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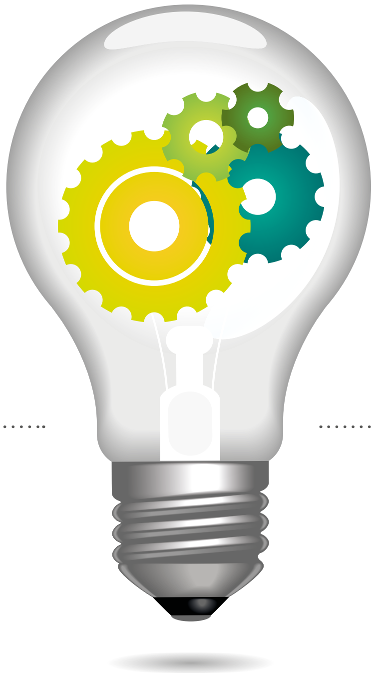

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Introduction

Shareholder versus stakeholders: financial performance cannot go without social performance

Why do firms exist? One view is that they have to maximize profits in order to create value for their shareholders, something often referred to as the "Anglo-Saxon corporate governance model". As a result, managerial attention is focused mainly on financial performance and short-term results. The shareholders demand a reliable profit growth and handsomely reward CEOs who realise this growth.

Another view is that firms exist because they provide value to multiple stakeholders, such as NGOs, governmental agencies, suppliers, customers and firms' employees. Rather than short-term performance, it is the long-term survival of the firm that is of mutual interest to all stakeholders. In this "Rhineland corporate governance model", the firm has to report not only on its financial performance but also its social performance.

The study by Pushpika Vishwanathan (p08) shows that this balancing act between various stakeholders is difficult and that businesses can learn a lot from philanthropic organisations. Moreover, the article by Mignon van Halderen and colleagues (p11) shows how major oil firms struggled with rising stakeholder pressures in the climate change debate. While Exxon fought long and hard against the growing consensus about global warming, BP, on the other hand, tried to cultivate a greener and more emotional image. However, both companies tended to change their strategy only gradually and suffered from path dependencies.

The pattern confirms that the closer the oil peak comes – the moment extraction reaches its peak – the more inclined established players are to replicate or even fixate upon their existing fossil energy business model. But in the end, negative social outcomes impact financial outcomes. Oil companies have received increasingly negative signals about their core business – fossil energy – not only from stakeholders, but also from major shareholders (large investment funds). If they ignore these signals, they might become the next Kodak or Nokia.

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Relational capital, new knowledge and innovative ideas

Chris Murray talks with *Tom Mom*

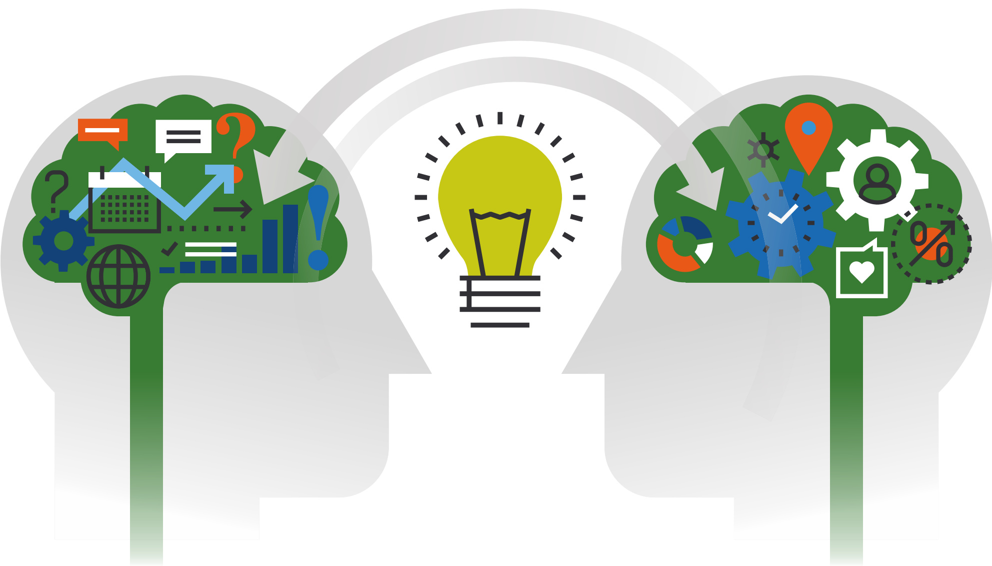
Organisational learning occurs when people engage in *exploration* activities – activities aimed at acquiring and using new knowledge, ideas and insights. Exploration, explains Tom Mom, associate professor of strategic entrepreneurship at RSM, 'is about people and organisations promoting things that are new to them,' which can lead to new products, new technologies, or the company going into new markets.

Exploration is thus fundamentally different from *exploitation* activities, which involve the implementation and execution of strategies and decisions. To take a simple example, market research for a business new to your firm is exploration. The launch of a marketing campaign for your existing customers is exploitation.

According to Mom, it is a commonly accepted wisdom that social capital – the breadth and depth of the connections and relationships of an organisation's employees and managers – can enhance the organisational learning at the heart of exploration.

However, many leaders and managers view social capital in terms of structure or quantity – for example, the size of individual networks in the organisation or the density of the connections in those networks (ie, how many people know each other personally and directly rather than being connected through other people).

In his research, Mom has focused instead on another dimension of social capital called *relational* capital, which refers to the types of relationships that exist between people (eg, the amount of trust in the relationship, or how closely the people are tied together). This research, including a recent study of 150 members of R&D teams from three R&D-intensive firms, reveals that not all dimensions of social capital have an unrelenting positive influence on individual exploration.



