



# DIGITAL MARKETING

Welcome to the course!

# Survey Questions

1. Do you know anyone who does *not* use the Internet?
2. Have you ever made purchases online (e.g., HKTV Mall, Taobao, Amazon)?
3. Have you ever used Openrice to choose a restaurant?
4. Have you ever written reviews on online platforms (e.g., Amazon)?



# Do You Know the Answer?

What is the Internet penetration rate in Hong Kong?





# Do You Know the Answer?

Among every \$100 Hongkongers spend on retailing, how many dollars are spent online?





# Do You Know the Answer?

On average, how much time does a Hong Kong teenager spend on their smartphones?





# Do You Know the Answer?

What are the most popular social media platforms in Hong Kong?





# Do You Know the Answer?

How many couples meet their partner online?





# Do You Know the Answer?

How many Hongkongers use Facebook?





# The Internet is changing our lives



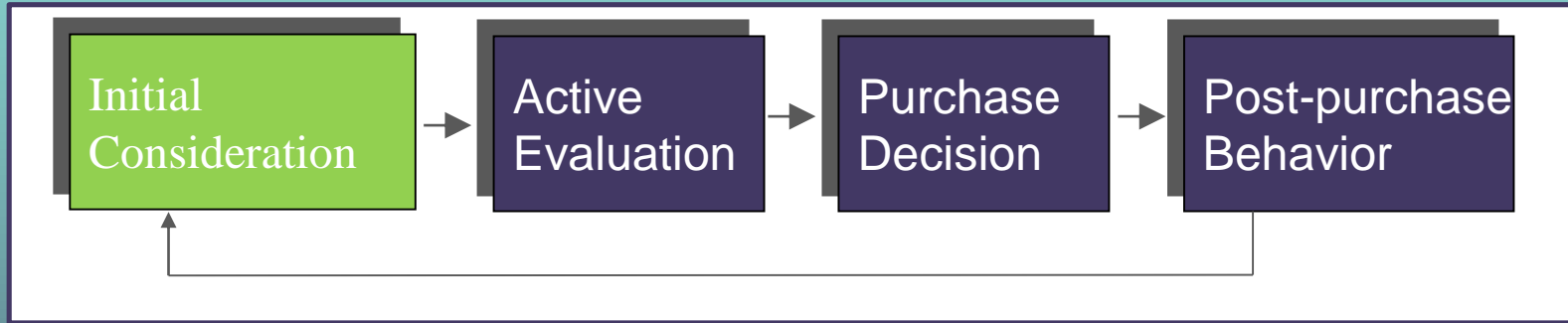


## Discussion

**How does Internet affect purchasing decisions?**



# Consumer buying decision




By consumer  
By traditional media such as TV ads  
How does digital media help?

# Via Targeted Online/Mobile Ads

Word of the Day Translate Games Blog

Dictionary.com definitions






NORDSTROM


Word of the Day  
**eudemonic**  
pertaining or conducive to happiness. [More...](#)

SIGN UP:


email


  

Previous Words



Do You Give Presents or Gifts?

 Your Word Wednesday

 Our Blog

Pick our Word of the Day!


What's your favorite word? Did Charles Dickens coin


Friday, December 18  
*Decem-* means "ten" in Latin, so why is December our twelfth month? [Learn more here.](#)

(919) 439-1569

**UNLIMITED CONFIDENCE**

— Unlimited Mileage Warranty —

 Certified Pre-Owned by Mercedes-Benz



**Leith, Inc.**  
Authorized Mercedes-Benz Dealer [Click here](#)

Dictionary.com Social

# Via Influencers

sincerelyjules PHOTO sincerelyjules PHOTO

 sincerelyjules  sincerelyjules

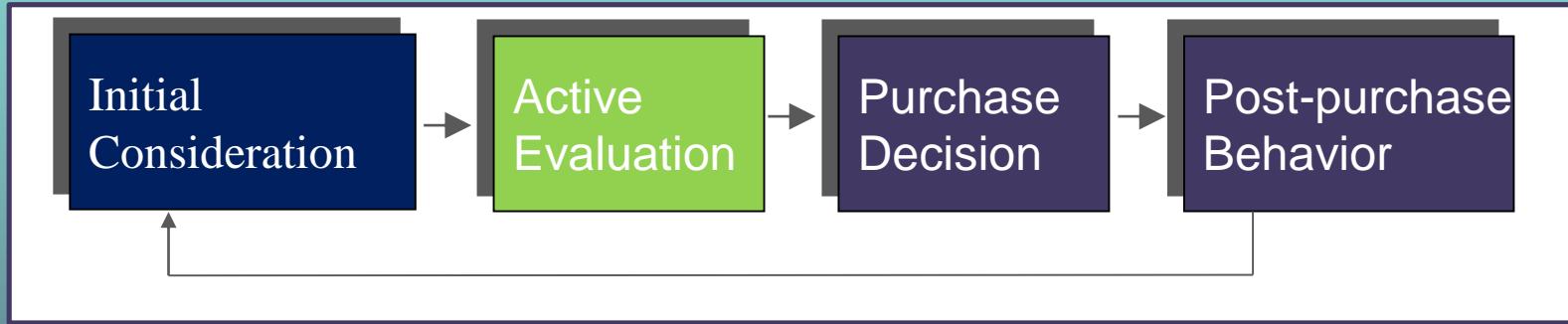


♥ 19176 likes    ♥ 21837 likes

● sincerelyjules Happy Sunday! 🐰 We #Célfie tee again!  
view all 234 comments  
\_\_julieteee\_\_ @\_manue\_\_ canon

● sincerelyjules Yesterday's easy breez  
♥  
view all 293 comments  
iamxooasia @sincerelyjules u have c  
love to have long i love them!

