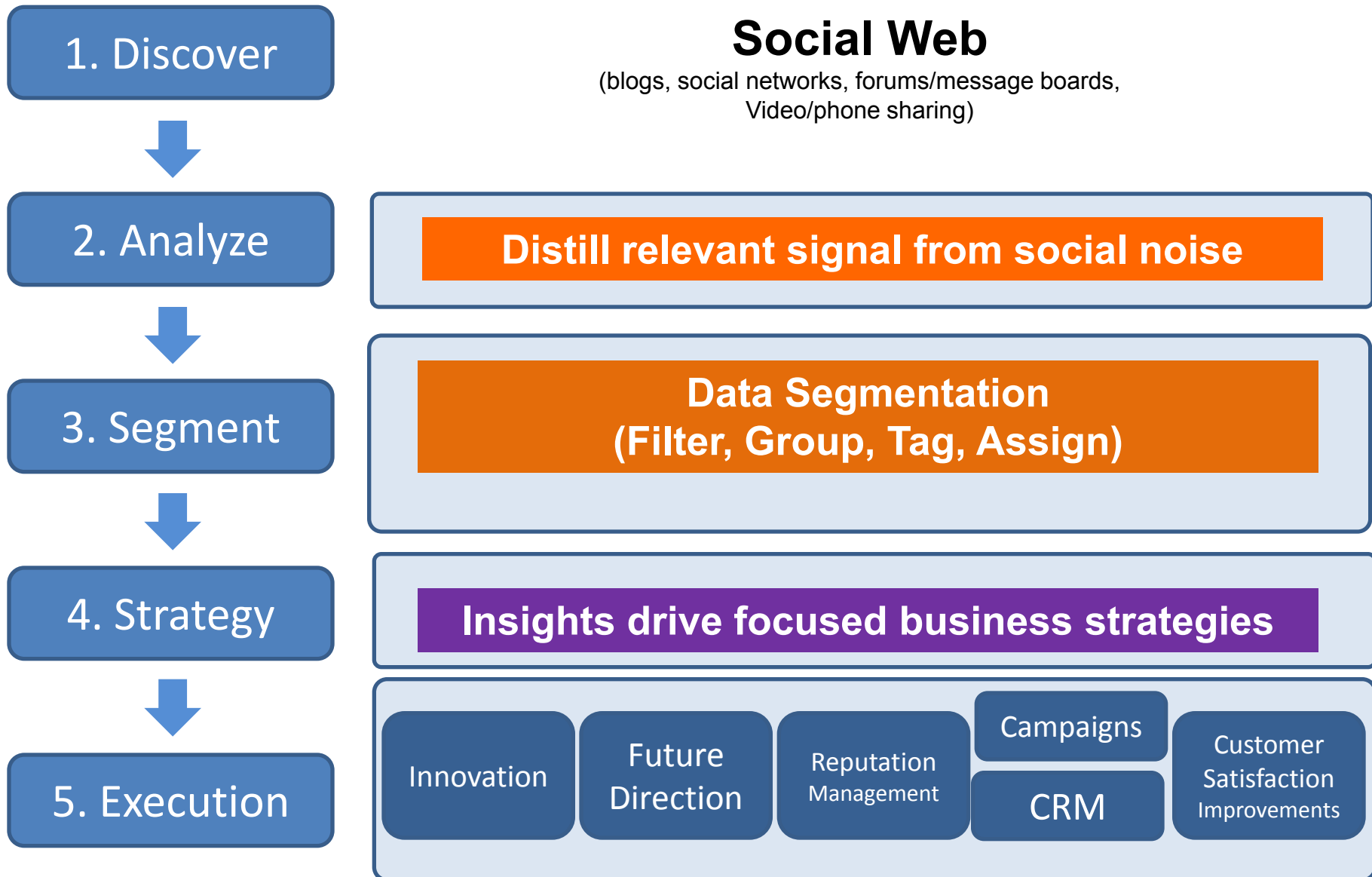
Reputation
Management

Campaigns

CRM

Customer
Satisfaction
Improvements

Social Analytics Lifecycle (5 Stages)



Big Data:

The Management Revolution

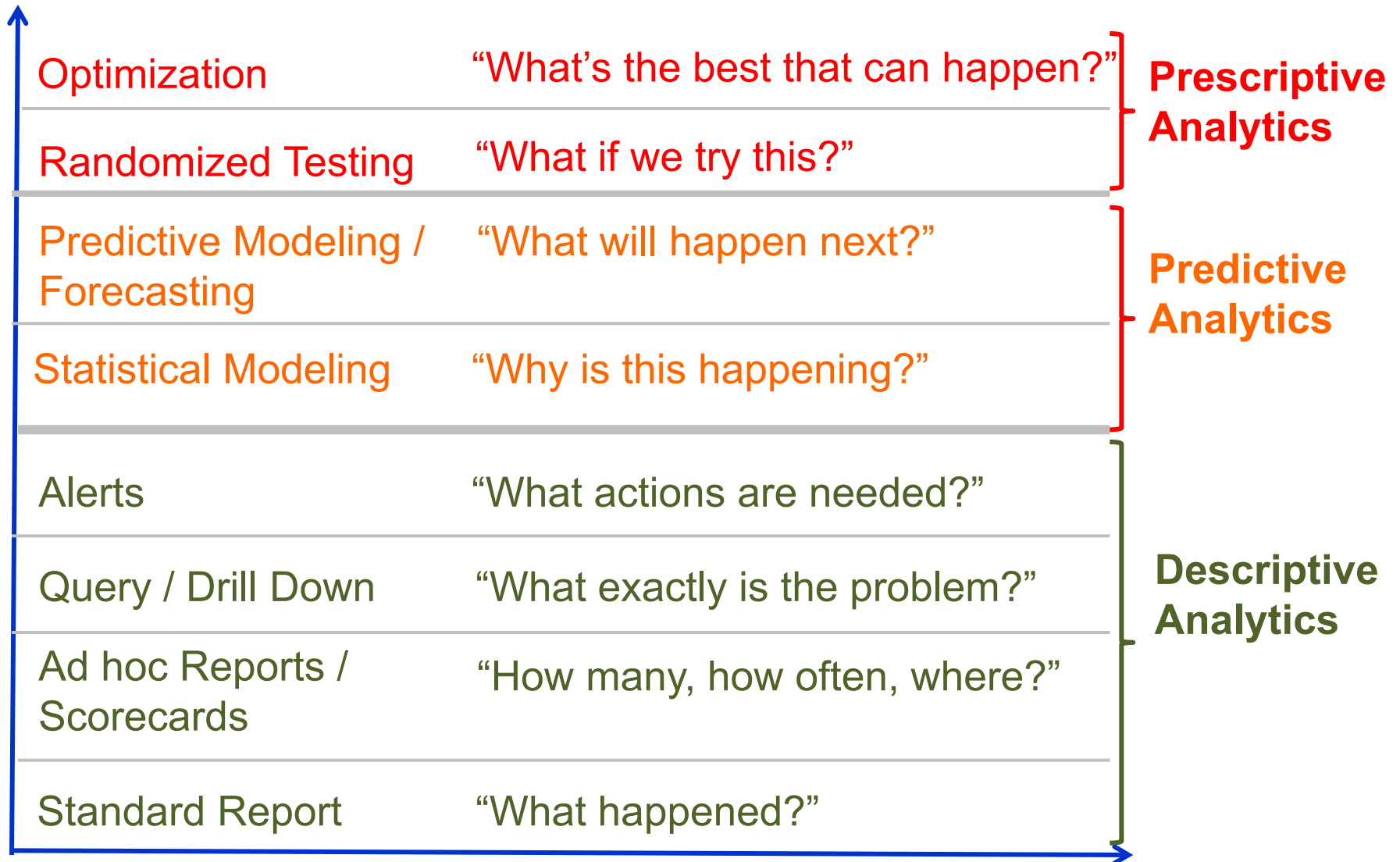
Business Intelligence and Enterprise Analytics

- Predictive analytics
- Data mining
- Business analytics
- Web analytics
- **Big-data** analytics

Three Types of Business Analytics

- Prescriptive Analytics
- Predictive Analytics
- Descriptive Analytics

Three Types of Business Analytics



Outline

- Big Data Marketing Analytics
- Big Data Marketing Research

Marketing Research

“Marketing Research

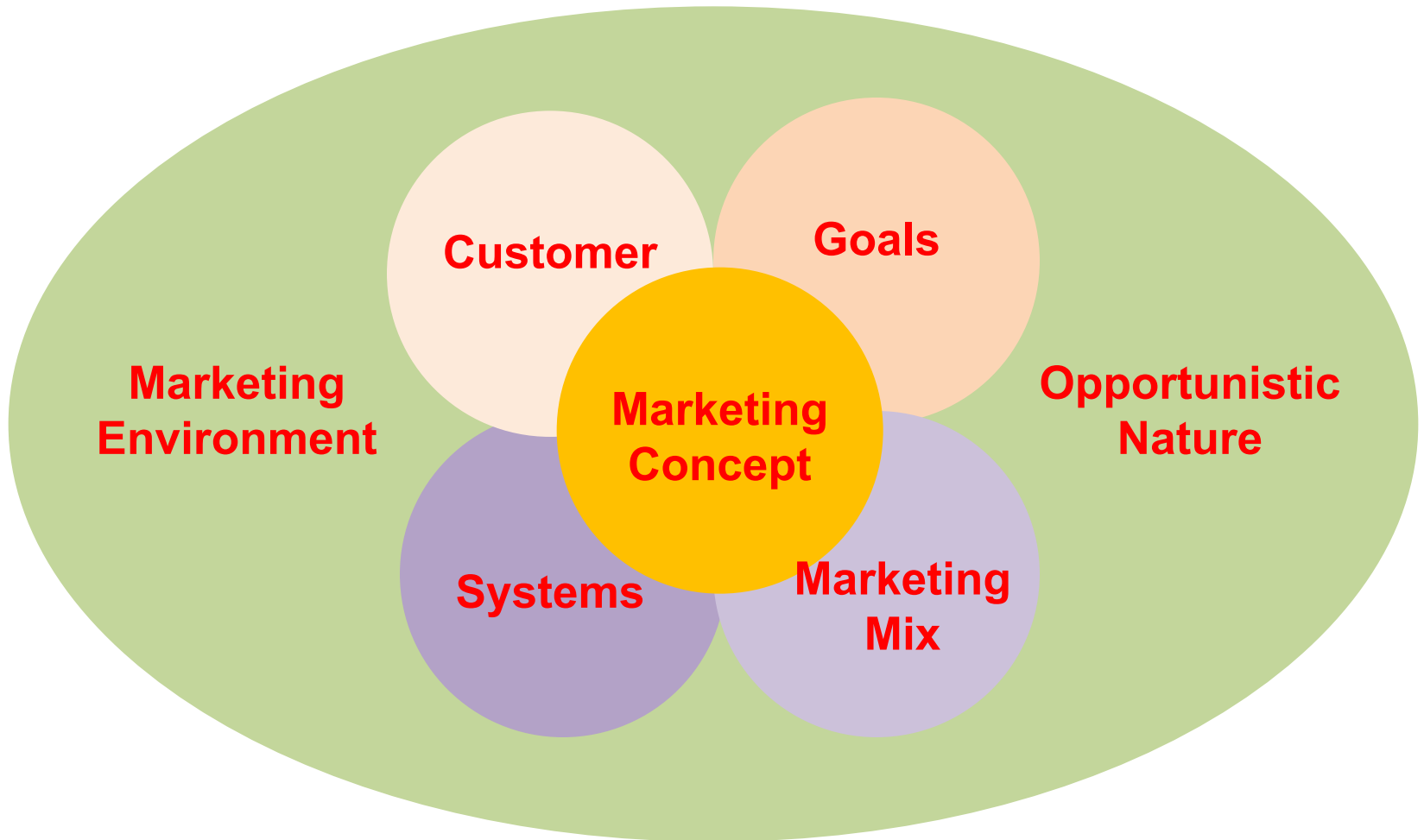
is the

planning, collection, and analysis of **data**
relevant to **marketing decision making**

and

the **communication of the results**
of this **analysis to management.**”

The Nature of Marketing Research



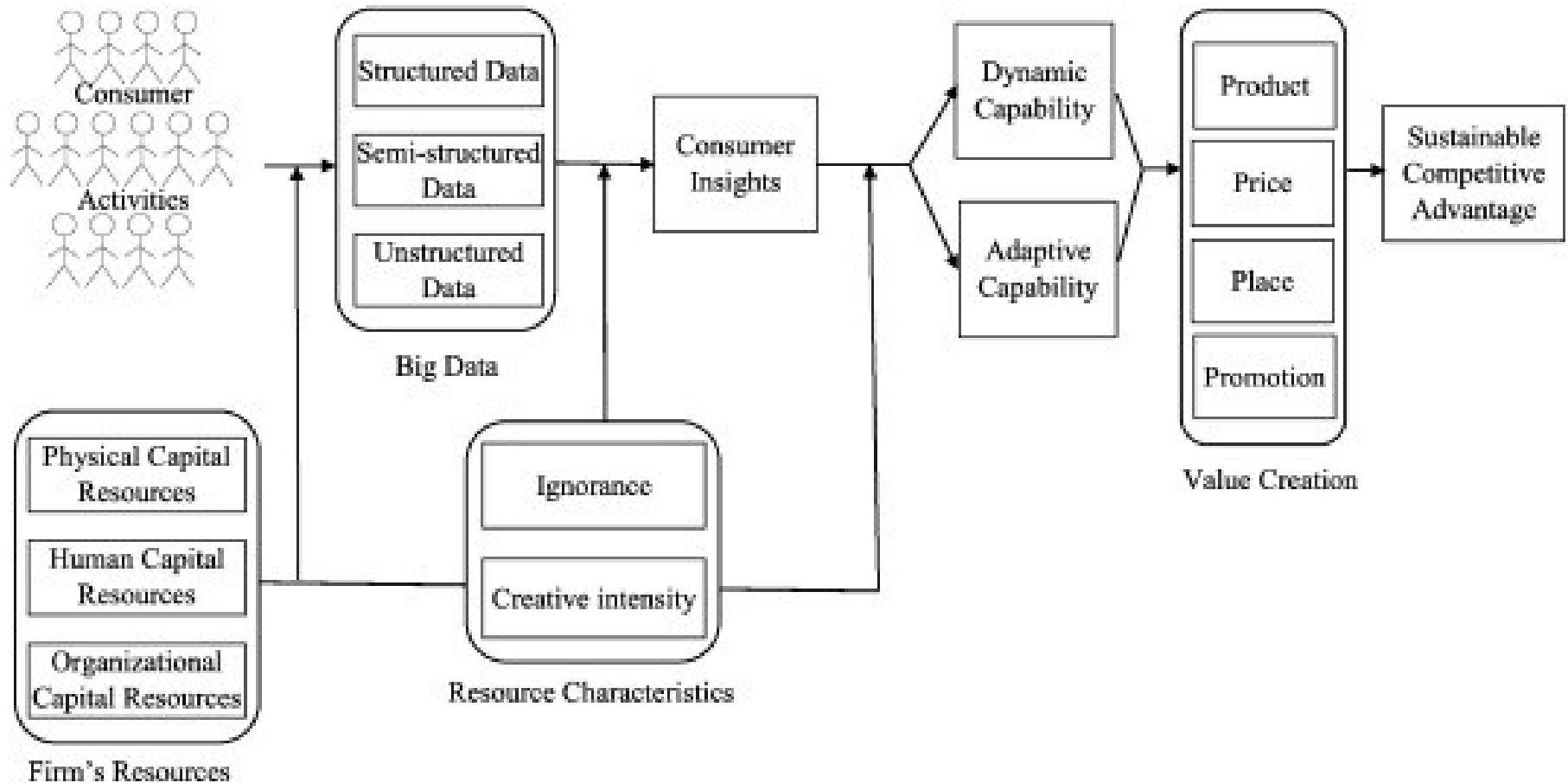
Marketing Research

**systematic design, collection,
analysis, and reporting of
data and findings
relevant to a
specific marketing situation
facing the company.**

