Chapter 2.2: Risk, Innovation and the Extended Enterprise

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The Importance of Innovation

In organisations, whether for profit or not, wilful neglect of innovation is widely recognised as a risky strategy. Within an Extended Enterprise that innovation may come from within your supply chain rather than from within your own organisation. In this chapter, we will look at innovation in the supply chain and more explicitly, innovation as it applies to Extended Enterprises. Before reading this chapter, read or at least review the chapters on ‘Complexity in Organisations’ and the chapter on ‘Building Trust’.

Why innovate?

Reviewing the extinction timeline below you see some of the popular products and services that have given way to newer alternatives. You may be surprised by how many you have forgotten.

(Reproduced with kind permission www.nowandnext.com)
Figure 1: An illustration of how innovation changes the products and services used by a society
Consider for example ‘film processing’ shown in above graphic. Film processing has largely given way to digital cameras and the viewing of images on digital devices. (See also the IRM Risk Culture guide for the Kodak case study). Chemical based film processing was a widespread and profitable industry, but its fall from popularity was still relatively quick. Neither scale nor brand power was enough to defend against the consumer benefits associated with the innovation of high quality digital imaging.

Shorthand is a service example, a skill in widespread use before the advent of the word processor. Without the benefit of hindsight, who would have made the link between the innovation of the word processor and the demise of shorthand? Even more difficult to see was the demise of the office typist role, as people changed the way they worked with the innovation of word processing. Innovation does not just replace old products with new ones, innovation is behind all the sea changes in society affecting the way we work, the services we expect and the skills we value as a society.

While innovation is a source of advantage and a necessity for ongoing survival, it is also a source of substantial risk and uncertainty. How organisations approach the issue of innovation is full of important choices and the risks associated with each choice should be carefully evaluated.

Staying ahead in a chosen market by being the leading innovative organisation in a sector is one approach, but that can be a costly high risk strategy. The alternative of adopting or acquiring the innovations of others may work equally as well and in some cases may be a better long term strategy.

This chapter provides guidance on how and where to look for many of the uncertainties associated with innovation in complex organisations. The chapter also touches on some of the steps needed to protect an organisation from having its innovation activities compromised. It is not an exhaustive guide, but rather a primer aimed at helping risk practitioners get started with this complex area of risk management.

**Innovation as a Strategic Choice**

McKinsey have carried out research into what makes a company successful in innovation\(^1\). Through that work they dispel the myth that all you need is some fun filled toys, housed in a brightly coloured break out room to spawn innovation. McKinsey found that successful organisations aligned their innovative effort towards clear goals through a practical working definition of what innovation meant for them as an organisation. The academic classifications of incremental, breakthrough, etc. appears to be largely irrelevant in achieving success and this particular classification approach is not used in this chapter.

McKinsey also found it was important to protect innovative investment at the Board level. Management also had to accept that the range of uncertainty associated with innovation risks may be higher than in normal day-day business. Obvious, perhaps, but saying and living these commitments are not the same thing. In some cases, maybe a different legal entity is required to free the innovation element from organisation controls that may apply in an established organisation.

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\(^1\) This research was discussed in an interview given to Boardmember.com by Maria Capozzi, an innovation expert with McKinsey and Co, on 21\(^{st}\) February 2013
Some of the uncertainty with innovation stems from the activity of development itself, but some is a result of the lack of familiarity the organisation will have with the innovative areas in which they are trying to work. Overconfidence may be a problem fuelled by familiarity with the current market rather than familiarity with the true innovative needs driving towards the future market.

Key questions to ask at an early stage in the cycle of innovative development are:

- Is there clarity in the strategic role innovation plays in meeting the organisation’s objectives?
- Is the definition of innovation used within the organisation grounded in useful practical outcomes aligned to the organisation’s goals?
- Is the innovation team appropriately resourced and protected within the organisation’s management framework?
- Do you have access to the skills you need and if not, how will you acquire access to those skills?
- Is the Risk Appetite for innovation articulated and understood within the whole organisation?
- Do you need to form a different organisation with a structure that can support the risks you need to take?
- Are the financial and non-financial resources available to support innovation projects?

