

The 3 E's of Innovation: A Networking Perspective

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“Entrepreneurs and inventors are no smarter, no more courageous, tenacious, or rebellious than the rest of us — they are simply better connected”

- Andrew Hargadon¹

Introduction

Innovation is a much talked about, much written about and much studied topic. Yet organisations regularly struggle to meet the innovation expectations of their stakeholders, be they their clients, management team or even their own employees. Innovation is regularly associated with breakthrough technologies and hero worshipped inventors. However, as Andrew Hargadon points out, even Edison wasn't a lone inventor, but was involved in a web thick with ties to other people, ideas, and objects, that together made up his particular “invention”, the electric light bulb. Innovation is as much social as it is technical.

Working on the premise that successful innovation is underpinned by social networks, this paper explores innovation from a network perspective. Innovation is defined here as “good ideas, implemented”, meaning that unless an idea is formally implemented and contributing new value, it is still just an idea. The three E's of innovation: Exploration, Engagement and Exploitation have been developed both as a categorization of the innovation process and

to also provide some insight as to why success has proved so elusive to so many firms and organisations.

In this paper we will describe the theory of social networks as it applies to innovation. We will then introduce the three E's as a framework for successful innovation that is underpinned by networks. We will demonstrate, through this networking perspective of innovation, why organisations have traditionally struggled with innovation and then provide some guidance as to how organisations can facilitate their networks to enhance their chances of innovation success.

The Theory of Networks and Innovation – “It's a small world after all”

There is much more to the “small world” effect than the catchy Walt Disney tune “it's a small world after all”. Naturally occurring social networks show distinctive characteristics that are loosely described as the “small world effect”. Essentially the effect shows clusters or cliques of highly connected individuals, some of who are more central than others.

¹ Author of “How Breakthroughs Happen—The Surprising Truth About How Companies Innovate”, Harvard Business School Press, 2003.

The connections or “ties” are described as either strong or weak, reflecting the differences between say, a strong friendship and a casual acquaintance. The clusters or cliques are then often connected through individuals who share membership of two or more cliques. These individuals are called brokers or bridges and become the main conduit for information or knowledge flows between the clusters.

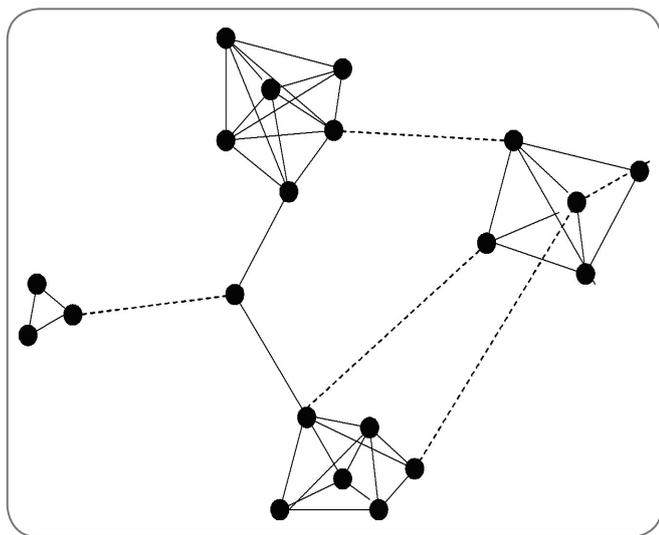


Figure 1 Small World Effect

The figure above shows a typical small world effect with four clusters with a combination of weak (dotted) and strong (hard) ties connecting them. There exist two competing, yet complementary theories describing the so called social capital of networks. The theory of closure² suggests that high social capital exists inside the tightly knit clusters where trustful relationships can be established through regular and frequent interaction. Conversely, the theory of structural holes³ suggests that maximum benefit lies in bridging the gaps between the clusters, called “structural holes”.