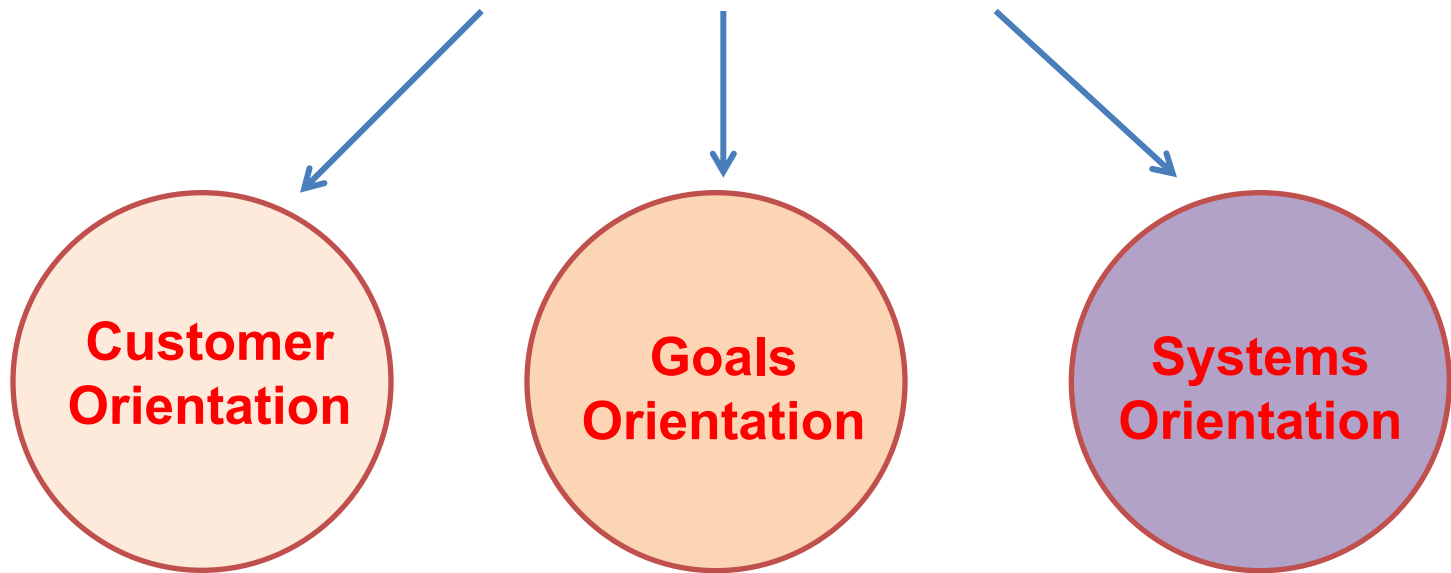
A Marketing Mix Framework for Big Data Management

| | People | Product | Promotion | Price | Place |
|-------------|---|---|--|--|--|
| Data | <ul style="list-style-type: none"> Demographics Social Networks Customer Review Click Stream Survey Data | <ul style="list-style-type: none"> Product Characteristics Product Category Customer Review Survey Data | <ul style="list-style-type: none"> Promotional Data Survey Data | <ul style="list-style-type: none"> Transactional Data Survey Data | <ul style="list-style-type: none"> Location-based social networks Survey Data |
| Method | <ul style="list-style-type: none"> Clustering Classification | <ul style="list-style-type: none"> Association Clustering Topic Modeling | <ul style="list-style-type: none"> Regression Association Collaborative Filtering | <ul style="list-style-type: none"> Regression Association | <ul style="list-style-type: none"> Regression Classification |
| Application | <ul style="list-style-type: none"> Customer Segmentation Customer Profiling | <ul style="list-style-type: none"> Product Ontology Product Reputation | <ul style="list-style-type: none"> Promotional Marketing Analysis Recommender Systems | <ul style="list-style-type: none"> Pricing Strategy Analysis Competitor Analysis | <ul style="list-style-type: none"> Location-based Advertising Community Dynamic Analysis |

A resource-based view of the impact of Big Data on competitive advantage



Definition of Marketing Research



The Marketing Research Impact

Its Importance to Management – Three Critical Roles

- Descriptive
 - The gathering and presenting of statements of fact
- Diagnostic
 - The explanation of data or actions
- Predictive
 - The specification of how to use descriptive and diagnostic research to predict the results of a planned marketing decision

The Problem Definition Process

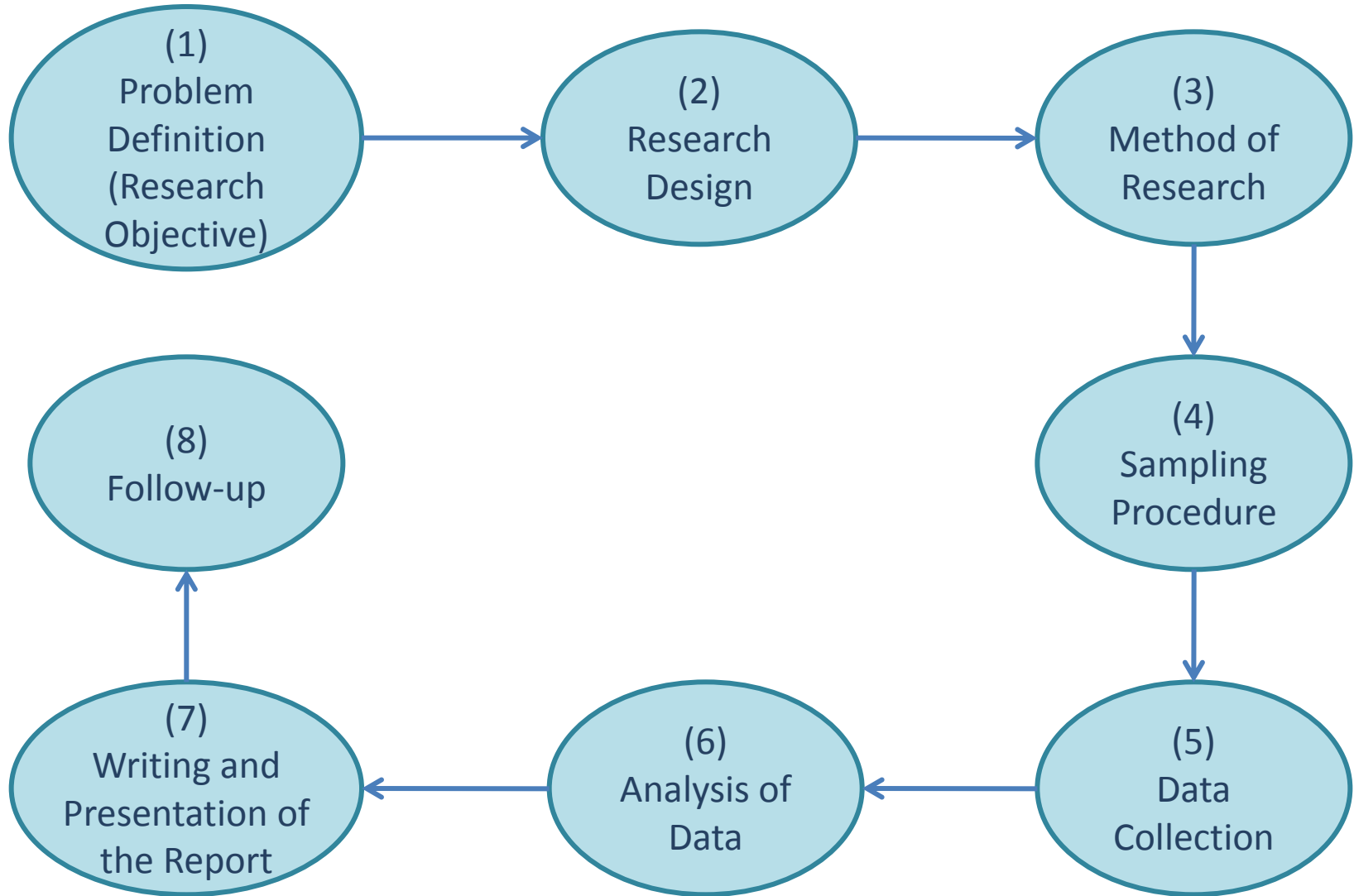
8 Steps

1. Recognize the problem or opportunity
2. Find out why the information is being sought
3. Understand the decision making environment
4. Use the symptoms to help clarify the problem
5. Translate management problem to marketing research problem
6. Determine whether the information already exists
7. Determine whether the question can be answered
8. State the research objectives

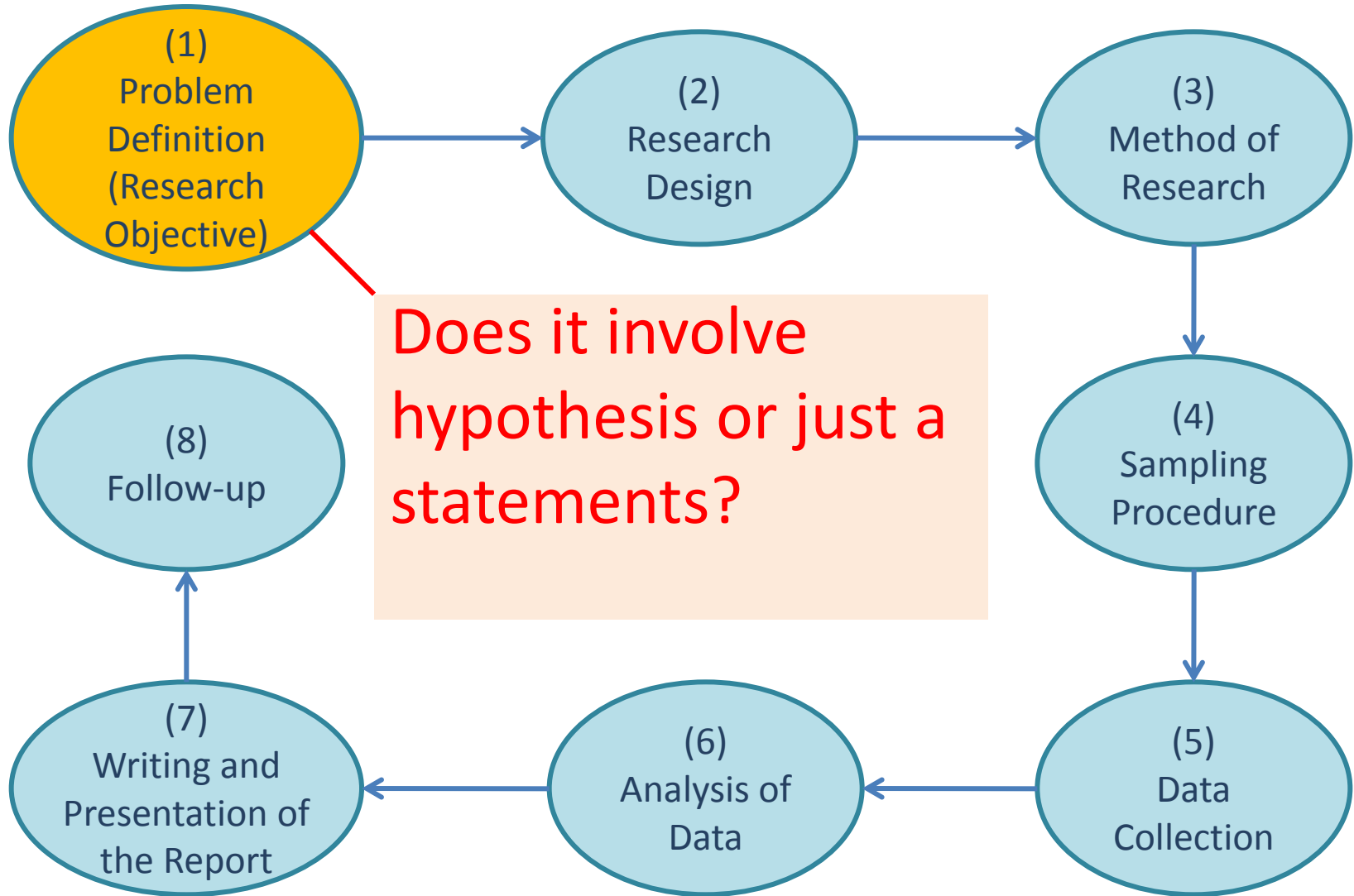
Understand the Decision-Making Environment