Good and not-so-good

Mom's recent R&D study, co-authored with professors Pepijn van Neerijnen of the University of Amsterdam, Patrick Reinmoeller of Cranfield University, and Ernst Verwaal of KU Leuven in Belgium, confirmed that relational capital has a positive impact on *knowledge acquisition*, an important element of exploration. In other words, people are more willing to exchange knowledge and learn more from people that they trust and with whom they have a close relationship.

At the same time, however, close, trusting relationships can undermine exploration activities because they lead to *goal alignment*, which, Mom says, refers to the tendency of people who work closely together to come to a consensus on goals and objectives. As a

Relational capital, new knowledge and innovative ideas *(continued)*

Chris Murray talks with Tom Mom

> *"Goal alignment is important for efficiency or decision-making speed..."*

result, they start to shut down or neglect other sources of innovative ideas, or fail to follow up on innovations that do not fit the group consensus.

The paradox is that alignment around key objectives can help with implementation and execution – that is, exploitation – even as it undermines exploration. 'Goal alignment is important for efficiency or decision-making speed,' Mom explains. 'But to force creativity or get people to explore new thoughts, goal alignment can be detrimental.'

The bottom line is that close, working relationships among people can be both productive and counterproductive to exploring new directions and opportunities. Leaders must find a way to balance the impact of close relationships; they must encourage trust and collaboration so that people are willing to share knowledge and insights but at the same prevent people from becoming so close that they are no longer thinking independently or exploring options that are outside of the group's consensus.

Finding this balance is further complicated, as shown in the next section, by the influence of contextual factors, such as the organisational environment.

Why context matters

Before leaders can decide how to achieve the delicate balance of just enough trust and closeness to encourage knowledge sharing while avoiding too much goal alignment, they must understand contextual factors that can impact this balance.

For example, a tough competitive environment can have a negative impact on the company's desire to be innovative or seek new ideas. When results start to falter or share prices are dropping, says Mom, 'the most common reaction is, "let's not change things, but let's do things better. Let's focus more on the things we have always been doing."'

In actuality, Mom says, competitive pressure should, on the contrary, encourage exploration-driven change.

In such a case, the *organisational context* – relating to such issues as the heterogeneity of the company's teams, the type of leaders in the organisation, or the company's hiring and promotion policies – can play an important role. 'Heterogeneity in terms of values, beliefs, relationships and goals is quite effective' in encouraging individual exploration, Mom says. Such heterogeneity enables the organisation, he says, 'to remain flexible and change direction every now and then.'

The type of leaders in the organisation is also important, Mom says. Certain leaders are intently focused on execution. Transformational leaders, however, 'are eager to understand the personal needs and developmental aspirations of their people,' he says. This attitude encourages their exploration activities.

Hiring and promotion policies is another facet of the organisational context. Mom cites the case of an airline that in essence "selects out" people who might tend to favour exploration over exploitation. The reason is that the airline hires and promotes people 'based on reliability, doing a good job, and being consistent,' Mom says. People who might have other attributes, such as creativity, are not as valued. Not surprisingly, the organisation is struggling with innovation and creativity.

Beyond organisational context, there is the more specific context of the *task*. Teams that are focused on research and development, for example, will be naturally more inclined to encourage exploration in their members, Mom says. In addition, R&D or product development teams are usually multi-disciplinary, which adds to the company's exploration capabilities.

Even very closely knit R&D teams built on trust and affinity among members will tend to reject goal alignment, seeking instead to continuously discover the new and innovative. 'I would project,' notes Mom, 'that in another company where single disciplinary teams are more common, it would see goal alignment come about more quickly.'

Finally, *individual personality traits* can influence whether the company successfully balances knowledge acquisition and goal alignment.

Individuals who are intellectually curious and open to new ideas can push against situations that might encourage goal alignment, such as mono-disciplinary teams.

What companies can do

Companies can take a number of steps to ensure close, trusting relationships that foster knowledge acquisition without tipping into groupthink-driven goal alignment.

The first step is fundamental: an awareness of the importance of exploration. 'The implications for practice really begins with the fact that firms should be aware that, generally speaking, more exploration or innovation is needed,' Mom says. Given the disruption in so many markets, he says, most companies are aware of the importance of seeking out the new and the innovative.

Second, companies should continue to foster close personal relationships in the organisation. While Mom strikes a cautionary note about such relationships in terms of goal alignment, he emphasises that close personal relationships are vital for knowledge acquisition and sharing. Some companies believe in fostering internal competition, and the results are disastrous. 'People start to protect their turf, they become less willing to collaborate and trust others less,' Mom warns. Other companies unwittingly discourage collaboration. For example, Mom describes how a bank mandated all knowledge sharing to occur through its internal website. As a result, people were no longer developing the personal relationships that can lead to a much more effective exchange of ideas and insights than the formal mechanism of a website.

Achieving the balance

While encouraging collaboration and knowledge sharing on the one hand, companies can take steps to prevent such collaboration from undermining exploration through goal alignment.

Encouraging relationships among people from a variety of functions or disciplines throughout the organisation is key, according to Mom. Such relationships will be rich in knowledge sharing but, because of the diverse backgrounds of those involved, will avoid insular alignment around certain goals.

Job rotation is another effective antidote to goal alignment: changing the members of a team prevents the team from coalescing around common goals.

'The other thing, at a company level, is to not have too strong a vision or develop too strong an identity,' Mom says. A top-down mandate on what and how the company will act discourages the exploration of new ideas and directions. On the other hand, decision-making autonomy will allow teams to forge different paths. For example, says Mom, 'let teams figure out what the problems are with customers, and how to solve them.'

'The message of this research is that it takes some time for goal alignment to grow and to come about,' Mom says. 'After two or three years in these teams, goal alignment has increased to such an extent that it starts to have negative effects for exploration. Maybe then it's time to reshuffle teams, and to bring people to other positions. It is not to say that we should not have goal alignment. But let it not get too strong.' ■

> *"The implications for practice really begins with the fact that firms should be aware that, generally speaking, more exploration or innovation is needed…"*

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Four approaches for managing stakeholders

*By **Pushpika Vishwanathan***

As the pressure and need for firms to perform socially as well as financially grows greater than ever before, managing the balance of power between stakeholders becomes an increasingly delicate exercise. However, new research shows that firms have much to learn from philanthropic organisations and the ways in which they deal with their own stakeholder groups.

