

# Feature, Function and Benefit: Designing Amazing Products – Learning from the Captivating World of Product Managers

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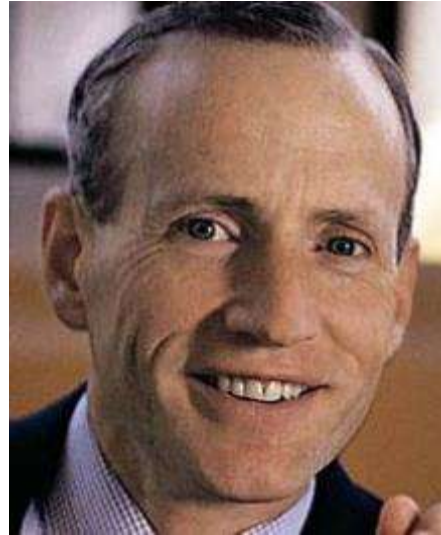
# Credit for whatever is helpful...



Simon Kuznets



Paul McCracken



Ted Synder



Merle Crawford

Faults are mine

# Focus based on the Call for Papers...

- New data sources
- Adjustments for quality changes of goods and services is one of the main challenges in CPI compilation.
- What are the problems of particular services such as insurance, health, transport, legal and financial services, telecommunication services and web-based services in terms of identification of suitable units and adjustments for quality changes, and which solutions or models can be suggested?

# Overview

Please think of yourself as a shopper

- Quality is more specific than assumed in price indices – it must be for companies to make money by satisfying consumers
- Assumptions of “close enough” measures of quality adjustment do not match daily reality of 1) mega retailers and 2) affinity-driven product companies at operating at hyper-refined levels of detail
- Assumptions of 1) adequacy of existing data and 2) available data don't match the world of big data and decision science by product companies and retailers – in most active product groups
- Analytical methods, hard data and practical application of that data exist in other disciplines, waiting to be engaged in price indices

# Price indices users...

- Individual people
- People/companies entering into contracts
- Business planning
- Investors/savers
- Public policy (broadly social, fiscal and monetary)
- More

# Price indices exist to answer user questions...

- *What is the cost, at this month's market prices, of achieving the standard of living actually attained in the base period?*
- What is the average change over time in the prices of goods and services that people buy for day-to-day living?
- How much better or worse off is a person based on her/his shopping basket that varies by age, working status, geographic location, living situation and more?
- How do we agree on wage increases?
- How do I hedge my foreign exchange transactions?
- When does our central bank taper large scale asset purchases?

# What are real challenges of price indices in view of the use of those indices for decisions?

## Questions of data quality and sufficiency

- Missing data
- Measurement objectives: price change & real output
- Quality: Utility (beyond surplus of price paid v. willing); really, increased benefit received
- Product concepts: new and retired, and cycles
- Price concepts (e.g., staggered price-setting)

## Questions of statistically acceptable inference

- “Generalized” price level for monetary policy
- Groups of people – contracts for wages, services and financial assets
  - Individuals – personal shopping basket

## Questions of human behavior

- What is perceived as a “whole” product (including Brand/affinity and convenience)?
- What is perceived in a price?
- What combination of product benefits and price motivate a purchase or substitution?
- What causes preference?

## Questions of product management behavior

- How are customer segments identified?
  - How is a customer need identified?
- How is a product designed, modified, retired?
- How is a product priced by online retailers (wide variation), costs, competitors, technology change, growth objectives and target customers?