There is no intention to condemn ‘blue sky research’ if the goals of the organisation include that kind of investigative research. Indeed, there are organisations for which this kind of research is in the majority of innovative effort being carried out. Nevertheless, even in this category, organisations without a clear, well-articulated strategic direction are considered as running a risk of underperforming.

It is worth remembering there are many ways for an organisation to acquire access to innovative skills. Understanding the different models for bringing innovation into an organisation and the complexity behind some of them is key. Guidance on this is provided later in this chapter.

**Lack of Innovation as a Risk**

Given the importance of innovation, a lack of innovation, particularly around the core products and services of an organisation, should be considered a serious threat. Every Board should ask itself the following questions:

- Is appropriate innovation being considered seriously in all areas of the organisation?
- Is the organisation prepared to take enough risk to foster appropriate innovation?

(This second question is an issue of Risk Appetite and the IRM guidance on Risk Appetite and Tolerance is recommended reading for this subject.)

A framework to explore the external threats and opportunities can be a useful tool to ensure a comprehensive review of competitive forces that may drive the need for fresh innovation. A potentially useful framework, at least for a macro-economic view is Porter’s Five Forces model (Porter, 1980).
This model is used by systematically considering the effect and outcome resulting from each of these identified market drivers. For example: in a market where there is significant oversupply, buyers may be seen as empowered and able to drive hard bargains. This will result in a different risk profile from a supplier driven market, where buyers may need to pay a premium to get what they need.

Innovation risks are often associated with the threat of substitutes and the entrance of new players. Substitutes can be more difficult to spot as they change the market they are serving. For many years, horses provided transport and power which met the needs of society at that time. Their use was prolific and there was substantial supporting infrastructure with both stabling and shoeing services available in every small town. With the development of the internal combustion engine, the horse was soon displaced as the main source of power within society. This innovation did not just affect the trade in horses, but created widespread changes in society and substantially increased our flexibility to travel.

Porter’s model has been suggested as an option for a macro economic view, as more recent work (Grundy, 2006) suggests that at the micro economic level, many other factors may be behind the need to innovate. For example, quality of service, market attractiveness and even emotional factors such as tradition may have considerable influence on the scope of innovative thinking.

**Innovation Timeline**

The Eureka moment of innovation may well be an overstated occurrence. Consider the development of the World Wide Web which is regularly held up as one of the great innovations of the modern age. The process started with the connection and transfer of files between two computers in a point to point connection. That led to more sophisticated connections with built in redundancy and signalling to route signals between multiple computers. Lines were found to be noisy and error correction was included to address the loss of data. With further development and the concept of layered signalling models, the application running on the computer became somewhat detached from the data stream that supported it. With a bedrock of data exchange, electronic mail was
possible and this was followed by a protocol that supported browsers from scientists and engineers at CERN in Switzerland. This whole process has already had a life history of some 35 years and it’s not over yet. Consider how the risk profile changed at every stage of this progressive innovation of the web. Initially, the risks were technical rather than commercial. Now, the loss of data is an economic risk for many organisations and the technical connections themselves are just low value commodity services.

**Innovation Clockspeed**

Charles Fine, an MIT professor, looked at the cyclic nature of industry for its value in developing Competitive Advantage (Fine, 1998). He makes several points in this book, but there are two that are worth highlighting for this chapter. Fine argues competitive advantage is a transitory position and if not renewed, competitive advantage will be lost to a competitor at some stage. Taking this a step further Fine also identified that some industries introduce new products at a faster rate than others. A suitable comparison would be between digital cameras, new versions of which are released within months of each other and white goods that may be on the market, almost unchanged for a number of years. He labelled this cyclic time orientated development “Clockspeed” and suggested that the slower clockspeed industries can learn from the faster ones. This approach leads to several questions related to innovation that every organisation should ask itself:

- Do you have competitive advantage and are you doing enough to renew it at a frequency that compares to the market norm?
- Who is capable of taking your competitive advantage from you? Bearing in mind that competitor may be a new entrant in the market with a substitute product or service.
- Is there a faster industrial clockspeed sector to study which is useful for you to learn from?

Before we leave the subject of clockspeed, Charles Fine’s book was the inspiration behind Risk Clockspeed (Smith & Borodzicz, 2008) which looks at risk from the perspective of management information availability. This is also relevant as in innovation, many of the risks will fall into the Fast Risk Clockspeed category and as such will require a different style of management to many other risks an organisation may face. When assessing the risks associated with innovation looking at their Risk Clockspeed is highly recommended to make sure the right management style is being used to address the risks.

