



Powering tomorrow's metropolis by
green electricity

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Background

- Emissions from the domestic housing sector
 - 27% of total emissions (2004)
 - Space heating, water heating, lighting, appliances, cooking
- Building Regulations 2006
 - “SAP” (Standard Assessment Procedure)
- “Code for Sustainability”
 - 9 categories (inc. energy/carbon efficiency)


Green Electricity

- Generated from renewable sources without emitting CO₂ into the atmosphere
- Green tariff available from electricity suppliers
 - e.g. EDF Energy: an extra of 0.42 pence per unit
- **But not widely taken up!**

Theme of the Study




- BP UES workstream ‘consumer behaviour’
- Needs to understand:
 - The adoption of green electricity (motivation)
 - The consumption of (green) electricity (behaviour/lifestyles)

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- Research objectives:
 - To identify consumer motivations for adopting energy service innovations
 - To understand characteristics/patterns of energy service consumption

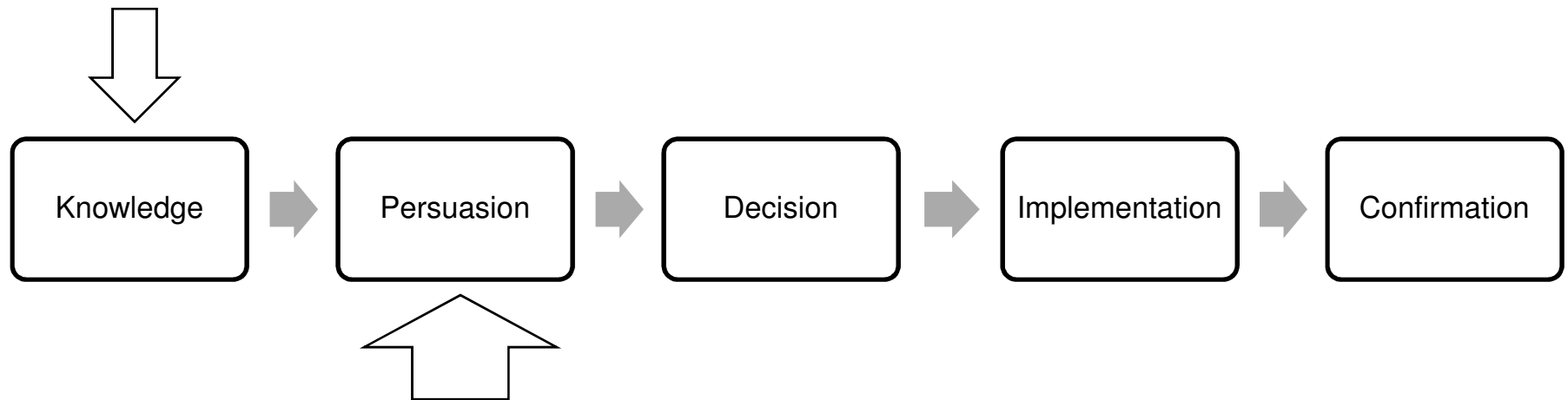
Theoretical Framework

- Adoption of innovation
 - Innovation diffusion (Rogers)
 - Technology acceptance model (Davis et al.)
 - Behavioural theories (Ajzen et al.)
- Consumption of innovation
 - Consumption theories
 - Symbolic meaning of material objects
 - Practices

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- Max Weber's four types of human action
 - Goal-oriented (R)
 - Value-oriented (R)
 - Affectional (E/IR)
 - Habitual (E/IR)

Roger's Diffusion Theory (2003 [1962])