Nexus

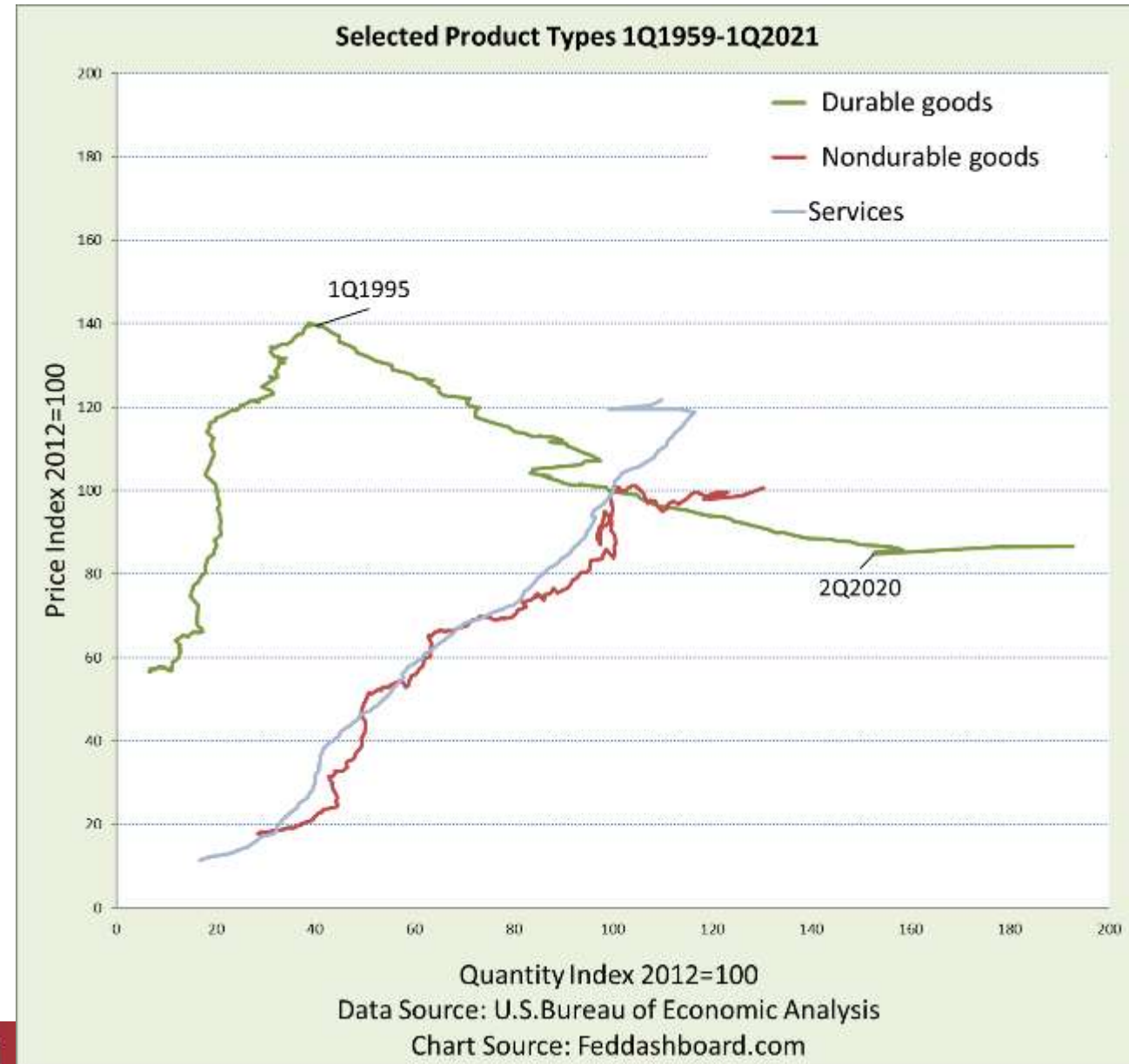
A statistic is only as good as its representation of reality





# In the data:

- Product prices lack a stable standard deviation and single mode
- Consumer purchase relationship to price is strikingly different
- Thus, inference limitations



# Quality adjustments for computers

## Consumer Price Index

[Bureau of Labor Statistics](#) > [Consumer Price Index](#) > [Publications](#) > [Factsheets](#)

## Measuring Price Change in the CPI: Computers, peripherals, and smart home assistant devices

The **computers, peripherals, and smart home assistant devices** index is a subcomponent of the **information technology, hardware, and services** category of the Consumer Price Index. The CPI tracks changes in prices for items sold to household consumers for personal use. The **computers, peripherals, and smart home assistant devices** index is published monthly at the U.S. level.

### Related Articles



**Last Modified Date:** November 25, 2020

# Quality adjustments for computers

## Quality adjustment

The quality for personal computers is associated with the attributes of the components that are used to build it. Attributes include the speed of the central processing unit (CPU), the amount of random access memory (RAM), and the hard drive storage capacity. Based on these and other attributes, all personal computers are classified into one of three levels of quality: high end, mainstream, or economy/low-end.

The specific attributes that differentiate each quality level are updated every 6 months. CPI data collectors are instructed to substitute a new computer to a new one of the same level of quality but with updated attributes. This process, known as directed substitution, is different from the typical CPI process where an item continues to be priced until it is replaced. With directed substitution, data collectors are directed to substitute to a new item, regardless of the availability of the old item, and then adjust for the quality change in the computer's attributes to reflect price change for the particular level of quality.

Also monitor size and video cards to replacement items (when applicable).

Because the individual components in personal computer configurations change so rapidly, the CPI program moved to an approach that uses attribute values available on the Internet as a basis to determine appropriate quality adjustments amounts in 2003. The attribute cost adjustment database for desktops computers has seven attribute categories. Each attribute category is populated with the values of specific components, resulting in a database of 250 to 300 attribute values that are updated monthly.