**Technology Risk Assessment**

When engaging with innovation it is easy to get caught by expanding budgets and constantly moving milestones. One strategy for helping to manage this risk is to assess how much and how risky the innovation content of a product or service is using a Technical Readiness Index (TRI).

Several TRI schemes exist, but it may be appropriate to design one specific for an organisation based on what the organisation does. The basic principle is to assess the degree and viability of the innovation required and assign a risk level to that assessment using a scale. For example, innovating a new elastic band based on current material technology,


The new total acquisition cost for the JSF is $395.7 Billion, up $117.2 Billion from the 2007 baseline. In 2011 only 6 of the 11 important objectives was met. Only 21% of the flight testing is complete with the most challenging tasks still ahead.

Quote. “Developing and integrating the 24 million lines of software code continues to be of concern”.

Quote. “Most of the instability in the program has been and continues to be the result of highly concurrent development, testing and production activities”
where the new version has a unique colour, length and tension (given by the materials cross section) would score low on TRI. The technology is largely known, research will be limited and experience from designing other elastic bands is available to quantify the R&D time. On the other hand, the O ring on the US space shuttle, which is just a band of elasticated material, was clearly much higher on the TRI scale. With this O ring the range of temperatures and pressures faced pushed the boundaries of this type of elasticated seal technology to its limit. New materials, new test methods and new assembly methods were all required. The design and later redesign of the O ring that failed on Challenger was expensive and time consuming in every way (Dalal, Fowlkes, & Hoadley, 1989). While popular with military equipment providers, the TRI approach does not ensure that programmes will not get out of hand and the example of the Joint Strike Fighter development (Sullivan, 2013) illustrates how innovation can still run away with budgets and time.

**Protecting Innovation**

Failing to protect innovation can cost an organisation its future, but protecting innovation can be costly too. Protecting innovation is a specialist area covering international design, patent and copyright protection, all of which have legally enforceable rights. Many of the laws that apply to products and service protection are backed by international agreements and this network of agreements adds to the complexity of this issue. Given the complexity, specialist advice is highly recommended. As for the associated risks, these will be driven by the scale of losses or unrealisable opportunity if adequate protection is not in place.

**Innovation and the Extended Enterprise**

The extended enterprise was more of an issue of recognition for the way organisations had evolved to work together rather than a new discovery as the issue was never hidden. Organisations had already formed extended enterprises before Chrysler’s CEO formally used the term in the early 1990s (Boardman & Clegg, 2001).

Following recognition of the extended enterprise as a commercial architecture, research was undertaken to understand the forces and tensions that exist within members and the effect organisational boundaries may have. Many of the issues found to be critical in an extended enterprise were exaggerations and variations of issues that arise in any large organisation. For this reason, many of the risk considerations raised in this chapter apply equally to any large organisations as well as extended enterprises.

**Risk in Open Innovation**

Open innovation is a particular form of extended enterprise which is proving to be increasingly popular (Van de Vrande, De Jong, Vanhaverbeke, & De Rochemont, 2009). The concept is that organisations do not need to place such tight control over things like idea generation, product and service testing or even design. By opening up their innovation and development structures by publishing information they have so far, anyone can freely contribute. A good example of this is the Beta testing of software, where companies such as Microsoft launch Beta products under special licence so that people may use and improve the product. Open Source is also a form of open innovation.

From a risk perspective, open innovation is not risk free. Publishers need to be confident that they are not giving away excessive amounts of their intellectual property or providing the information
competitors need to counter any market advantage that may be realised. Here are some questions to ask about open innovation to surface the risks that may be involved. See also the issue of Integrity Risk:

- Is open innovation the best way to get the competitive advantage you are seeking with this innovation?
- Are you placing the right amount of information into the public domain to get the innovation you seek?
- Are you placing information into the public domain that your competitors may be able to use against you and if so, will the benefit outweigh the losses? (The value question)
- Do you own or have rights to all the information you are placing into the public domain?
- Do you have the right processes in place to capture and capitalise on the fruits of this innovation? (Value realisation)