Firms of all types are constantly faced with a common challenge – how to create value that is of mutual interest to all, meaning the owners of the firm and the recipients of its end product or service. This is anything but a new situation. However, the increased responsibility to perform and report upon the social outcomes of a firm's activity as well as its financial gains means that this balancing act between the various stakeholders involved in a firm's core business is an even more complex affair.

Stakeholder management has been traditionally viewed as something exclusive to the corporate world but a look at how philanthropic organisations, albeit under different conditions, involve actors in the process could point the way forward for all.

Managing without owners

The social objectives and benefactors of a philanthropic organisation are clear to see, as are those providing financial or logistical backing. That said, the contributors to philanthropic initiatives (in the form of financial donors) are sometimes less visible, which increases the emphasis placed upon the good that such initiatives do to society rather than more traditional business concerns such as sales figures and return on investment (ROI). Of even greater significance to philanthropic organisations themselves, and as a potential learning opportunity for firms, is the fact that the former operate within a climate where no official owner exists.

"There are lessons to be learnt from how the interests of all are weighed up in the philanthropic sector."

This gives them greater freedom to operate with stakeholders as they see fit but also increases the importance of balancing the interests of both donors and beneficiaries. They enjoy the liberty to pick and choose which stakeholders they wish to prioritise but must remain wary of the potential consequences of their decision.

By contrast, firms have to function and apply strategy within the context of shareholder pressure, to whom they must ultimately bow in terms of producing positive financial results. That said, they also need to try to maintain a "happy family" both within the firm and in terms of those benefitting outside the firm.

It is therefore because philanthropic organisations have no ownership, and thus no stakeholder group whose interests ultimately dominate decision-making, that they can act with greater independence than firms. This enables them to adopt all kinds of interesting and creative stakeholder involvement practices to improve their governance that firms have not even begun to explore. So companies can gain insights into *how* to manage and balance stakeholders by looking at philanthropic organisations, rather than simply concentrating on end results.

Keeping everyone happy

"Mediation" is the buzzword for stakeholder management within philanthropic organisations – because donors are traditionally less visible than their equivalent in the corporate world and performance can be less easily illustrated via sales figures, it is doubly important to not upset the apple cart between those helping to fund projects and those intended to benefit from them. They are also faced by additional challenges – business language between management and beneficiaries can create problems, whilst the geographical dispersion of those benefitting from philanthropic projects can make stakeholder management an extra challenge.

So in short, philanthropic organisations represent a very special case: they are not strictly owned by someone, are financially backed by one stakeholder group but for the entire social profit of another. How does this work? Do they seek to keep everyone happy or do different approaches to stakeholder management exist? Balanced involvement is the key.

Four main types

A recent empirical study of 34 Dutch philanthropic organisations, performed via interviews, focus groups, and archival data, has succeeded in identifying four main approaches to stakeholder management within philanthropic organisations, as well as the potential outcomes (positive or negative) of each set-up and potential solutions for redressing the balance between donors and beneficiaries. The results make for fascinating reading, including for the corporate world.

The first type identified by the study is labelled "free spirits" – stakeholder pressure is low, which may seem a comfortable situation but also represents a higher risk for donors and beneficiaries if targets are not met. Such a set-up requires significant self-discipline. The second type to emerge is the so-called "gold minder", whose primary focus is firmly placed upon generating funding opportunities, at the potential risk of presenting projects to beneficiaries that do not interest them. Whilst such a set-up provides financial security, if those to receive the end product are not interested then such a model is not sustainable.

In short, donors are over-involved, whilst beneficiaries find themselves lower down the pecking order. In such a scenario, it is recommended that central programme management and fundraising be separated to ensure that resources are allocated regionally and with greater relevance according to needs.

The third category, known as "peacekeepers", play things softly. Negotiation and decision-making are crucial, but almost to the extent that projects do not get off the ground. They are engaged in a constant battle of balancing the interests between both donors and beneficiaries. Sometimes one prevails, sometimes the other, and sometimes even none. In order to avoid endless debate with few results, centralising the project approval process could potentially solve such situations.

Finally, the "caregivers" operate primarily in relation to their beneficiaries but at the risk of presenting projects to donors that they do not wish to fund. More detailed and adapted reporting is recommended by the study as a possible way of better convincing those with the funding to support projects.

Lessons to learn

For the philanthropic sector, the study is revealing in the extreme as it underlines the diversity of approaches taken, challenges faced and solutions available to organisations. However, on a broader scale, what could firms have to gain from examination of a sector that has to deal with similar but different stakes? The key lies in involvement and, above all, how to balance involvement between stakeholders. Firms manage stakeholders like any other organisation but do not necessarily perform the same balancing act between them as philanthropic bodies do with their donors and beneficiaries. Until recently, research into corporate governance strategy has focused far more on the outcomes of the strategies adopted than the processes involved in order to apply them in the first place. There are lessons to be learnt from how the interests of all are weighed up in the philanthropic sector. Sometimes it is the donor who prevails, sometimes the beneficiary, and sometimes genuine parity is achieved. The key issue is in understanding what the outcomes will be depending on the approach taken.

Another major contribution of the study is to show that stakeholder management is not only about increasing involvement of some of the actors. Firms do this as well by communicating with stakeholders via social media, organising events, and conducting surveys and research. However, stakeholder management is also about *restricting* the involvement of certain stakeholders by adopting practices that deliberately reduce the extent of influence an actor has on managerial decision-making. Effective stakeholder management is revealed to not always be about more dialogue, more connection, and more relationships. Sometimes it is about less.

