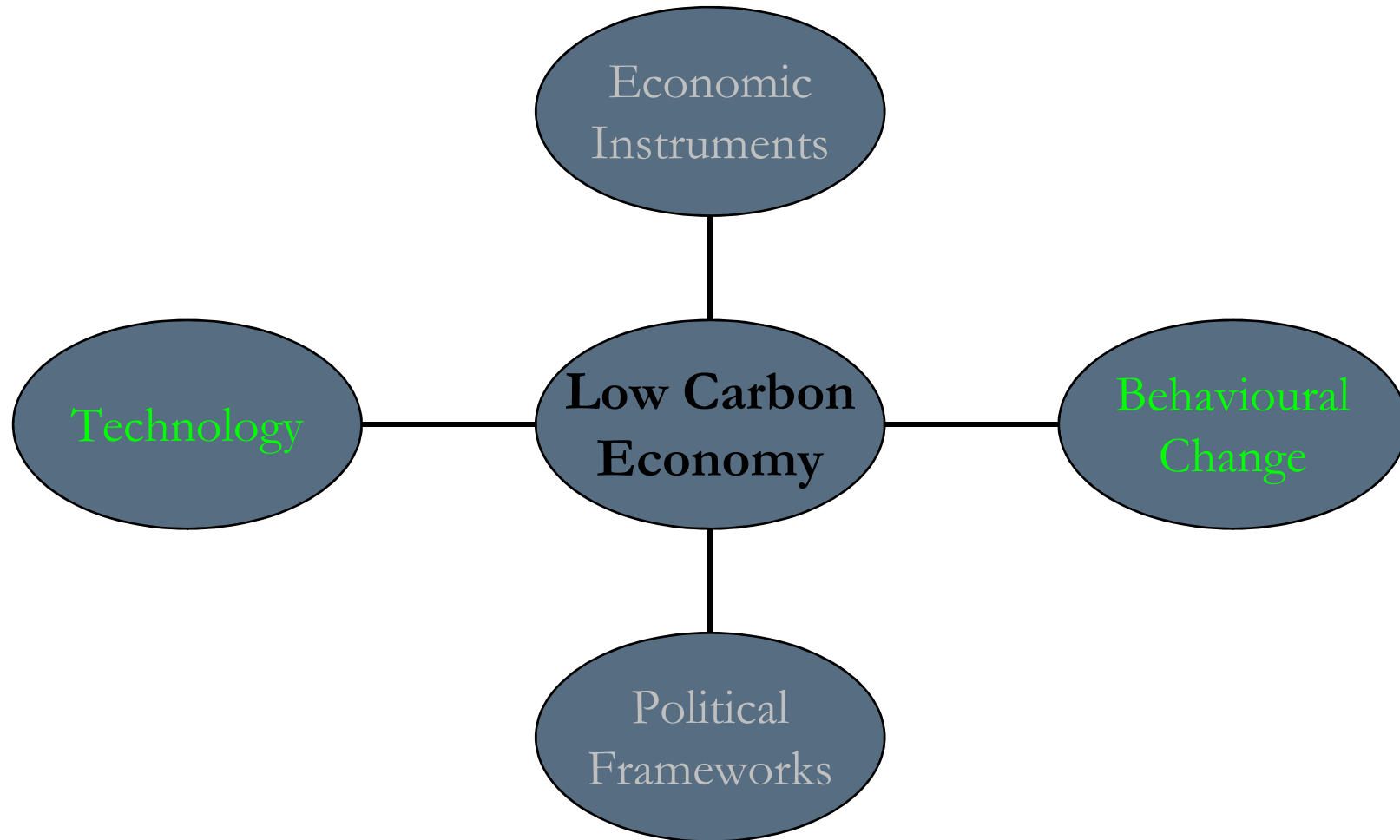# Consumer adoption of new technological products – implications for take-up of low carbon technologies

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Building the "low carbon economy"

Agenda

- Some new thoughts on consumer adoption of innovations
- Low-carbon technological products or services
- New findings on factors influencing consumer adoption of innovations
  - What make a product or process really-new?
  - Uncertainty
  - Temporal construal
  - Future vs. present benefit
- Implications for businesses

Rogers' five adopter categories

- Innovators (2.5%): Venturesome: resourceful, knowledgeable, risk seeking.

- Early adopters (13.5%): Respect: opinion leaders with sound judgment and responsible attitude.

- Early majority (34%): Deliberate: cautious but positive

- Late majority (34%): Sceptical: limited resources, uncertainty avoidance.