# Consumer buying decision



How is search done in the offline world?


Call/visit stores/friends

Problems?

Asymmetric information and high search cost

How does Internet/digital facilitate information search?


# Low-Cost Search by Search Engines

**OUR ADVICE**  
**Buy now** 

Prices are unlikely to decrease within 7 days <sup>①</sup>

Track prices  OFF

1162 of 1293 flights

**Fee Assistant** <sup>①</sup> 

Carry-on bag

Checked bag

**Stops**


Nonstop \$147

1 stop \$154

**Cheapest**  
\$147 • 1h 35m

**Best** <sup>①</sup>  
\$147 • 1h 40m

**Quickest**  
\$162 • 1h 34m

 Other Sort

**Delta® Flights from Raleigh to New York**


Enjoy Free In-Flight Entertainment on Delta Flights. Terms & Bag Fees Apply.



**\$162** nonstop

delta.com | Sponsored

**\$162**  
Delta

[View Deal](#)

**Cheapest** Rating: 9 

<input type="checkbox"/>		<b>5:35 am — 7:10 am</b> American Airlines	<b>nonstop</b>	<b>1h 35m</b> RDU - LGA	<b>\$147</b> Hacker Fare Basic Economy
<input type="checkbox"/>		<b>1:40 pm — 3:15 pm</b> United Airlines	<b>nonstop</b>	<b>1h 35m</b> EWR - RDU	

[View Deal](#)

# Coupons can be found more easily

The screenshot shows the Honey browser extension interface. At the top, there is a search bar with the Honey logo on the left and navigation links for STORES, DROPLIST, HONEY GOLD, FREE GIFT CARDS, and HELP on the right. Below the search bar, there is a sidebar with 'Onboarding REGISTRATION + \$ 50'. The main content area is titled 'Top Deals Today' with a sub-header '30s ago'. It lists three deals:

- Macy's**: Worked 11h ago. Deal: 25% Off BCX Plus Extra 25% with Code PREVIEW. Shop Now at Macys.com! Valid 8/21-8/25! 2,437 uses - \$55.88 avg savings.
- JCPenney**: Worked 1m ago. Deal: Coupon Code COM278. 2,301 uses - \$26.00 avg savings.
- Forever21**: Worked 2m ago. Deal: Coupon Code WCR. 2,140 uses - \$12.29 avg savings.

**Macy's FRIENDS & FAMILY**  
WEDNESDAY, DECEMBER 1 - MONDAY, DECEMBER 6

WE'RE SHARING A VERY SPECIAL DISCOUNT WITH YOU.  
**AN EXTRA 25% OFF\***

REGULAR, SALE & CLEARANCE ITEMS, INCLUDING THE DESIGNER NAMES YOU LOVE!  
EXTRA 10% OFF ELECTRICVE/ELECTRONICS, FURNITURE, MATTRESSES AND RUSS/FLOOR COVERINGS.

GET AN EXTRA 10% OR 20% OFF WHEN YOU SHOP ONLINE AT MACYS.COM. PLUS, GET FREE SHIPPING WITH NO MINIMUM PURCHASE OF \$99 OR MORE!  
Enter code **MACYSFF** in the promotional code box at checkout to redeem your discount and receive **FREE SHIPPING**.

Visit [www.macys.com/friends](http://www.macys.com/friends) for details and exclusions.  
\*Excludes sale, clearance and gift items.

**FRIENDS & FAMILY**  
EXTRA 25% OFF\*  
REGULAR, SALE & CLEARANCE ITEMS.  
\*Excludes sale, clearance and gift items.

The Macy's logo and the tagline 'The magic of macy's.com' are at the bottom.

**Get the coupon.**  
Now in the @ app.  
Or text TOY10 or TOY25 to TARGET

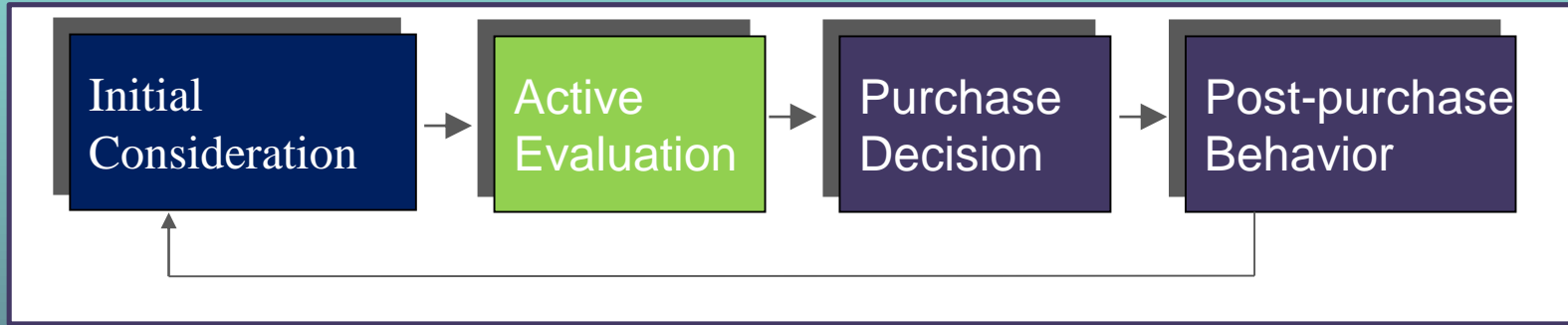
**\$10 OFF**  
Toys and games  
purchase of \$50 or more

**\$25 OFF**  
Toys and games  
purchase of \$100 or more

The image shows a hand holding a smartphone displaying a mobile app interface with various coupons. In the background, a red coupon for Target is visible, featuring a QR code and the text 'scan at register'.



