The Role of Social Influence in the Adoption of Low Carbon Digital Innovations

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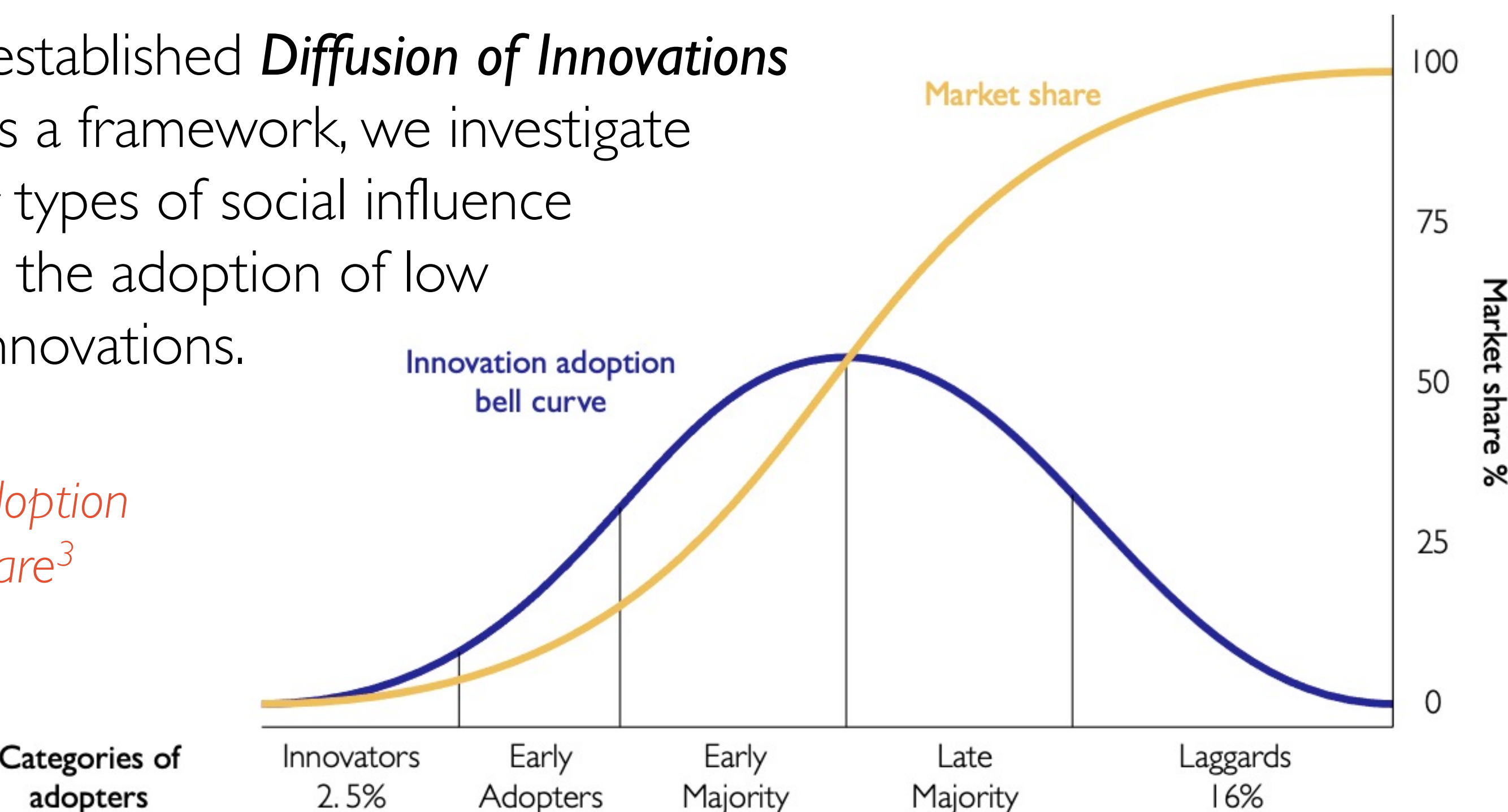
1 Background

Digital consumer innovations exist which offer low carbon alternatives to mainstream consumption practices[1] (fig. 1). We contribute new insights on the importance of social influence in the uptake of low carbon digital consumer innovations across domains: mobility, food, homes, energy[2].