What the recent study into philanthropic organisations also succeeds in doing is to make the following point – regardless of sector or the nature of the organisation, the results achieved are directly impacted by the way in which all those contributing to and benefitting from a product or service operate together. Everyone wants to have their say and it is down to the firm or organisation to decide how to balance power. However, by only listening to those who are stumping up or the cash or, alternatively, those “consuming” the end result, the firm or organisation will inevitably achieve very differing results.

The philanthropic sector may represent an entirely different ball game in terms of the end product or service and the level and nature of accountability, but it faces very similar governance pressures as the corporate world, one from which the latter could learn. ■

“Effective stakeholder management is revealed to not always be about more dialogue, more connection, and more relationships. Sometimes it is about less.”

This article draws its inspiration from the PhD thesis *Governing for Stakeholders – How Organizations May Create or Destroy Value for Their Stakeholders*, written by Pushpika Vishwanathan. It can be freely downloaded at WEB http://repub.eur.nl/pub/93016

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Impressions management: lessons from the oil industry

By ***Mignon D. van Halderen, Guido Berens, Mamta Bhatt, Tom J. Brown and Cees van Riel***

In the late 1990s, after over a century of extracting hydrocarbons, the petroleum industry faced a growing scientific consensus that pollution from fossil fuels is a major cause of global warming. Operationally and in terms of their global image, oil and gas companies faced a serious dilemma. Two major players, Exxon and British Petroleum, took very different approaches in their corporate communications strategies, the outcomes of which offer valuable lessons in impressions management.

Most firms try to avoid conflict whenever possible. After all, a company can survive only so long as its stakeholders will support it. If the government, your customers, your investors, or your employees don't provide you with a licence to operate, you probably won't last long. But being neutral in highly politicised and very public debates isn't always possible for a firm. When the product itself becomes controversial, as was the case of hydrocarbon extraction in an age of public concern about global warming, ducking controversy isn't an option.

In a study, *Managing impressions in the face of rising stakeholder pressures: Examining oil companies' shifting stances in the climate change debate*, we analysed two extreme but very different responses to this communications challenge. Exxon fought long and hard against the growing consensus around global warming. British Petroleum, at the same time, tried to cultivate a greener and more emotional image. Yet as we found after analysing archival materials, media articles, and corporate texts from 1997 to 2009, each company found its own way to play a difficult hand badly.

Executives, investors, and society all paid dearly for these errors, but for us as management scholars, the two cases offered an interesting opportunity. Most cases about impression management focus on positive scenarios that recount how companies handled their reputation management well. However, we believed that reaching a better understanding of how corporate communications strategies change under extreme pressure may be more instructive.

Over time, both companies' impression management passed through four distinct stages. Each company passed through an initial stage, in which it laid out its position; then, a stage in which it tried to make its view clearer; a third stage in which it tried to repair holes in its public image; and a final adjustment that aligned the company's official public image with its operational reality.

1. Taking a stance

In 1997, both companies enjoyed strong public reputations and were considered major players in their industry, but the growing global consensus on the seriousness of global warming began to change that.

To fight back, Exxon took out advertisements in *The New York Times* in 2000 that asserted the economic risks of sudden action on climate change and took a sceptical view of global warming as a man-made phenomenon. Although the company actually did have several environmentally friendly initiatives going on at the time, including projects that promoted cogeneration, energy saving, and the reduction of three air pollutants by 30 per cent, it chose not to emphasise that side of its portfolio.

> *"Exxon fought long and hard against the growing consensus around global warming. British Petroleum, at the same time, tried to cultivate a greener and more emotional image."*

Impressions management: lessons from the oil industry *(continued)*

By ***Mignon D. van Halderen, Guido Berens, Mamta Bhatt, Tom J. Brown and Cees van Riel***

British Petroleum, on the other hand, was the first oil company to state that the global warming problem was one of its major responsibilities. The CEO, Lord Browne, told students at Stanford University in 1997 that the company was tackling climate change because 'it is the right thing to do.' It also quit the industry-friendly Global Climate Coalition and set a sales goal to build its solar energy business to US$1 billion within 10 years.

Most of all, in 2000, British Petroleum began a US$200 million campaign to position itself as an environmentally forward-thinking company. In the course of the campaign the company shortened its name to BP, unveiled a bright green, white and yellow sunburst logo, and launched an advertising campaign, Beyond Petroleum, to focus the public on its non-fossil fuel projects. However, the substantive side was much less active: approximately two per cent of the company's capital investments were made in natural gas, electrical power, and renewables.

In the beginning, stakeholder pressures were low at both companies. In 1998, Exxon received its first shareholder resolution demanding the company make an effort to prevent global warming, but the proposal won only four per cent of the shareholders' votes. BP did earn criticism, from Greenpeace, the radical environmental NGO, which described the company's stance as a 'triumph of style over substance' and claimed that in 1999 the company had spent more on rebranding its logo than on alternative energy.

2. Clarifying the position

Between 2001 and 2004, the environmentalists' critique grew sharper. For example, Greenpeace and several other NGOs started a boycott against Esso, Exxon's European brand, until the company changed its policies and stopped funding global climate change sceptics. BP's stakeholders also began to perceive there was some distance between the company's rhetoric and its reality. In particular, Greenpeace and others criticised Lord Browne's announcement that BP intended to explore for oil in the Arctic National Wildlife Refuge, Alaska's last remaining pristine wilderness. Nor did several accidents in its Alaska operations help its reputation for clean energy.

Both companies tried to reframe the debate in this stage. Exxon spokespeople began to acknowledge the "potential" for human–induced climate change and defended its donations to climate change sceptics as a way to "broaden the debate." The company also announced a plan to donate US$100 million to the Stanford climate change project, and made ongoing investments in energy efficiency, emission reduction, and innovation.

