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# INNOVATION HUBS: WHY DO THESE INNOVATION SUPERSTARS OFTEN DIE YOUNG?

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## 1. Introduction

Whilst 'incremental innovation' is an imperative for the short-to-medium term success of a company, there is also a need for companies to engage in innovation activity that goes beyond the incremental, in order to guarantee long-term success. However, such 'radical innovation' (RI) poses new challenges and requires new competencies, some of which may conflict with existing best-practices for incremental innovations. 'Innovation hubs' are a type of organisational structure dedicated to RI projects, that have been used by companies to manage these conflicts by maintaining a certain degree of separation from the culture and routines of the mainstream organisation. Unfortunately, it would appear that many attempts to set-up this type of organisational structure have ended in failure within a few years; not before considerable time, effort and resource has been expended. This paper reports on a study of six innovation hubs that attempts to discover why some have failed whilst others have flourished. Conclusions are drawn on what management practices are most conducive to a successful innovation hub; and how greater benefit could be derived by the mainstream organisation through the cross-fertilisation of ideas, knowledge and culture.

## 2. Radical innovation

### 2.1 What is radical innovation?

Academic research into New Product Development (NPD) has improved the ability of companies to take good ideas through to commercialised product with less cost, in less time and yet higher quality. The vast majority of this work has focused on 'incremental innovation' which we define here as innovation that represents a discontinuity in technology, or within a specific market, at the *micro level only* e.g. the introduction of direct, fuel-injection systems in automotive engines. A notable contribution to the management of incremental innovation was the development of the 'Stage-Gate' process for New Product Development by Cooper [1990], which has been widely adopted within industry. The understanding of incremental innovation has therefore reached a good level of maturity and NPD practitioners can draw upon a reasonably comprehensive set of 'best-practices' that cover issues such as culture, process design, team processes and organisational structure [Tidd, et al. 2005].
However, it has been recognised since the 1950s that the progression of technologies involves not only incremental changes but also non-incremental, radical changes [Schumpeter 1950]. 'Radical innovation' is defined here as an innovation that represents a discontinuity in either technology, or within a specific market, at the *macro level*. For example, the Sony Walkman was a market discontinuity as it used existing technology to deliver a product that was totally new to the market, whereas the diesel locomotive replacement of the steam engine was a technical discontinuity. Both

represent macro level changes and hence both are considered to be 'radical innovations'. By their nature, RI projects are far less common that incremental innovation projects and hence there have been fewer studies of RI. Unfortunately, this means that RI is not yet as well understood as incremental innovation.

### 2.2 The opportunities and risks of radical innovation

Radical innovation can present opportunities: to satisfy existing customers' requirements significantly better than the current technology; to attract a new set of customers; or in a few cases, to create entirely new industries [Leifer, et al. 2000]. There is therefore a lot to be gained by companies who decide to pursue RI activities.

Unfortunately there are many sources of risk for RI projects. First, the market and technical risks are much greater than for incremental innovation projects as users find it difficult to evaluate products which are not similar to anything they have experienced previously, and the product technology is often unproven. Secondly, risks stem from the lifecycle of an RI project which can often require 10 years or more to complete and involves sporadic bursts of activity, many dead-ends, and a high degree of uncertainty throughout [Leifer, et al. 2000]. Finally, RI projects must also contend with risks originating from *organisational* and *resource* issues that 'stem from a fundamental conflict between the mainstream organisation and the unit engaged in RI, and the difficulty of managing the relationship between them' [Rice, et al. 2002].

### 2.3 Building new competencies for radical innovation

Previous work has concluded that the nature of RI requires a change in management practises beyond a quantitative, 'do what we do, but better' sense, towards a qualitative, 'do something different' sense [Phillips*, et al.* 2004]. Existing practices used for incremental innovation may not be useful for RI projects, and may even be counter-productive according to some authors [Christensen 1997, Leifer, et al. 2000]. The organisation therefore has to develop an entirely new set of skills and competencies, as shown in Table 1. How and where to develop these new skills and competencies, whilst still maintaining those required for incremental innovation, is discussed in the following section.