- peer-to-peer car sharing
- digital food hubs
- smart lighting
- PV + storage
- ride-sharing
- meal kits
- smart heating
- Peer-to-peer electricity
- 'taxi-bus'
- 11th hour apps
- smart appliances
- electric vehicle-to-grid

Fig. 1 Examples of low carbon digital innovations

Using the well established *Diffusion of Innovations* theory (fig. 2) as a framework, we investigate the role of four types of social influence mechanisms on the adoption of low carbon digital innovations.

Fig. 2 Stages of adoption and market share[3]

Market share

Innovation adoption bell curve

Market share %

Categories of adopters

| Innovators 2.5% | Early Adopters 13.5% | Early Majority 34% | Late Majority 34% | Laggards 16% |

2 Methods

Online survey with 3007 nationally representative UK participants during summer 2019 on the adoption of 16 innovations. Participants first answered questions on adoption experience of all 16 innovations and were then allocated to answer questions regarding one specific innovation. We used a quota sampling design to target 100 adopters and 100 non-adopters for each innovation.

We present findings from our analysis* comparing non-adopters' responses to multi-item Likert-scale questions on the relative importance of four social influence mechanisms (fig. 3).
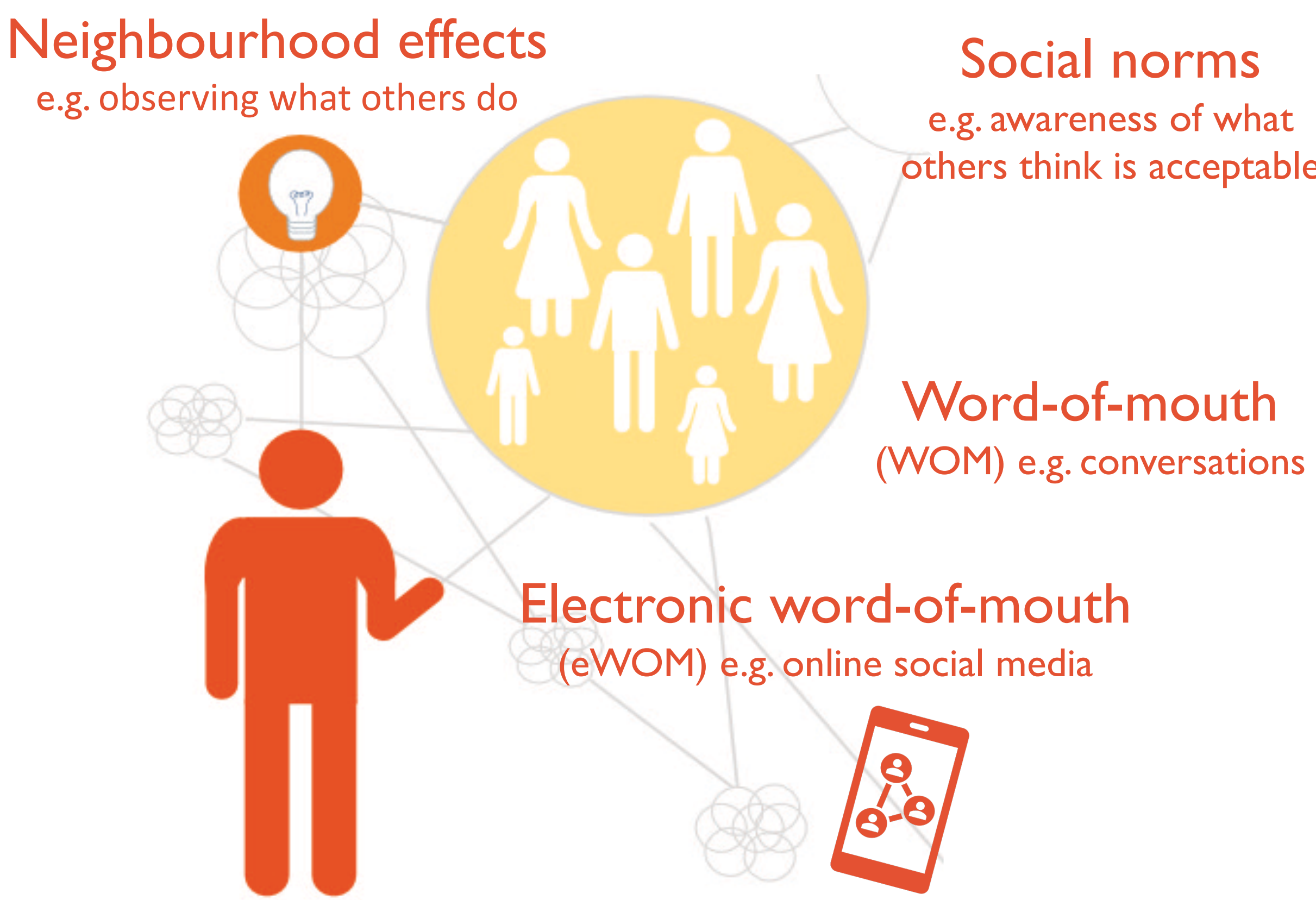
Neighbourhood effects
e.g. observing what others do