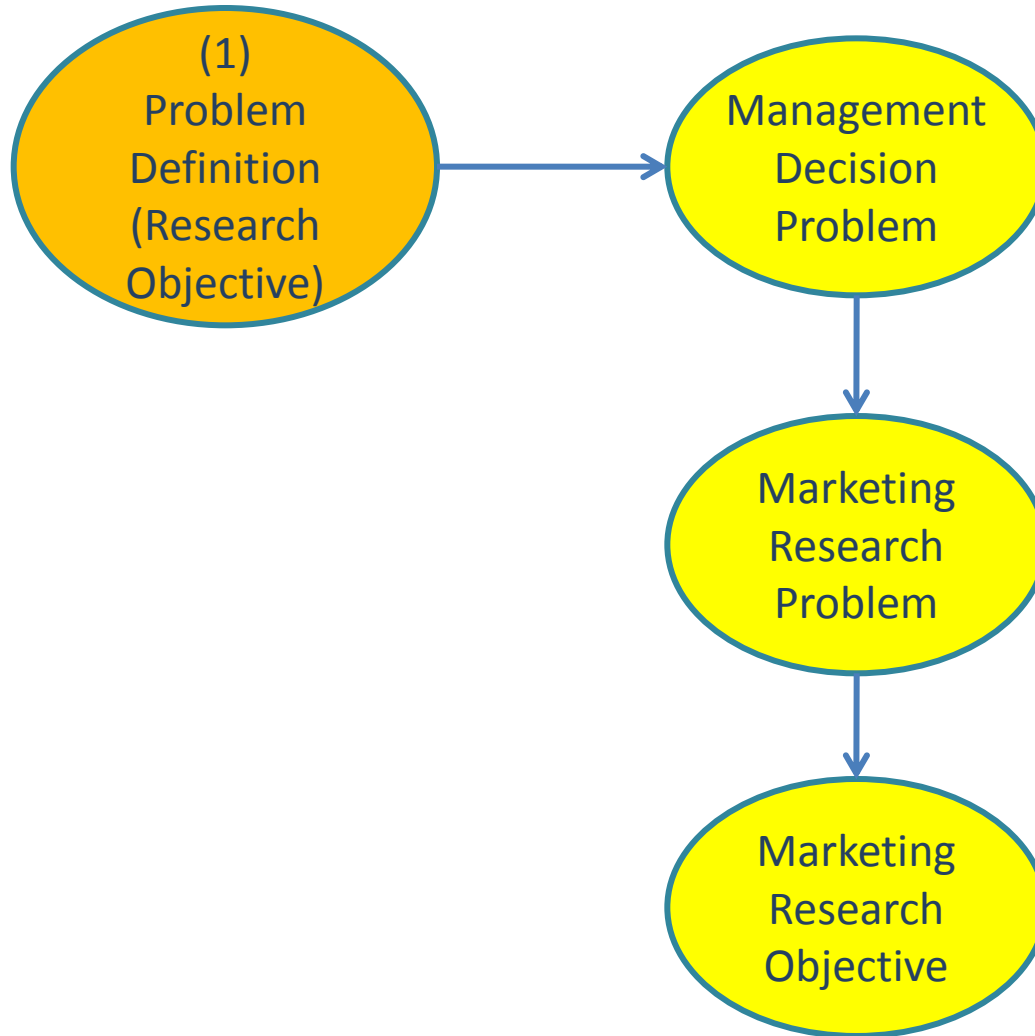
The Marketing Research Process



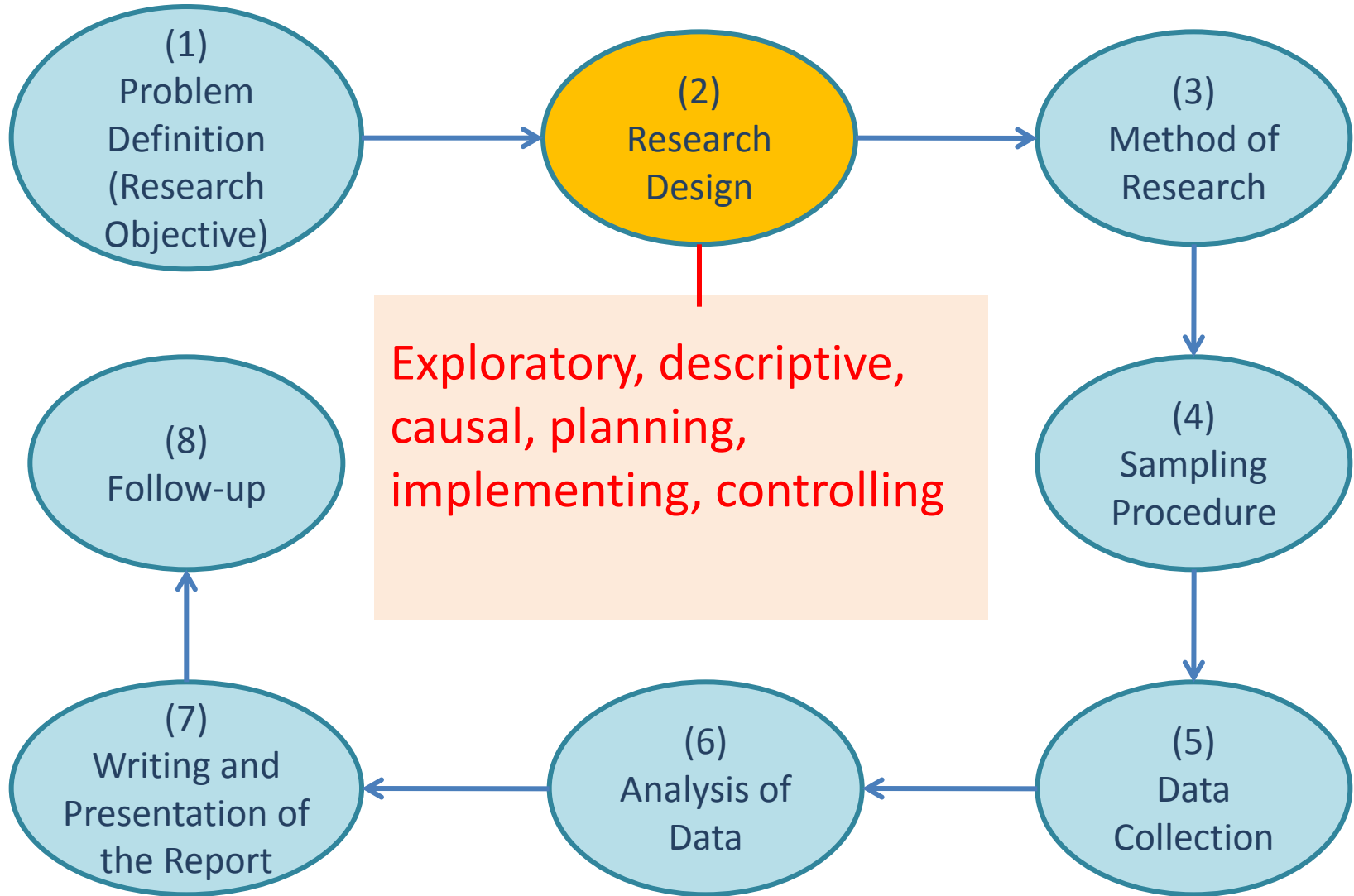
The Marketing Research Process



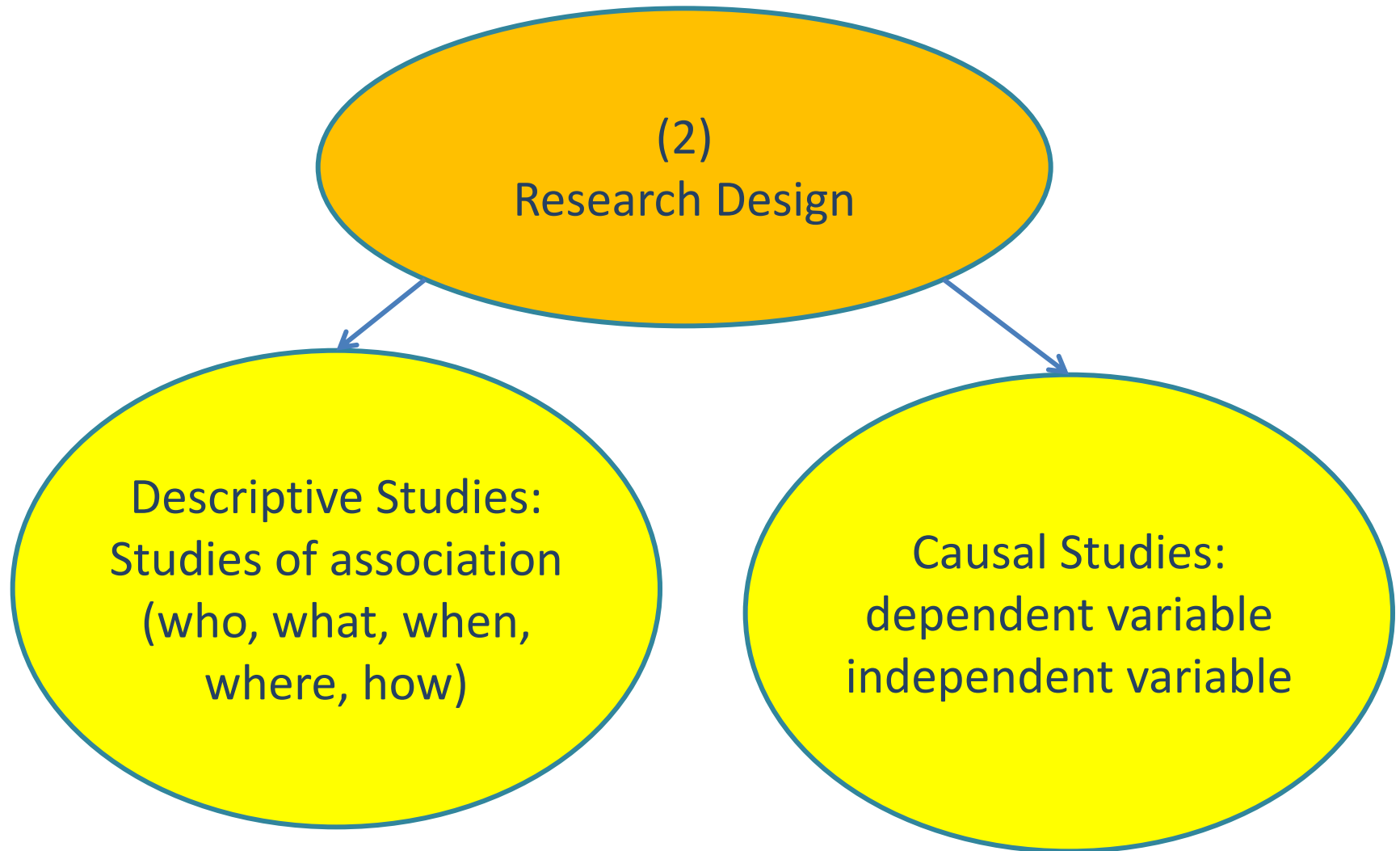
The Marketing Research Process



The Marketing Research Process



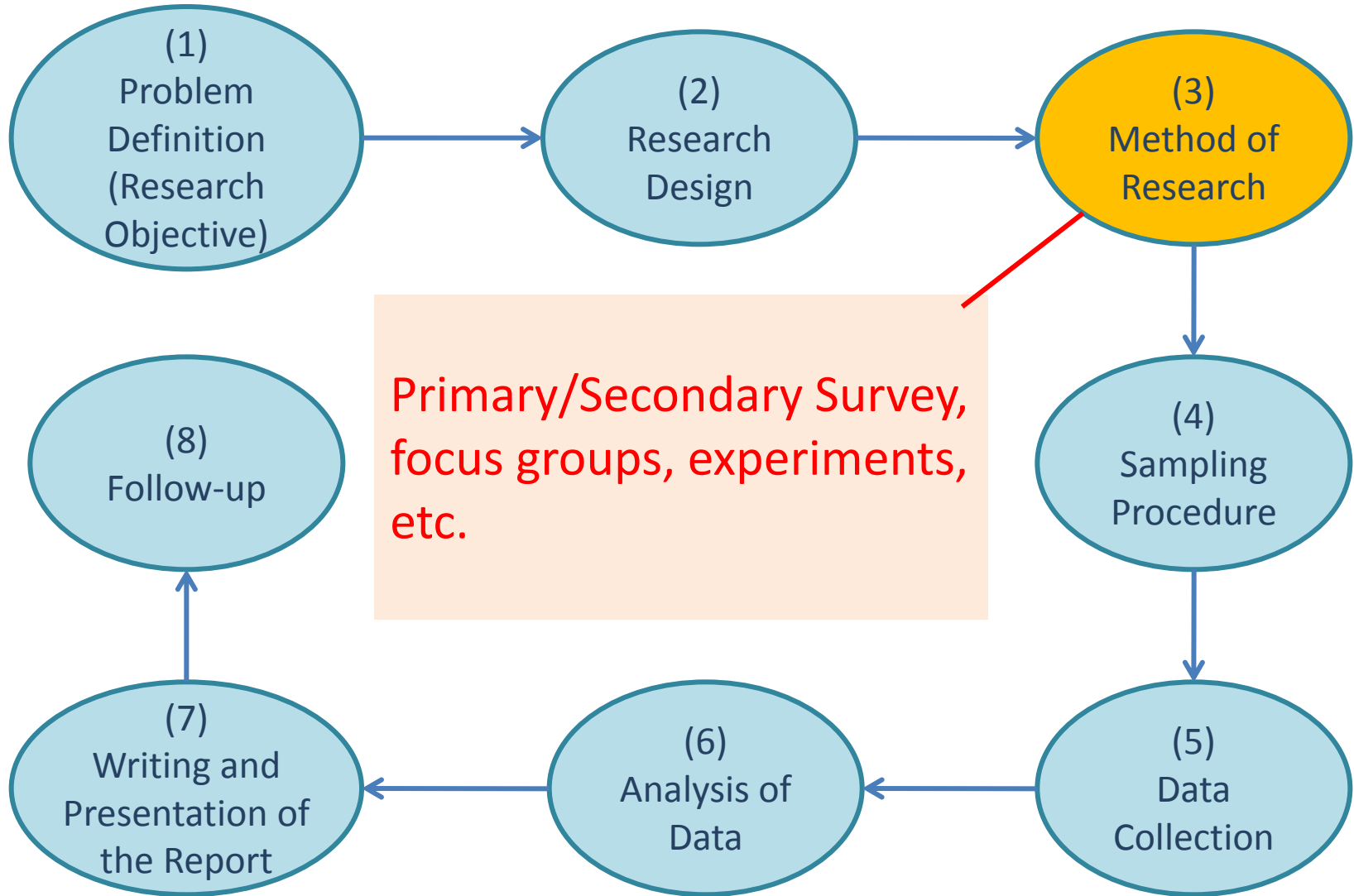
The Marketing Research Process



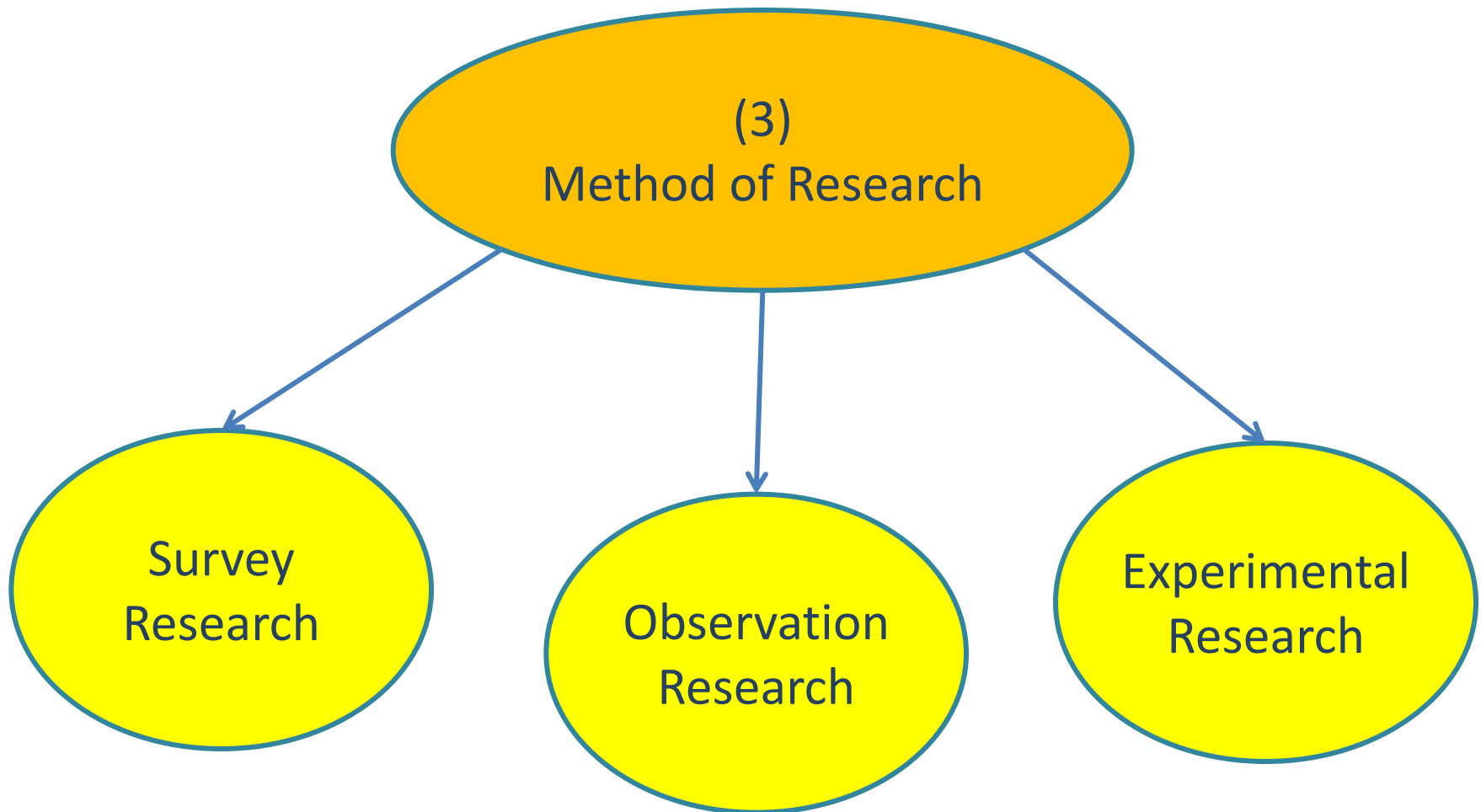
Marketing Research Design

- Marketing Research Design
 - “The plan to be followed to answer the marketing research objectives.”
- It is the detailed blueprint used to guide the research study towards its objectives including what and how you will conduct the research study.

