
Diffusion of Innovations

How do people adopt innovations?

Agenda

Motivation

Diffusion of innovations theory

A case study

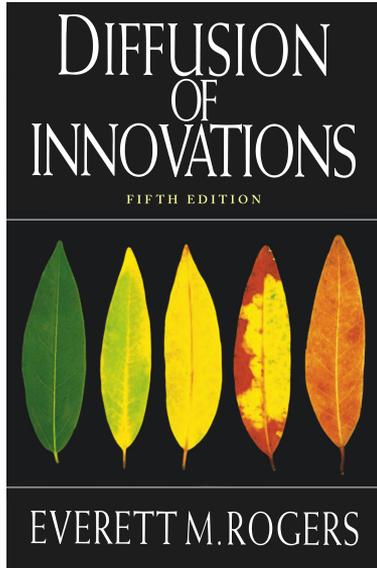
Criticism of the theory

Instructions for the assignment

Motivation

The diffusion theory and assignment ...

- are part of the "systems" aspect of TS2
 - help to understand how communities, networks and organizations behave
 - support entrepreneurship, often applied in business/marketing contexts
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Diffusion of Innovations theory

Originates from the early 20th century

First discovered and applied in the context of agriculture

Everett M. Rogers' *Diffusion of Innovations* a seminal book, first published in 1962

The discussion here mostly based on the book

A holistic theory on how (groups of) people adopt new innovations

What is an innovation? Or diffusion?

According to Rogers:

"An *innovation* is an idea, practice, or object that is perceived as new by an individual or other unit of adoption."

"*Diffusion* is the process in which an innovation is communicated through certain channels over time among the members of a social system."

Examples of innovations

Originally something agricultural: weed spray, hybrid seeds, or farming equipment

Often seen in the context of business and marketing: how a product is adopted by the market

Can be something completely different too: health, education, sociology, technology, and so on

Not necessarily a positive change!

1. The innovation-decision process

1. Knowledge: becoming aware of an innovation (need or push?)
2. Persuasion: forming an attitude on it (looking and asking around)
3. Decision: choosing to adopt or reject the innovation
4. Implementation: putting it into use (integration with everyday practices)
5. Confirmation: considering if the decision was right

Let's think of everyday examples together.

2. Perceived attributes of innovations

Relative advantage: how much better than the old one

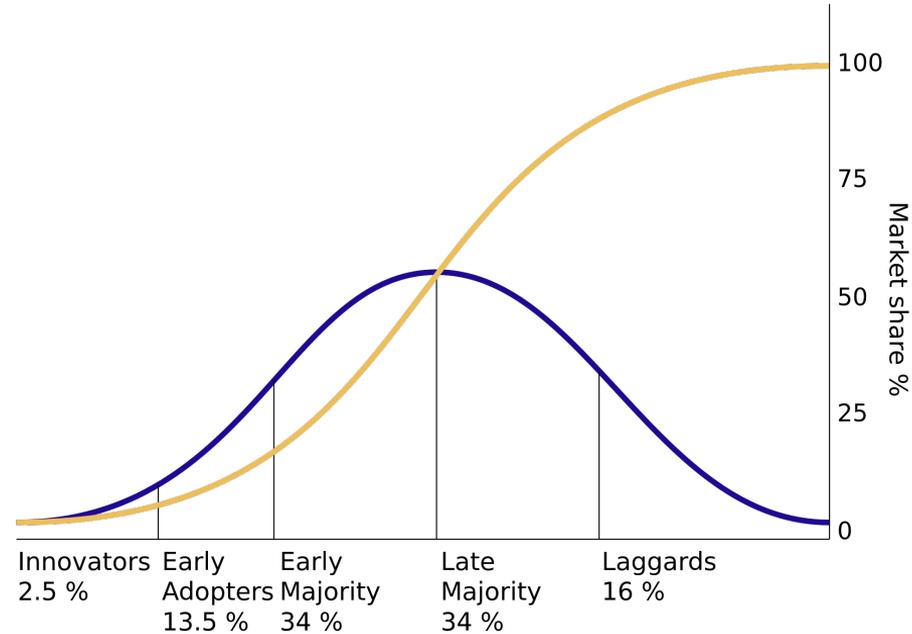
Compatibility: values, norms, past experiences and needs