# Consumer buying decision



Implications of reduced search cost to firms?

More price competition

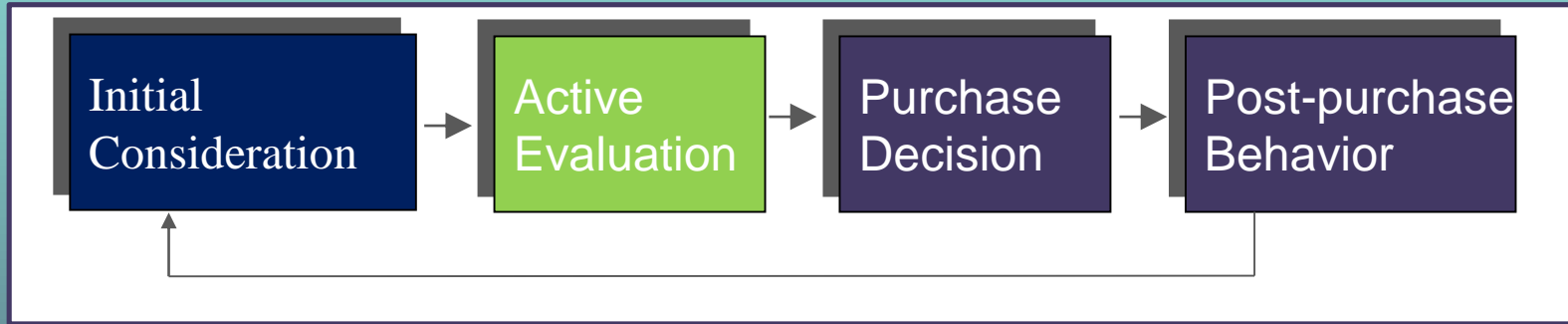
Less loyalty

How can manufacturers and retailers fight against price competition?

Increase product differentiation, even just perceived

Increase switching cost (e.g., loyalty program)

# Consumer buying decision



Evaluate alternatives in consideration set

Is the product performing as claimed?

Are there any unobservable attributes?

Does this product match my preference?

How does Internet & digital media facilitate evaluation?

# User Generated Content

Which Japanese restaurant will you visit?  
Why?



Rating vs. Volume


**japanese restaurant Chapel Hill, NC**

**Filters**



\$ \$\$ \$\$\$ \$\$\$\$ Open Now All Filters


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**1. MinGa**   85 reviews  
\$\$ · Korean, Japanese  
116 Old Durham Rd  
Chapel Hill, NC 27517  
(919) 933-1773



 I went to MinGa for lunch on Monday and was pleased with my experience there. The **restaurant** serves really authentic Korean and **Japanese** food, even serving the small cold appetizers that


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**2. Oishii**   50 reviews  
\$\$ · Sushi Bars, Japanese  
1129 Weaver Dairy Rd  
Chapel Hill, NC 27514  
(919) 932-7002



 Tasty, but service and price are a little off. I came out here for dinner recently. As a **Japanese restaurant/sushi** place, it's pricier than most of the other places in Chapel Hill. However

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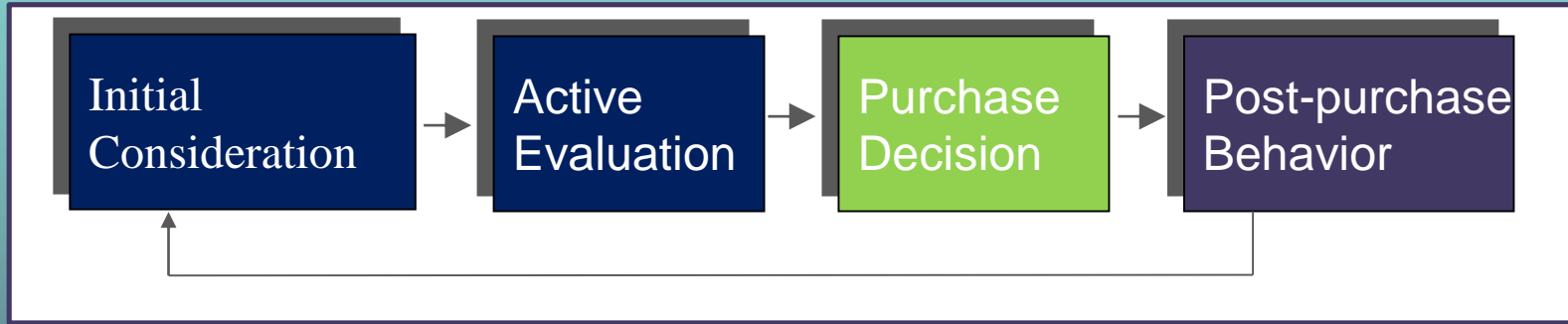
**3. Akai Hana Japanese Restaurant**   108 reviews  
\$\$ · Japanese, Sushi Bars  
206 W Main St  
Carrboro, NC 27510  
(919) 942-6848

 Very cool place, much more flair for detail and quality than I am used to in a typical **Japanese dinner restaurant**. NOTE: I can't comment on the sushi because I've never tried that portion

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**4. Sushi Nikko**   40 reviews  
\$\$ · Japanese  
104 NC 54  
Carrboro, NC 27510  
(919) 240-5046

# Consumer buying decision



Purchase at an online store, offline store, or through a mobile app

# Showrooming

The practice of examining products in a store and then buying it online for a lower price.

Top categories affected by showrooming?