The monetary values of computer attributes used by the CPI for adjustments are obtained from Original Equipment Manufacturer (OEM) websites. These websites are computer part price aggregators. The data obtained from these OEM websites include the producer prices of computer components, such as the hard drive, CPU, or RAM model, that were charged to the computer manufacturer.

# How are products sold...

## Surface Go 2

Surface Go 2 is perfectly portable, with a bigger 10.5" touchscreen, better resolution, and long battery life designed to keep up with you and your family. Use it like a laptop or tablet for everyday tasks. Surface Go Type Cover and Surface Pen sold separately.



## Our smallest, lightest 2-in-1 laptop

Keep up with everyone from just about anywhere. 10.5" Surface Go 2 is perfectly portable, with tablet-to-laptop versatility and long battery life up to 10 hours.<sup>1</sup> If you need more power, more productivity and a larger screen, check out [Surface Pro 7](#).

## Everyday performance for every task, anywhere

Surface Go 2 can handle every to-do item throughout your day. Jot down ideas, help out with homework, create and practice presentations, and manage your email.

## Go and unwind

Browse, play and binge on the 10.5" touchscreen display with improved 220 ppi resolution.

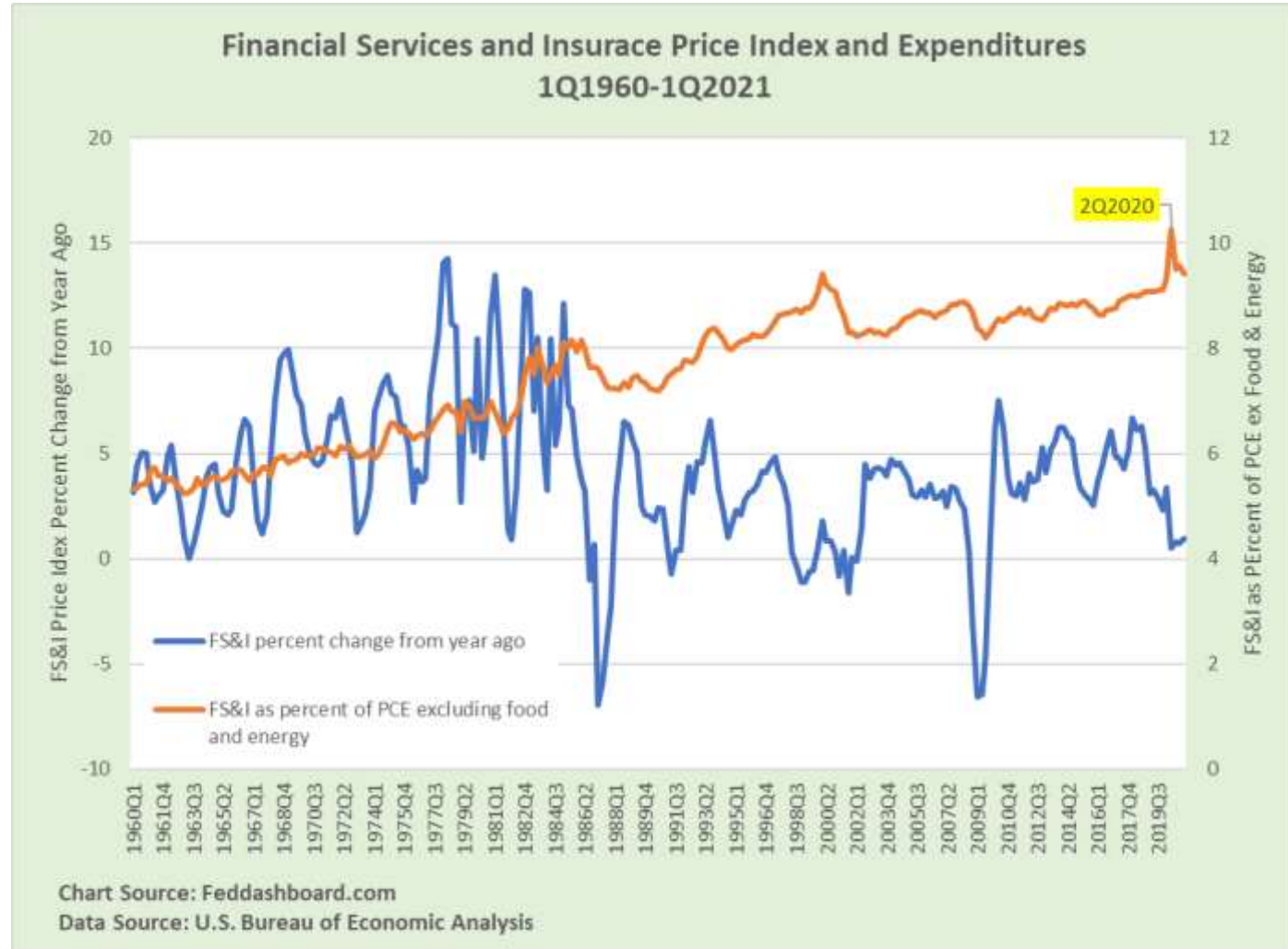
<https://www.weareoriginalbydesign.com/>

# For personal computers and many categories

- “Available” attributes used are different from the value creating features, functions and benefits on which product managers, retailers and consumers focus
- For example, in consumer landline telecom, price increasingly based on consumer risk aversion or laziness
- For price indices, a beneficial gap to close is to expand beyond current attributes

Did you know?