At the same time, BP back-pedaled. Spokespeople explained that their "Beyond Petroleum" slogan should not be taken as a 'literal statement' and that they were not leaving the petroleum industry. Browne said it meant instead that the company was 'going beyond the conventional way of dealing with petroleum.' Substantively, the company reached its greenhouse gas emissions reduction target eight years ahead of schedule and allocated three per cent of its capital investments to gas, power and renewables.

However, to an extent the companies also stuck by their initial positions, with Exxon CEO Lee Raymond arguing that renewable investments were 'a complete waste of money,' while BP spokespeople insisted that the company 'wanted to play its part in reducing harmful emissions.'

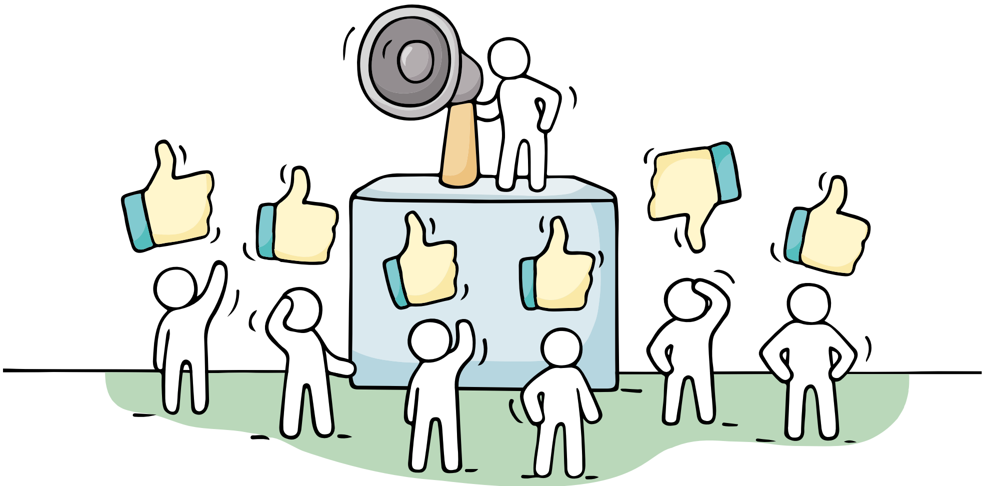
3. Repairing reputation

In its third stage, 2005-2006, the companies faced rising pressure from shareholders. An Exxon shareholder resolution demanding that the company be more transparent about its degree of compliance with the Kyoto Accords won more than 25 per cent support. At the same time, BP also faced more scrutiny and criticism after an explosion at a BP refinery in Texas killed 15 people and later that year, a BP pipeline in Alaska suffered a leak.

In response, Exxon's new CEO, Rex Tillerson, struck a more accommodating tone and the company raised its level of investment in new cleaner, energy saving technologies. BP, on the other hand, apologised, announced plans to invest three per cent of its capital investments in gas, power, and renewables and US$8 billion over the next 10 years in alternative energy, including natural gas.

4. Returning to square one

Yet in some respects, the companies still did not stray too far from their initial stance. Tillerson claimed there was still 'significant uncertainty' around



"A corporate reputation is often an uneasy combination of symbol and substance, but in the end, stakeholder pressure tends to force more congruence between them."

global warming, while BP continued to describe renewables as a 'real and viable business' and claimed it was investing heavily in alternative energy.

Finally, in 2007, in the face of rising pressure, each company modified its stance. Exxon acknowledged that 'the risk is serious and action should be taken' with respect to climate change, and invested US$600 million to develop algae biofuels. BP, in the meantime, under pressure from shareholders to earn more on hydrocarbons and lose less on renewables, argued that focusing on oil and gas and disinvesting in some of its renewable projects 'was a perfectly reasonable way of proceeding.'

These cases suggest that even when companies sustain this level of public pressure, their strategy tends to change only gradually. Companies often suffer from a great deal of path dependency: once a company has been defending a particular view of itself, executives feel compelled to stick to this view, or (if that is no longer tenable) to try to explain away the inconsistency between current and past actions and positions.

A corporate reputation is often an uneasy combination of symbol and substance, but in the end, stakeholder pressure tends to force more congruence between them. Symbolic and substantive actions tend to harmonise. With so much societal scrutiny, it becomes increasingly difficult to say one thing but do another.

How might companies facing this kind of difficult problem handle it better? Three ideas come to mind:

- Don't get too emotionally invested in a particular interpretation of the controversy. While some desire to "save face" is understandable, having the courage to admit that you were wrong is sometimes desirable.

- Face difficult conversations early, particularly with advocacy groups. If they feel ignored or left out of the discussion, they might be more likely to engage in hostile actions.

- Don't cultivate a reputation too far removed from the realities of your business. People forgive mistakes more readily than hypocrisy. ■

This article draws its inspiration from the paper *Managing impressions in the face of rising stakeholder pressures: Examining oil companies' shifting stances in the climate change debate* written by Mignon D. van Halderen, Mamta Bhatt, Guido A.J.M. Berens, Tom J. Brown and Cees B.M. van Riel. *Journal of Business Ethics (2016) 133: 567-582*. http://dx.doi.org/10.1007/s10551-014-2400-8

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Stable energy: the road ahead for electric cars

By ***Konstantina Valogianni***

The adoption of electrically powered modes of transport continues apace. However, even in countries such as the Netherlands where a boom in the use of electric cars has been perceptible over the past four years, the problem remains the same – the high frequency of recharging is expected to pose new strains on the grid due to the extra load coming from these vehicles.

However, an IT-based solution tested both mathematically and via simulations exists that could make the difference for grid operators, energy providers and vehicle users alike.

In the current climate, few would argue against the environmental interests of generating power via wind turbines and solar panels and encouraging consumers to switch from polluting petrol or diesel-powered cars to electric vehicles. The case of electric cars is an especially pertinent one. Once the logistical hurdle of providing sufficient recharging points has been overcome, there follows the issue of energy surges on the power grid at the most intense times of use.