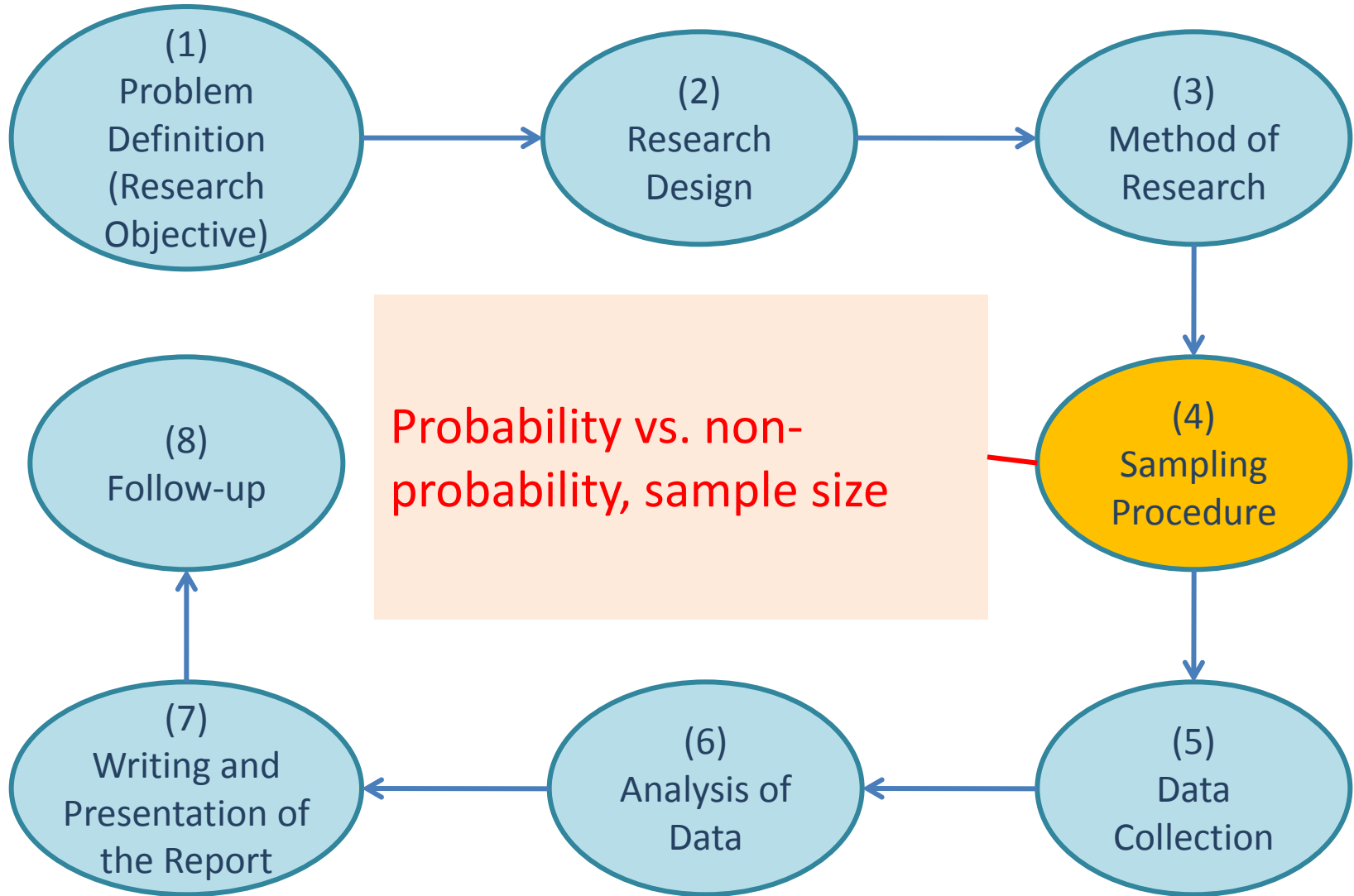
The Marketing Research Process



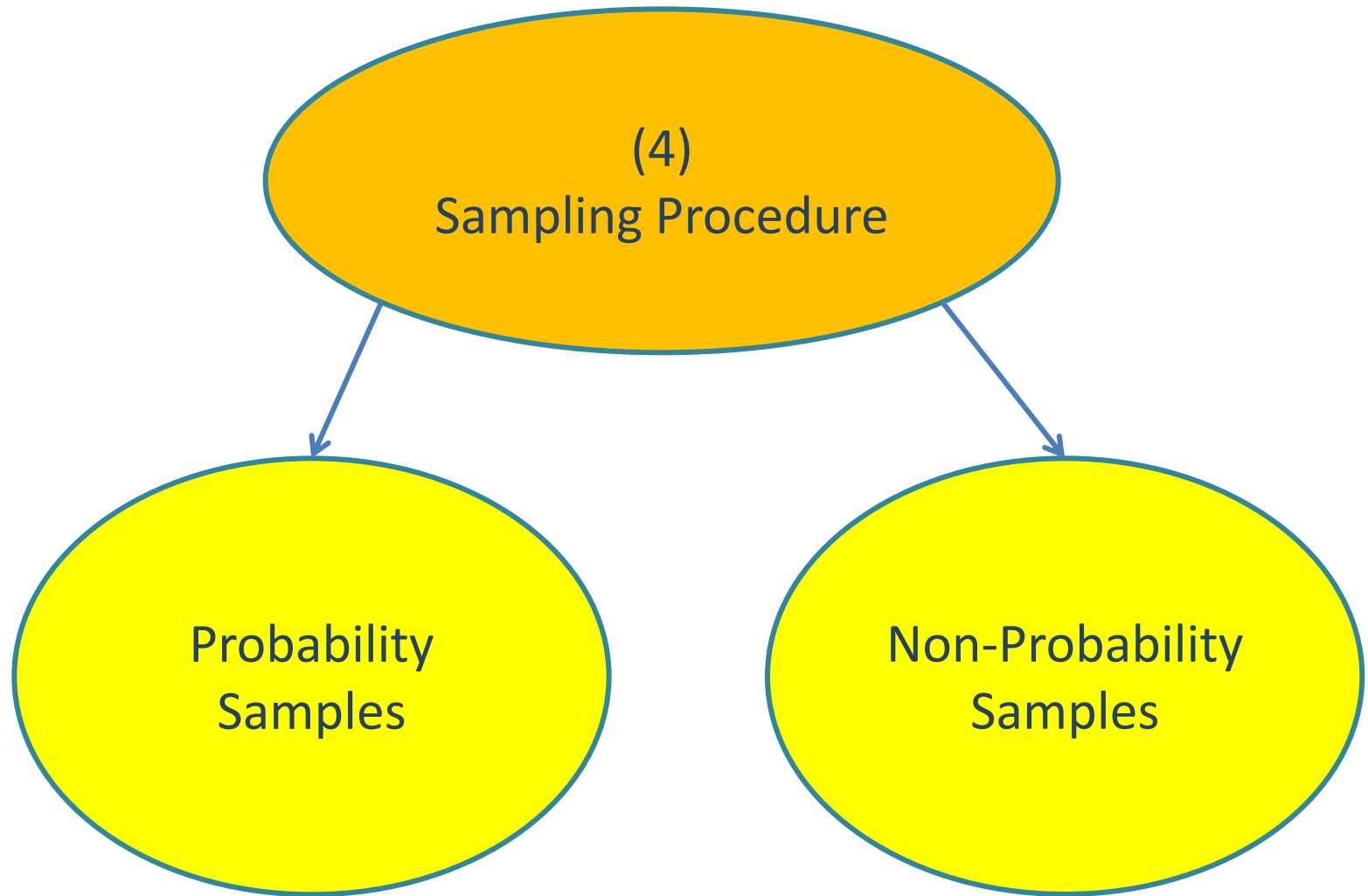
The Marketing Research Process



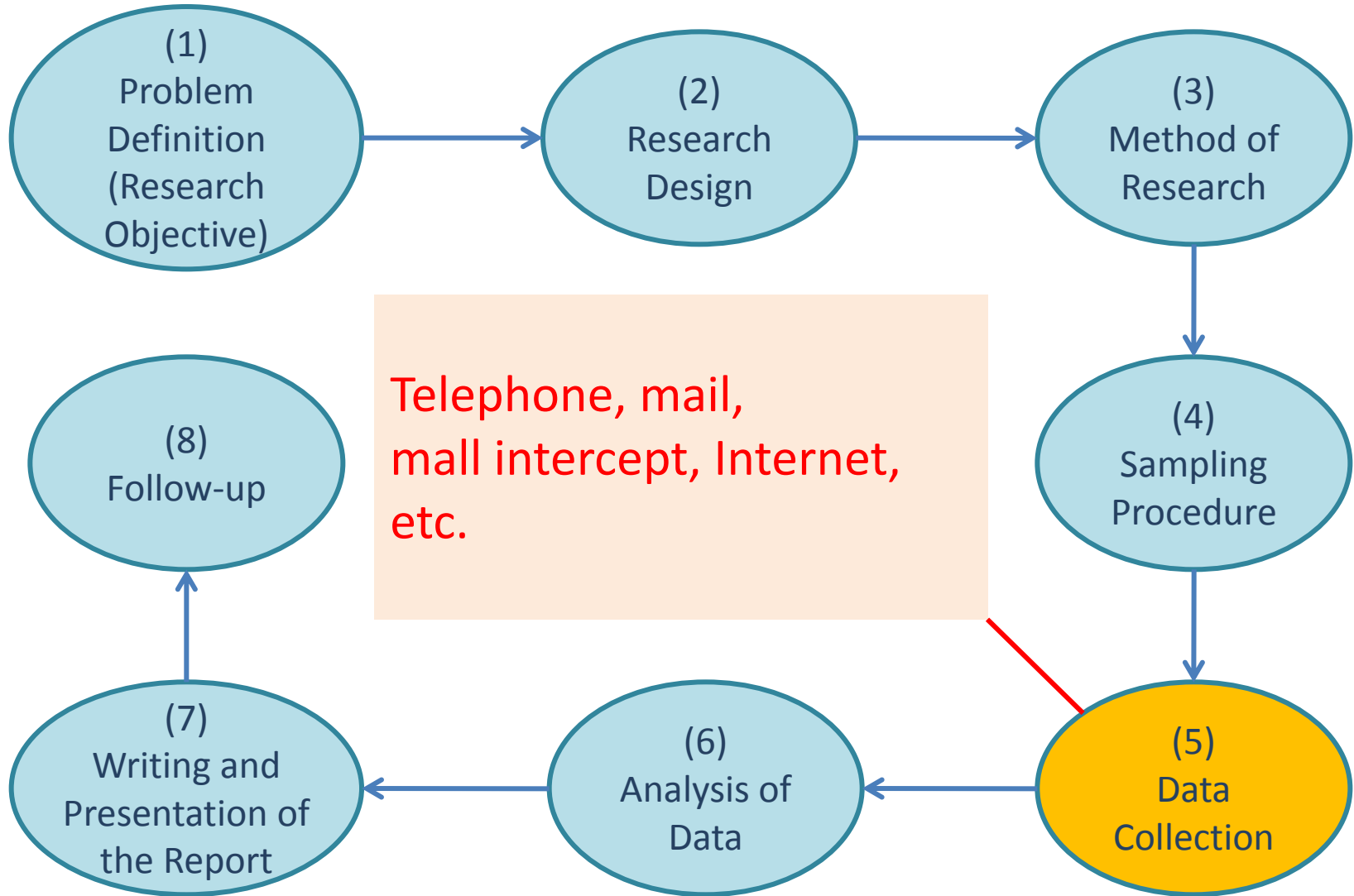
The Marketing Research Process



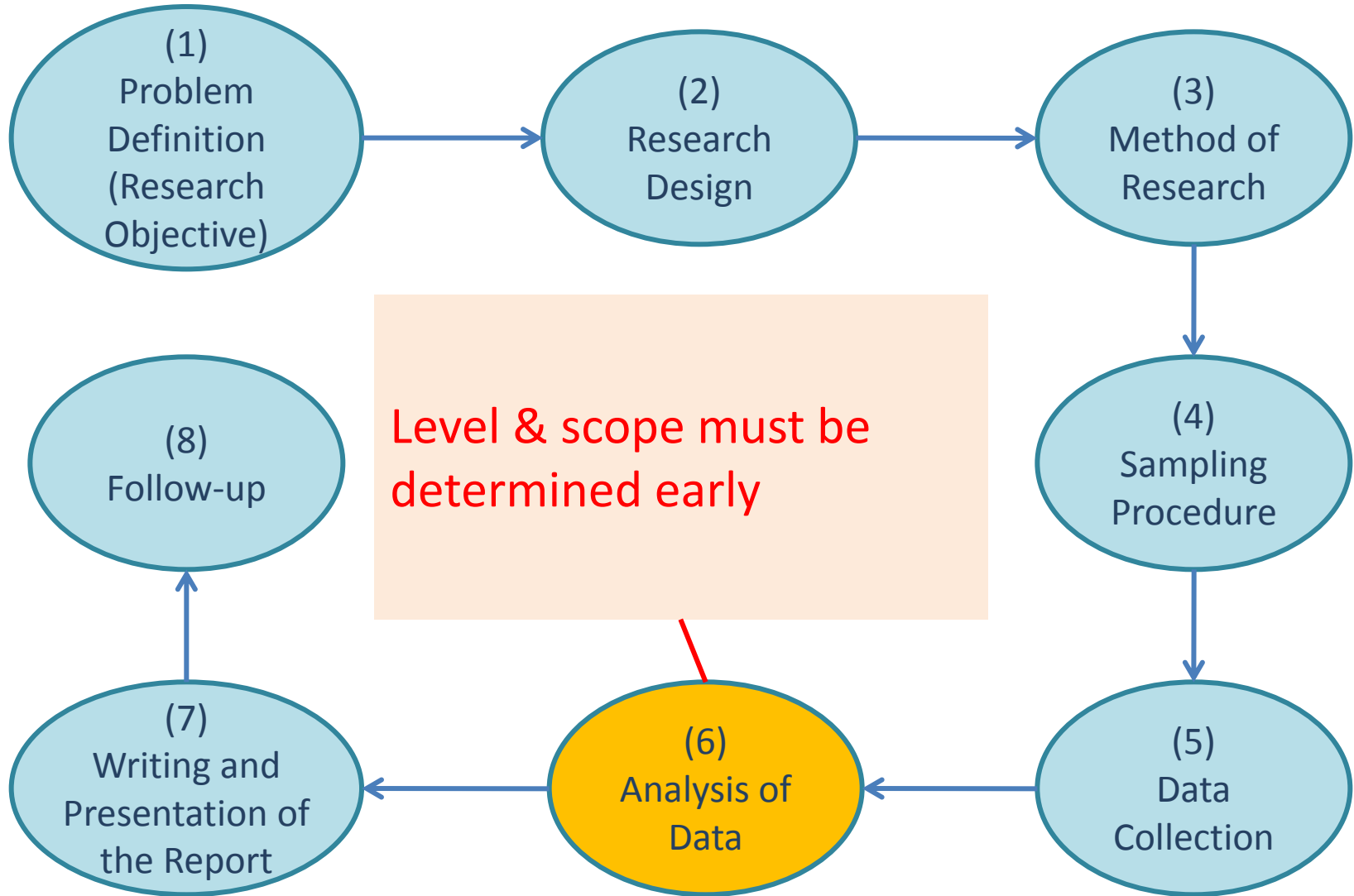
The Marketing Research Process



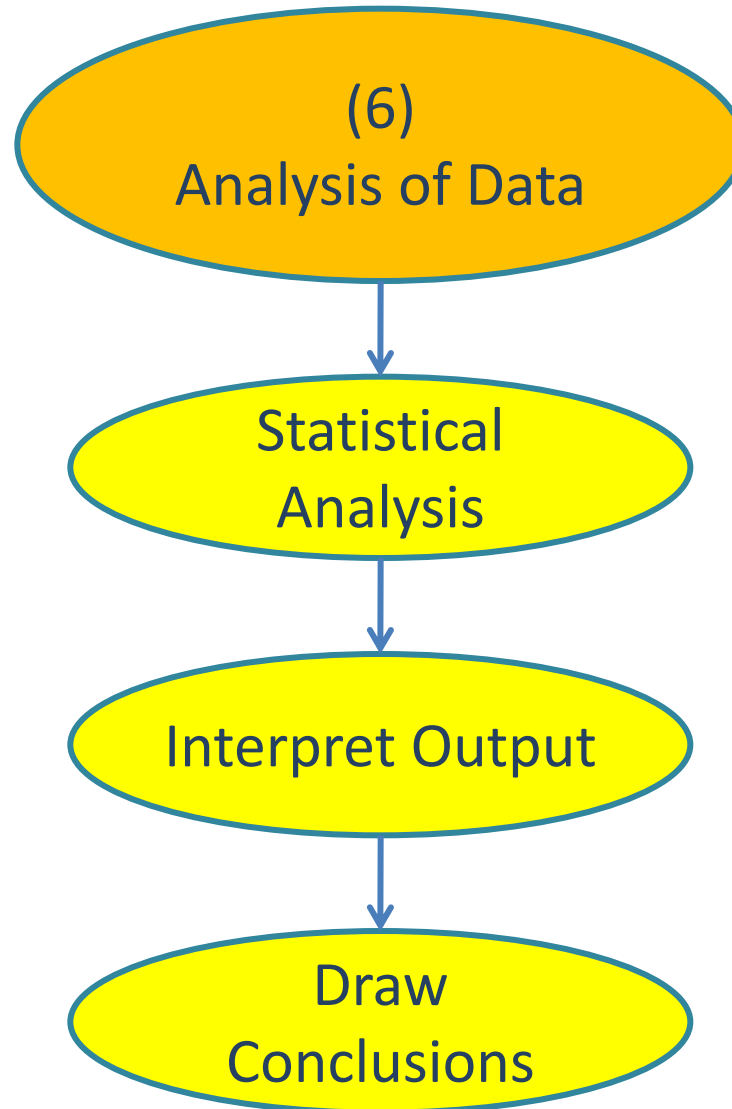
The Marketing Research Process



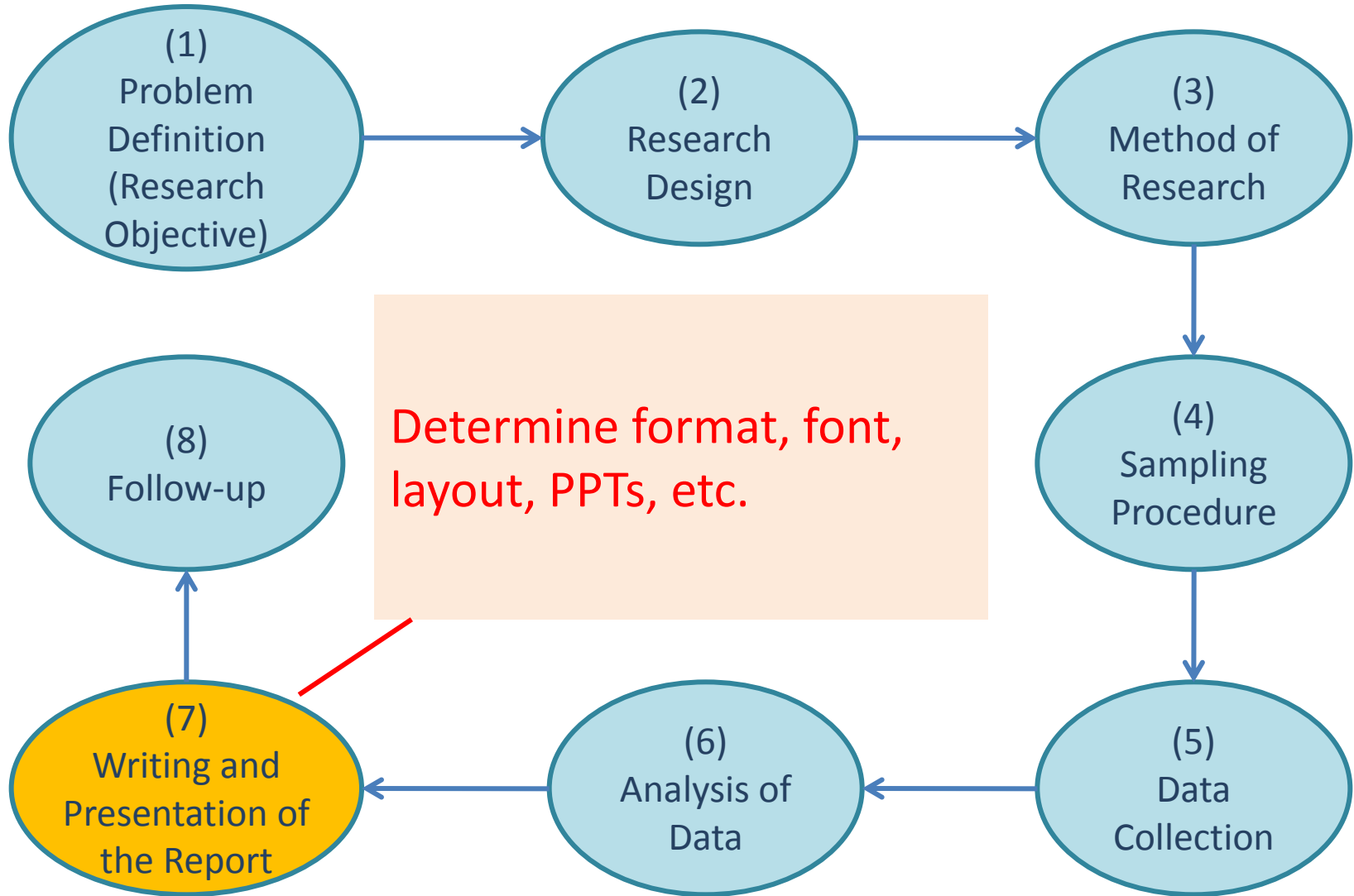
The Marketing Research Process



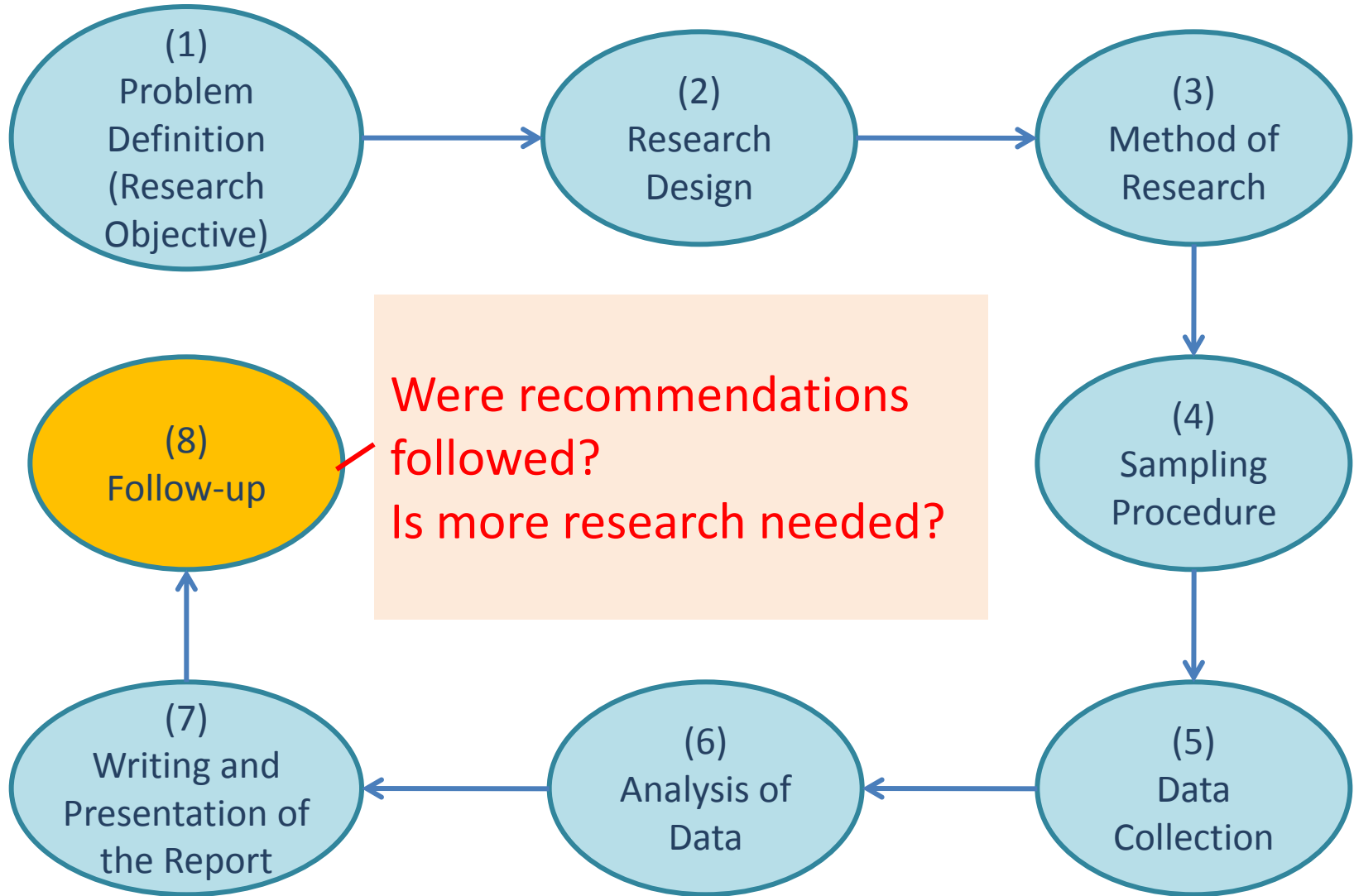
The Marketing Research Process



The Marketing Research Process



The Marketing Research Process



Marketing Research Approaches

Observation

Focus groups

Surveys

Behavioral data

Experiments

Marketing Success Metrics

| External | Internal |
|--|--------------------------------|
| Awareness | Awareness of goals |
| Market share (volume or value) | Commitment to goals |
| Relative price (market share value/volume) | Active innovation support |