FS&I is 9% of PCE ex. Food & Energy, and runs hotter



# Lag in financial services and insurance

CHAPTER 5: PERSONAL CONSUMPTION EXPENDITURES

## **CHAPTER 5: PERSONAL CONSUMPTION EXPENDITURES** (Updated: December 2020)

# Lag in financial services and insurance

- For OTC markets, individual purchases from dealers are equal to total dealer sales to the public less purchases by institutions. Total dealer sales to the public is derived by subtracting dealer-to-dealer and public-to-public share volume from the total and using a BEA assumption that one-half of the remaining dealer-to-public transactions is accounted for by sales. The institutional share of OTC transactions is based on SIA reports. Average cents-per-share spreads are from NASDAQ, extrapolated by the “PPI for dealer transactions, market making in over-the-counter equities.”
- For registered exchanges, the NYSE ratio of specialist sales to total purchases and sales is applied to total purchases and sales on all registered exchanges to derive total specialist sales. The individual share of specialist sales is based on SIA reports. Average cents-per-share spreads are assumed to equal the volume-weighted spread for NYSE specialists as reported by the exchange.



# Financial services needs updating

SECURITIES AND EXCHANGE COMMISSION  
(Release No. 34-58184; File No. SR-NYSE-2008-46)


July 17, 2008

Self-Regulatory Organizations; New York Stock Exchange LLC; Notice of Filing of Proposed Rule Change, as Modified by Amendment No. 1, to Create a New NYSE Market Model, with Certain Components to Operate as a One-Year Pilot That Will Provide Market Participants with Additional Abilities to Post Hidden Liquidity, Phase Out Specialists by Creating a Designated Market Maker, and Enhance the Speed of Execution Through Technological Enhancements

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (“Act”),<sup>1</sup> and Rule 19b-4 thereunder,<sup>2</sup> notice is hereby given that on June 12, 2008, the New York Stock Exchange LLC (“NYSE” or “Exchange”) filed with the Securities and Exchange Commission (“Commission”) the proposed rule change as described in Items I, II, and III below, which Items have been prepared by the Exchange. On July 15, 2008, the Exchange filed Amendment No. 1 to the proposed rule change. The Commission is publishing this notice to solicit comments on

Updates also needed for all forms of electronic banking – web and smartphone

# For answers, hard data is available for...

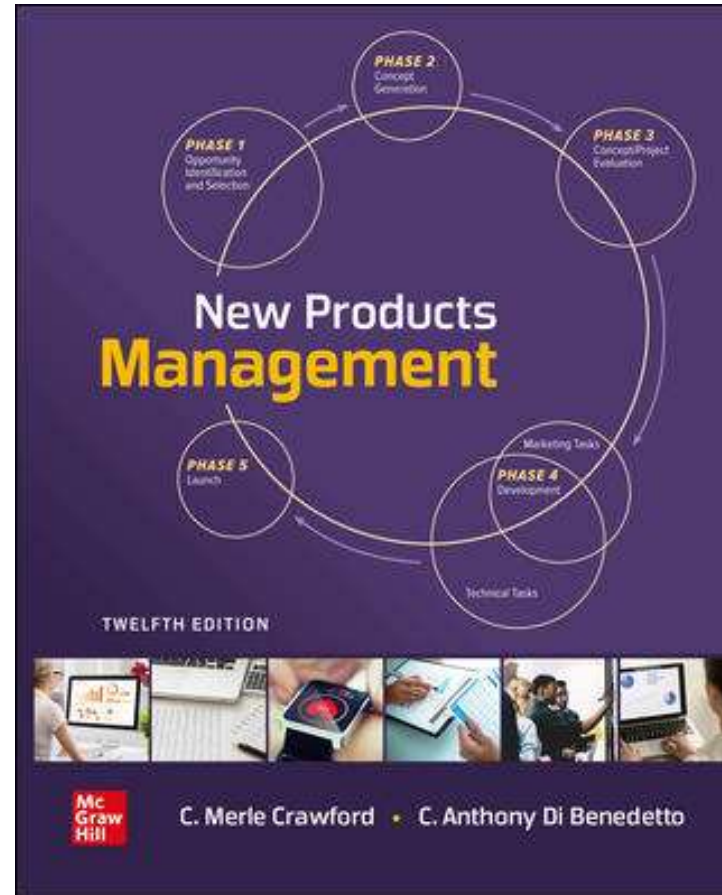
- Compensation of product managers
- Sales objectives per product
- Achieving lifecycle price curve per product
- Online marketing and sales
  - Influencer and endorsement compensation
  - Bundling decisions
  - Different price in different venues by a single seller
- Valuation of products and companies for corporate transactions
- Development of products such as Wikibuy now 