- Laggards (16%): Traditional: local and isolated. Past is the main reference point.
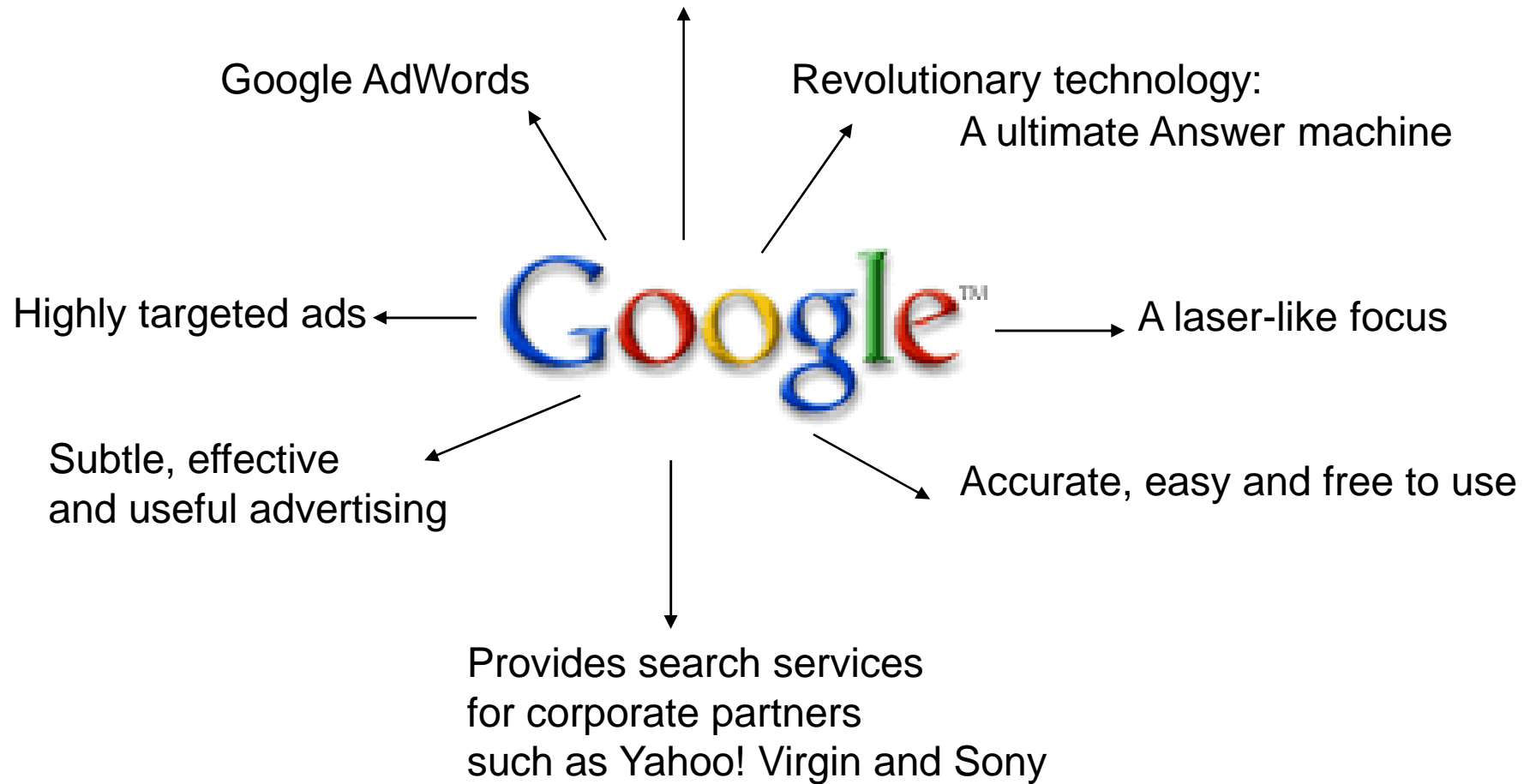
The Segway Scooter

- Targeted at the majority (i.e. the mass market)
  "Cities would be architected to accommodate the computer-controlled, self balancing human transporter" - Steve Jobs

- Ended up in a niche market

One of the world's best known brands through word-of-mouth

Google AdWords

Revolutionary technology:
A ultimate Answer machine

Highly targeted ads ← **Google™** → A laser-like focus

Subtle, effective
and useful advertising

Accurate, easy and free to use

Provides search services
for corporate partners
such as Yahoo! Virgin and Sony

New thoughts: a shift in the focus of innovation adoption

- Re-address the balance between:
  - reaching the innovators and reaching the majority adopters
  - designing advanced features to attract innovators and removing barriers for the majority adopters

  And develop effective marketing techniques to achieve the above objectives

Positive characteristics of low-carbon technologies

- Enhancing – Technologies that optimize energy use by making existing processes more efficient:
  - E.g. boiler technologies for domestic heating system, variable speed drive technologies for industrial motors.
- Enabling – Technologies that save energy by allowing us to do things differently:
  - E.g. hybrid vehicles, solar panels, wind farms.
- Transforming – Technologies that lead to alternative, low-carbon business models:
  - E.g. elimination of paper-based communication, teleworking, teleconferencing.