| Number of complaints (level of dissatisfaction) | Resource adequacy |
| Consumer satisfaction | Staffing/skill levels |
| Distribution/availability | Desire to learn |
| Total number of customers | Willingness to change |
| Perceived quality/esteem | Freedom to fail |
| Loyalty/retention | Autonomy |
| Relative perceived quality | Relative employee satisfaction |

Marketing

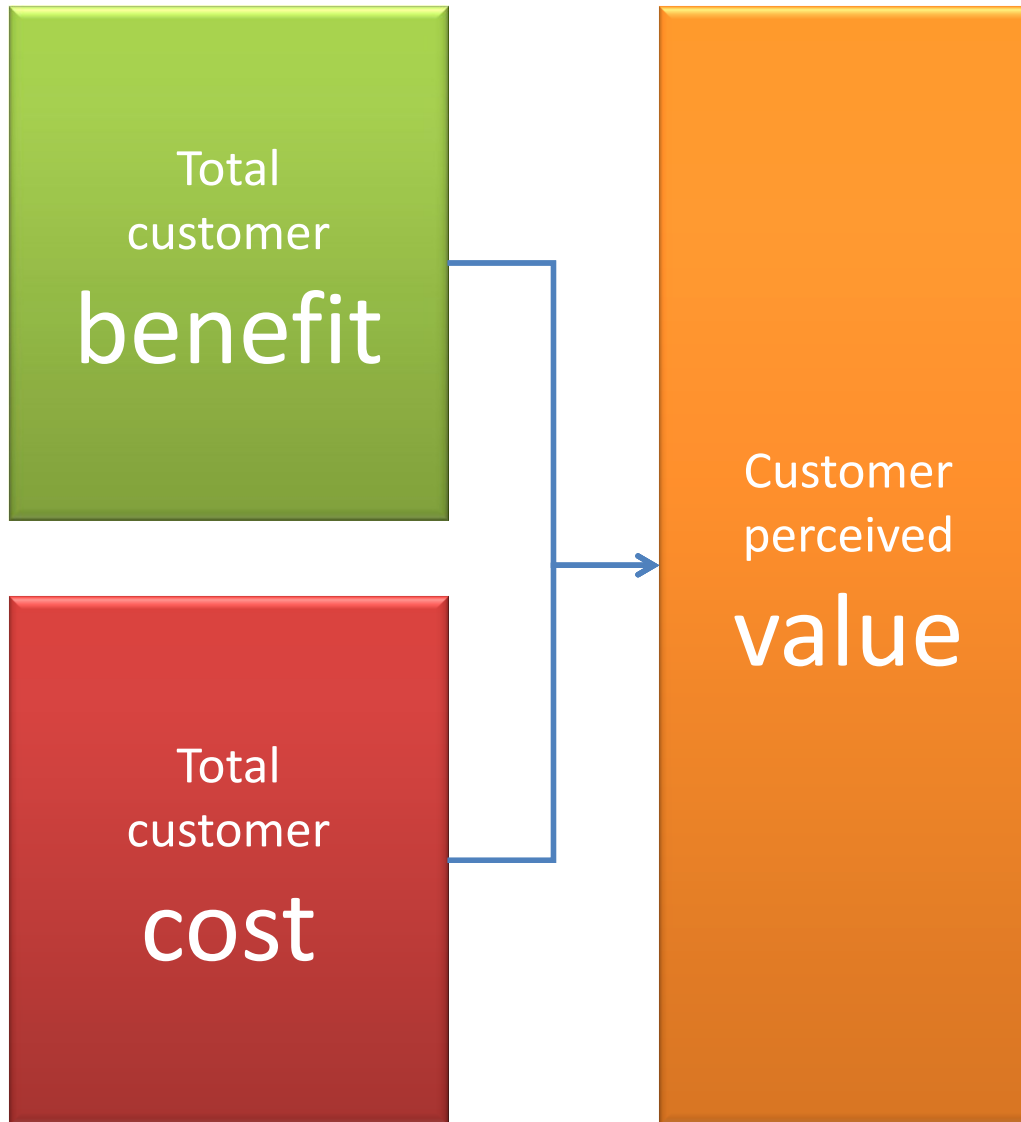
**“Meeting
needs
profitably”**

Value

the sum of the
tangible and
intangible

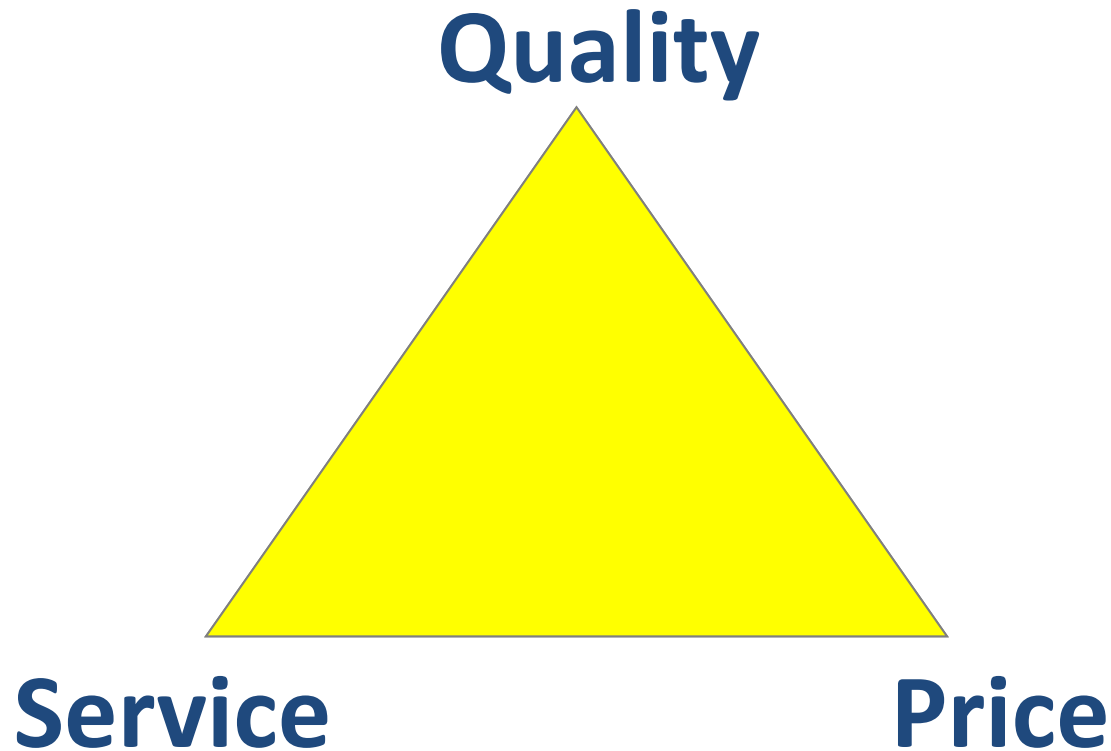
benefits and costs

Value



Customer Value Triad

Quality, Service, and Price
(qsp)

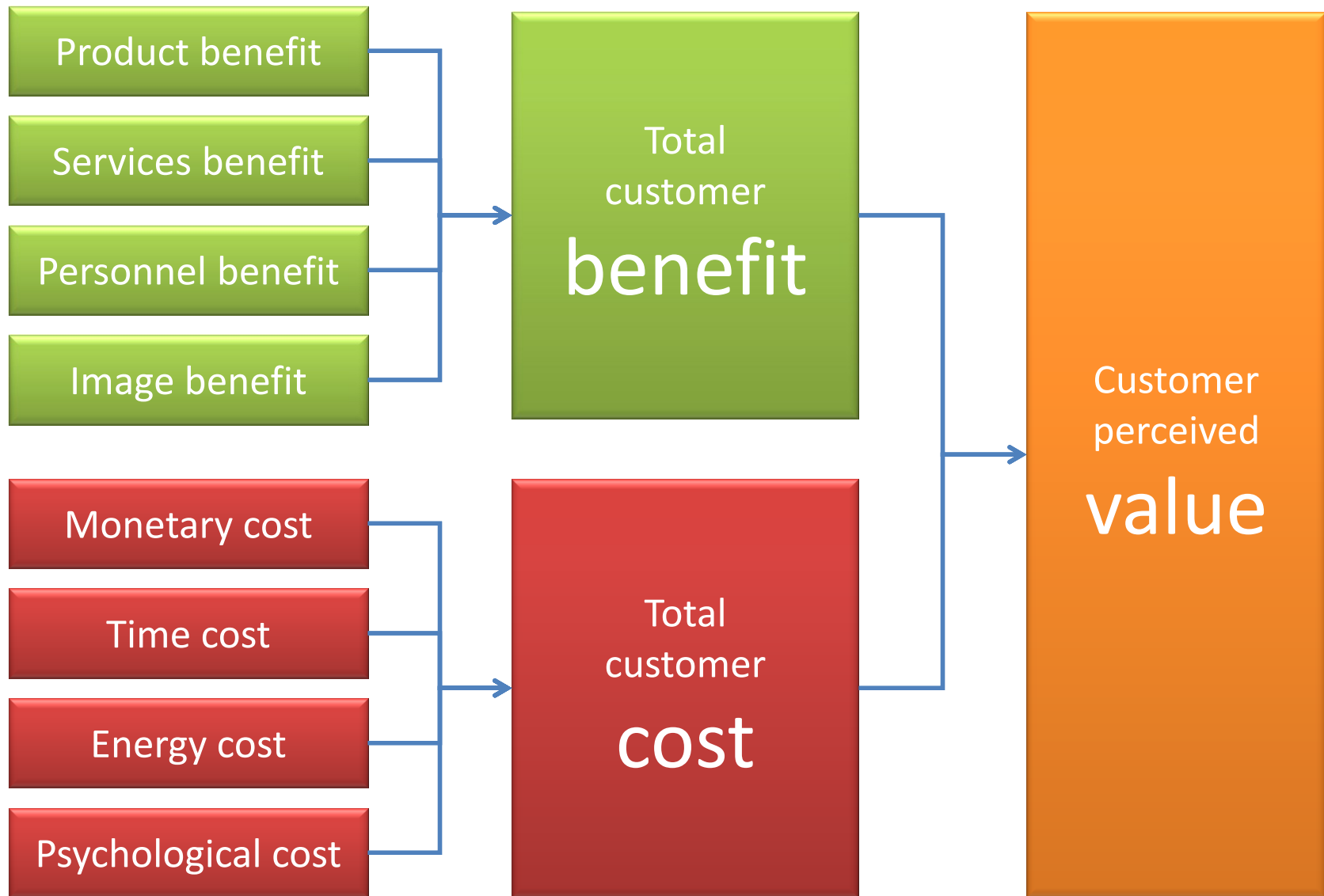


Value and Satisfaction

- Marketing
 - identification, creation, communication, delivery, and monitoring of **customer value**.
- Satisfaction
 - a person's judgment of a product's **perceived performance** in relationship to **expectations**