Complexity: easy to use and understand

Trialability: how easy it is to experiment with the innovation

Observability: how visible the results of an innovation are to others

3. Adopter groups



Thanks fly to Wikimedia Commons

Characteristics of adopter groups

Innovators: technically capable, venturesome, risk-takers

Early Adopters: more integrated, opinion leaders

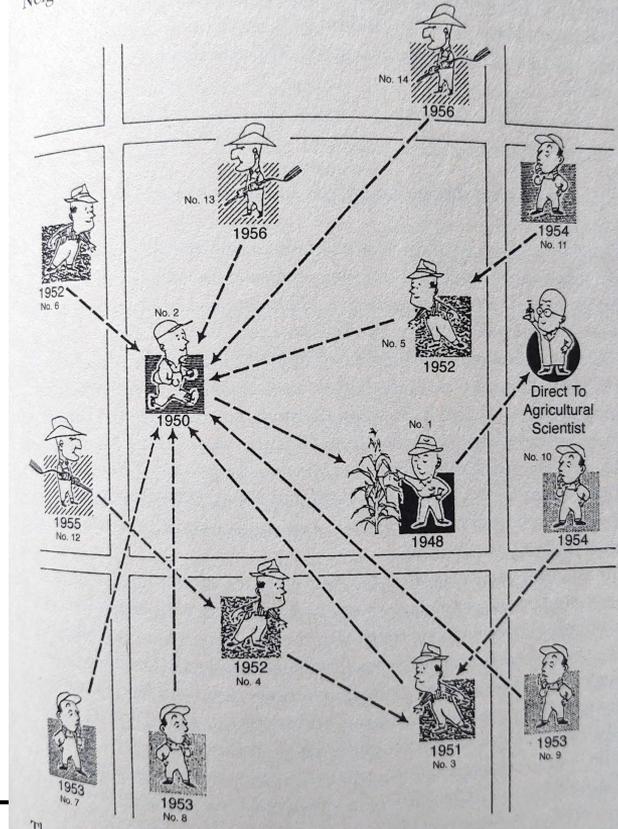
Early Majority: first big group, take their time

Late Majority: second big group, peer pressure, need convincing

Laggards: last to adopt, point of reference in the past, isolated,
not derogatory!

Weed spray in Iowa

Figure 7-4. The Diffusion of a New Weed Spray in an Iowa Farm Neighborhood



Pic by Bohlen et al. (1958)

A couple of notes

Not all innovations succeed: the adoption may never reach 100%

An innovation will eventually be replaced by another

The adopter doesn't need to be a *person* but can be a larger unit as well, such as a family, school or company

Therefore, decisions may be made collectively or by an authority as well

A couple of notes more(!)

The three main parts:

1. **The innovation-decision process** is about the "adopter unit" i.e. person or organization, **not** about society at large
 2. **Perceived attributes of innovations** are about the innovation itself
 3. **Adopter groups** are about when and why different groups adopt **in the big picture**
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Re-invention

People don't always use innovations as planned

Initially omitted by diffusion studies

Who is the expert now? Embracing re-invention or losing control?

Adapting to actual needs, simplification, pride, individualism

Case: home computers

Home computers: what to do with them?

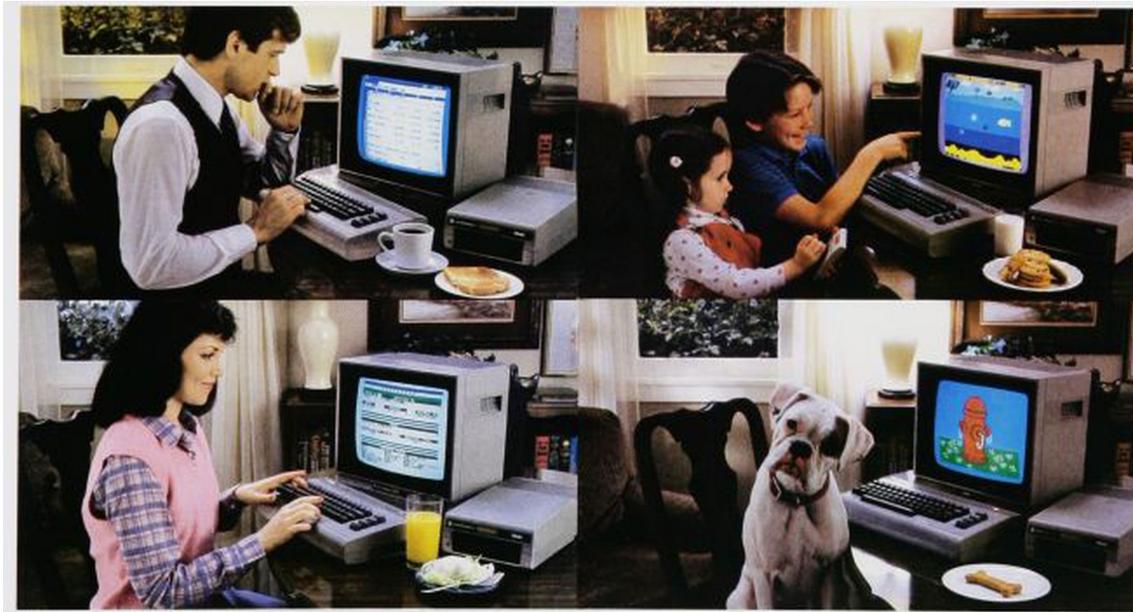
Starting from the late 1970s many companies started building and selling home computers

Expectations based on:

- Existing computer uses
- Existing game console uses
- Speculation

Marketing an important factor: how to sell this to people?