Social norms
e.g. awareness of what others think is acceptable

Word-of-mouth
(WOM) e.g. conversations

Electronic word-of-mouth
(eWOM) e.g. online social media
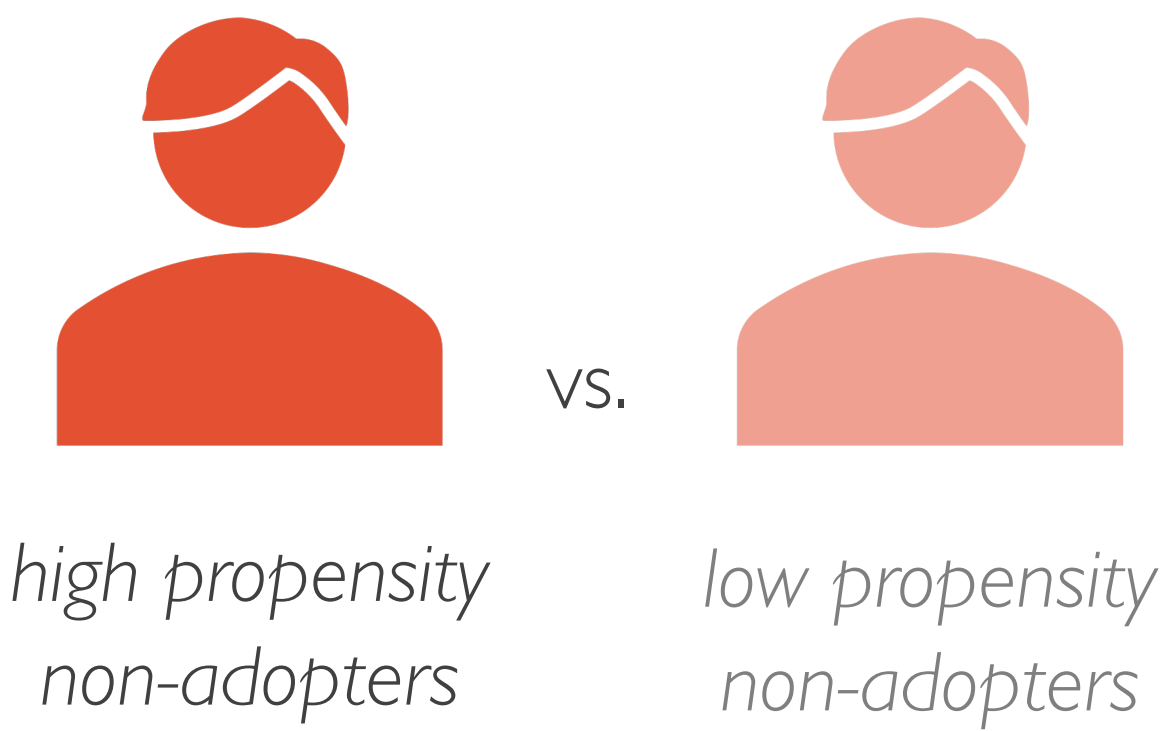
Fig. 3 Social influence mechanisms

In-depth case studies with early adopters of three innovations using online surveys, interviews and focus groups to investigate the impact of specific *innovation characteristics* on the role of social influences.

1) **Trust in the platform:** ride sharing (sharing personal space in a vehicle for a journey)

2) **Low salience:** smart home technology (used at home, out of sight)

3) **Place-based:** digital food hubs (local network of food producers and consumers)

* Using Mann-Whitney U test with effect sizes we compared non-adopters with 'low adoption propensity' (n=654) to those with 'high adoption propensity' (n=647) (These groups were determined by asking about the likelihood of adopting the innovation within the next year). We then used a binomial logistic regression model to test the effect of mechanisms on adoption propensity when other mechanisms are held constant.