**Table 1. Comparison of organisational characteristics which have been found to facilitate incremental and RI projects respectively -Adapted from O'Reilley *et al.* [2004]**

| Characteristic | Incremental innovation | Radical innovation |
|---|---|---|
| Strategic intent | Cost, profit | Innovation, growth |
| Critical tasks | Operations, efficiency | Adaptability, new products |
| Competencies | Operational | Entrepreneurial |
| Structure | Formal, mechanistic | Adaptive, loose |
| Control, rewards | Margins, productivity | Milestones, growth |
| Culture | Efficiency, low risk, quality | Risk taking, flexibility, experimentation |
| Leadership role | Authoritative, top down | Visionary, involved |

## 3. Innovation hubs

### 3.1 Innovation hubs as a promising home for radical innovation projects

Companies looking for success in RI projects face the problem of managing the two different and conflicting sets of skills and competencies required for RI and incremental innovation projects. One solution that has been proposed for this problem is to house RI projects in a physically distinct organisational structure, away from the incremental innovation activities of the mainstream organisation [Benner, et al. 2003]. The theory being that by maintaining this physical separation the two types of culture and skill sets can develop without conflict or hindrance.

This idea has been taken-up by many different authors and practitioners and has led to the creation of a wide range of different types of organisational structures intended for housing RI projects, each with their own benefits and disbenefits.
The different structures can be classified in terms of the level of integration with the core organisation. At the highly integrated end of the spectrum are Corporate R&D centres. They benefit from the ability to leverage the resources of the mainstream organisation and can improve knowledge transfer and learning. However, in such close proximity to the mainstream, R & D centres may not be able to break away from the innovation suppressive routines of the mainstream. At the other end of the spectrum is the spin-out company, which may enjoy the freedom of being able to develop its own culture and nimble, entrepreneurial spirit but its physical separation may mean that the mainstream less likely to accept the radical innovations it develops compared with an identified group embedded within the organisation [O'Connor, et al. 2006].
Innovation hubs sit somewhere near in the middle of this spectrum. They have been described as a separate organisation, funded through corporate funds, which must possess competencies for idea generation, recognition and evaluation [Leifer, et al. 2000]. This study has chosen to focus on innovation hubs because they appear to represent a good compromise between the conflicts outlined above which appear to be hindering companies in their efforts to develop of radical innovations. Whilst there have been previous studies of innovation hubs [O'Connor, et al. 2006], further research was deemed necessary because we were aware of several companies that had attempted to start some kind of innovation hub, which were either struggling, or had failed within a few years. Therefore, this work provides a contribution to an industry need for a greater understanding of why innovation hubs often fail early.

### 3.2 Current understanding of Innovation Hubs

In recent years academic studies have begun to provide deeper insights into the activities and management strategies adopted within innovation hubs. From a longitudinal study of 12 large companies who had declared a strategic intent to develop RI capabilities, O'Connor *et al* [2006] found 7 different models of innovation hubs. The models describe the hubs in terms of their structure, function, location and reporting relationships. The study also highlighted three key competencies:
*Discovery* - "A discovery capability involves activities that create, recognize, elaborate, and articulate RI opportunities. The skills needed are exploratory, conceptualization skills, both in terms of technical, scientific discovery and external hunting for opportunities."
*Incubation* – "…the incubation competency involves activity that matures radical opportunities into business proposals. A business proposal is a working hypothesis about what the technology platform could enable in the market, what the market space will ultimately look like, and what the business model will be. Incubation is not complete until that proposal - or, more likely, a number of proposals, based on the initial discovery - has been tested in the market, with a working prototype."
*Acceleration* - "Acceleration activities ramp up the fledgling business to a point where it can stand on its own, relative to other business platforms in the ultimate receiving unit. Whereas incubation reduces market and technical uncertainty through experimentation and learning, acceleration focuses on building a business to a level of some predictability in terms of sales and operations."
Unfortunately, a high level of maturity in each of these competencies does not appear to be sufficient in themselves to guarantee the successful commercialisation of an RI project. The *interface* between each of these phases of a project, and in particular, the interface with the core organisation is another key determinant of the success of a project according to several authors [O'Connor, et al. 2006] [Leifer, et al. 2000].