- Electronics & Appliances
- Books & Music
- Clothing & Shoes
- Furniture & Home

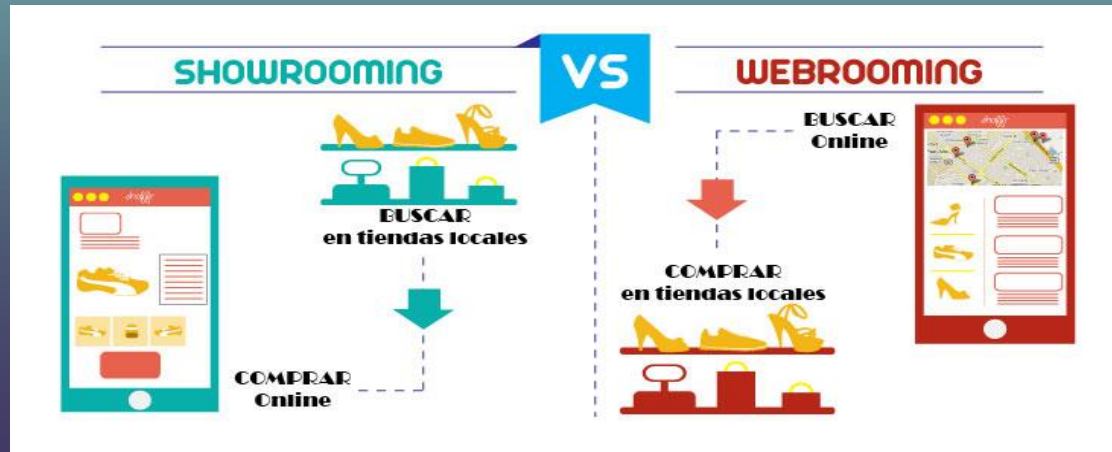
60% in 2013 -> 35% in 2018. Why?

- Increasing online presence for traditional retailers
- Offer price matching
- Digital friendly in-store environment (e.g. e-payment, digital coupons)
- Flexible return policy



# Rise of webrooming

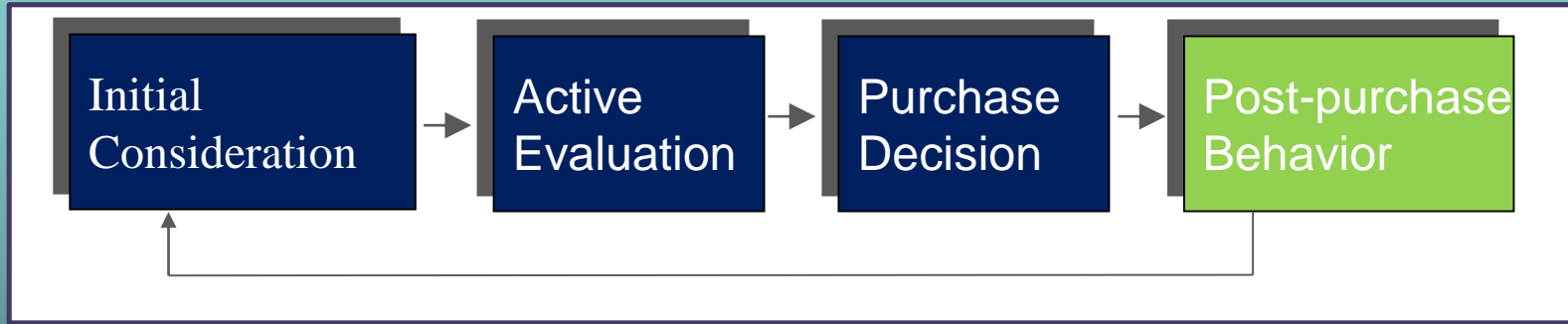
Webrooming refers to the process of researching products online and then visiting a store to make a purchase  
Webrooming more common than showrooming (46% vs. 35% in 2018)  
Millennials prefer webrooming



# Mobile Grocery Shopping



# Consumer buying decision



What does Internet & digital media add?

WOM generation

Positive ones can be used as promotional content

Negative ones can be used as useful feedbacks

Behavior-based recommendation

Customer purchase history becomes a piece of "Big Data"



# Key Takeaways

How has Internet/digital changed the way we shop?

Changes in search costs

Results in larger product assortment and lower prices

Implications to firms: focus on product differentiation, raising switch cost

Changes in availability and use of data

Allows firms to deliver more targeted messages

Allows users more easily to provide feedback (new data) to improve product/service

Allows users to be affected by others' choices

Changes in role of geographic proximity

Reduces the cost of communication with others

Encourages the use of multiple channels in shopping process

Offline context still matters in each stage of customer journey



# What is digital marketing?

“Digital Marketing is the use of Internet connected devices and electronic media to engage a customer.”

Search advertising  
Display advertising  
Social media marketing

...





# What is this course about?

Overview of digital technology + Underlying Business/Marketing concepts

Aim is not mastery of all the topics, but to give an overview of most important topics

The list of topics covered in this course can be found in the syllabus.





# Who should take this course?

Undergraduate students

Learn the basics of Digital Marketing

Learn the basics of data analytics

Already have a background in basic marketing /advertising





# True or False?

This is a course that covers cases and examples without solid techniques.





# True or False?

I am already an expert in HKTV Mall, Google, YouTube, Twitter, Instagram etc. There is no need for me to take this course.





# True or False?

The course teaches me how to become a successful entrepreneur in the digital age.





# True or False?

The course is very demanding. I will struggle with the course.





# This is not a course about...

Introduction to Marketing

Web development or Web Design

Public Relation/ Journalism

e-Commerce

Entrepreneurship class - build app/website, become a millionaire!