Drivers of such vehicles typically use them for commuting, meaning that the peak points for plugging in come in the morning before work, during the day at work, and in the evening upon returning home. Energy providers cannot necessarily deal with such peaks, as underlined by the fact that recharging an electric car is often higher than a household's daily energy consumption. Changing consumer habits at attractive prices in order to space out their recharging times is key to the issue.

Taking the strain

One of the most obvious ways to counter the highest periods of demand is for additional power plants to be fired up to take the extra strain. But this option is both polluting for the environment and an expensive operation for energy providers. Grid stability has to be the goal, whilst keeping prices affordable. With electric vehicle usage expected to rise and rise, this would only represent a short-term solution at best.

The ideal approach would be to influence how and when such vehicles are charged and in order to do so two, if not three options are available. The question is one of responsibility – is it down to the consumer to choose the ideal time (both in terms of cost and available energy supply) to recharge or is it down to grid operators and energy providers to manage in a top-down way the right times to fill up? The answer is, ideally, both.

Consumer preferences

The decentralised, consumer-oriented approach involves installing on-board computer software in electric cars that would track consumers' typical use of their vehicles and inform them of the optimal refuelling times and amount. Consumers could choose to ignore such advice in the event of an unusual long-haul trip, so they would ultimately remain masters of their own vehicle and its and their needs. However, such an approach could represent a financial gain for all – for consumers who follow the advice given and charge accordingly and at cheaper times and for energy providers who could span out supplies more effectively.

Bidding for energy

The centralised, provider-driven approach would involve what is known as energy "auctioning", whereby central grid operators decide upon the best times for recharging to occur. In some cases, consumers could also plug in and sell back unused electricity to the benefit of fellow drivers in greater

“The ideal approach would be to influence how and when such vehicles are charged and in order to do so two, if not three options are available.”

need. The challenge would be to keep all customers happy as, in some cases, delays would occur. Charging often occurs at a different rate, so the challenge confronted by providers and consumers alike is not just one of the amount of electricity required but also at what rate it can be supplied.

This dilemma could be overcome via IS technology in a mobile app form, meaning that consumers would be kept informed in real time of current energy prices, leaving them the option to either fill up right away when prices are higher or wait until the cost becomes more attractive at another point in the day. However, the ideal scenario would be to combine both approaches and offer varying prices and rates at different times in the day, giving drivers the chance to adapt their consumption habits accordingly and energy providers the opportunity to keep expansion investment costs down.

Testing the theory

A recent litmus test was carried out for the above theory via a complex set of mathematical modelling operations, statistical machine learning and simulations based upon electric car recharging in the Netherlands over 2013. Some 1,500 users and 231,995 charging transactions were under analysis, on the assumption that each household possessed one electric car only, could recharge at home or at work, and charged within the same region where different prices were available. Driving profiles were obtained via the Dutch Bureau of Statistics, whilst pricing information was drawn from EPEX SPOT data and the California-based

Time of Use scheme. The analysis was also based on the assumed peak charging times as being 9am, 2-3pm, and 7-8pm.

From the resultant algorithms produced, it was found that the coordinated, centralised/decentralised approach to managing consumer behaviour and grid stability could lead to an average 55 per cent reduction in the market price for electricity. Above all, it would also relieve the pressure on the grid and encourage more intelligent usage of recharging points by consumers. After all, the main objective in the current situation faced by consumers and suppliers is to incentivise the use of less polluting modes of transport whilst maintaining grid stability and attractive market prices. The ultimate "win-win" situation if ever there was one.

"...the main objective in the current situation faced by consumers and suppliers is to incentivise the use of less polluting modes of transport whilst maintaining grid stability and attractive market prices."

Time to road-test

By applying the algorithms devised as part of the recent study, it would be possible for intelligent software to be developed and installed in electric cars that would track consumers' usage, their household energy supply and, depending upon energy price variations during the day, inform drivers of the optimal time to recharge. Better still, it would also be capable of determining whether a given driver needed to only do a short commute in the morning, for example, thereby ensuring that sufficient power would be contained within the battery without recourse to additional expense and power surges through needless overcharging.

Within this ideal scenario, grid managers would not lose their level of control over demand. For supply and demand to dovetail, consumers cannot be the sole drivers of the system. This is precisely the beauty of the hybrid centralised/decentralised approach proposed. Consumers are duly informed of the right times to refill, the automotive industry can learn how to make recharging as smooth as possible, grid operators can be informed of how to set up their pricing schemes and, perhaps above all, the overall concept and reality of sustainable vehicle powering could be promoted on a broader scale.

The proposed model requires testing based upon different assumptions but one thing is clear – the way ahead for the electric car is to have consumers, grid operators and energy providers heading in the same direction, in order to keep prices down and supplies up. ■

This article draws its inspiration from the PhD thesis Sustainable Electric Vehicle Management using Coordinated Machine Learning, written by Konstantina Valogianni for Rotterdam School of Management, Erasmus University. It may be freely downloaded at http://repub.eur.nl/pub/93018

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Using scent to lift customers' moods

By ***Mark Leenders, Ale Smidts and Anouar El Haji***

Faced with tougher and tougher online competition, traditional retailers are scrambling to find ways to exploit the advantages of real-world sales that e-commerce vendors can't easily duplicate, such as taste and feel – and smell. Strong scents brighten attitudes and open wallets, and a recent study shows that the right scent at the right intensity can increase sales by nearly a third.

Background music, lighting and interior decoration are all well-established tools retailers use to put consumers in the mood to buy, but scent is further out on the sensory frontier. Businesses have always used scent to influence customers – think of bakeries – but in recent years, the science has become much more advanced. The Mirage Casino in Las Vegas, the Magna Plaza shopping mall in Amsterdam, and most of the theme parks in Orlando, Florida, use scent to attract customers. Consultancies have even sprung up that offer advice on the best scents for particular businesses to use.