## 4. Methodology

Our study has been conducted as a combined theoretical and empirical study. The empirical study has been conducted in six different companies based on observations, participation, and semi-structured interviews. Cases were selected to provide a range of outcomes: two long-lived successful hubs, one

successful but young hub, and three 'deceased' hubs. For the 'deceased' hubs, interviews were conducted with former staff from the hub.
While our theoretical study has been broad and multi-facetted our empirical study has been limited to a few specific focal areas, mainly related to the organisational setup. They are:
*The vision or driving idea of the hub* – O'Connor's work suggested that there are seven types of hub that have subtle differences in their structure and task i.e. technology focused, 'white-space' products, concept development etc. Does the hub type and its task affect the likelihood of survival?
*The organisational relations between the hub and the core company* – Tushmann and O'Reilley have suggested that problems can occur when this relationship is either too weak or too strong. How were those relationships managed in our cases?
*The task and its integration with the rest of the organisation* – are the efforts of the hub strategically aligned and integrated with the efforts of the core organisation?
*The processes applied including external relationships* – the work by Leifer et al highlight the key role of an innovation hub in hosting idea 'hunters' and 'gatherers' who search both within the core organisation and with external parties. Is there evidence of hunters and gatherers within our cases?

## 5. Empirical observations

The following tables provide a summary of the six innovation hub case studies. Table 2 provides basic details of the parent company. Tables 3 and 4 summarise key observations pertaining to the four focal areas outlined previously.

**Table 2. Company Characteristics**

| Company | Industry | Short description | Employees | Company age | Turnover |
|---|---|---|---|---|---|
| A | Consumer electronics | Company A is leading brand within a lucrative high-end segment. | 5,000+ | 80 years | €600 M |
| B | Medical | Company B is the world leading company within its specialized segment of the medical market. | 10,000+ | 50+ years | €1,500 M |
| C | Consumer goods | Company C is the world leading company within a niche of the consumer goods market. | 6,000+ | 70+ years | €1,000 M |
| D | Industrial and commercial equipment | Company D consists of a number of businesses that serve a diverse range of high value markets. | 14,000+ | 100+ years | €2,000 M |
| E | Industrial equipment | Company E consists of a closely related set of businesses offering industrial equipment. | 19,000+ | 100+ years | €4,000 M |
| F | Packaging | Company F is a leading brand in the packaging industry. | 24,000+ | 100+ years | €4,500 M |

**Table 3. Innovation Hub Characteristics I**

| Company | Age, initiating idea and status | Structural characteristics |
|---|---|---|
| A | Established in 1975 as an idea generating and idea elaborating unit.<br>Has been re-structured frequently and has maintained its position as the unique driver of creative ideas. | A physical as well as an organisational unit.<br>No emphasize on the physical layout – only focus on the processes applied.<br>Only internal and experienced people.<br>The hub manager reports directly to the CEO. |
| B | Established in 2002 as a creative | A lot emphasize on establishing a different |

| | | |
|---|---|---|
| | environment where all people involved in product development should come and be facilitated by proven creative processes.<br>The setup was re-evaluated in 2005 and the physical unit only continued as a unique meeting room. | physical environment.<br>Internal and relatively young people.<br>After 2005 the idea generating and process development task has been transferred to a small group of people that interact with several external partners. |
| C | Established in 2001 aiming at spotting trends and transferring these into concepts.<br>The hub was discontinued in 2004. | A lot emphasize on establishing a different physical environment.<br>The hub had an internal manager but the rest of the team was externally recruited people.<br>After 2004 the tasks were taken over by the sales organisation and the original team left the company. |
| D | Started life as an unofficial 'Skunk Works' in 1999. Officially launched as a company wide innovation hub in 2001. Focused on 'next generation' products. | Own custom-designed office and labs situated away from headquarters. Led by an internal manager but rest of team are externally recruited people with diverse backgrounds. Hub manager reports directly to the CEO. |
| E | Established in 2000. Tasked with generating new product ideas and associated business models. The hub was discontinued in 2001 | Own offices situated away from main organisation. Staff were recruited externally using a structured method which aimed to target three personal profiles: 'thinkers', 'shapers' and 'makers'. Hub manager reported to a general manager in the core organisation. |
| F | Established in 1996 with one person from the R & D team who was allowed to work on new product ideas or new applications for existing technologies. Quickly grew and continues today with a small team. | Stimulating office environment situated within company headquarters. Combination of internally and externally recruited personnel, all relatively young. Hub manager reports to R&D manager. |