A specialized course intended for one specific aspect

- Search Engine Marketing

- Social Media

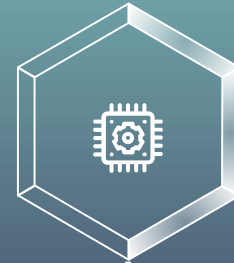
This course adopts methodologies from



**Computer  
Science**



**Statistics**



**Economics**




# Leveraging your competitive advantage

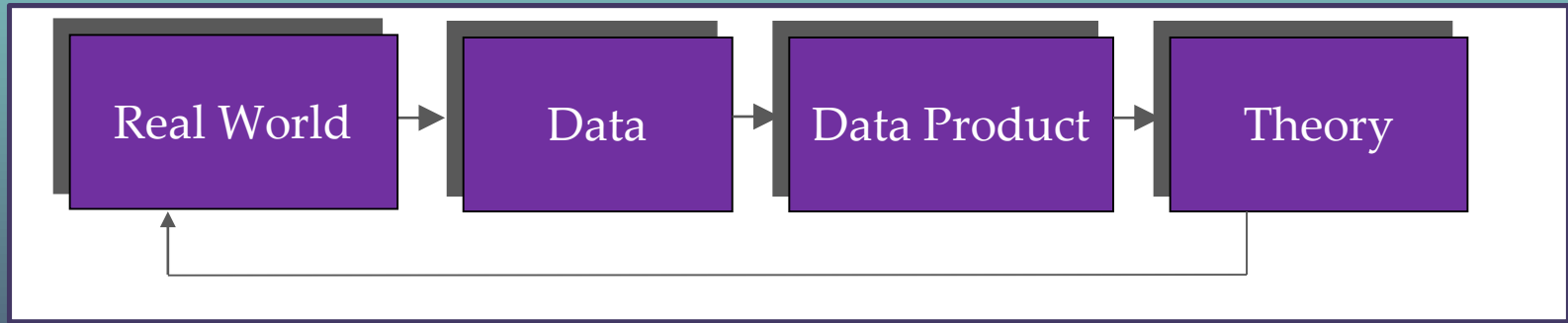
Compared to traditional marketers, you know how to program and how to analyze data.

Compared to statisticians and computer scientists, you understand consumers and better, and know how to apply results to business settings.

Compared to economists, you not only know the theory, but also know how to apply the theory to solve real-world marketing problems, and test the theory using real-world data.



# The LOOP





**We emphasize on data, data, and data**

*“Talk is cheap, show me the data!”*





We solve problems for



**Firms**



**Platforms**



**Individuals**



# The Instructor

Xi Li, Associate Professor of Marketing.

PhD in Management, University of Toronto.

M.Phil. in Operations Research, HKUST.

B.E. in Computer Science, Tsinghua University.

*Research interests:* Algorithms, big data and online marketplaces.



# Do I really want to take the course?

I don't know. It depends. But let me offer you some advice.

## Take the course if

You are interested in data analysis, and you are considering to become to data scientist in the future.

You want to understand how the digital marketing industry operates and evolves over time.

You want to explore rigorous research methodologies from different areas.

## Don't take the course if

You hate data analysis or programming.

You already know the materials to be covered in the class.

You want to pick an easy course to fulfill your credit requirement.





**Why should we study Digital Marketing?**






# Why go digital?

Consumers are online, more than ever before!

Firm productivity can be significantly improved by digital technology and data analytics

Better promotion effectiveness via SEO and online advertising  
Better engagement between firms and customers via social media