In support of the argument for bridging structural holes, empirical research has shown that the probability of an individual having his or her idea accepted by management is inversely correlated with the density of ties that the individual has. That is, members of tight clusters have a very low probability of having an idea accepted by

management and in fact have a low probability of even voicing a new idea. Conversely, less constrained individuals have a much higher probability of having their ideas positively reviewed by management⁴. It is not enough however, for a broker to simply be in a position to identify a good idea. Brokers or bridges need to also have the influencing skills to firstly argue the merits of the ideas with his or her peers and then ultimately with management. Kelley’s study of star performers at AT&T’s research laboratories identified the skills of initiative, networking, small-L leadership, organisational savvy and show and tell capabilities were required to turn good ideas into successful innovations⁵.

Of course identifying promising ideas and successfully engaging management in their funding is only part of the journey. To be classed as a successful innovation, the ideas have to be productive in practice. New ideas do not come with tried and tested recipes. This is where the exploitation teams need to be effective in the sharing of the adaptations and improvisations commonly required to make something work in practice. The characteristics of exploitation teams are substantially different to exploration teams. Research by March⁶ indicated that a concentration on exploitation over exploration can have a short term beneficial effect on organisational learning, but in the long term is destructive. He and Wong⁷ showed empirically that firms that could effectively balance the competing demands for exploration and exploitation achieved higher levels of innovation success. Conversely, most firms struggle with innovation precisely because they fail to effectively balance exploration and exploitation initiatives.

In summary, social network theory suggests that successful innovation is best achieved through careful management of the interaction between exploration and exploitation activities. This is articulated further in the next section.

2 Coleman, J. (1990) Foundations of Social Theory, Cambridge, MA: Harvard University Press
 3 Burt, R. (1992) Structural Holes, Cambridge, MA: Harvard University Press
 4 Burt, R. (2004) “Structural Holes and Good Ideas”, American Journal of Sociology, 110:

5 Kelley, R. (1998), “Star Performer”, Orion Business Books
 6 March, J. (1991), “Exploration and Exploitation in Organizational Learning”, Organizational Science, Vol. 2, No.1.
 7 He, Z. and Wong P. (2004), “Exploration vs. Exploitation: An Empirical Test of the Ambidexterity

The 3 E's of Innovation

The three E's of innovation infer a linear process starting with an exploration process, or a broad based scanning of the environment, looking for new innovation opportunities. New ideas or inventions necessarily need to progress through an acceptance filter which is usually in the form of management acceptance and approval to invest in an idea's progression. This could be seen as an engagement process between the idea proponents and the organisation management who has the authority to invest. Finally, for those chosen initiatives the task is then to convert the ideas into a deliverable solution or product from which a business benefit is gained.

On the surface the 3 E's looks like a straight forward linear process with stage gates and ultimately 100% success. In practice, reality is far messier than this. Social networks are neither linear nor mechanistic. Feedback loops between phases will occur as brokers travel to and fro between exploration, engagement and exploitation. However, networks can be assessed and orchestrated to an extent, to maximize your chances of innovation success. The schematic below describes the innovation process in terms of networks. The exploration process is seen as the environmental scan for new ideas, with the points of intersection between clusters or cliques representing separate disciplines or cultures, seen as the most fertile areas for exploration. The role of

the broker or bridge between clusters is seen as critical to the exploration process. The engagement process is where the informality of the exploration process meets the formality of the management hierarchy, required to fund the progression of prospective ideas. The success or otherwise of the engagement process will rely critically on the influencing skills of the brokers/bridges. Having survived the management filter, prospective ideas now need to be developed and implemented in practice. This exploitation process relies on close collaboration and co-operation of exploitation teams as ideas are implemented, adapted and fine tuned to meet the demands of a real world environment.