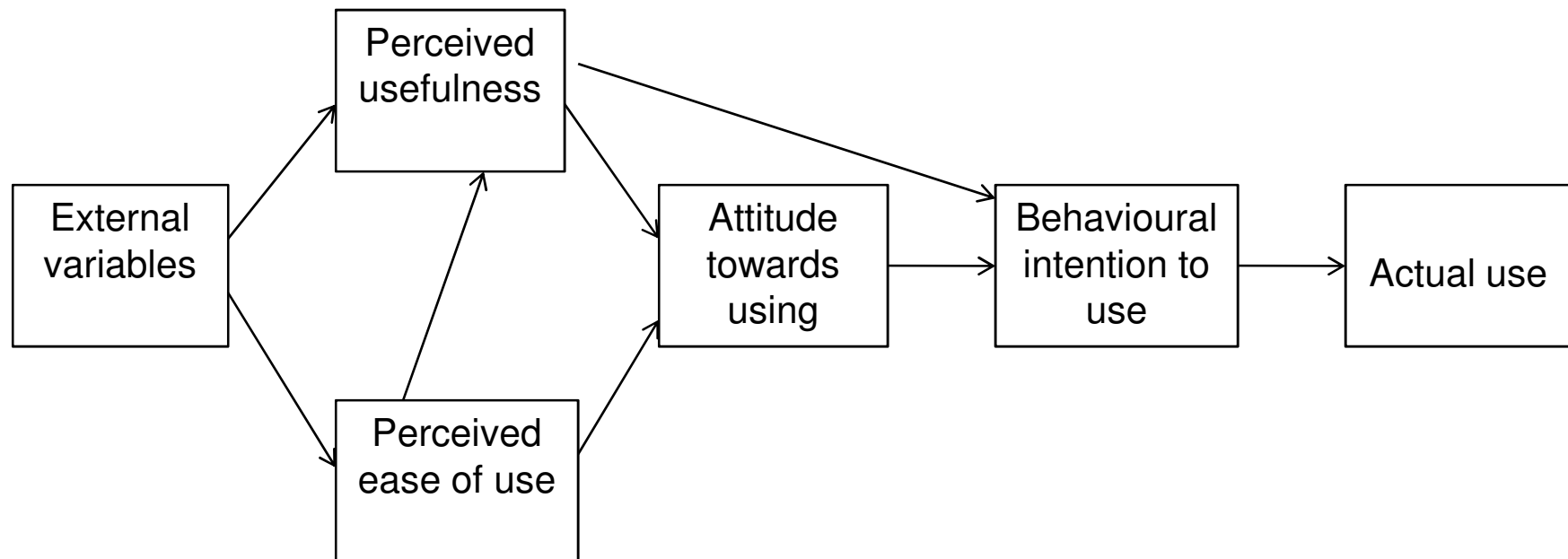
Social network



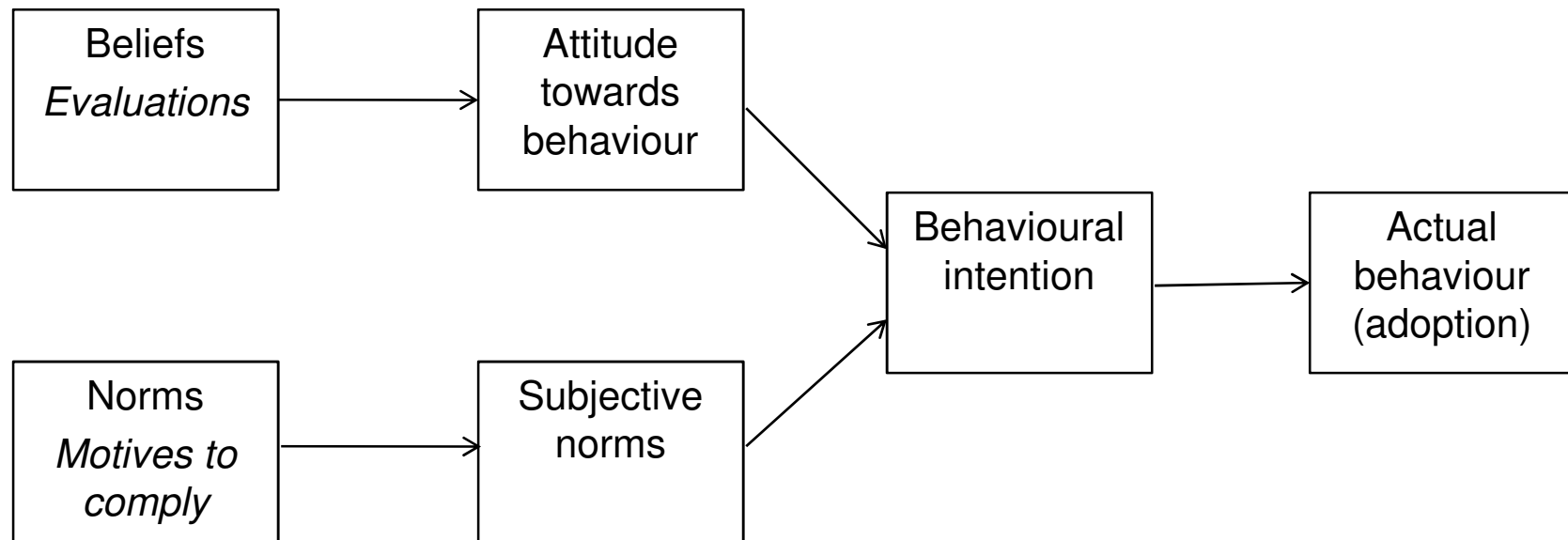
Perceived characteristics of the Innovation