However, academic researchers know relatively little yet about the dynamics of scent as a strategic marketing tool beyond a fairly broad understanding that, unsurprisingly, a neutral to pleasant scent can have a positive effect on the customer's mood or trigger memories.

As scholars interested in marketing management, consumer behaviour, and innovation, we thought this gap between business practice and research smelled like a rare opportunity. Academics and retailers alike have many questions about the use of scent, and only a limited number of studies have considered the specifics of how scent affects consumers.

"Not every scent is good for every situation: a scent that brings people out on a dance floor may be different than the one that keeps them in the grocery aisle."

Most researchers have found that a pleasant scent leads to better evaluations of the store and its merchandise, and increases the amount of money spent. People exposed to a pleasant scent also tend to underestimate the time they spent in a store. One researcher even observed more smiles on consumers after their exposure to a citrus scent in a sporting goods emporium.

Scent intensity

But no one had worked out much on the impact of scent intensity on consumer behaviour. To find out, we found a supermarket in the Netherlands, part of a major chain, that was willing to allow us to conduct a real-world experiment on the relationship between scent intensity, customer mood, and sales.

First we needed to find the right scent. When it comes to ambient or "background" scents, scholars have found that congruence seems to be important when the goal is to encourage a positive mood. By congruence, they mean that the scent must blend in with the surroundings. Not every scent is good for every situation: a scent that brings people out on a dance floor may be different than the one that keeps them in the grocery aisle. Consumers will notice non-congruent or mismatched scents, but generally not in a way that the retailer will like: a non-congruent scent may start them thinking about the weird smell itself and such thoughts may reduce the automatic emotional impact.

We asked scent experts for a recommendation of a scent that people would find pleasing in the context of a supermarket. They suggested that melon would be the best of all pos-

Using scent to lift customers' moods *(continued)*

By ***Mark Leenders, Ale Smidts and Anouar El Haji***

sible scents for our purposes. Melon smells are universally liked, they told us, and melon scent has the additional virtue of being safe, easily synthesised, and inexpensive.

Our goal was to find out whether the intensity of a scent affects consumer behaviour. Most earlier studies on ambient sent have compared the impact of scent and no-scent treatments, and on the whole, most found scent had a positive impact on customers' moods and likelihood of purchase. Not much was known about scent intensity, however, except an intuitive understanding that there can be too much of a good thing, even when the scent is pleasant.

Using electrostatic aroma diffusers, we infused a melon scent at three different intensity levels on three different sets of Tuesdays and Wednesdays (the days with the most even foot traffic), and then measured the differences in shoppers' moods, behaviour, and general opinions of the store.

For each intensity level, a total of 100 customers were observed and studied. In order to assess the actual time spent in the store, observers registered the arrival time of each potential respondent. When the observed respondent arrived at the checkout counter queue, the end time of the trip was registered. Upon leaving the shop, these customers were intercepted and asked to participate in a study evaluating the supermarket by completing a four-question survey at a location nearby, but out of sight of customers entering the store. Before the interception, there was no interference with the customers' regular shopping trip.

We found that for the whole sample of 300+ respondents, the stronger the intensity of the melon scent, the more they purchased.

At the highest intensity level, 43 per cent reported that they had made an unintended purchase, compared to 33 per cent and 30 per cent at the medium and low thresholds. Overall, revenue from the high-intensity scent shoppers increased almost 14 per cent compared to the gross from the baseline group, but the medium intensity had only a two per cent impact on consumer spending. Shoppers during periods of high-intensity scent diffusion also had more positive things to say about the store and its products than those who visited during mid-intensity or low-intensity periods.

> *"Shoppers spent 30 per cent more time in the store when the scent was strong compared to shoppers in a no-scent period. They also thought they had spent less time."*

Perceptions of time

Interestingly, we also confirmed prior studies that suggested that scent affects consumers' perception of time: at the highest intensity level, shoppers often underestimated their time in the store, while at the lowest level they overestimated the length of their visit.

Shoppers spent 30 per cent more time in the store when the scent was strong compared to shoppers in a no-scent period. They also thought they had spent less time. At the high end, they actually spent 14.18 minutes in the store, but their visit felt shorter (13.99 minutes). With no scent, they spent an average of 11.15 minutes in the store but felt they had spent longer (12.13 minutes).

Broken down by demographics, the results of our study were more mixed. Although men tend to have a weaker sense of smell than women, we found no significant difference in their responses from those of the average. Nor did we notice an age effect, although the ability to smell declines over age 50, but this was probably because we did not have many older shoppers in the sample.

Improved moods

The only sub-group that did have a stronger response than average was shoppers in a hurry. Marketers have long known that hurried shoppers tend

to be in a worse mood than shoppers with time on their hands, but before this study no one had established that a strong pleasant smell could lead to a dramatic improvement in busy consumers' moods.

For less hurried shoppers, who were presumably in a better mood when they walked through the front door, scent improved their mood only slightly. Interestingly, however, a strong pleasant scent still affected their behaviour, causing them to linger in the store somewhat longer than shoppers who visited on low-scent days, suggesting that scent still affects people who are already in good humour.

Our most important conclusion is that the intensity of the scent matters. We found that store evaluations and behaviour changed substantially only when the scent reached the high-intensity level. Evidently, the scent needs to be relatively strong to reach a large number of shoppers. The fact that we conducted the experiment in a supermarket may also have affected the scent intensity needed to produce the effects desired by retailers, as our melon scent had to contend with a cornucopia of smells.