# Analytics especially well developed in New Product Management



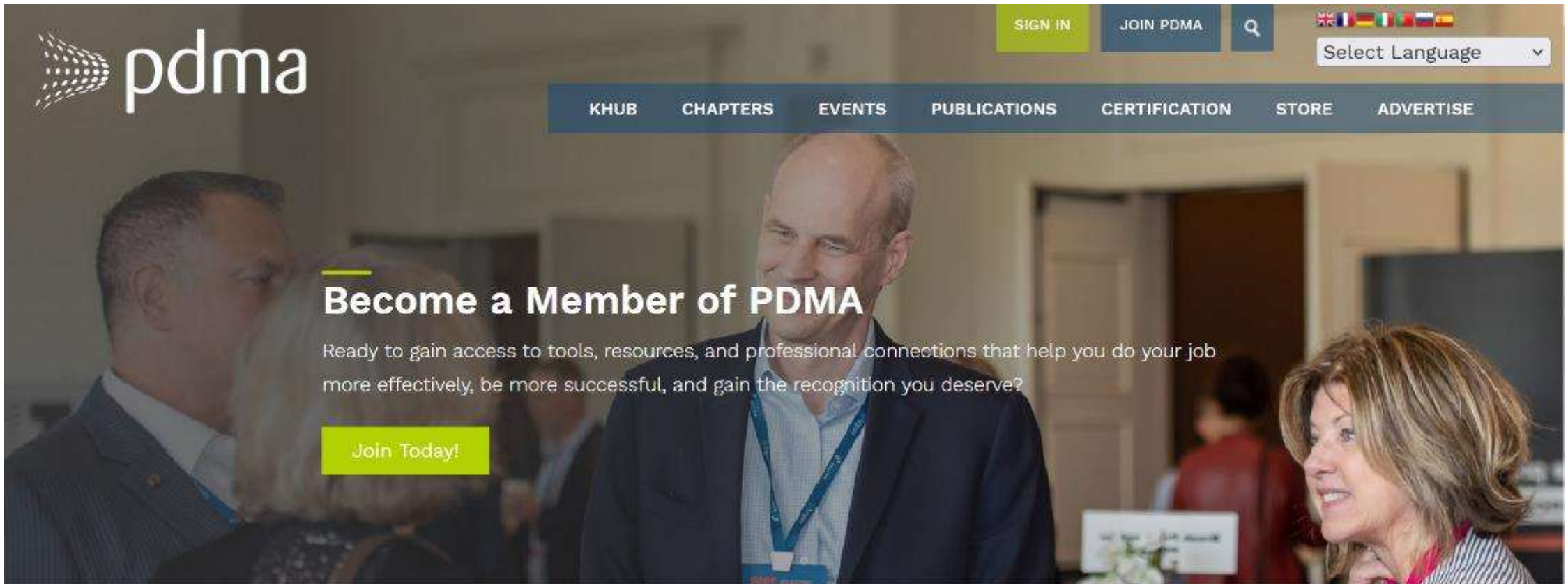
Merle Crawford



Practitioners and  
Academics

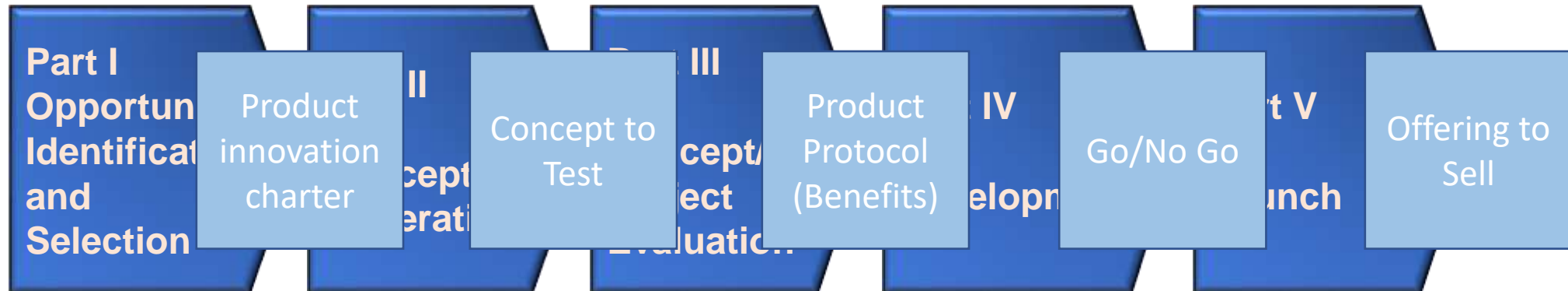
Crawford Fellowship

Just ask for the insight needed...