**Frugal Innovation**

Considered a relatively new but none the less a growing concept is ‘Frugal Innovation’. This type of innovation is aimed at reducing the cost of a product by carefully selecting the features and requirements necessary to address an identified market. This approach to innovation does not produce lower quality goods, so much as highly specialised ones fit for markets that have previously been overlooked. With such a definition, it is easy to see some of the additional risks associated with this kind of innovation. Again, the list is not meant to be exhaustive, but is intended to promote deeper consideration of the issues:

- Has the market been well researched and are the product requirements fully understood? (This is important in any innovation, but essential in a frugal innovation as over specification is a particularly undesirable outcome)
- Is there a profitable balance between the innovation costs and price point available in the target market?
- Given competition between similar products, where one is provided at a reduced specification, is the differential in price point sustainable to support multiple markets?
- Is the life expectancy of the frugal product viable?
- Have the innovation costs truly been minimised or is innovation required in other areas such as component sourcing or assembly to meet the best market price point?

**Risk When Clustering**

One successful approach to foster innovation in an extended enterprise came with clusters (Mudambi & Swift). If a number of high energy innovative collaborative enterprises are co-located and collectively they have the capability to deliver a product or service, then the co-location helps. This concept has been taken up strongly in the Middle East within the Emirates of Dubai and Abu Dhabi. Cities have been created to foster shared innovation in areas such as media, sport, finance and communications.

Here are some questions to help surface the risks associated with clustering:

- How close is your organisation both geographically and relationship wise to potential sources of innovative input? Do you need to relocate?
- In clustering with these organisations, are you with the right group?
If your relationship changes with each organisation in this cluster, will you still be in the right place for your business?

Are you adequately engaged with the local cluster to reap the benefits of your location?

**Communication Risks**

Back in the 1990’s a research project into the extended enterprise called PIPSEE (De Montford University) concluded that inter organisation communications was a real problem for the extended enterprise. Terminology was an issue, but also information paths. In some cases, the formal recognised information path was not the source of information that partners relied upon. With Information Security being a priority, information sharing for the purposes of innovation is an area of risk that must be evaluated carefully as often there are competing challenges. Here are some questions to explore the risks involved:

- Are appropriate channels of communication with your innovation partners in place?
- Are you at risk of informal information exchange channels emerging through the growth of personal relationships between staff?
- Is the audit of information sharing and information security appropriate for the value of the information being shared?
- Are there adequate safeguards in place on IT systems shared with your partners?
- Are there adequate processes in place to manage the natural churn of people and organisations who may be involved in your innovation relationships?

**Integrity Risk**

When the extended enterprise is innovating software, the trust relationship is inevitably high as it may be difficult to fully test what is delivered. Integrated software integrity may be compromised by third party modules of software built into a larger program. When software is involved, the following questions may be relevant to surface any additional risks.

- Are you relying on third party software to maintain the integrity of your innovation?
- If the integrity of your innovation is compromised by a third party supplied module, what are the likely consequences and are you adequately protected?
- Are you confident with the processes and procedures your innovative partners have in place to ensure the integrity of the software they are providing?
- Are you confident about your acceptance test process?
- If you are going to use open innovation, can you be confident about the content and quality of contributions?

**Five models of innovation**

The process of innovation has itself been subject to innovation and there are various models to describe the different forms of innovation organisations engage in. Rothwell (Rothwell, 1992) articulated five models that he arranged as generations indicating that the models used have become more sophisticated over time. Rothwell’s descriptions are listed as follows and a useful critique of these can be found in a paper by Hobday (Hobday, 2005).