Building
Customer Value,
Satisfaction,
and
Loyalty

Customer Perceived Value



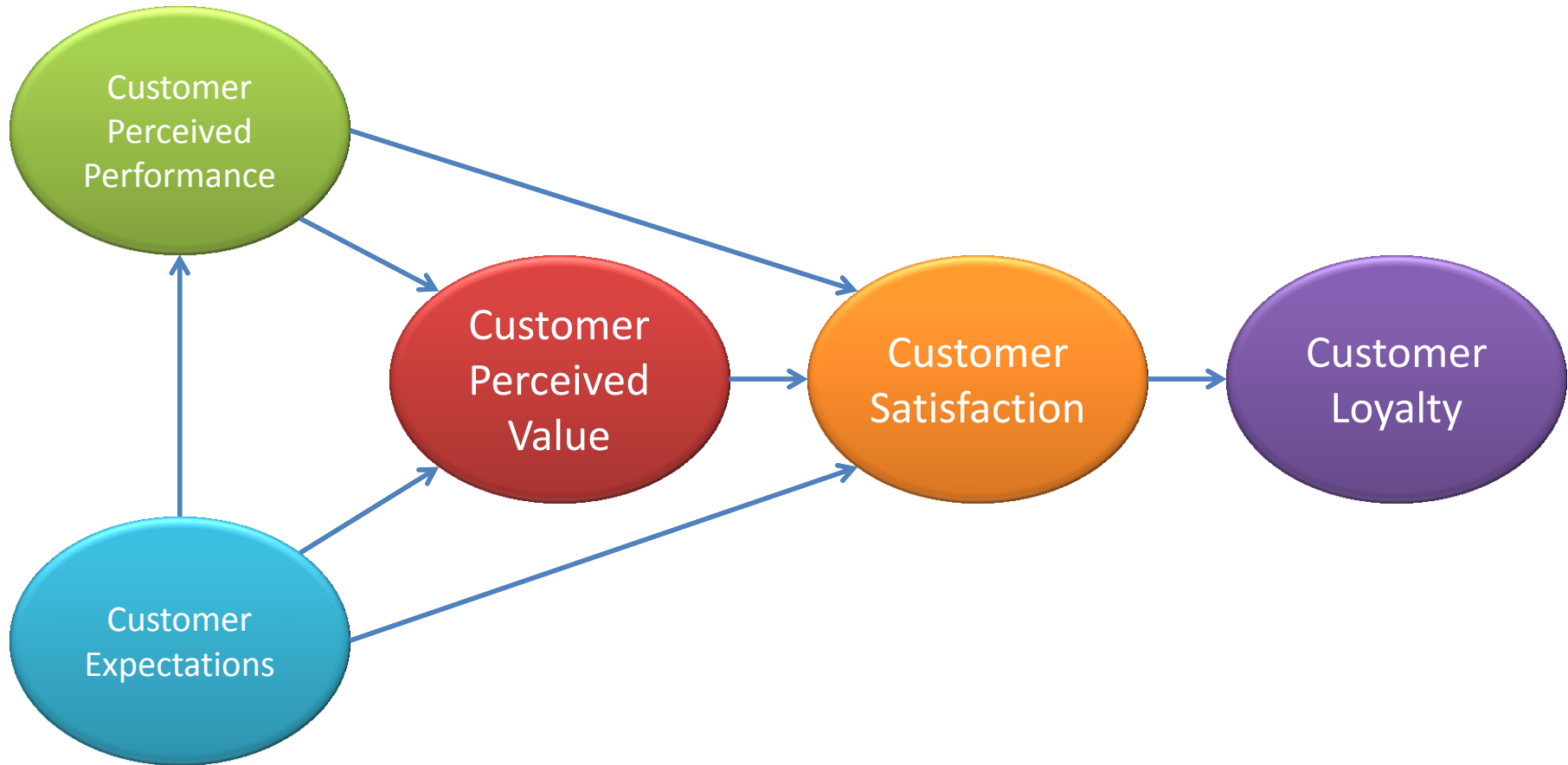
Satisfaction

“a person’s **feelings of pleasure or disappointment** that result from comparing a product’s **perceived performance** (or outcome) to **expectations**”

Loyalty

**“a deeply held commitment to
rebuy or repatronize
a preferred product or service
in the future
despite situational influences and
marketing efforts having the
potential to cause switching
behavior.”**

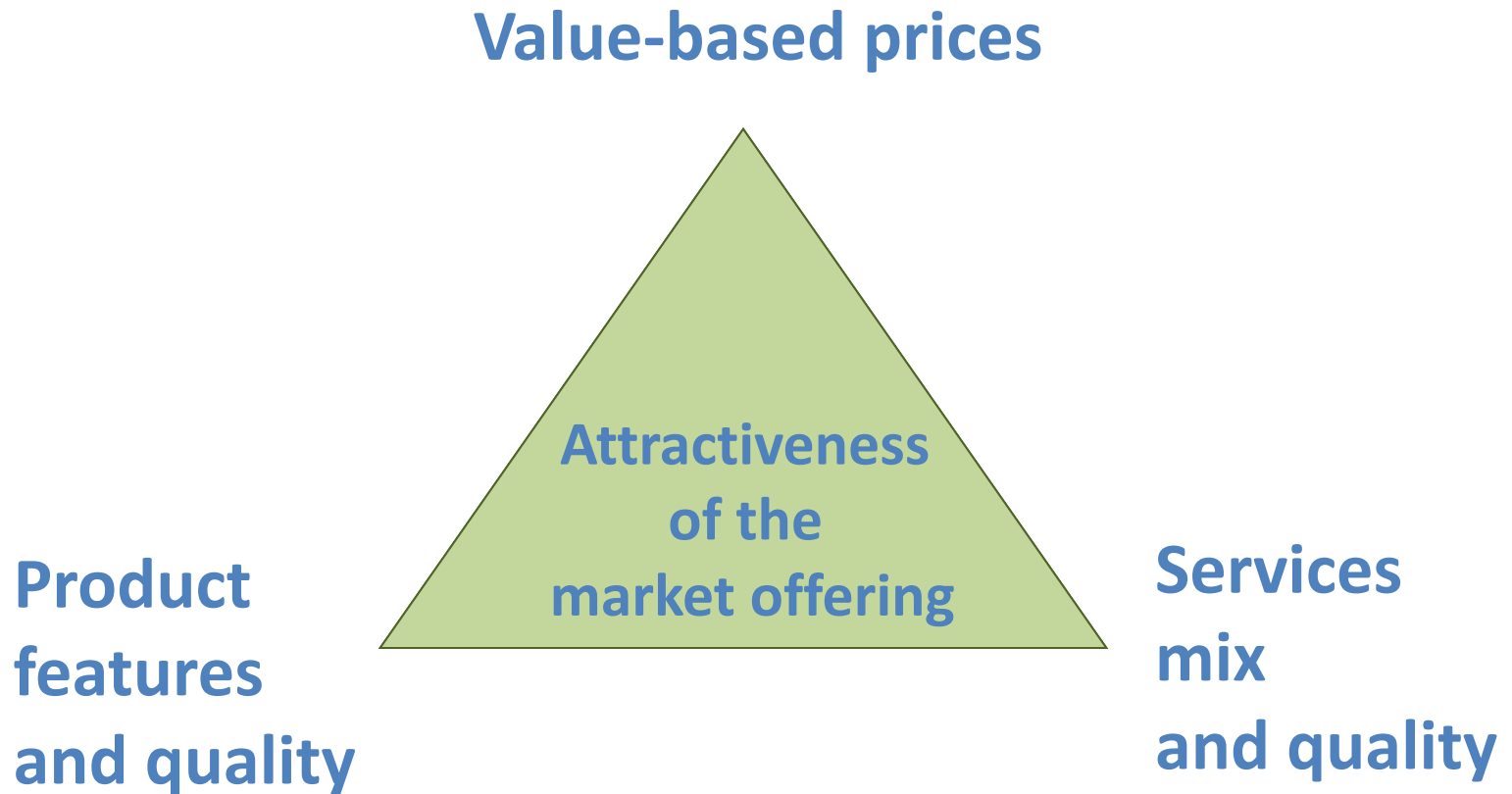
Customer Perceived Value, Customer Satisfaction, and Loyalty



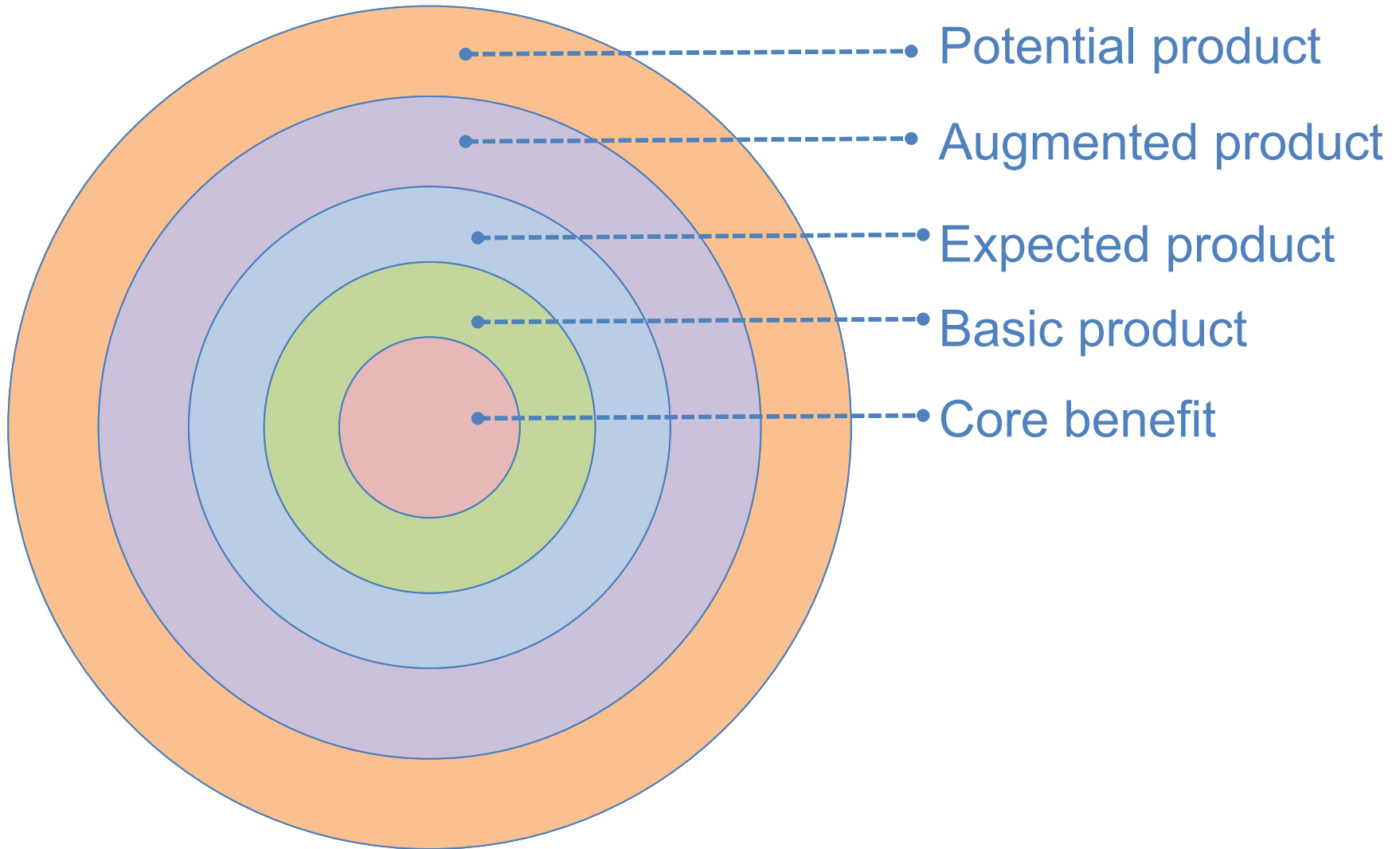
Customer Value Analysis

1. Identify the major attributes and benefits customers value
2. Assess the quantitative importance of the different attributes and benefits
3. Assess the company's and competitors' performances on the different customer values against their rated importance
4. Examine how customers in a specific segment rate the company's performance against a specific major competitor on an individual attribute or benefit basis
5. Monitor customer values over time

Components of the Marketing Offering



Product Levels: The Customer-Value Hierarchy

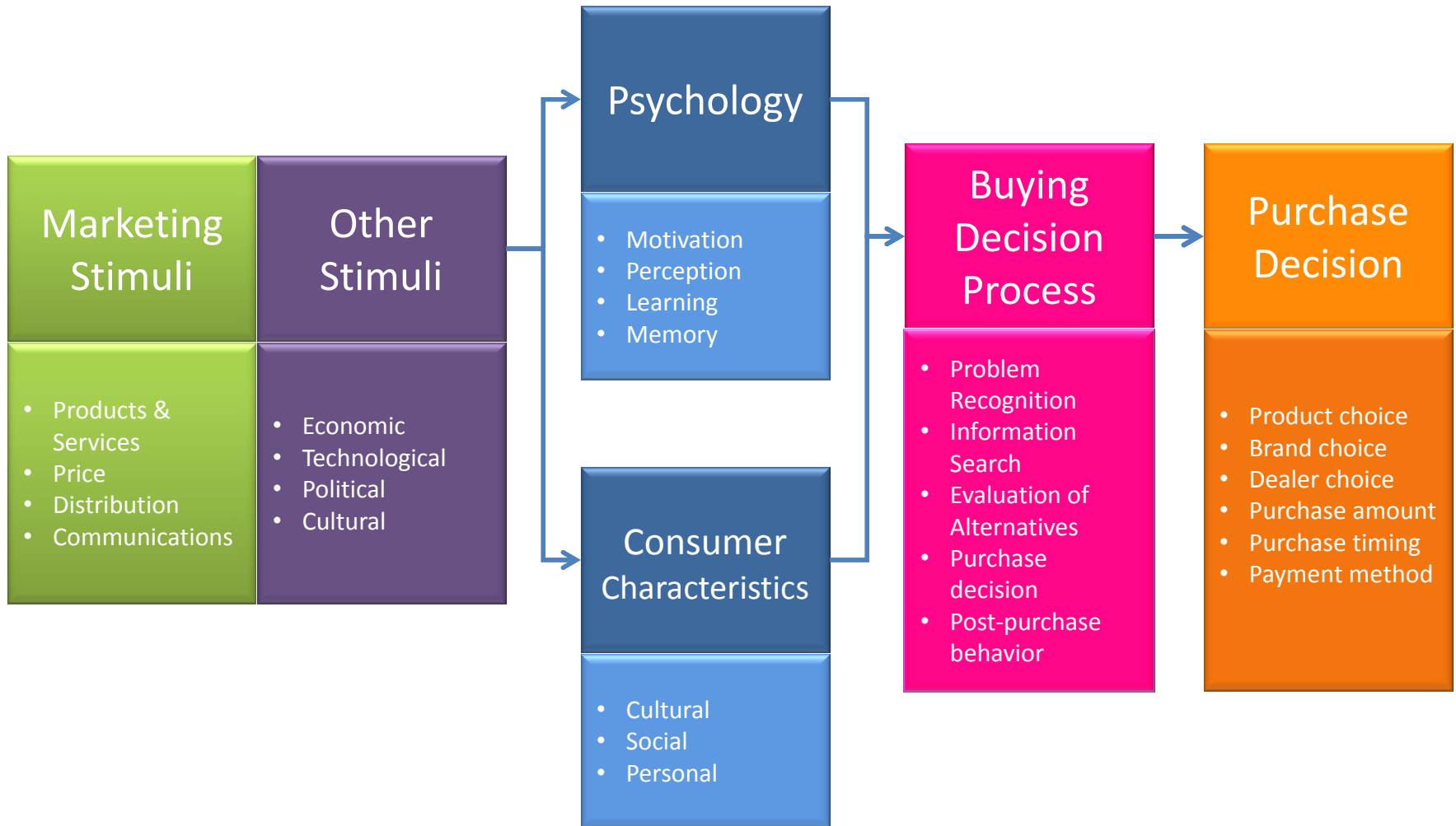


Analyzing Consumer Markets

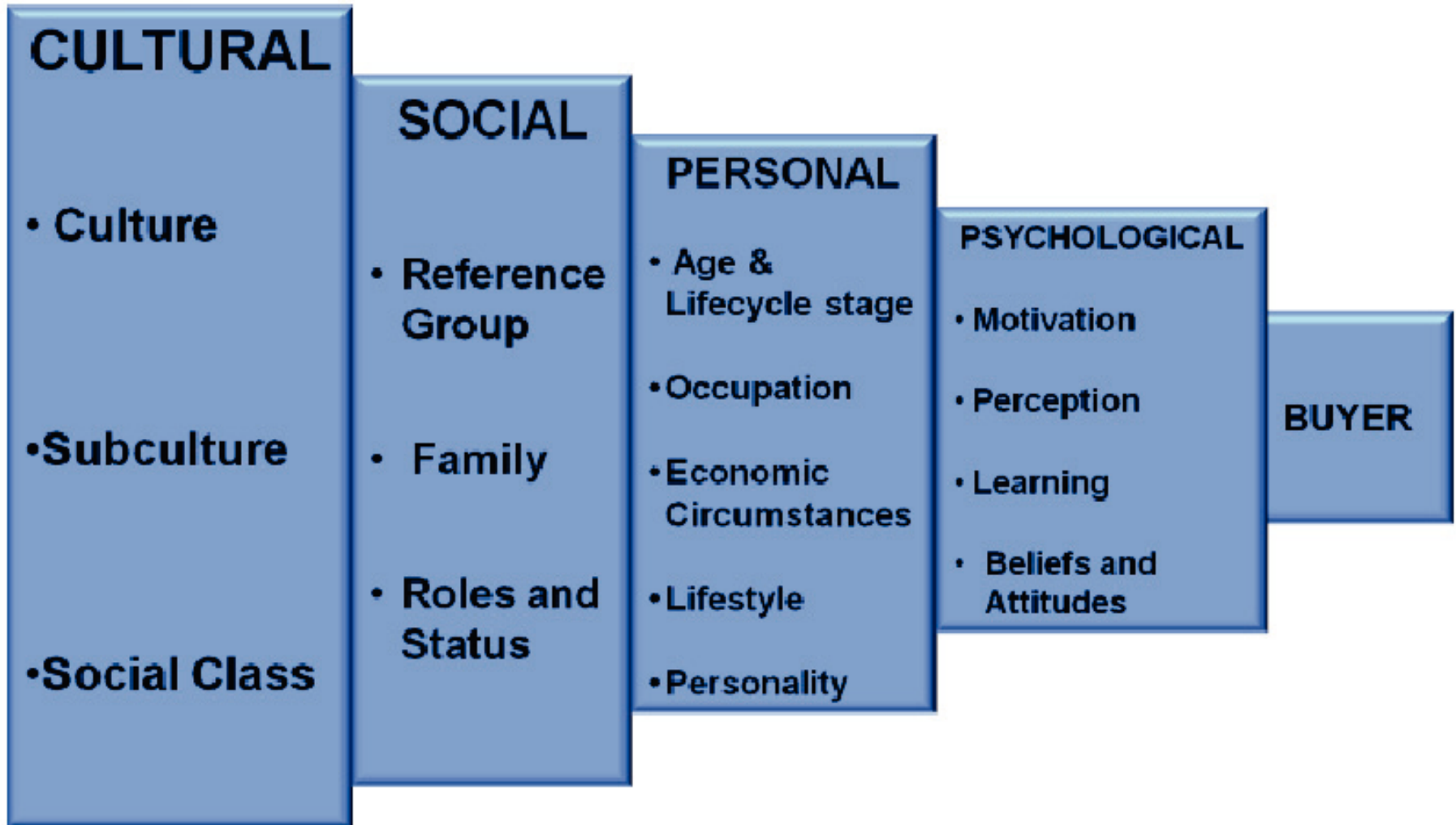
- The aim of marketing is to **meet** and **satisfy** target customers' **needs and wants** better than competitors.
- Marketers must have a thorough understanding of **how consumers think, feel, and act** and **offer clear value** to each and every target consumer.