- Relative advantage
- Compatibility
- Complexity
- Trialability
- Observability
- *Risk*

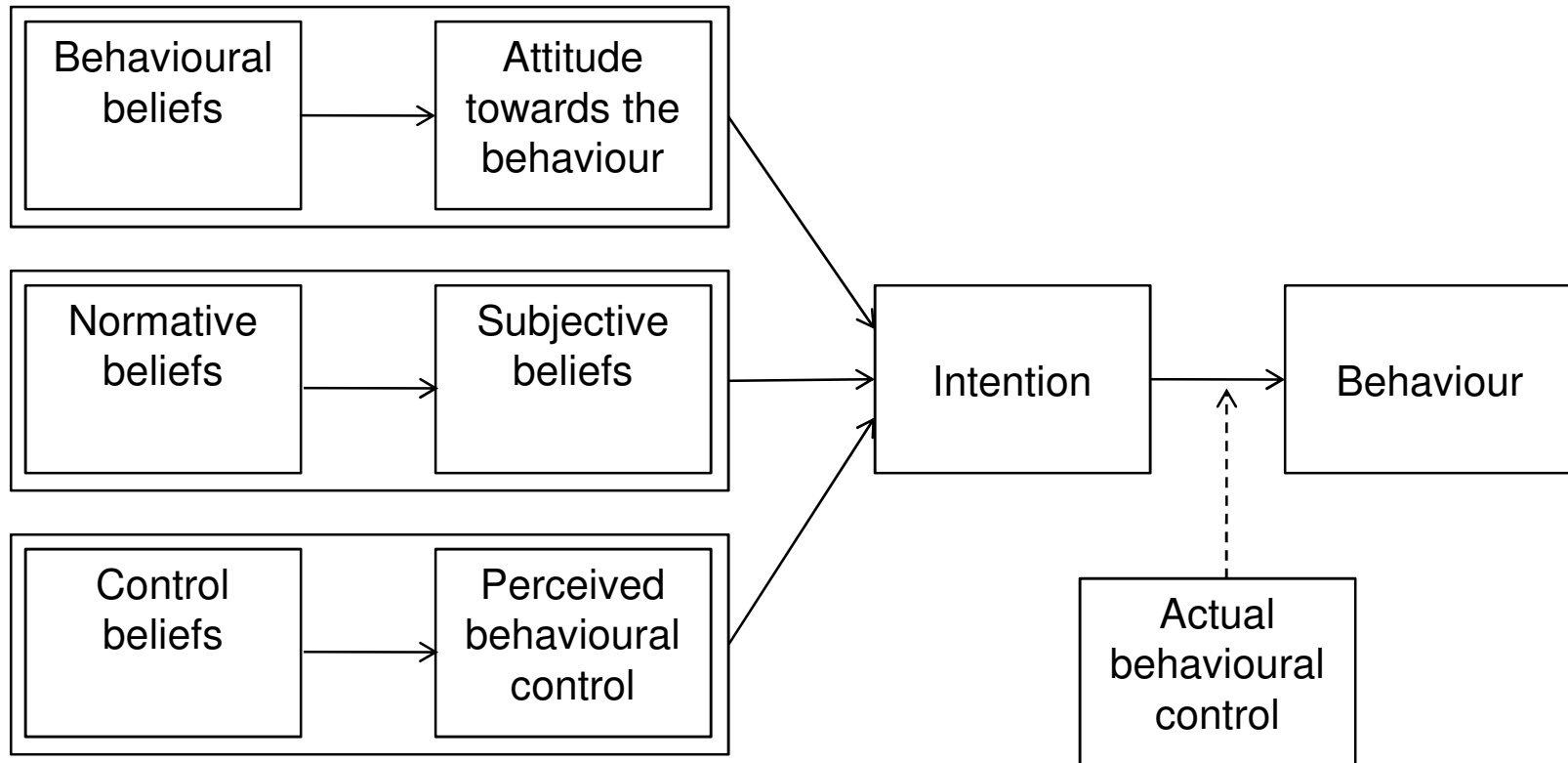
Technology Acceptance Model (Davis et al. 1989)