The banner features the PDMA logo on the left, a navigation menu with links for KHUB, CHAPTERS, EVENTS, PUBLICATIONS, CERTIFICATION, STORE, and ADVERTISE, and a 'SIGN IN' button. A 'JOIN PDMA' button is also present. A language selection dropdown is set to 'Select Language'. The main text reads: 'Become a Member of PDMA' followed by 'Ready to gain access to tools, resources, and professional connections that help you do your job more effectively, be more successful, and gain the recognition you deserve?' and a 'Join Today!' button. The background shows a group of people in a professional setting.

# The “Crawford Book” – Five Phases

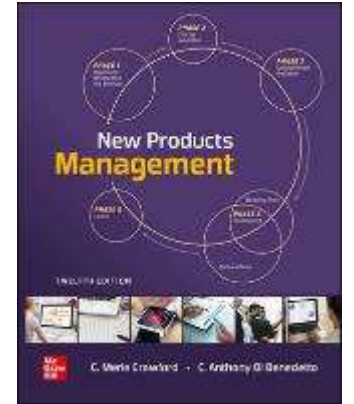


Adapted from: New Product Management, Crawford & Di Benedetto, 12<sup>th</sup> Edition, 2021

# Food buyer clusters based on price

(Based on scanner data analysis)

- Brand loyalists, not price sensitive
- Rotators within a set, not price sensitive
- Deal seekers with a set
- Price-sensitive
- Store brand loyalists
- Light users with no pattern, often largest group of buyers
- Retailers can use prices as “end-cap” “loss leaders”



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# Ahold Delhaize frozen juice leveraging both scanner and loyalty program data – “sale” price plus individual coupons



For Adobe analytics data, see also Goolsbee & Klenow, 2018  
[https://www.nber.org/system/files/working\\_papers/w24649/w24649.pdf](https://www.nber.org/system/files/working_papers/w24649/w24649.pdf)

# Ahold Delhaize v. Costco bakery pricing strategy



What does this mean for the intended use of a price index in measuring cost of living?



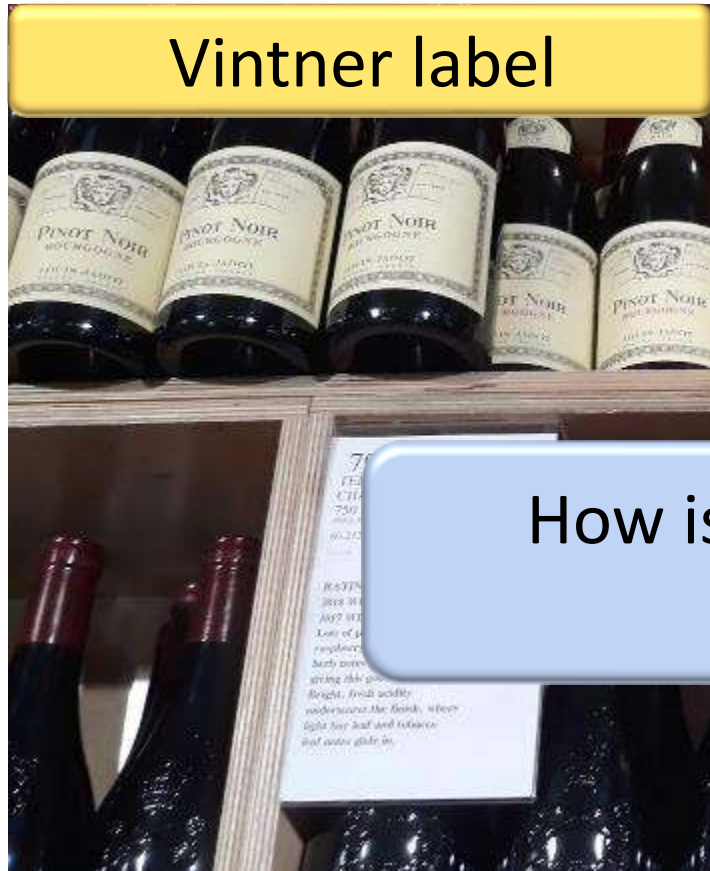
Ahold **lowers cookie prices** to attract grocery customers while increasing loyalty programs to increase visits and total shopping spend per visit.