How consumers think, feel, and act

Model of Consumer Behavior

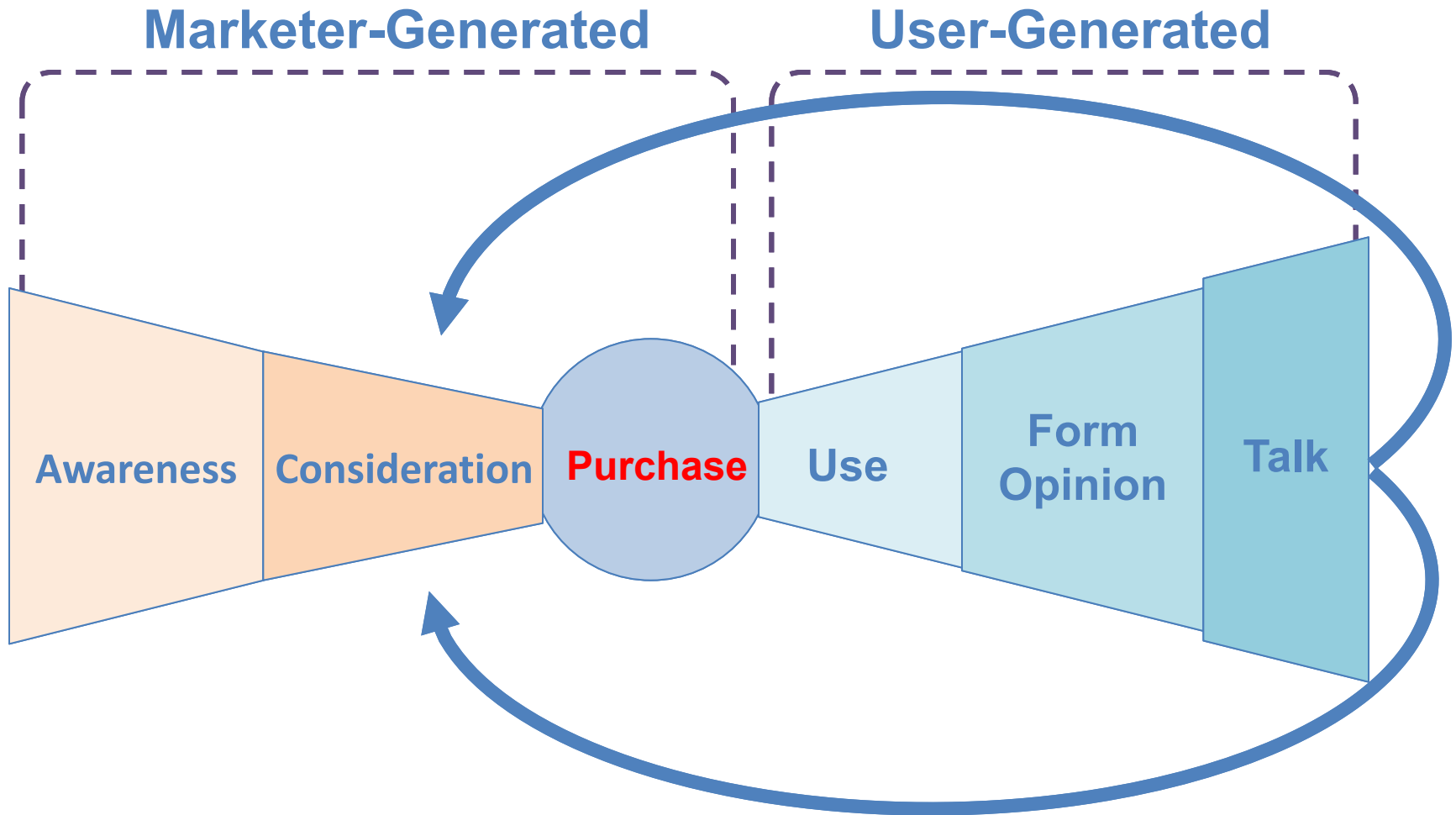


Factors Affecting Consumer Behavior

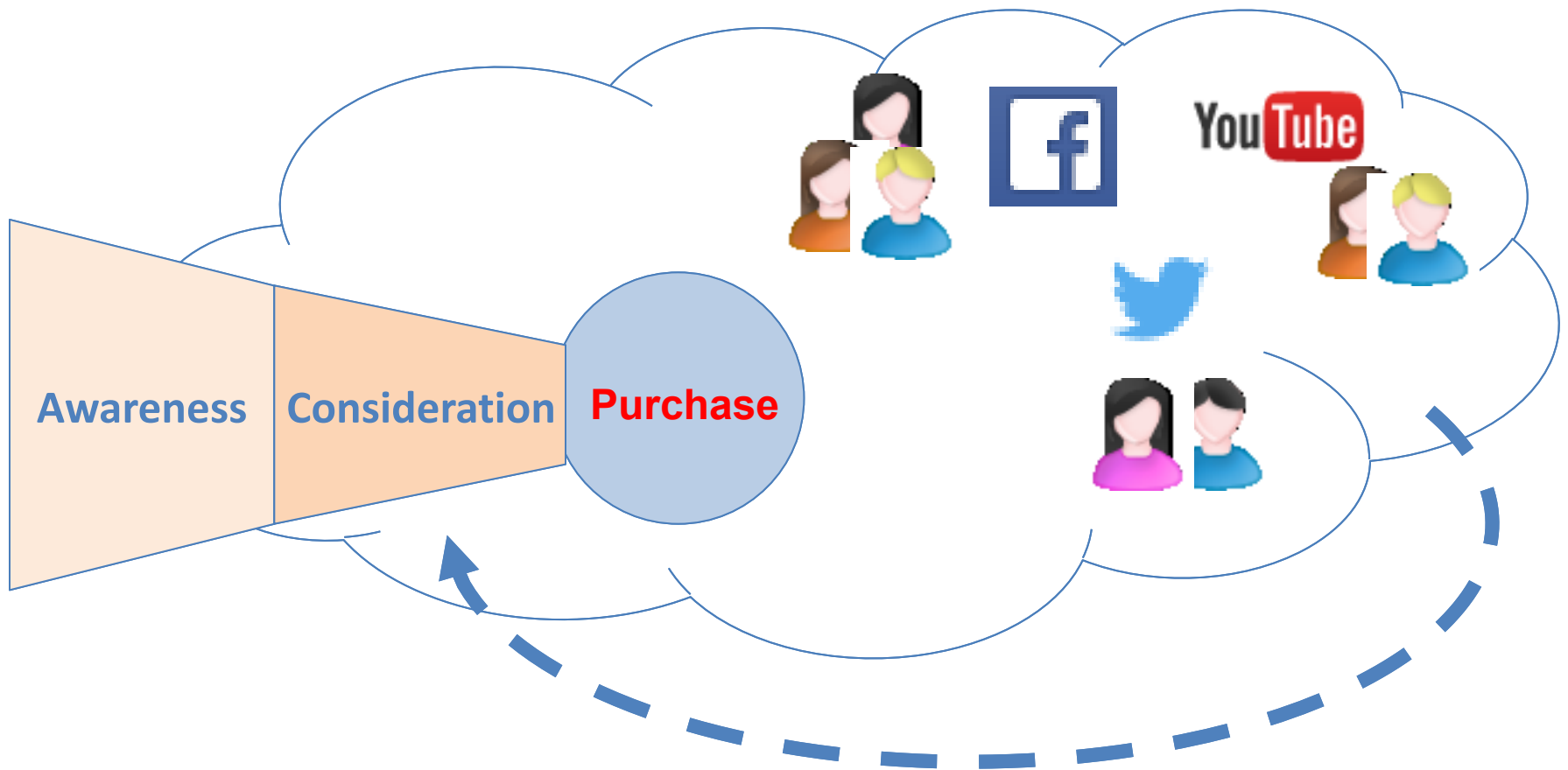


The Social Feedback Cycle

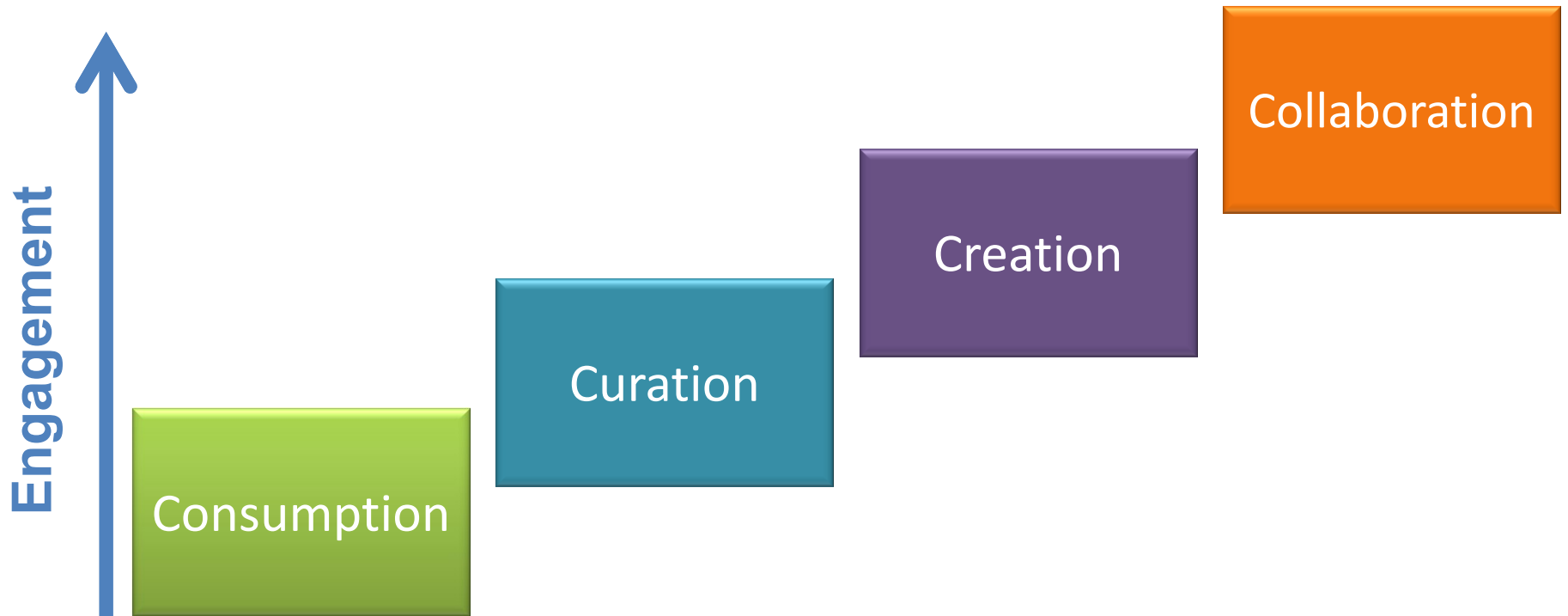
Consumer Behavior on Social Media



The New Customer Influence Path



Structured Engagement Engagement Process on Social Media



Nothing
is
so practical
as a
good theory

Theory

“a set of propositions or
an abstract conceptualization of
the relationship between entities.”

Purpose of theory

increase **scientific understanding**
through a **systematized structure**
capable of both **explaining and**
predicting phenomena

(Hunt, 1991)

Theory

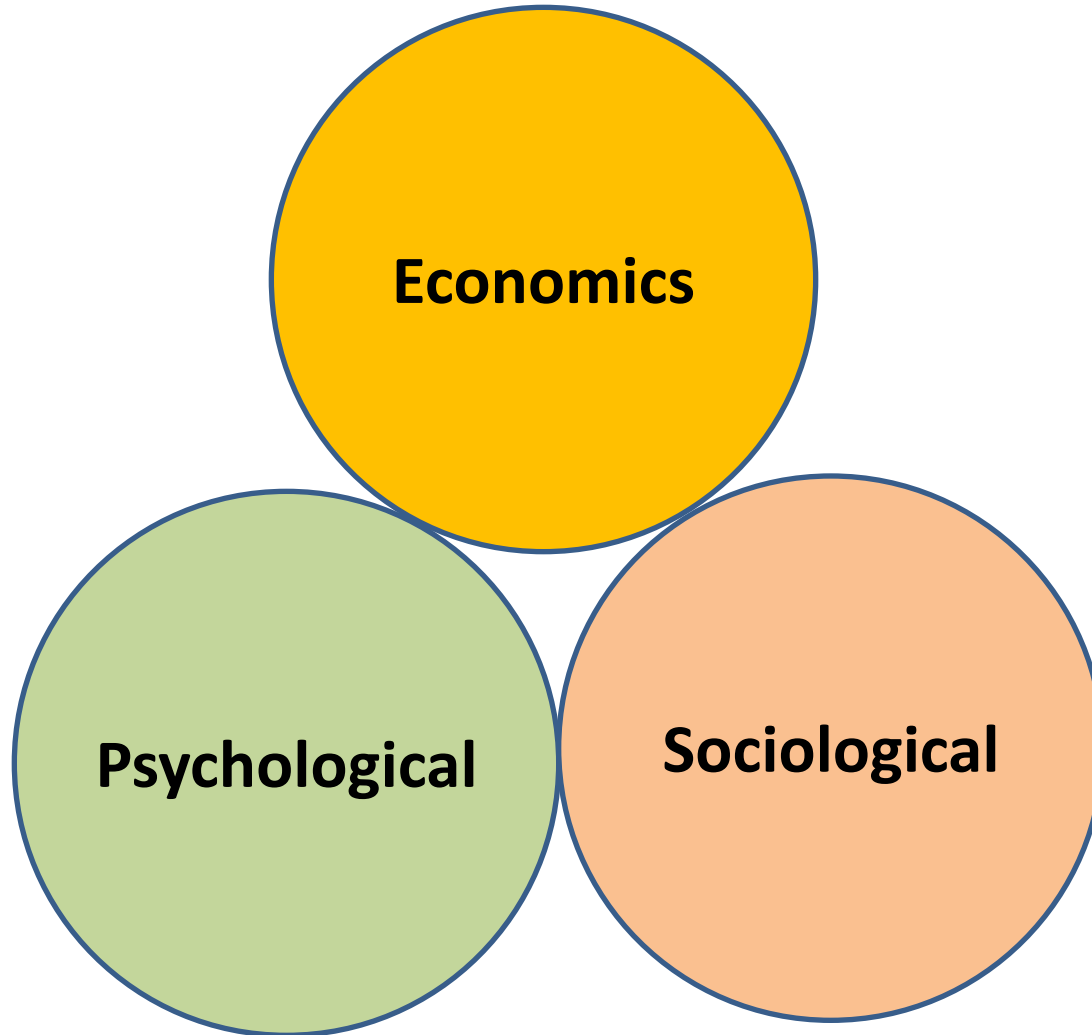
“a **statement** of
relations among **concepts**
within
a set of **boundary** assumptions
and **constraints**”
(Bacharach, 1989)

Marketing

**Identifying
and
meeting**

human and social needs

Basis of Marketing Theory



Disciplinary Underpinnings of Marketing Theory

- The **economics** basis of marketing
- The **psychological** basis of marketing
- The **sociological** basis of marketing
- Cultural aspects of marketing

Psychological foundations of marketing

- Motivation
- Perception
- Decision making
- Attitudes
- Persuasion

Psychological Constructs and Some Associated Marketing Areas

| Psychological Construct | Marketing areas |
|-------------------------|---|
| Learning | Brand recall, loyalty |
| Motivation | Consumer needs , choice conflicts |
| Perception | Product packaging, advertising content |
| Decision making | Brand selection, consumer involvement, post-purchase evaluation |
| Attitudes | Customer satisfaction , trust , ad influence |
| Personality | Consumer segmentation, materialism, addictions |

Motivation

- both **physiological needs** (e.g. hunger, thirst, pain avoidance, security, maintenance of body temperature)
and **psychogenic needs** (e.g. achievement, affiliation, status, approval, power)
motivate consumer behaviour

Motivation and Psychological Needs

- the waste of money and/or resources by people to display a higher status than others' is clearly linked to the **psychological ego-related needs** for **status**, **approval** and **self-confidence**, although it may be influenced in part by **extrinsic factors**, such as **social norms** and **cultural values**