**Table 1: Risks and Generations of innovation. A risk based view of innovation models**

<table>
<thead>
<tr>
<th>Generation</th>
<th>Associated date</th>
<th>Explanation and key risks</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Technology Push</td>
<td>1950s to mid 60s Simple linear process. Emphasis on R&amp;D to develop new products for the market. <strong>Risks associated with developing products and services that the market then rejects</strong></td>
</tr>
<tr>
<td>2: Market Pull</td>
<td>1960s – 1970s Market demand pulls new products and services through a linear process. R&amp;D reactive to market demand. <strong>Risks of underperforming products and services where the market players did not see a useful innovation that competitors then incorporate. Market pull may also lead to products and services with short lifetimes as markets tend to deliver short term expectations</strong></td>
</tr>
<tr>
<td>3: Coupling models</td>
<td>Mid 1970s – 1980s Sequential model with feedback loops. Typified by interaction between Marketing and R&amp;D to balance product innovation with market need. <strong>Risk of delay to market and confusion where product or service is always subject to change. As with simple market pull, there are also still risks associated with lack of comprehensive innovation and short term views.</strong></td>
</tr>
<tr>
<td>4: Integrated model</td>
<td>1980s – 1990 Parallel development with integrated teams. Aim to make innovative product that was cost effective to manufacture. Introduction of joint ventures and partnerships to combine strengths. <strong>Risk that locked in partners are mismatched or the network formed is too weak to compete against competitive networks. However there is a lot of opportunity in this model to integrate leading suppliers to give world beating products and services through an established pipeline of expertise.</strong></td>
</tr>
<tr>
<td>5: Systems integration and networking</td>
<td>Post 1990 High integration, parallel development. Collaborative research. Emphasis on flexibility and speed. <strong>Threats exist around information sharing, security and collaboration. Research has shown that informal information transfer paths become established</strong>. <strong>On the other hand, opportunities to be very creative can also exist and many high tech products rely heavily on this model</strong></td>
</tr>
</tbody>
</table>

In reality, there are probably examples of innovation based on each of these models still in existence today and these timeframes should be considered as loose guides at best. Indeed, it could be argued that SMS messaging on mobile phones (circa 1991) was an example of successful technology push; as the market pull at the time did not reflect the high demand for messaging that rapidly developed when the service became available (Xu, Teo, & Wang, 2003).

The value in the five models from the risk point of view is that collectively they provide a useful set of labels for identifying the innovation processes at work in any relationship. These labels can also be associated with specific areas and types of risk:

- Which of these models are in use within the organisation under review?
- Are these models appropriate?
- What risks are faced as a result of the innovation model that is in place?

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2 PIPSEE Research was conducted from 1996 led by Prof J. Boardman De Montfort University. This research looked into the issue of new product development in a collaborative environment.
Modelling the Organisation

To systematically assess the risks associated with the innovation processes in any organisation, it is necessary to understand the flow of innovative activity around organisation. It is also important that every part of the organisation is considered, as innovation is not limited to the core activities the organisation offers. Innovation can occur in any part of the organisation and at many levels of depth.

A detailed set of process models for the organisation will of course be one way to map the organisation for this purpose, but such a full set is unlikely to exist in any simple form. For the purposes of risk management, the value contributed by the innovation process is perhaps easier and more interesting, where value can be seen in terms of achieving the organisation’s objectives.

Michael Porter, the Harvard Business School Professor, introduced the Value Chain concept in his work on competitive advantage (Porter & Millar, 1985) and with that concept he introduced the following view of an organisation.

![Figure 2: An illustration of Michael Porter's value chain](image)

The Value Chain is not perfect for our specific risk use as it was not necessarily aimed at innovation risk identification. In addition the Value Chain is not the only valid view of the organisation that could be used, so the intention here is just to provide a least one valid option for understanding innovation within any organisation.

This method of modelling the organisation has imperfections considering the risk management purpose being addressed, but it does have the following useful characteristics:

1. The Value Chain model may be used for both ‘for profit’ and ‘not for profit’ organisations where the value and margin are seen in terms of non-financial gains
2. The focus on value generation is useful in terms of assessing the impact any risk may have on the organisation’s objectives
3. The model can be applied to all types of organisation, so in a complex group of organisations, the model can provide consistency across the group
4. In an extended enterprise, the risks associated with key suppliers and other stakeholders can also be mapped out in terms of their Value Chain. Applied recursively, the model may be
used to analyse the whole extended enterprise and so surface any hidden conflicts and misaligned goals

(5) It is exhaustive in that all parts of any organisation can be incorporated within the headings used in the model

(6) The model allows for innovation in any part of the organisation

Given the ‘innovation risk’ use being made of the Value Chain, there are some enhancements that could highlight other considerations that matter in the management of risk. An alternative value model is shown below which can be distinguished in type by referring to it as the Risk Based Value Model of the organisation. Again, the model chosen should be right for the practitioner and for the organisation and this is presented as no more than a candidate in that choice

![Figure 3: The Risk Based Value Model of an organisation](image)

(For each of these two models (Value Chain or Risk Based Value Model) consider the innovation being carried out in each area of the business. Consider the risks arising from the innovative process employed, the information shared, the trust that exists and the IPR generated. Consider too the effect delays in information sharing, the mismatch of language and the multiple sources of feedback that exist. Consider also the external environment and how that may directly or indirectly affect the behaviours of partners?)