Costco **increases cookie prices**, leveraging lower prices on other products and already high spend per visit.

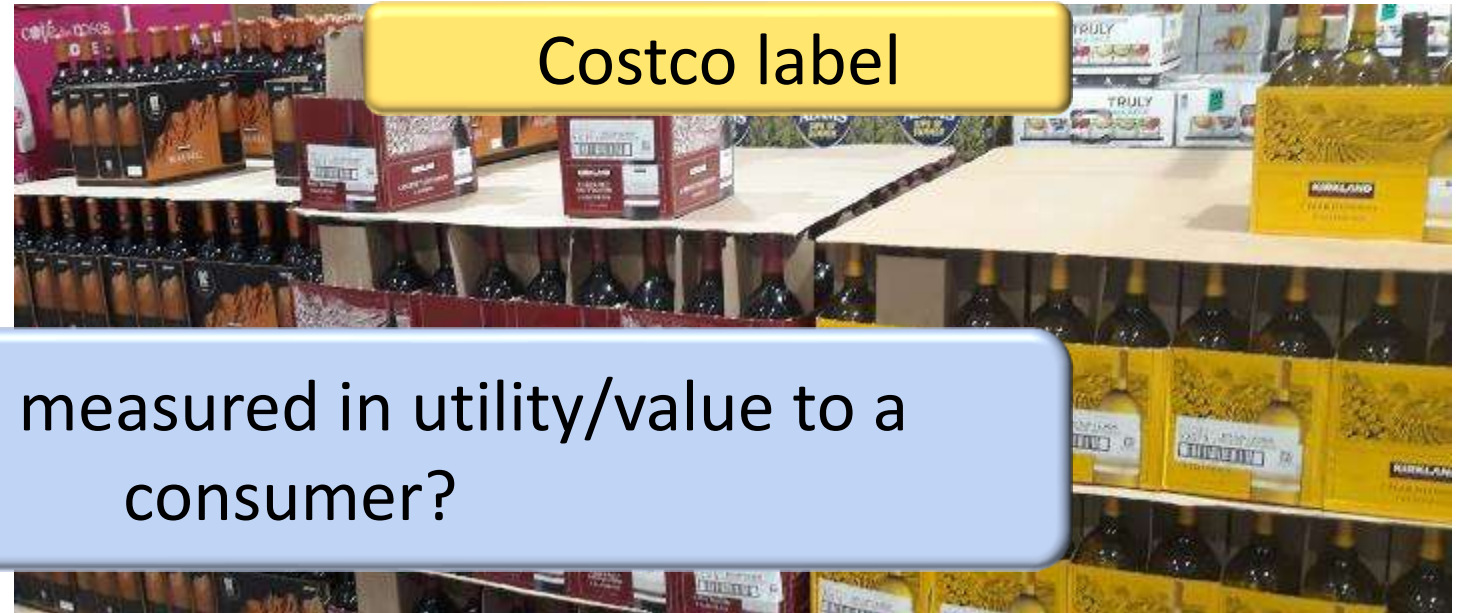


# Costco brings British wine model to U.S. – with a twist – highlighting cost per award competition point

Vintner label



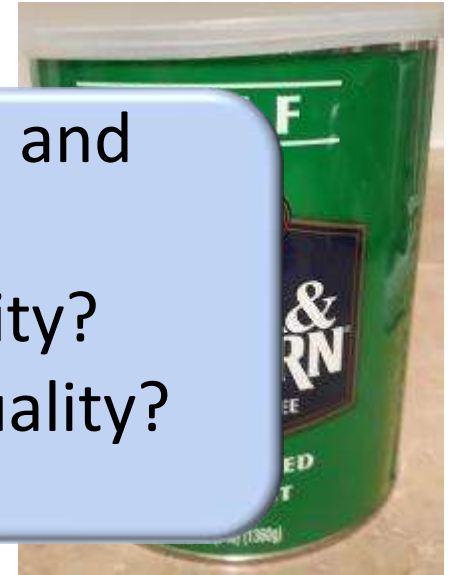
Costco label



How is this measured in utility/value to a  
consumer?

<https://wineeconomist.com/2007/08/22/costco-and-global-wine/>

# Costco premium house brands complicate utility, replacement, comparison and output analysis – strikingly clear during COVID



Even in basic products such as coffee, green beans and peanuts much activity.

- How much of rebranding is a decrease in quality?
- For premium house brands is it an increase in quality?
  - How much is a decrease in price?