**Table 4. Innovation Hub Characteristics II**

| Company | Task and interaction with organisation | Processes and external relations |
|---|---|---|
| A | The tasks concerned design, concept, and technology.<br>The task of the hub was fully integrated with the product development process. | The processes were not formalized but there was a tight timeline.<br>All activities were evaluated once a week.<br>There were only a few outside people involved. |
| B | The task concerned mainly technology development and process improvement.<br>The task covered the initial part of the product development process. | The processes were rather formalized and had the character of being best practice.<br>The outside partners that would participate were representatives of the customers. |
| C | The task mainly concerned long term concepts.<br>Technology was not considered.<br>The task was integrated with the rest of the organisation through seminars attended by staff from the core organisation. | There were no formal processes. Most of the activities took outset in new methods.<br>There was a high degree of interaction with external partners. |
| D | Initially focused on long-term technology development and concepts, more recently its role has included more 'incubation' activities and innovation coaching of the core business. | Processes were loosely formalised and included significant use of creativity methods. High degree of external participation with both academia and industry. |
| E | Hub was set-up to generate ideas for new businesses that could either be taken up by the | Structured and innovative recruitment process. Good use of creativity methods but |

| | | |
|---|---|---|
| | core organisation or sold off to generate a revenue stream. Almost no interaction with core organisation. | too short lived to establish formal processes for project management. Few external relations. |
| F | Remains focused on strategically aligned projects – either new applications for existing technologies or new product ideas within existing markets. Nature of projects results in relatively high level of integration with R&D and business divisions. Currently facing pressure to generate more radical ideas. | Formalised processes for idea generation, development and selection. Use of external parties to improve ideation processes and for technical research not already covered by R&D department. |

## 6. Implications

Of the six case study hubs, three had failed within three years of opening, despite having considerable resources invested in them. This section begins by looking at why the innovation hubs in the sample failed but goes on to consider why the remaining hubs survived, and what can be learnt from the experiences of innovation hubs.

### 6.1 Why the hubs failed

The failure of the innovation hubs in companies B, C and E can not be attributed to any one catastrophic decision or event. Instead it seems that failure was due to a range of internal and external factors, with a different combination of factors in each case. Hence, explaining why each of the hubs failed becomes complicated. However, below are some of the issues that appear in all three cases of failure.

*High expectations* –The failed hubs were set-up with the idea that they would generate a string of radical innovation ideas that could be commercialised by the core organisation and that they would begin generating profit within a relatively short time frame. When it became clear that ideas being generated were not strategically aligned, or that the hubs would not commercialise the ideas within a reasonable time, they were shut down. The initiating idea of the hubs created high expectations, but when those expectations proved to be unrealistic the hubs were not able to adapt or renegotiate their task. This implies that managing expectations should be an important activity for managers involved in the setting-up of a hub. This could be done by making sure that from the outset decision makers clearly understand the length of time required to commercialise an innovation hub (often a decade or more); the level of resource required (people, money, equipment); and the non-linear nature of RI projects which means that standard project management metrics are not effective [Leifer, et al. 2000].

*Focus on idea generation and technology* – The failed hubs tended to be the hubs viewed as being an 'ideas factory' or those that had a strong technology focus. It seems that these hubs were not able to develop the commercialisation competencies of *incubation* and *acceleration,* or to manage the *interface* between these activities and the core organisation. The origins of this problem is perhaps that many of the companies will have heard about the high-profile successes enjoyed by Corporate R & D centres such as the 'Xerox Parc' [Chesbrough 2002]. These centres had a strong technical focus and their research led to several break-through technologies that gave their companies a significant competitive edge. Unfortunately, this type of approach is not appropriate for an innovation hub as, unlike hubs, the R & D centres worked on technologies that had been pre-determined as being of strategic importance for the core company. Hence as soon as the technologies were ready for mass-production there were business units ready to integrate the new technology into their products. In contrast, innovation hubs have to ensure that the technology or product concept they are developing will have a home to go to once it is suitably mature.

The successful hubs from companies A and D also suffered from focussing too narrowly on idea generation when they were first set-up. However, these hubs were able to adapt their role and expand it to include other activities beyond idea generation, such as *incubation* and innovation coaching.

This finding that hubs tend to encounter difficulties when their initial focus is limited to idea generation or technology is consistent with the work of O'Connor and DeMartino [2006] who found that three of the twelve hubs in their study began life as 'idea generator' hubs but eventually transformed into 'incubators'.

*Too big, too soon* – The hubs at companies B, C and E were amongst the largest in the sample. They all spent significant amounts of money on recruitment and creating a unique working environment. Company B in particular created a showpiece office that is still in use today despite the hub being discontinued which perhaps indicates the money that was invested in it. Unfortunately, in the modern investment era, large investments are made on the understanding that the payback period will be short. This was never likely to happen in the case of innovation hubs due to the long-term nature of RI projects. The implication is that it is not advisable to create a large innovation hub initially as this will only generate more pressure for quick results and it seems that in many cases increased size and scale of the hub does little to speed-up the process of commercialising radical innovations.