3 Results

Online survey We find all social influence mechanisms to be significantly more important (p< .01) for respondents with high propensity to adopt compared to those with low propensity.

high propensity non-adopters vs. low propensity non-adopters

Electronic word-of-mouth is the dominant mechanism of information exchange for strengthening adoption intentions.

Other social influence mechanisms such as social norms and neighbourhood effects are as important only for highly visible innovations such as electric vehicles or rooftop solar.
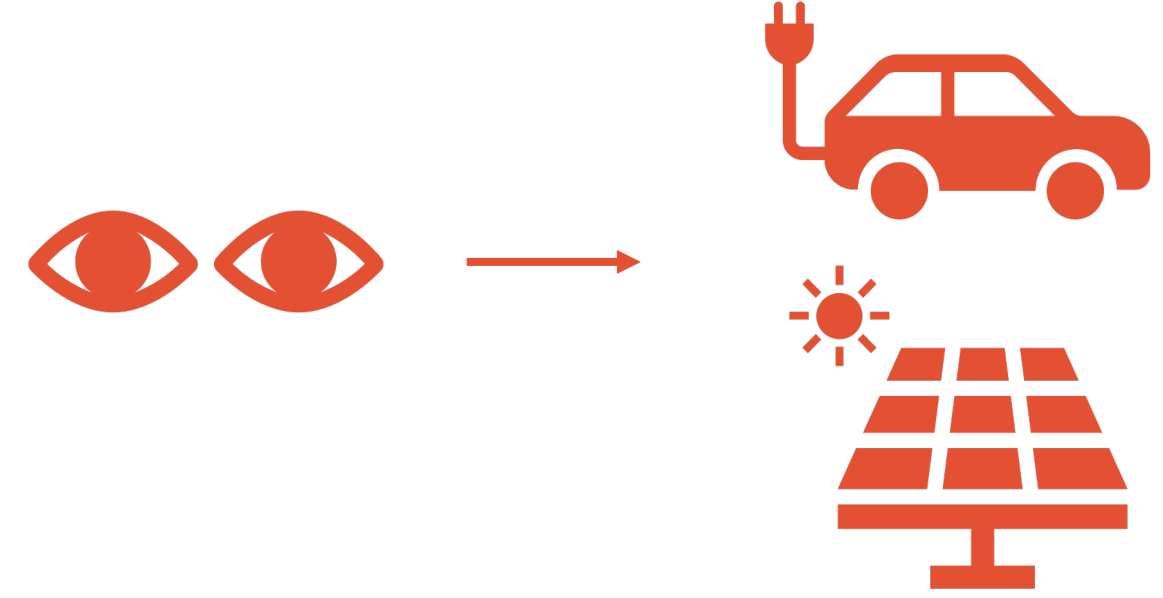
In-depth case studies

Characteristic	Social influence mechanism	Barriers hindering adoption
Trust	**eWOM** online reviews provide reassurance for one-off users. **Social norms** workplace culture encourages more colleagues to adopt.	Lack of trust amongst non-adopters, perception of danger. Lack of societal norms exist in the wider community.
Low salience	**WOM** and **eWOM** from adopters to non-adopters helps diffuse information. and increase salience.	Non-adopters lack exposure and social connection to adopters for first-hand knowledge and experience.
Place-based	**WOM** most important for shaping opinions in communities. Adopters reported as opinion leaders persuading others to adopt.	WOM occurring in echo chambers. Limited exposure for wider community when interactions occur out of sight e.g., home delivery.

Key messages

To aid diffusion of low carbon digital innovations…social influence is crucial! Electronic word-of-mouth is most important for exchanging information and strengthening adoption intentions. Trust and community networks are important moderators of social influence. Social norms can help build trust, while word-of-mouth spreads positive information for locally salient innovations. Our research emphasises the importance of digital skills and infrastructure, social marketing for building positive norms, and community networks for interpersonal exchange.

References and Acknowledgments

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2. Vrain, E., Wilson, C., Kerr, L. and Wilson, M. (under review) Social influence in the adoption of digital consumer innovations for climate change.
3. Rogers, 2003. Diffusion of Innovations. 5th Edition.