Theory of Reasoned Action (Ajzen & Fishbein 1980)



Theory of Planned Behaviour (Ajzen 1991)



Rogers Diffusion Model	Davis et al. TAM	Ajzen et al. TRA and TPB
Perceived Relative Advantage	Perceived Usefulness	Behavioural (consequential) belief
Perceived Compatibility		Normative belief
Perceived Complexity	Perceived Ease of use	Control belief <ul style="list-style-type: none"> -Ease of use -Daily factors -WTP
Perceived Risk		

Consumption



❖ Contexts

- Consumption is embedded in everyday life
- *Social constructionist views*

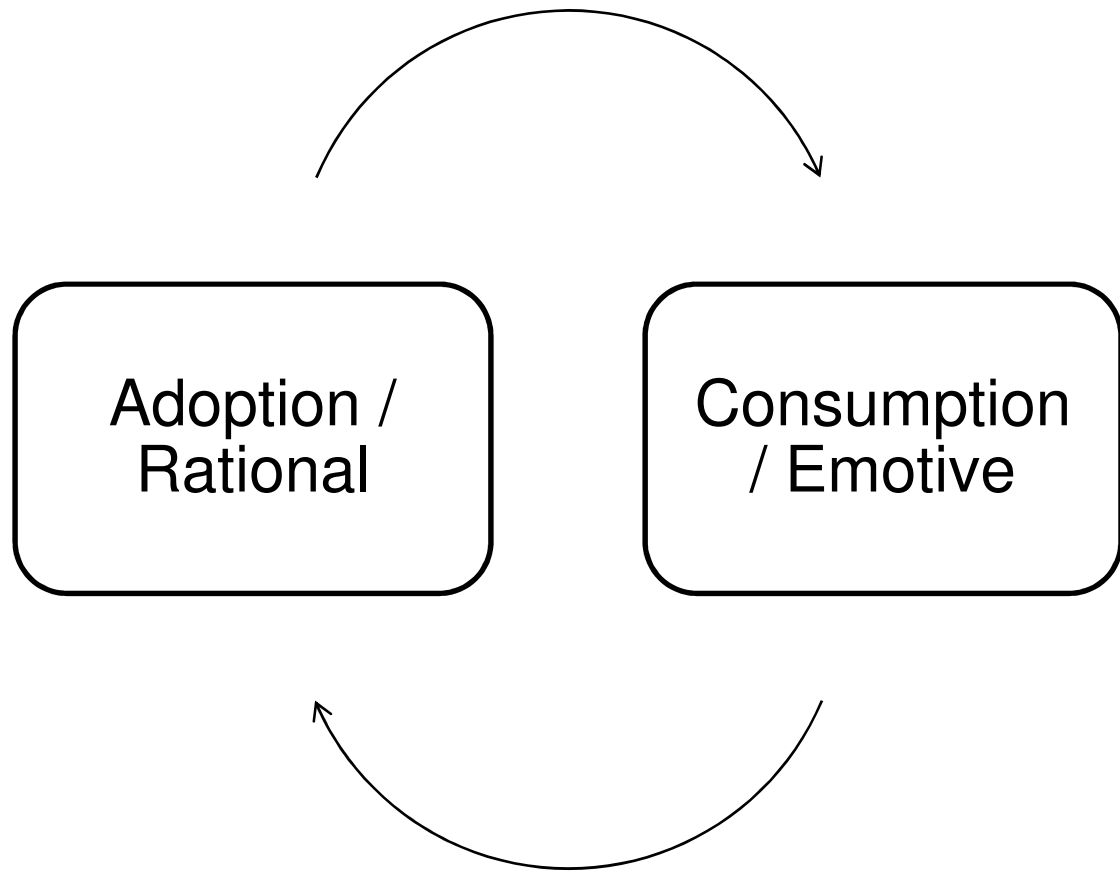
(1) Meanings: *“To have is to be”*

– **Symbolic meanings for the actor**

- Expression of existing social orders (Bourdieu, 1984)
 - ‘Reflexivity’ – identity-building (Lash & Urry, 1994)
- Consumption distinguishes and communicates values, identities and memberships

(2) Practices = “equipment and use”

- **Technology holds practice together** (Latour, 1993)
- Practices involve (Shove & Pantzer, 2005):
 - Materials/objects/technologies
 - Skills/competence
 - Meanings
- **‘Wants’ emerge from the practice** (Warde, 2005):