This rendition of the Value Model has additional features over the standard Value Chain representation:

(1) The final end ‘margin’ element has been removed and the ‘Value’ concept is considered to be the value generated by each part. This allows tight coupling between the innovations taking place in any part of the organisation to the value it brings to the organisation
The inferred left to right flow has been removed as this isn’t helpful for identifying risk in the innovation processes and may lead to some incorrect assumptions about timing.

This Risk Based Value Model aligns with the systems view of risk as covered in other chapters of this document.

The complex flow of information is represented by the arrows recognising that risk may be a feature of communications, particularly in an extended enterprise. The model also includes the important consideration of delays and feedback that exist in a real enterprise and which may be a source of additional risk.

The model has been set in the wider context of the external environment where changes could affect the innovation processes and the value generated within the organisation.

**Value Assessment**

The determination and distribution of value is an important part of this chapter on risk and innovation. For a product it is relatively easy to disaggregate the product into its component parts and assign both cost and added value to the parts. Portelligent Inc carried out such an exercise on the 5th generation IPod that was sold in late 2005. This Portelligent work was then revisited in 2007 by a team at the University of California (Kraemer, Dedrick, Linden, & Center, 2007)

<table>
<thead>
<tr>
<th>Component</th>
<th>Estimated Factory Price</th>
<th>Estimated Gross Profit Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Drive</td>
<td>$73.39</td>
<td>26.5%</td>
</tr>
<tr>
<td>Display Module</td>
<td>$20.39</td>
<td>28.7%</td>
</tr>
<tr>
<td>Media processor</td>
<td>$8.36</td>
<td>52.5%</td>
</tr>
<tr>
<td>CPU</td>
<td>$4.94</td>
<td>44.8%</td>
</tr>
<tr>
<td>Assembly and Test</td>
<td>$3.70</td>
<td>3%</td>
</tr>
<tr>
<td>Battery</td>
<td>$2.89</td>
<td>unknown</td>
</tr>
<tr>
<td>Display driver</td>
<td>$2.88</td>
<td>24%</td>
</tr>
<tr>
<td>32GB memory</td>
<td>$2.37</td>
<td>28.2%</td>
</tr>
<tr>
<td>Back enclosure</td>
<td>$2.30</td>
<td>26.5%</td>
</tr>
<tr>
<td>PCB</td>
<td>$1.90</td>
<td>28.7%</td>
</tr>
<tr>
<td>All other parts</td>
<td>$21.28</td>
<td>unknown</td>
</tr>
</tbody>
</table>

Apple acted as an integrator of these parts so this is an extended enterprise view of the IPod with each of these parts being supplied by a number of suppliers to Apple. The purpose of this illustration is to show how the value may be tracked and how not every partner extracts equivalent value. Given the actions of partners will be determined by the overall worth in participation such a view may help determine where some of the co-operative risks may lie, particularly if the impact of participation on the partner is substantial.

With a service, particularly if the service is provided in a not for profit organisation, the disaggregation and assigning of value through the complexity of players may be more difficult to do and the concept of value may not be measured in direct financial terms. However the usefulness of such an exercise may justify the effort, even if the figures produced are just good estimates.

In some relationships the value of participating in an extended enterprise may not be for any direct monetary outcome. The value of participation may be to raise profile, positioning of the organisation
or in a not for profit relationship, participation may be based wholly on a social gain value model. Indeed, the value of participating may be based on a mixture of rewards, as value is a quality assigned by the recipient. However value is determined, the principle here remains the same, for the evaluation of risk, it is important to understand the value each party derives from their participation.

**Relationships**

Another perspective to take when assessing the risks associated with innovation is the relationship held with other parties engaged in the innovative process. This section simply aims to suggest some lines of enquiry under the heading of Relationships.