In practice the exploration and engagement practices are best facilitated by the bridge or broker with what Kelley calls "star performer" characteristics. The transition to exploitation might typically take the form of a "best practice" implementation. In many organisations today, cross divisional "communities of practice" are used as a mechanism for implementing a global best practice across organisational boundaries. Again, while a star performer broker could help initiate the exploitation process, the "high contact" style of the tight clusters or cliques that make up effective exploitation teams could quickly alienate the exploratory style of the broker. Therefore, it is usually best to have the broker retreat from the activity at this stage and let the exploitation team get on with the implementation unhindered.

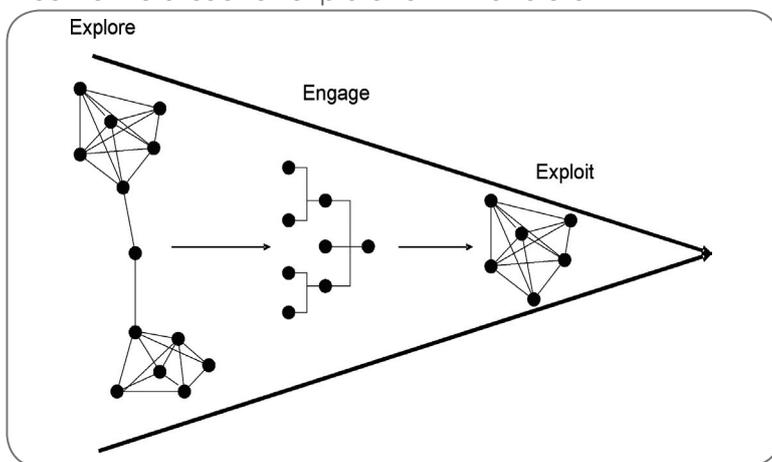


Figure 2 - The Three E's

What Can You do to Improve your Chances of Innovation Success

In this paper we have argued that successful innovation is as much to do with social networks as it is with technology developments. Therefore to be successful one needs to be aware of the social networks in your organisations. These are often known as a firm's hidden or shadow organisation. The hidden organisation is best exposed by an Organisational Network Analysis (ONA). A typical ONA process is summarized in the schematic below:

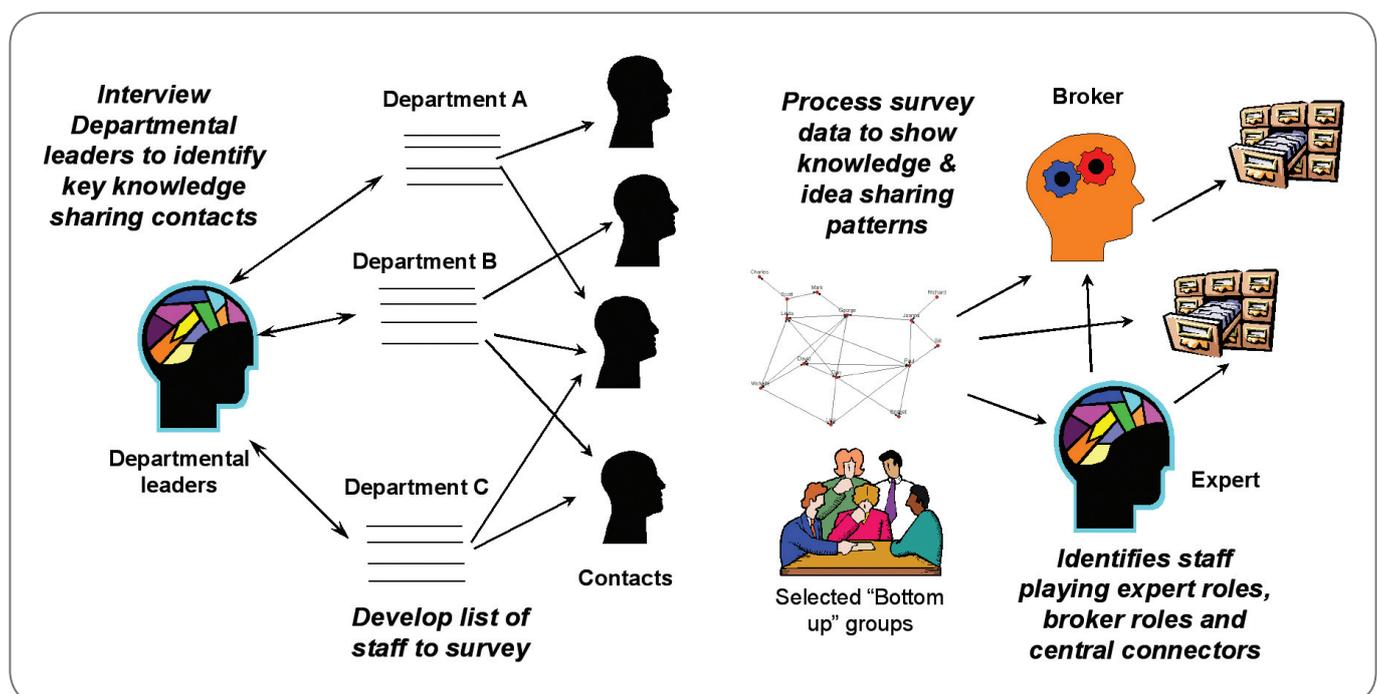


Figure 3 - ONA Methodology

The organisation is firstly sampled according to the key business processes or functions. Selected survey respondents are then asked to nominate their most trusted contacts or ties that they rely on to help perform their job functions. The resulting network can then be analysed for individuals playing network roles such as broker/bridges, central connectors and peripheral experts.

In terms of the innovation process and the 3 E's the steps would be to:

1. Identify the brokers/bridges from the ONA analysis. Research has shown that these people are not always visible to management. Do they display "star performer" characteristics like initiative, perspective, organisational savvy, small-L leadership, show and tell capabilities? Do their networks go beyond the organizations boundaries? If so, recruit them into the

exploration process for new value adding ideas.

2. Encourage the selected broker/bridges to put forward a portfolio of innovation prospects that they have gleaned from their participation in diverse networks.

3. Management should then assess the prospects put forward on a risk/reward basis to come up with a final set to take to implementation.

4. Identify the natural communities of practice, cliques or clusters along with their centrally connected leaders. Central connectors are usually more visible to management than brokers or bridges. Recruit the central connectors into the exploitation phase.

5. Have selected senior managers take on the sponsorship role by brokering connections between the broker/bridges from the exploration and engagement phases to the central connectors of the exploitation teams.

6. As sponsors the senior managers need to be mindful that the broker/bridges and central connectors may suffer personality clashes if left unattended. The sponsors may need to facilitate the graceful withdrawal of the broker/bridge to ensure that the implementation team's work can proceed unhindered, such that the business result is achieved and therefore the innovation a success.

In summary, this paper has provided a framework, the three E's, for implementing an innovation programme underpinned by the social networks that naturally exist within your organisation. A key requirement is to understand the hidden or shadow organisation that exists within your firm and the different roles that individuals play in these networks. Once identified, they can then be leveraged to facilitate the innovation results that have proven so elusive to firms relying on more structured approaches.

About the Authors:

Laurence Lock Lee is a partner and co-founder of Optimice Pty Ltd. He has personal experience with the three E's, having been a research leader for artificial intelligence and knowledge based systems within BHP's corporate research laboratories, before following these developments into the exploitation teams across BHP's operations and later other corporate and government businesses. More recently he has been a research affiliate of Computer Sciences Corporation's (CSC) global leading edge forum.

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Cai Kjaer is a partner and co-founder of Optimice Pty Ltd. He has been responsible for a number of innovations in the knowledge management area. For his efforts in deploying Knowledge Management in CSC Scandinavia, Cai received the CSC Scandinavia President's award for outstanding performance. Since moving to Australia, Cai has pioneered a strategic framework for information management capability assessments. In the area of networks Cai also pioneered Optimice's accelerated networking approach for facilitating faster and better networking between participants at conference events.

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