# Price Strategies

- Premium – including affinity and early adoption
- Skim
- Meet the market
- Penetration
- Many combinations for online:
  - Including variable prices based on 1) convenience, 2) path to a site and 3) search criteria used (e.g., hotel shopping sites based on search parameters for brand and street intersection).
  - Different from perfect price discrimination.
- Starbucks-McDonalds 30-40% gap is an example

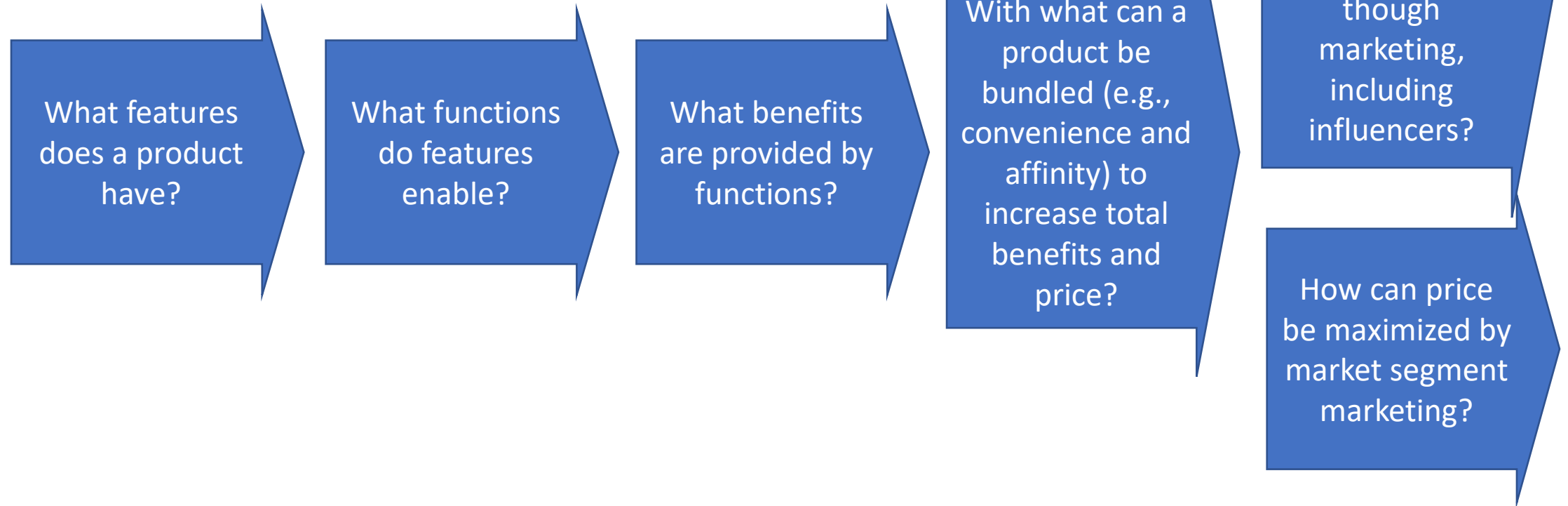


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See also Aviv Nevo, ECB Forum on Central Banking 2018

[https://www.ecb.europa.eu/pub/conferences/html/20180618\\_ecb\\_forum\\_on\\_central\\_banking.en.html](https://www.ecb.europa.eu/pub/conferences/html/20180618_ecb_forum_on_central_banking.en.html)

# Realities to reflect in stats



# Thus, questions to ask about stats...

How to determine product features, functions and benefits? – (from peanuts to laptops)

To maintain product comparison, how to separate bundled product/whole purchase (convenience, affinity, luxury, brand) -- e.g., bananas

How to determine what functions are used by how many buyers? (first widespread seen with VCRs, later telecom)

How to account for benefits received from a whole purchase given features, functions, benefits used and nature of used of those functions? (e.g., digital platforms in COVID)

How to maintain product comparison when goods and services can be bundled by both manufacturers and retailers?

How to account for the same product at different prices separated by a consumer's preference for convenience (search or travel)?

# Our changing world...

All attributes

**Product and Price Analytics driving new products**

Including affinity and convenience value bundles

Attributes on  
which price  
indices focus

# Summary

Please think of yourself as a product manager

- Engage the discipline of new product management
  - Direct insight on both 1) quality design intention and 2) customer behavior
- Engage the discipline of pricing – producer and retail levels
- Focus on difficult assumptions about
  - Disentangling bundled products -- especially with convenience and brand affinity/luxury
  - Behavior
    - User for goods -- knowledge of a person to use a good and complementary goods/tools – similar to the “farmer problem”
    - Blended service provider-user for services
  - How the features in a product are used to create value/real economic output
    - Similar to utility, but different as this is about how features are used for a purpose – Similar to how Microsoft sells its Surface products to achieve objectives; also true for something as basic as a hammer
    - Potentially large impact
  - Both price exposure and quality/real quantity benefits are individual (or at least market segments)
- Explore cause, rather than statistically assume and test in limited data

# Thank you!

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