Values,
Beliefs,
Norms



Attitudes,
Perceptions



Diffusion



Adoption



4. Empirical Study

- Focus group discussion
- Questionnaire survey
- Semi-structured interview

(1) Focus Group Discussion

- **Purpose:**
 - To tease out issues related to ‘being green’
 - What does ‘being green’ mean?
 - General perceptions about ‘being green’ and ‘green electricity’
- **Sample:**
 - 2 groups of 6 participants (TBS)
 - An hour discussion



- **Issues raised:**

- ‘Being green’: variety of interpretations
- Differences in green values and beliefs among consumers
- Product uncertainty (functionality, availability, price, etc.)
- Weak beliefs about ability to perform green behaviour: lack of control/self-efficacy
- Little institutional support and weak social norms to perform green behaviour (e.g. recycling)

(2) Questionnaire Survey

- **Purpose:**
 - To investigate the relationship between people's environmental values/beliefs/norms, their attitudes towards green electricity and their adoption intention
- **Method:**
 - On-line survey (with 3 departments in ICL)
 - Questionnaire preparation (expert panel discussion, pilot study)
- **Sample:**
 - 103 responses (of 520; response rate = 19.8%)



- **Findings:**

- **Demographic**

- Highly educated (Master/Doctorate)
 - Income varied
 - 33.38 years old
 - 2.67 persons per household
 - Mostly owned or privately rented
 - 55% living in flat
 - 3.71 rooms per house
 - Own bill: 96.0%
 - Monthly electricity bill: £45.22

Sample bias towards green consumers

- Recycle regularly (82.52%)
- Energy-saving bulbs (65.05%)
- Member of green movement (12.75%)
- Donation to green movement (16.50%)
- WTP £12.09 per month
- *Green electricity tariff (13.86%) – 14 out of 103*

Descriptive statistics

- Strong green values and beliefs
 - But less so when it comes to actual commitment
- Not often heard of green electricity tariffs
- Positive belief on:
 - Functionality of green electricity
 - Societal benefits of green electricity
 - Effects of personal use of green electricity
- Not strong social support/norms felt
- A number of factors preventing from taking up a green electricity tariff
- 14 out of 103 (13.86%) have intentions to adopt

Segmentation analysis

- Segmented by WTP (WTP=£0, >£0, >£15)
 - Intention to adopt affected by:
 - Strong green values
 - Access to information
 - Consequential behavioural beliefs
 - Control beliefs
 - Low perceived norms
 - Low social pressure for all categories
 - WTP>£0 vs. WTP>£15
 - Higher control beliefs lead to higher adoption intention

- Segmented by ‘intention to adopt’ (no, low, high intention)
 - WTP associated with:
 - Active search for information
 - Strong behavioural beliefs
 - Strong normative beliefs
 - Strong control beliefs
 - Not much difference in green values
 - Low vs. high intention
 - Higher intention leads to higher WTP

- Overall...
 - Intentions are affected by: green values, information, consequential beliefs and control beliefs
 - Perceived low social pressure to adopt (*norms*)
 - WTP is a construct that evolves from values and beliefs
 - Intentions are translated into WTP
 - But WTP is not necessarily translated into adoption intention



- **Problems:**

- Lack of information (availability and access)
- Lack of control (over daily factors)
- Lack of social norms and support
 - Less commitment on the personal level

→ *What drives people to adopt green electricity?*

(3) Semi-structured Interview

- **Sample**
 - Interview with 8 ‘green electricity’ adopters
 - Identified in the questionnaire survey
 - 30 min. interviews
- **Questions** (Consumer contexts)
 - Why have they decided to take up green electricity?
 - How have they developed interests in green issues?
 - Why is it important for them to use green electricity?
 - What do they think of social norms/pressure, institutional support, information availability, etc.?
 - How do they actually use (green) electricity at home?

Summary



Our mission

- To understand consumer adoption motivation and patterns of electricity consumption
 - Using multiple methods
 - A more holistic and dynamic picture
- To draw managerial/marketing implications

- Next case studies:
 - Hybrid cars (Toyota)??
 - Purchaser motivation
 - Agent behaviours in relation to hybrid car purchase and ownership
 - Zero-carbon housing development (Southern Housing Group)
 - The evolution of residents perceptions of new sustainable technologies and services
 - Changes in consumption behaviours/lifestyles