- **Who is involved on a day-day basis with the process of innovation?**
  Risks may be associated with these personal relationships and the commitment individuals have to each other.

- **What is the legal relationship between the parties involved in the innovation?**
  For risks around future legal challenges based on the relationship structure.

- **Are IPR ownership issues clear?**
  Innovation may not result in formal IPR being registered, but almost certainly innovation will lead to increased value being generated for one or more parties. Any lack of clarity around IPR issues needs to be considered as a risk.

- **How is the value distributed?**
  If there is an imbalance in the way the value created by innovation is shared, then there is a risk that irrespective of the formal legal relationship, one or more of the parties involved may seek to rebalance the equation.

- **Are there misaligned goals?**
  Frequently overlooked, it is useful to consider the goals held by each party involved in the innovation. It is wrong to assume they are the same, particularly in an extended enterprise. Misalignment of goals may yield a number of surprises, most of which are likely to be unwelcome.

- **What is the balance of power?**
  Again, something that is frequently overlooked, but an issue that was widely researched as part of the extended enterprise work in the 1990s. A large integrator organisation may exercise considerable power over a smaller supplier. This may force the supplier to act defensively, or be a barrier to that supplier in terms of sharing their innovative skills. At the other end of the spectrum, being dependent on a large supplier, for whom the organisation is just a small customer, is a dangerous place to be. Power balances are at the heart of the Five Forces model and this relationship issue is why its use is recommended (The Kitty Litter case study found later in this chapter is an example of this form of risk).

- **How is terminology used?**
  Communications is a common source of risk in any situation. Research into the extended enterprise (See the footnote on PIPSEE) found that terminology mismatch between organisations with a different language heritage can be a particular problem. More to the
point, this same research project found that such mismatches can be persistent over time.

- How is influence exercised?
  While a relationship may suggest influence, the exact nature of that influence and the effectiveness of influence may need to be considered. Personal and entity level relationships need to be considered.

- What is the level of trust?
  Trust is covered more extensively in other chapters of this guide. It is raised here in the context of innovation as a particularly acute consideration as without trust, innovation between parties is unlikely to happen.

**Regulation and Society**

Strange as it may seem, both regulation and society pressures may be substantial drivers in innovative practice. In children’s care for example, the tragic cases of ‘baby P’ and Victoria Climbié ³ both proved to be strong forces for change and innovation in child care practices. In the field of commerce, the Solvency II regulations are currently driving innovation in the insurance market.

The impact of regulation and society is not always targeted at the organisation or sector in any direct way. Changes in Government and Governmental policy such as taxation can be a consideration when investment in innovation is being considered

Within the Risk Based Value Model, the addition of the external environment includes the innovative forces of regulation and society. However this is one area not covered by Porter’s Five Forces model which is illustrative of why consideration should be given to applying a range of techniques in any risk analysis.

For all organisations, the ‘green agenda’ and the ‘social responsibility agendas’ are specific cases that should be assessed as part of the innovation risk universe. It may be useful to consider the following levels of Corporate and Social Responsibility (CSR) as part of a review of innovation risk. Unlike most of the above where the dominant issue has been threats, this is an area where the opportunity side of risk management can be a significant consideration.

Again, based on work by Michael Porter (Porter & Kramer, 2011) who has contributed a lot to strategy and competition, consider these three levels of CSR.

1: Philanthropy. No innovative interaction, no new value being generated, but gifting of some profit to good causes.

2: CSR. Gifting of funds and adherence to social expectations such as fair trade, social responsibility towards workers (for example no child labour) and open reporting of CSR activities. No direct innovation results and no new value generated, but innovation may be required to maintain socially accepted levels of CSR as expectations change.

3: Creating Shared Value (CSV). Interaction with smaller suppliers and even sole traders to increase the value generated in the value chain for later distribution. For example, a large agricultural

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³ Both of these cases involved the tragic long term abuse and final death of young children. Societal outrage led to inquiries and legislative changes to try and prevent such events ever happening again.
organisation may work with local farmers to improve practice, reduce costs and increase yield. The essential difference in CSV being that new value is created by this more interactive level of working.

On first reading, the significance and value of applying these levels to any analysis of the risks associated with innovation may seem obscure. However, any interaction with external organisations, societal units or even individuals may carry some threat or be an unrealised opportunity.