## Average Time Spend in the US, 2019

Hrs:mins per day among population



Digital **6:35**



TV **3:35**



Radio **1:20**



Newspaper **0:11**

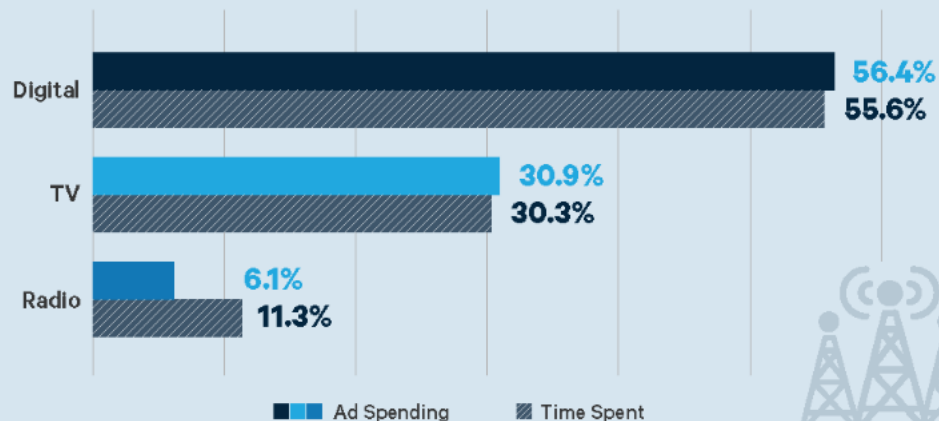


Magazines **0:09**

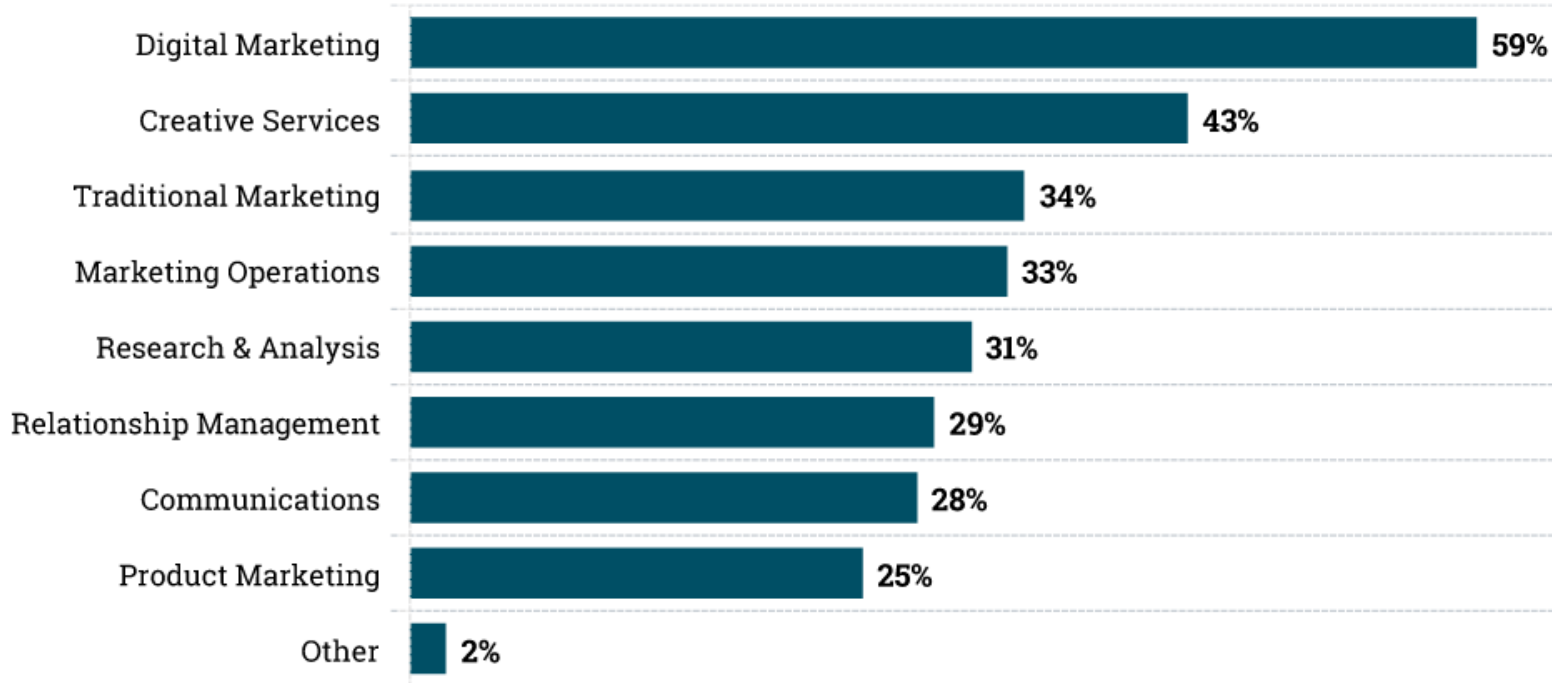


Average time users spend watching digital video everyday  
**2 hours, 13 minutes**

## Share of Time Spent with Media vs. Ad Spending in the US, 2019



# Demand for Marketing Talent in 2018, by Function



Published on [MarketingCharts.com](https://www.marketingcharts.com) in May 2018 | Data Source: McKinley Marketing Partners

*Based on an October 2017 survey of 329 marketing professionals in the US from a mix of company types and sizes.*



# How is digital marketing different?

More targeted and context relevant

More use of personal devices rather than mass media

Use of social aspect and viral marketing

More measurability





# Additional Course Information





# Course Website

In addition to the official course website provided by the university, we will also use a semi-official course website. You can find the latest materials and updates on this course website.

[https://ximarketing.github.io/\\_pages/teaching/](https://ximarketing.github.io/_pages/teaching/)

Password for digital marketing: HKU-FBE





**Textbook? No.**








# Course Overview

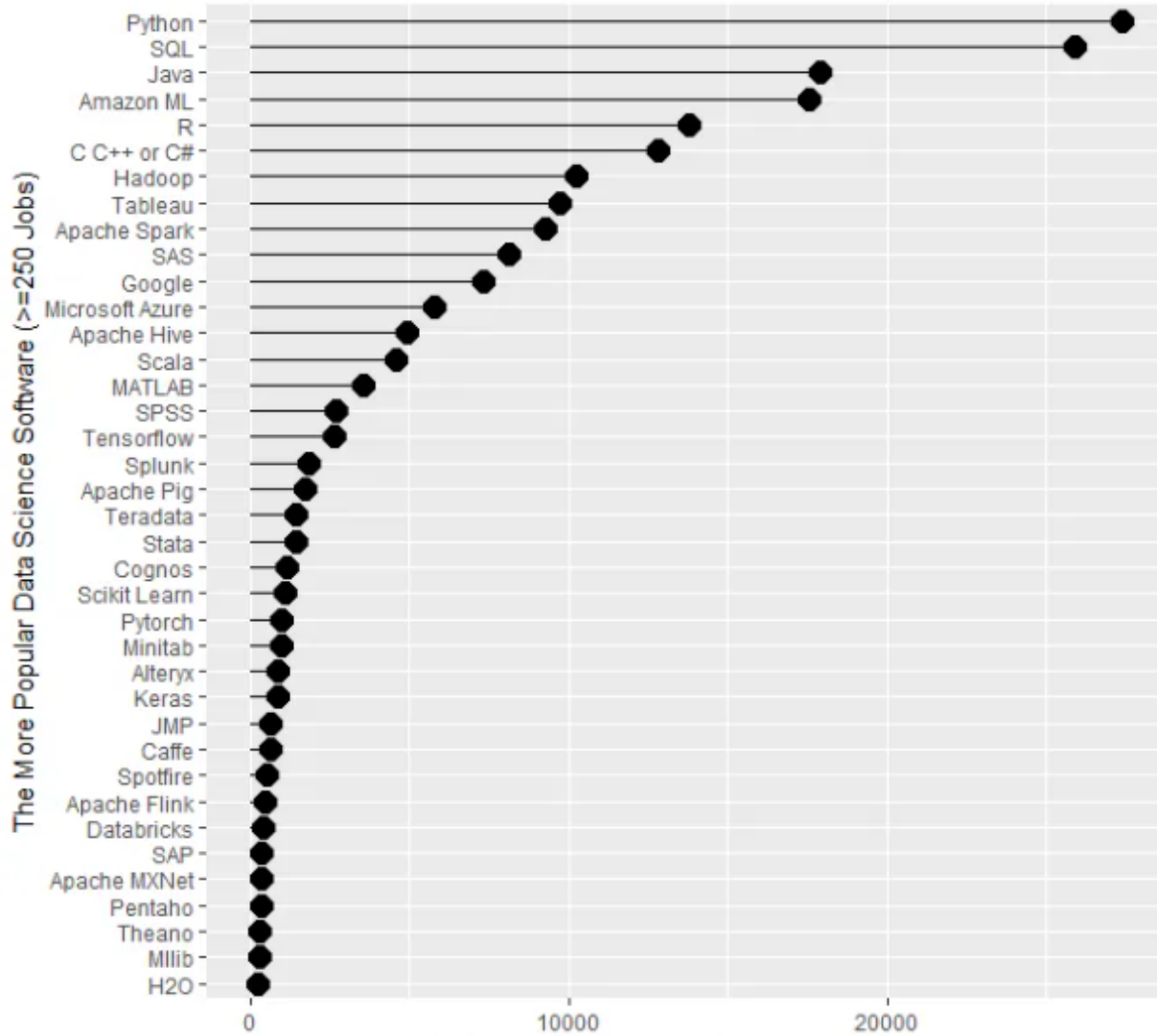
## Data analytics with R.