Scent can be a powerful tool for retailers, but it is still imperfectly understood. Our study, however, suggests that the right scent at the right level of intensity represents a rare opportunity for brick and mortar stores to create a unique form of emotional market differentiation. ■

This article draws its inspiration from the paper *Ambient Scent as a Mood Inducer in Supermarkets: The Role of Scent Intensity and Time-Pressure of Shoppers*, written by Mark A.A.M. Leenders, Ale Smidts and Anouar El Haji. *Journal of Retailing and Consumer Services*, available online 17 June 2016. http://dx.doi.org/10.1016/j.jretconser.2016.05.007

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The critical role of children and schools in internet adoption

By ***Rodrigo Belo***

Children are fast learners, and the speed at which they learn can have an impact on the broader adoption of new technology. In particular, the provision of broadband in schools can be an effective way to encourage household internet uptake in neighbouring areas.

That is one of the major conclusions I have come to as a result of a research project started during my PhD and soon to be published in a top management journal.

As I will shortly demonstrate, anecdotal evidence abounds of how the demands of children increase the spread of behaviour patterns. In the meantime, one non-technology example which I would cite in support of my thesis and which is borne out by a separate academic study is the way in which children of Hispanic parents born in the USA learn to speak English and by the very act of doing so increase the use of English in the home environment. Children who become acquainted with a new experience at school will transmit the benefits arising from that experience effectively.

Returning to the anecdotal, the human condition is such that parents mostly want their children to be happy. Therefore, when children ask for something (such as the latest Nintendo or PlayStation games console, participation in a school trip to Rome, driving lessons and cars, or help with buying a house), parents will mostly try to please them (within limits) even if that is costly for them.

It is worth noting that while the requests become financially more expensive and complex as children grow older, in their earlier years many are relatively inconsequential. They are often triggered by what children see their friends using or consuming at school or in other environments.

Every so often, children can contribute to a real change in their parents' life, even if only inadvertently, by showing them the advantages of using a new product or technology. This is fundamentally different from just getting a new product or technology for children: adults start using the technology for themselves, even if some of them struggle to deal with the internet, broadband and streaming, in the way their own parents struggled to cope with video records.

This happens because children are exposed to new products, ideas and technologies at school, and bring this knowledge home. The recycling of goods, materials and waste is another good example: children learn how to recycle at schools and then go home and teach their parents how to do it.

Boosting uptake

The evidence compiled during the research on broadband take up is of a more scientific nature. At its simplest, we found that providing broadband to schools meant that children took the demand for the technology home, thereby boosting the overall levels of adoption. The lessons that are to be learnt could apply to the spread of any idea or technology.

We used data from Portugal between 2006 and 2009 on household internet penetration and on how much schools use broadband. We observed a number of patterns from the

"Children are fast learners, and the speed at which they learn can have an *impact on the broader adoption of new technology*. In particular, the provision of broadband in schools."

data. Households with children are more likely to have internet access. Households close to schools that use the internet intensively are more likely to have the internet; and this is even more so for households with children. Finally, households close to other households with internet access are also more likely to have access to the internet themselves.

Observing these patterns from the data one might be tempted to draw a number of conclusions. One, children are a driver for having internet availability at home. Two, the very act of living close to schools that use the internet contributes to the number of households adopting the internet (even for households without children). Three, having children attending schools that use more internet leads to a higher likelihood of adopting the internet. And four, living close to other households with the internet increases the likelihood of having the internet at home.

However, other potential explanations exist for the observed patterns. One, wealthier (or more educated) households are more likely to have both internet access and children. Thus, it is not having children that causes adoption of the internet, but being wealthy that leads to both outcomes: having children and having the internet at home.

Two, wealthier households may be located close to wealthier schools which might have more resources to have a better internet connection. Thus, it is not the fact that school internet use leads to home internet adoption, but simply a sorting phenomenon.

The critical role of children and schools in internet adoption *(continued)*

By ***Rodrigo Belo***

Three, again, children's regular use of the internet at school may just be a symptom of wealth. It can even be the other way around: children get acquainted with the internet at home and then apply those skills at school, leading the schools to register higher internet use. Four, again, this can simply be a function of the tendency for wealthier households to cluster together.

"Children who become acquainted with a new experience at school will transmit the benefits arising from that experience effectively."

In our study we rule out each of these alternative explanations and find that providing broadband to schools can in fact be an effective way to foster household internet adoption in neighbouring areas. On the one hand, the infrastructure put into place to meet the needs of schools can also serve households nearby. On the other hand, students get acquainted with the internet at school and signal its usefulness to parents at home who, consequently, can be more likely to adopt it.

In simple terms, we find that broadband use at school leads to higher levels of internet penetration in neighbouring households. It is possible to argue that broadband use in schools was responsible for a year-over-year increase of 3.5 percentage points on internet penetration in households with children. Across our data set this effect accounts for about 17 per cent of the increase in home internet adoption.

We also found evidence of regional spillovers in internet adoption across households. These were roughly responsible for an increase of 2.1 percentage points in internet penetration or 38 per cent of the total increase in household internet penetration between 2006 and 2009. These results show that wiring schools with broadband is an effective policy to lower the barriers for internet adoption at home and as such contributes to accelerating the pace of broadband diffusion.

Children are exposed to broadband at school and transmit knowledge about how to benefit from it to parents at home. As a result, the propensity of parents to follow the example of their children and adopt the internet at home might increase. In our study, we propose that the parents' productivity of using the internet at home is a function of the knowledge transmitted by children as well as of the knowledge transmitted by neighbouring households that have already adopted the internet.

The point I made in my introduction is therefore worth repeating. Children are fast learners, and the speed at which they learn can have an impact on the broader adoption of new technology. ■

This article draws its inspiration from Rodrigo Belo's PhD thesis, and the paper *Spillovers from Wiring Schools with Broadband: The Critical Role of Children*, written by Rodrigo Belo, Pedro Ferreira, and Rahul Telang, and published online in the journal *Management Science*, April 2016. http://dx.doi.org/10.1287/mnsc.2015.2324

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