Overall Model of Consumer Behavior

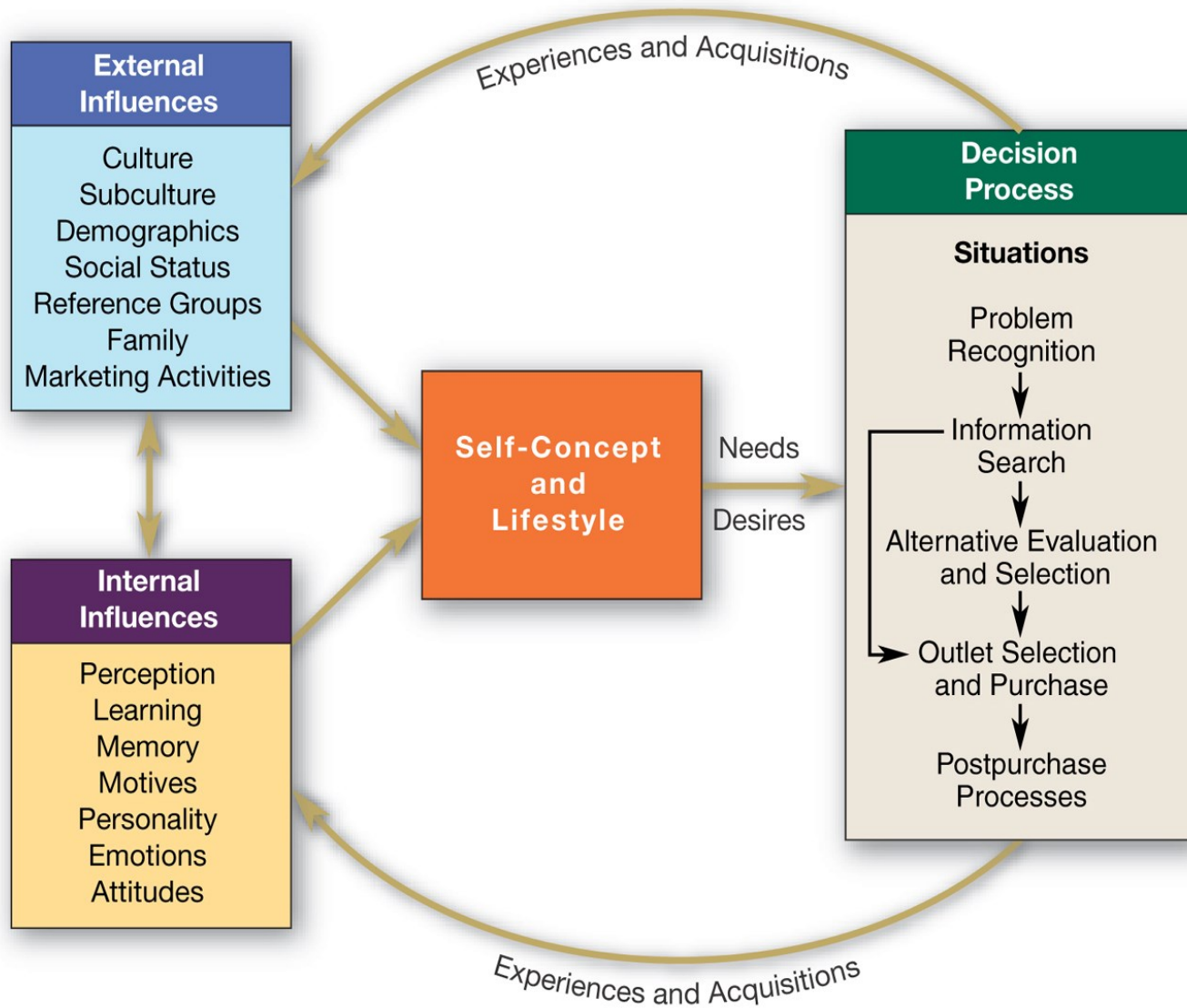
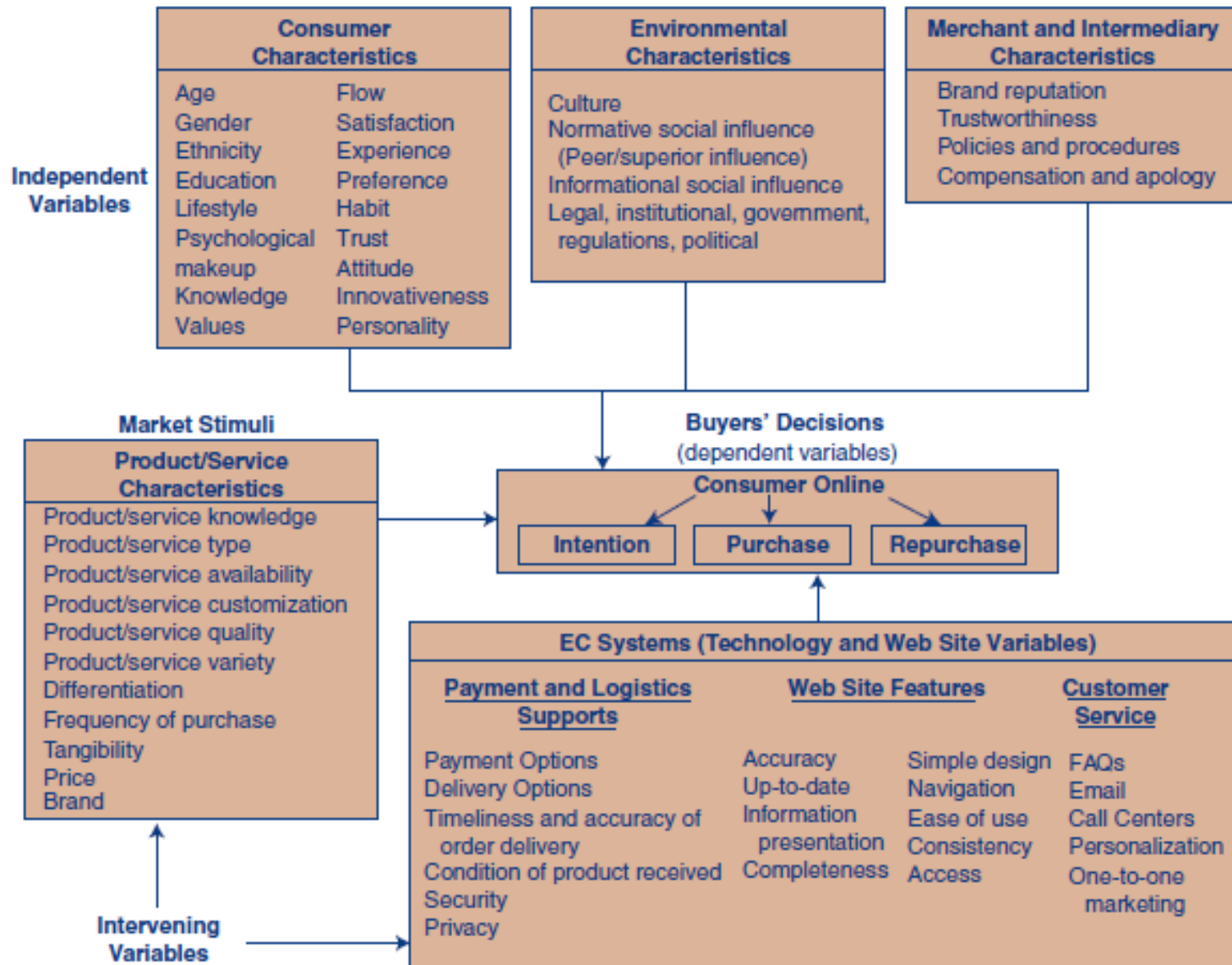


EXHIBIT W4.1.1 EC Consumer Behavior Model



Big Data Landscape 2016

Infrastructure

Hadoop On-Premise
 cloudera Hortonworks
 MMAPR Pivotal
 IBM InfoSphere
 splunk jethro

Hadoop in the Cloud
 amazon web services Microsoft Azure
 Google Cloud Platform
 IBM InfoSphere
 CAZENA altilscale
 Qubole xplenty

Spark
 databricks
 GridGain
 TACHYON NEXUS

Cluster Services
 amazon web services
 Kubernetes
 HPCC SYSTEMS
 MESOSPHERE
 Core OS
 pepperdata
 StackIQ

Analytics

Analyst Platforms
 Palantir
 AYASDI
 Quid enigma
 Digital Reasoning
 ORBITAL INSIGHT

Analytics Platforms
 Microsoft
 guavus
 Datameer
 interana

Data Science Platforms
 context relevant
 CONTINUUM DataRobot
 Alpine ADATAO
 MODE ploity
 dataiku Ionian
 DOMINO sense
 yhat ALGORITHMIA

Visualization
 +ableau
 Google Cloud Platform
 Roambi
 Qlik
 CHARTIO

Applications

Sales & Marketing
 RADIUS Gainsight
 bloomreach Zeta
 livefyre blueyonder
 kahuna Lattice
 persado infer sense
 AVISO ACTIONIQ
 QUANTIFIND ENGA GIO

Customer Service
 MEDALLIA
 ATTENITY CLARABRIDGE
 STELLAService
 NGDATA Preact
 DigitalGenius wiseia
 appurri
 fuse machines

Human Capital
 gild
 Connectifier
 textio
 entelo
 hiQ

Legal
 RAVEL
 JUDICATA
 Everlaw
 Brevia
 PREMIONION

NoSQL Databases
 amazon DynamoDB
 Google Cloud Platform ORACLE
 Microsoft Azure
 mongoDB MarkLogic
 DATASTAX
 KEROPIKE Couchbase
 SequoiaDB redislabs
 influxdata

NewSQL Databases
 SAP HANA Clustrix Pivotal
 paradigm4
 memsql nuODB
 MariaDB VOLTDB
 citusdata
 deepdb Trafodion
 Cockroach LABS

BI Platforms
 Power BI amazon
 DOMO
 Wave Analytics
 GoodData birst
 kyvos insights
 platfora looker
 atscale ARCADIA
 SIBSENSE

Statistical Computing
 SAS
 SPSS
 MATLAB

Log Analytics
 splunk
 sumologic
 kibana
 CLOUD PHYSICS
 loggly

Social Analytics
 NETBASE
 DATASIFT
 tracx bitly
 syntheso
 bottlenose
 simplereach

Ad Optimization
 MediaMath Integral
 Ad Science
 rocketfuel
 OpenX theTradeDesk
 Adgorithms
 Liventent dstillery
 DataXu Appier TAFAD

Security
 CYLANCE
 CounterTack cyberason
 ThreatMetrix
 AREA 1 SECURITY
 Recorded Future
 Guardian Analytics
 FORTSCALE sift science
 Kaybase feedzai SIGNIFYD

Vertical AI Applications
 facebook
 Clara
 KASISTO
 lumiata

Graph Databases
 neo4j
 OrientDB
 InfiniteGraph

MPP Databases
 TERADATA
 VERTICA
 NETEZZA
 kognitio
 dremio

Cloud EDW
 amazon web services
 Google Cloud Platform
 Microsoft Azure
 Pivotal
 snowflake
 HADOOP
 Infoworks

Data Transformation
 alteryx
 TRIFACTA
 tamer
 MuleSoft
 PAXATA
 StreamSets
 Alation

Data Integration
 informatica
 Put potential to work:
 MuleSoft
 snapLogic
 BedrockData

Real-Time
 amazon web services
 METAMARKETS
 confluent
 DATATORRENT
 dataArtisans

Machine Learning
 Azure Machine Learning
 H2O
 SKYTREE
 rapidminer
 DATAFORMA
 deepnlp VISENZE
 PredictionIO glowfish

Speech & NLP
 NarrativeScience
 api.ai NUANCE
 Grindspace
 semanticmachines
 cortico.io
 mindmeld
 IDIBON yseop

Horizontal AI
 IBM Watson
 Cortana sentient
 VIV
 nervana
 Numenta
 MetaMind
 clarifai

Publisher Tools
 outbrain
 mixpanel
 Chartbeat
 yieldbot
 Yieldmo

Govt/ Regulation
 Socrata
 OPENGOV
 FN FiscalNote
 enigma
 PREPOL
 mark43
 OpenDataSoft

Finance
 affirm
 LendingClub
 OnDeck
 Kreditech
 Kabbage
 INSIGHT
 Lenddo
 ZUORA Dataminr
 KENSHCO AIDYIA
 iSENTIUM
 Quantopian
 sentient

Management / Monitoring
 New Relic
 APPDYNAMICS
 actifio
 Numerify
 splunk
 DATADOG
 Trocena
 Anodot

Security
 TANIUM
 illumio
 CODE42
 DataGravity
 CipherCloud
 VECTRA
 sqrrl
 BlueTalon

Storage
 amazon web services
 Google Cloud Platform
 Microsoft Azure
 Pivotal
 panasas
 nimblestorage
 Qumulo

App Dev
 apigee
 CASK
 Typesafe
 CONCURRENT

Crowd-sourcing
 amazon mechanicalturk
 CrowdPower
 WorkFusion

Search
 hp
 ORACLE
 ENDECA
 EXALEAD
 Lucidworks
 elastic ThoughtSpot
 MAANA swifttype

Data Services
 OPERA
 Mis Sigma
 DATA SCIENCE
 kaggle datascience
 DataKind

For Business Analysts
 OrigamiLogic
 ClearStory
 CIRRO
 import io

SMB / Commerce
 Google Analytics
 AMPITUDE RJMetrics
 BLUECORE
 sumAll granify
 retention custora

Education/ Learning
 KNEWTON
 Clever
 Declara
 PANORAMA
 knowTe

Life Sciences
 23andMe
 Pathway Genomics
 Counsyl
 Recombine
 KYRUS FLATIRON
 zymergen HealthTap
 METABIOTA ZEPHYR HEALTH
 ovia
 Gingerio transcriptic
 Glow
 entlic AiCure
 Atomwise

Industries
 OP@WER eHarmony
 RetailNext
 STITCH FIX
 WorkFusion
 BLUE RIVER
 TACHYUS
 SwiftKey
 Seeq FarmLogs
 HowGood
 select
 NIGHT MACHINE
 statmuse BOXEVER

Cross-Infrastructure/Analytics

amazon web services Google Microsoft IBM SAP SAS hp Autonomy vmware talent TIBCO TERADATA ORACLE NetApp

Open Source

Framework
 hadoop HOPS
 YARN Spark
 MESOS TEZ
 Flink CDAP

Query / Data Flow
 SLAMDATA
 DRILL
 Google Cloud Dataflow

Data Access
 cassandra HBASE
 mongoDB
 CouchDB
 riak
 OPENTSOB

Coordination
 talent
 Apache Zookeeper
 Apache Ambari

Real-Time
 STORM Spark
 APEX Flink
 TACHYON druid

Stat Tools
 Scala
 Numpy
 SciPy

Machine Learning
 milib
 Apache SINGA
 MADlib
 Caffe
 FeatureFu
 DIMSUM
 jupyter DL4J

Search
 elasticsearch
 Solr
 Lucene

Security
 Apache Ranger
 Zeppelin

Data Sources & APIs

Health
 Apple JAWBONE GARMIN
 practicefusion fitbit
 Withings VALIDIC netatmo
 kinsa Human API

IOT
 UPTAKE
 ThingWorx
 helium samsara
 AUGURY estimote

Financial & Economic Data
 Bloomberg DOW JONES
 YODLEE PREMISE S&P CAPITAL IQ
 quandl xignite CB INSIGHTS
 mattermark estimize PLAID

Air / Space / Sea
 PLANET LABS
 spire
 WINDWARD
 CRUISE SKYCATCH
 Airware DroneDeploy

Location/People/Entities
 GARMIN foursquare InsideView esri
 STREETLINE
 connecting the real world
 CARTODB factual PlaceIQ
 Crismon Hexagon placemeter BASIS Sense

Other
 qualtrics
 panjiva
 DATA.GOV

Incubators & Schools
 GA DataCamp
 INSIGHT METIS
 DataElite
 The Data Incubator

© Matt Turck (@mattturck), Jim Hao (@jimrhao), & FirstMark Capital (@firstmarkcap)

FIRSTMARK

Summary

- Big Data Marketing Analytics
- Big Data Marketing Research

References

- Lisa Arthur (2013), *Big Data Marketing: Engage Your Customers More Effectively and Drive Value*, Wiley.
- EMC Education Services (2015), *Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data*, Wiley.
- Foster Provost and Tom Fawcett (2013), *Data Science for Business: What you need to know about data mining and data-analytic thinking*, O'Reilly
- Thomas W. Miller (2013) , *Marketing Data Science: Modeling Techniques in Predictive Analytics with R and Python*, Pearson FT Press
- Peter C. Verhoef and Edwin Kooge (2016), *Creating Value with Big Data Analytics: Making Smarter Marketing Decisions*, Routledge
- Stephan Kudyba (2014), *Big Data, Mining, and Analytics: Components of Strategic Decision Making*, Auerbach Publications
- Fan, S., Lau, R. Y., & Zhao, J. L. (2015). Demystifying big data analytics for business intelligence through the lens of marketing mix. *Big Data Research*,2(1), 28-32
- Erevelles, S., Fukawa, N., & Swayne, L. (2016). Big Data consumer analytics and the transformation of marketing. *Journal of Business Research*, 69(2), 897-904.