You can use Excel or SPSS, but they are too simple and cannot handle complex data analysis projects.

R is a free software that is commonly used for statistical analysis.

It is not only useful for digital marketing, but also useful for other purposes such as machine learning and optimization.







# Course Overview

## Data visualization with Tableau.

Data visualization gives us a clear idea of what the information means by giving it visual context through maps or graphs.

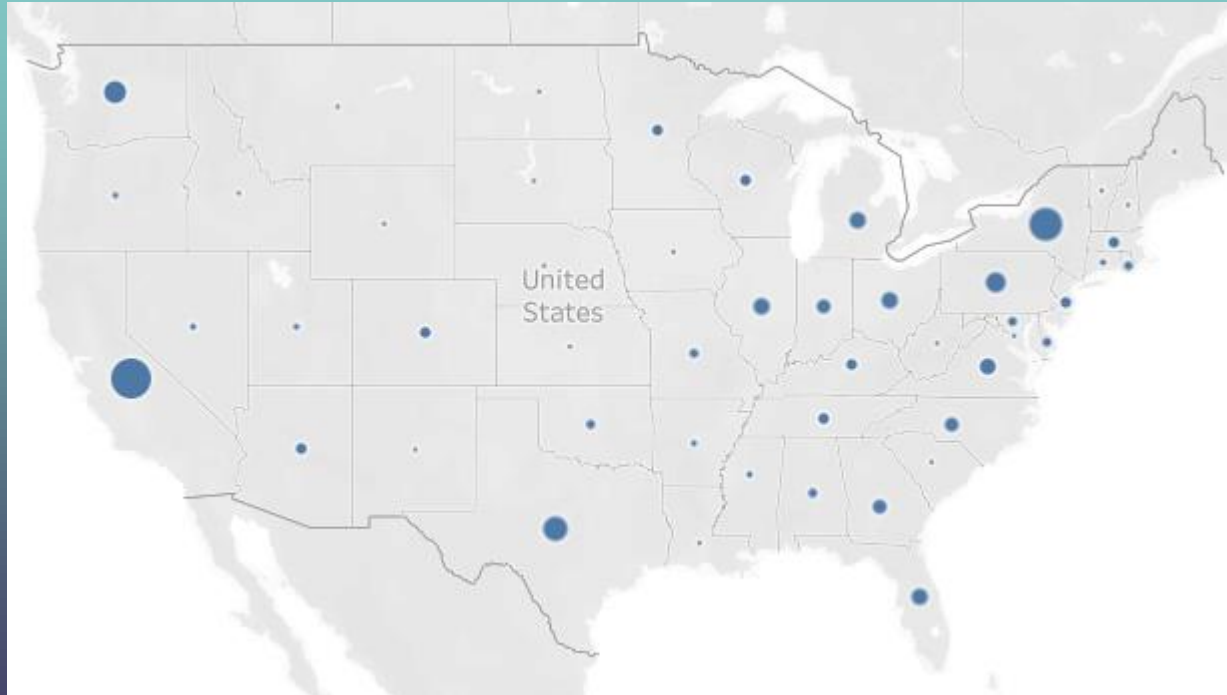
When you want to show your results to others, the best way to use figures --- *“A picture is worth a thousand words”*.



# Tableau

United States California	United States Texas	United States Illinois	United States Ohio	United States Michigan	United States Virginia
	United States Washington	United States North Carolina	United		
		United States Indiana	United States		
United States New York	United States Pennsylvania	United States Georgia			
		United States			
	United States Florida	United States			

# Tableau






# Course Overview

## Web Scraping with R.

Data scraping allow you to scrawl information from websites, e.g., online marketplaces. For example, you can collect product information from HKTVMall, weather information from Hong Kong observatory, and tweets from Twitter.

Warning: Do not expect that you can become an expert in data scraping within one class. This is simply an introduction, and you need more practice yourself.



# Course Overview

This may be the only web scraping class in a business school (I don't know the answer, through).

We will see how to gather information from HKU faculty webpage:






# Course Overview

## Search Engine Optimization.

We all know that Google is the most popular search engine (and even the website) over the world.

We are going to address the following questions: (1) How does Google (and other search engines) work? (2) How to improve your page rank on Google, so that consumers can more easily find your website through searching?