Commodore ad from the 1980s



COMMODORE MAKES SOFTWARE FOR EVERY MEMBER OF THE FAMILY.

Commodore makes software for uncles, cousins, aunts who teach, aces, nephews, brothers, sisters preparing for exams, fathers, mothers and brothers-in-law in roofing and fling.

You see, Commodore makes software for fun, profit, homework, homework and office work. Our EasyCalc (upper left) is an electronic spreadsheet that's 63 columns x 204 rows with graphics

and bar charting. And even with color options. Fish Me!™ (upper right) is an educational math program in a game format. With our Manager program (lower left), you get a sophisticated

stablemate system with four built-in filing applications. Or you can design your own. Why, in the lower right hand corner, there's even a... (oh, we don't make that one yet)

But we're working on it. Incidentally, we also make the perfect place to use all these software programs (except the last one), the all purpose Commodore 64™, the world's best selling computer.

ALMOST.

COMMODORE 64
IT'S NOT HOW LITTLE IT COSTS,
IT'S HOW MUCH YOU GET.

Re-invention in action

In the end, home computers found many unexpected uses the designers never anticipated

An answer without a question?

The contrast between marketing (aimed at parents) and reality: gaming was undoubtedly the main use for computers

Compare to much later *Raspberry Pi* computers, which endorsed creative uses right from the beginning (2014-)

Case example: demoscene and its platforms

A topic I've been studying since 2004, did two theses too

A form of digital subculture

Started in the mid-1980s, so there have been several platform migrations

I used diffusion of innovations theory for analyzing how a community adopts new technology

What "demoscene"?

Major migrations

Commodore 64 – Commodore Amiga

Amiga 500 – Amiga 1200

Amiga – PC

MS-DOS – Windows

Mail swapping – BBS – Internet

Smaller-scale diffusion with for example sound cards, graphics cards

Old platforms never completely disappear



Diffusion in the demoscene

Innovation-decision process:

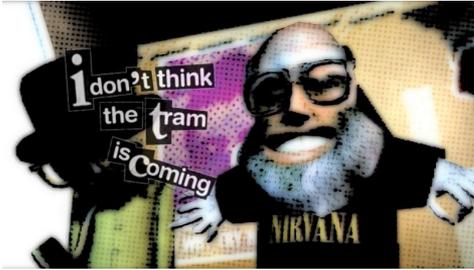
Community members typically well-versed with technology and aware of new developments

Decision on the migration a collaborative effort, conflict is always involved

External factors, such as the market do play a role

Implementation requires learning new skills

Confirmation – platforms either become mainstream or fall out of use



Diffusion in the demoscene



Perceived attributes of innovations:

Technically a new machine is most often more capable than the old one

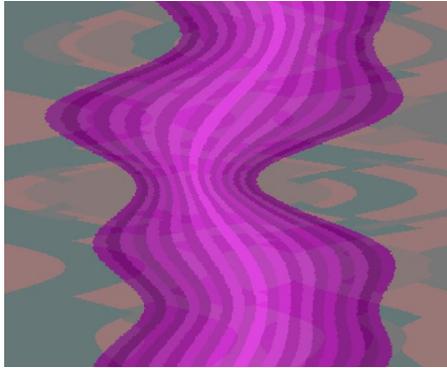
The values of the demoscene may hinder adoption: too easy to do cool stuff, pushing the machine to its limits

Complexity hardly ever a question – technical skills expected

A computer can be an expensive device, experimenting together

Fame – how the audience reacts (and do you have one)

Diffusion in the demoscene



Adopter groups:

Isolate attempts at demos for a new/rare platform – often by the same people (innovators)

Opinion leaders change attitudes by example, the role of *parties*

Eventually the majorities follow – actually the scene is pretty mainstream in this respect

Some choose to never adopt, leaving the community or sticking to old platforms

Criticism

Pro-innovation bias (positivism)

The recall problem: exact times and causalities are hard to measure

Issue of equality – spreading of innovations may promote inequality

Too mechanistic "one size fits them all" model?

Diffusion essay

- A reflective essay on the diffusion of an innovation that is relevant for your topic
 - Choose the topic yourself – confirm with us if unsure
 - Discuss at least the topics of
 - a. *Innovation-decision process*
 - b. *Perceived attributes of innovations*
 - c. *Adopter groups*
 - If some part of the theory doesn't apply, you can say that too
 - Maximum length: four A4 pages
 - Graded 0–5 based on the quality of writing, reflection, structure and use of theory
 - Deadline: Feb 15 at 23:59
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Tutoring on Thursday

There's tutoring again for groups on Feb 9 in the morning

Online on Zoom, schedule as usual

Again a possibility to refine your essay before the deadline

What's next?

Choose an *innovation* that you can find information on and that is manageably simple

Consider it in the light of the diffusion theory

Markku will be available on Zoom for consultation until 15:00 or so (except lunchtime 12-13)

Remember to cover all the three presented aspects of the theory

There's a couple of copies of the book in the library, googling will find you some editions too :)