### 6.2 Success factors for innovation hubs

*Maintain a low profile* – The hubs at companies B and C received high-profile launches, presumably with the good intention of demonstrating to the rest of the organisation and the outside world the companies' commitment to radical innovation. Unfortunately, this attention also increased the pressure to deliver results. Several interviewees commented that they felt publicity of the hub had led to tension and resentment from the mainstream organisation who were jealous of the considerable investment in the hub and their pleasant working environment. The rest of the hubs, including all of the successful hubs, maintained a relatively low profile so as not to generate this type of pressure.

*Start small and grow organically* – The hubs at companies D and F began life with one or two people involved and have grown steadily since their inception. The managers of both of these hubs felt that there humble beginnings had helped them to establish a good track-record and build relationships with key staff within the core organisation from an early stage, before major resource was committed.

*Maintain a close relationship with the core organisation* – whilst the fundamental principle of innovation hubs is that they are separate from the mechanistic, risk-averse and efficiency-driven culture of the core organisation, the findings suggest that it is the innovation hubs with the closest relationships to the core organisation that survive in the long term. This is perhaps because the hubs with close relationships also tended to focus on more strategically aligned projects and hence had encountered fewer problems when it came to commercialising their ideas.

*Develop a balanced range of competencies* – It has already been explained how focussing only on idea generation will lead to problems for an innovation hub. It is therefore important that, from the earliest stages of the creation of an innovation hub, thought is given as to how the hub will develop competencies in *idea generation*, *incubation*, *acceleration* and the management of the interface between these activities and with the core organisation. Hubs B and C failed partly because they were too focused on *idea generation*. Hub E staffed by people with expertise in *generation*, *incubation*, and *acceleration* but failed because they were too remote and was unsuccessful at managing the interface with the core organisation. The surviving hubs were not necessarily strong in all three competencies or interface management, but they showed an awareness of each of these important activities and demonstrated a more balanced range of skills.

### 6.3 Learning from innovation hubs

From the experiences of visiting and participating in ideation sessions within several hubs, it was felt that, in general, the hubs had been very successful at cultivating a 'culture of innovation'. This is attributed to a number of factors including the stimulating office environments, the small size of teams, the flat management hierarchy and the regular use of input from external parties.

It is suggested that the core organisation could learn and benefit from the innovation culture of their hubs through innovation coaching initiatives. For example, the hub could provide training programs on creativity tools; it could offer staff from the core organisation the opportunity to come and complete a short placement within the hub; or it could send staff from the hub to help out on projects within the core organisation. As well as 'transplanting' some of the innovation culture and best-practices from the hub into the mainstream organisation, these initiatives might also promote the strengthening of the relationship between the hub and the core organisation through the building of personal networks and an improved understanding of each others viewpoints.

## 7. Conclusions

This paper has outlined the importance of RI to the continued success of companies and has focused on innovation hubs as a potentially useful organisational structure in which to house RI projects. The aim was to understand why innovation hubs often fail within a few years of opening; wasting resources and thwarting attempts to develop radical innovations. Case studies of three failed hubs and three successful hubs, along with existing theory, were used to explain some of the general causes of failure of hubs and the success factors for the hubs that survived. The causes of hub failure were found to be: high expectations of the hubs to deliver commercialised products and profit within a short period of time; a strong focus on *idea generation* and technology at the expense of other important activities; and becoming too big, too soon. Success factors were found to include: maintaining a low profile; starting with a small team and growing organically; maintaining a close relationship with the core organisation; and building a balanced range of competencies. It is also suggested that core organisations could learn and benefit from the excellent culture of innovation often found within innovation hubs. Staff exchanges and creativity training programs are suggested as mechanisms to achieve this.

Finally, this research was based on data obtained from within innovation hubs and has focused on the affects of the core organisation on the hub. It is suggested that future work considering innovation hubs might be enriched by spending time within the core organisation to understand the affects of an innovation hub on the core organisation. Such work might provide insights into the less tangible benefits of maintaining an innovation hub such as learning, inspiration, contribution to the creation of a culture of innovation, cross-fertilisation of ideas, motivation etc.

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