# Course Overview

## Paid Search.

While SEO allows you to improve your page rank for free, you can also spend money to get more attentions from consumers.


We are going to address the following questions: (1) What is online advertising? (2) How does Google sell its search results through auctions? (3) How to buy paid ads? (4) How to develop you keywords list?





# Course Overview

## Display Advertising and Content Creation.

- How to offer targeted ads based on user behavior?
  - How are displayed ads bought and sold?
  - How to design content?
  - What is click fraud?
- 



# Course Overview

## Social network and mobile marketing

We will discuss ways to take advantage of the social network to engage your users and amplify the influence of your brand.

We use introduce some measures of social networks and use R to process social network data.

We will also discuss some characteristics of mobile marketing.





# Course Overview

## Social media.

Setting guidelines and policies for your social media: make sure that you are using social media platforms in a correct way.

Managing social media campaigns using HootSuite.

Ways to engage your users through social media.

AB testing for social media optimization.





# Course Overview

## Social media (Continued).

Social listening: listening to your consumers on social media. Social listening is useful for brand monitoring, watching the competition.

Influencer marketing – amplifying your brand on social media.






# Data Analysis

In this course, we are introducing a practice class on data analysis. This is one unique feature of our course.

You have already learned about R and Tableau. Perhaps you can also use many other tools such as SPSS, Excel, Python etc.

I will give you some real digital marketing data, and your goal is to study the data using the tools you know --- It's entirely up to you how you want to play with the data!






# Data Analysis

You are going to work with your teammates on the data project. Then, each group will submit a report illustrating the findings from the data. **It will be graded, and it affects your final grade.**

We will start with the data analysis in the class, and you will finish all the analysis after the class.

The purpose of the data project is to help you understand the data analysis methodologies and gain a sense of real data that data scientists are analyzing everyday.






# Overall Course Structure

We have 12 or 13 lectures over the entire semester. Among them, we are going to have

- 1 introduction class (today)
- 1 data workshop
- 9 regular lectures
- 1 class for project presentation

For 1A (Monday), perhaps one more class for data workshop/review/QA session.







# A novel feature of this course

Instead of using cases, we will talk about some real data-analytic projects done by professors at top universities (e.g., MIT, Chicago, Harvard) to see the cutting-edge research in digital marketing.

Understand what we can do with data.

Understand how to collect and analyze data, and how to design studies for Internet companies.

Understand how data scientists are working on nowadays.



# Mobile ads are more effective in crowded trains

Hyper-C

crowdedness

Goizueta Business School

Business, Temple University,

Fox School

xm@temple.edu

Stern School

se@stern.nyu.edu



# Review Ratings Change Sequentially and Temporally

## Sequential and Temporal Dynamics of Online Opinion

David Godes

Robert H. Smith School of Business, University of Maryland, College Park, Maryland 20742,  
dgodes@rhsmith.umd.edu

José C. Silva

Fuqua School of Business, Duke University, Durham, North Carolina 27708,  
josecamosilva@alum.mit.edu



# What we would do

You are going to work in groups to select one research study from a list of papers assigned by the instructor.

You need to read the paper carefully to understand how the study was executed and what we can learn from the study.

Then, each group will prepare a few slides and share the study with your classmates – the idea, the methodologies and the findings.

This gives us a sense how serious data projects are carried out.



# Research Presentation

What you need to do:

- Choose a paper to read (instructions will be announced later)

- Read and understand the paper

- Prepare a few pages slides

- Share the study with your classmates (12~15 minutes for each group)

Not sure what to prepare? No worries.

The instructor will first do the sharing in the class. So, you will find out the format and know how to present.

# Suggested After-Class Workload

Group level:

Paper Presentation: 6 hours

Data Analysis Task: 6 hours (+ 3 hours in class exercise)

Research Project: 12 hours (No data analysis required).

Individual preparation for final: 6 hours

In sum: around 30 hours

# More on course workload

It seems that the course has several components (paper presentation, data analysis, research project and final), in fact the workload is not that much:

In the past, we need to collect data and analyze the data in the research project, but now you do not need to do so. Moreover, I will give you the data directly so that you do not need to collect it.

As you work on the research project, you will use most of the concepts taught in class, so it will be very easy to review for the final exam.

# More on course workload





# Research Project

**Good news:** Because we already have the data analysis task, you do not need to collect or analyze data in your research project.

What you need to do: **Choose a company and analyze the company's digital marketing strategy.**

You are free to choose your own company, but make sure that the company is active in digital marketing (at least it should have social media accounts and its own website).

# What you should focus on

Company website: Any issues? What can the company do to improve its website?

Social media (e.g., Facebook, Instagram, Twitter): Is the company managing its social media accounts? Any issues? What would you suggest the company?

Online sentiment: How people are discussing the company or its brands in online review platforms (e.g., TripAdvisor, Amazon)? What's wrong?

# Grading

Your grades will be determined by the following components:

Group-level paper presentation: 10%

Group-level data-analysis task: 15%

No presentation; report needed

Group-level research project: 25%

Both in-class presentation and report required

In class participation: 5%

Final examination: 45%




# TODO List

If you decide to take this course, here is what you should do after today's class (Important!):

Form groups with your classmates. Think about the papers you are going to present and the project you are going to work on.

Individual task: Install R on your laptop. We will be using it in the next class.



# Group Formation

Each group consists of at most 4 students (and at least 1).

You need to choose a name for your group, e.g., “Marketers”, “Fantastic”, “A Plus” ...

Email me your group information (group name, your own names and student numbers) before **Sep 12 (Class 1B) / Sep 15 (Class 1A)**.

Let me know if you cannot find a group.



Let's Download and install R.





**Next, let's download R-Studio.  
It is also free.**