Negative characteristics of low-carbon technologies

- High cost (e.g. domestic solar panels)
- High technical uncertainty and cost-benefit trade-off still unclear (e.g. electric vehicle)
- Supporting infrastructure not yet established
- Users (both consumers and business users) have to switch to new ways of doing things and change behaviour/lifestyle/routine significantly

What makes a product or process really-new?

- Many low-carbon technology products or services belong to really-new category, such as enabling and transforming technologies.
- They are not related to existing product concepts or production processes.
- Consumer learning involves developing *new preferences,* and requires significant *behavioural and lifestyle changes*.
- Business learning involves radical re-thinking of the current business models, and the implementation of which requires significant change of organisation routines and processes.

"**FirstScience news**: Award-winning paper looks at consumer response to really new products"

"**When Being the New Big Thing Hurts Your Product**"

"**Innovative Products Make Consumers Uneasy
That's the conclusion of a new research**"
Tudor Vieru, Science Editor

What's the cause of the failure?

- Marketing research methods unreliable:
  - Hard for consumers to estimate the benefit and tradeoffs of really new products.
  - Hard for firms to estimate market demand using conventional methods.
- Perceived uncertainty:
  - Consumers' perceptions of feature importance decline with uncertainty.
  - Absence of relevant information leads to lower evaluations as a penalty for uncertainty.
  - Thus consumers are less likely to form intention to adopt due to perceived uncertainty
- Temporal construal
  - People represent temporally distant actions in terms of abstract, high-level considerations of the *desirability* of the action. They represent more near-term actions in terms of concrete, low-level considerations of the action's *feasibility*.
  - Thus, consumers are less likely to follow through on their intentions to buy really new products.

Future vs. present benefit

- Benefits can be classified into those that are *present-focused* and those that are *future-focused, which in turn* influence consumer adoption decision *(see Gad, Dacko and Wang, forthcoming).*

- *Present-focused benefits* represent gains which occur in the short-term, providing an immediate return during product consumption.

- *Future-focused benefits* signify gains that occur in the long-term, beyond the end of product consumption.

The case of the organic food (Marwa, Dacko and Wang, forthcoming)

- An growing inclination of people to move away from a chemically-treated world of food products, with rising concerns about the potential health and environmental hazards of genetically modified (GM) food products (see Wilson, Evans, Leppard and Syrette, 2004).

- Future benefit: health and longevity, green environment.

- Present benefits: better taste; satisfy curiosity; fit in socially; peace of mind.

The case of low-carbon technologies

- The three biggest environmental problems that we now face: pollution, climate change, resource degradation

- Present benefit: reducing pollution and improve the air quality we breath in and out every day;

- Future benefits: preventing/delaying climate change and resource degradation, better environment for the future generations.

Long term benefit, product knowledge and usage

- Long term or future benefits are significantly and positively correlated with level of product involvement, level of product knowledge and expertise, and level of usage.

- Thus, increasing the perceived relevance of the new product, increasing product familiarity and encouraging trial use are all possible effective ways to encourage adoptions of low-carbon technological products and services.

Policy and strategic implications

- Early stage of adoption:
  - Perceived newness of a new product or service actually decreases the desire to adopt. Positioning strategy can be an effective means of reducing the negative impact of perceived newness.
  - Standard market research measurement techniques must be modified in that intention-to-purchase deflators should be larger.

- Later stage of adoption:
  - Usage difficulty and complexity (both anticipated and actual) decrease the desire to use a new product or service.
  - Marketing communication can provide consumers the impetus to overcome usage difficulty.

Thanks and Questions?

Incrementally new products

Product	Newness score
Flat Screen (Plasma or LCD) TV	8.87
New Video Game Titles	9.14
High Definition TV (HDTV) and HDTV Tuner	9.18
Home Theatre with Surround Sound (Dolby)	9.32
DVD Player	9.59
Broadband Internet Service (cable modem or DSL)	9.79
DVD Recorder	9.87
Products to detect and remove Internet "Spyware"	9.91
Digital Cable	9.98
Digital Still Camera	10.04

Really new products

Product	Newness score
On-Demand Digital Cable Services	10.38
DVD By Mail Service	10.38
Digital Video Recorder	10.51
Instant Messaging	10.56
Cell Phone with Picture Phone Capability	10.62
Cell Phone with Internet Access	10.63
Home Computer with Microsoft Media Center	10.68
Cell Phone with Walkie-Talkie feature (e.g., Nextel)	10.70
Personal Digital Assistant	10.76
Streaming Television	11.32
Blogging (web logging)	11.77