

How do economic conditions change consumer preferences when it comes to energy conservation?

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Assistant Professor Anirban Mukherjee Copyright : Cyril Ng

Every day, thousands of families choose between larger and smaller cars or basic and advanced appliances. In turn, these choices determine

whether the technologies that leave the factory floor will consume more or less of the world's energy resources.

When the economy is flourishing, will consumers be more eco-conscious in their purchases, or will they succumb to the temptation for a bigger car or appliance? We can now measure the impact of the macro-economy on such consumer choices to a surprisingly detailed degree, thanks to the research by Assistant Professor Anirban Mukherjee at the Singapore Management University (SMU) Lee Kong Chian School of Business.

Professional accolades for his research

Professor Mukherjee's data-driven research into this question earned him the best paper in the marketing analytics track and the conference overall, at the annual Australian & New Zealand Marketing Academy Conference 2015 in Sydney. For his paper, "Does economic growth lead to consumers purchasing more energy efficient appliances?", Professor Mukherjee worked closely with Professor Andre Bonfrer, whose research focuses on understanding consumer behaviour and implications for marketing decisions.

Before this research, it was well established that macro-economic changes alter consumer choices, over and above an individual household's financial outlook. But relatively little was known about how economic conditions affect the thousands of decisions driving behaviour within industries—the trade-offs people make when choosing between brands and features during their purchase.

Seeing this vital gap in knowledge, Professor Mukherjee decided to study consumer choices on household appliances such as fridges, freezers and clothes dryers. Although these are everyday items in our lives, purchasing them involves complex consumer choices with many

dimensions at play.

"We cannot measure the environmental attitudes and motivation of so many consumers, so we use efficiency as a proxy for eco-friendly buying," he says. Efficiency can be measured, for example, through product information on the number of energy conservation stars a washing machine or fridge might have.

In partnership with market research firm GfK Australia and New Zealand, Professor Mukherjee used a new data modelling paradigm called structural modelling to analyse purchases in each category of appliances over eight years.

Studying the massive amount of purchases and attempting to isolate the dynamic drivers behind them was a mammoth challenge, but it gave Professor Mukherjee incredible insights into consumer behaviour. "For example, we can determine how much more someone would pay for an appliance with three energy stars instead of two energy stars," he says.

A sobering find on our eco-consciousness

The result of all this number crunching? Perhaps a realistic, if not practical, portrayal of our eco-consciousness—the data showed that during economic upswings, consumers cash in on convenience rather than energy efficiency.

"Normal washing machines take about 30 minutes to wash clothes, whereas the energy-efficient machines take about an hour longer," notes Professor Mukherjee, explaining the trade-off consumers tend to make when times are good.

The findings are in line with studies of the car industry, says Professor Mukherjee, who points to literature showing that in the automobile

industry, consumers' desire for more motor power made those vehicles more popular than those which are energy-efficient. "It is quite astounding that the family cars today have more horse-power than the sports cars of the 1980s."

The results were not all gloomy—for example, people do choose energy-efficient refrigerators for their purchase. However, what could be the reason behind most consumers' "less eco-friendly" purchases?

Professor Mukherjee says it is partly to do with how we think about ourselves. "When we buy cars we also buy intangibles—status or lifestyle. One statistic says that just three percent of SUVs are used off-road, despite what you see in the advertising."

Importantly, the robust collection and modelling of data might help marketers and policy makers understand the changes in consumer behaviour they are observing, suggests Professor Mukherjee. "Because there are so many other things going on, if market or political observers see preferences for eco-friendly appliances rise or fall, it might not simply come from a rise in eco-consciousness."

Such precise data about the impact of economic forecasts within industries is important for planning advertising and pricing decisions, says Professor Mukherjee. This is especially important in markets where the manufacturing is not local, such as Australia, where a six-month lag could exist between ordering and arrival. "Marketers need to know whether changes in the economy will cause a move towards preferences for efficiency or convenience."

Good marketing can influence the conversation

Professor Mukherjee is looking to the future for the next phase of his research, as he seeks to study the impact of large technological advances,

especially electric cars. "Car pollution seems central to mitigating global pollution, at least in large cities, and we have the same trade-off between 'doing good' and convenience," he says.

In the face of data that people tend to upgrade and make life more convenient when the economy is doing well, Professor Mukherjee is surprisingly upbeat about the possibility of steering consumers away from their self-interest towards eco-consciousness. Research and good marketing can influence this conversation, he argues, citing the success of documentaries such as Al Gore's *Inconvenient Truth* in changing attitudes about climate change.

"Marketing is based on change, maybe not of fundamental needs, as much as how we express ourselves. It does not have to be that large cars denote high status. If electric car manufacturers, such as Tesla, have the right appeal, those who buy for status might choose electric cars over others.

Provided by Singapore Management University

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