For example; philanthropic giving may be a missed opportunity if the money given may be used as part of a programme of shared information and innovation. CSR based giving may be more targeted and the value distributed is shared within the industry, but again is there missed opportunity to use the funds to generate new value (the CSV model)? Or, are the CSR activities providing funds for unseen innovation in the supply base that may be exploited and the risk is that the organisations CSR structure is hiding this?

When engaging with Creating Shared Value (CSV) organisations still need to consider and address the associated risks. Is there clarity in who will own the IPR? Is there reasonable sharing of value, or is the organisation exposed to claims of exploitation? Perhaps these issues can be easily resolved as part of the engagement contract, but where a large organisation is working with poorly educated groups in poor countries, the risks of unintended consequence are higher.

Contracts and Risk Sharing

While an organisation sat within a healthy extended enterprise may benefit from key supplier expertise, the key supplier also benefits from the relationship and this raises the opportunity of risk sharing. On the one hand, natural justice suggests any party who benefits in the relationship must bear some responsibility for the pool of risks that arise. On the other hand, the size, economic power and access to resources for the participants are frequently quite different. The point to bear in mind of course is that all the participants in an extended enterprise based innovation venture are key. In formulating contracts for innovation, one of the biggest risks is in the over use of positional power to create or even impose a risk sharing agreement that off loads risk in an inappropriate way. This is an extension of the ‘Kitty Litter’ problem in which power imbalance is the real issue.

When entering in a Creating Shared Value relationship, the power and resource imbalance may be even more pronounced than in an extended enterprise where the partners are likely to already be involved in a tight commercial relationship. It is quite possible that one or more of the Shared Value participants could be considered as commercially or contractually naïve when compared to some of the larger more established organisations.

Kitty Litter

(The following may be found in Clockspeed by Charles Fine. Perseus Books. 1998. P106)

For Chrysler, the Grand Cherokee Jeep was a profitable model. Chrysler mapped its supply chain and found that important castings for the engine were ultimately dependent on a small niche supplier of casting clay ceramics. The problem was this supplier had been managed down to such an unprofitable position by the power of the chain above them that they were forced to think of new markets to address. Without informing the rest of the supply chain, the decision had been made to exit the casting market and exploit a different property of their ceramic technology. The ability to soak up cat urine for the kitty litter market. Such a move by this small supplier would have spelt disaster for Chrysler had they not found out in time.

This little anecdote highlights the risks that can arise from power imbalances and inappropriate contract terms when dealing with smaller, weaker suppliers.
When an innovative or CSV relationship exists, there is a risk that it is seen as being outside the normal day to day business of the organisation. This in turn may lead the organisations concerned to exclude the venture from its process of audit (See Audit elsewhere in this document). This may be a significant omission as the role of innovation plays an important part in the future of all organisations. Audit, particularly shared audit, may also help ensure that each party is dealt with fairly and this is a key ingredient for the trust relationship on which success is dependent.

In an extended enterprise or CSV relationship, whether related to innovation or not, there is always the prospect of unintentional risk sharing. That is to say one party may be exposed to a risk that is caused by the acts or omissions of another party. For clarity and to emphasise the different nature of this unintentional risk sharing we could use the term ‘inherited risk’, where the inheritance could come as a surprise to one or more of the participating organisations. In an extended enterprise or CSV relationship there are several reasons why inherited risk may not come to light. Consider the following as example reasons why inherited risk needs due consideration:

- A partner may hide a risk that affects another partner out of concern that the risk may jeopardise the relationship
- A partner may be insufficiently risk aware to uncover the risk in the first place. This is a problem that may be exacerbated by size and resource issues
- A partner may assume that the other partner is aware of the risk and accepts the consequences as an aspect of the business they are in

The following questions are provided as a primer for some of the risks that may arise from the contractual and risk sharing arrangements that may exist for innovation and CSV relationships:

- How equal (power, resources size, etc.) are the partners and is there evidence that any imbalance is leading to inappropriate risk sharing?
- Can any of the participants be considered as disadvantaged through contractual or commercial awareness such that this may cause a contractual relationship imbalance?
- Is the risk sharing clear and are all parties involved able to manage the risks they have?
- Is the contract fair in the way it manages risk and continued areas of uncertainty that may arise?
- Is the contract adaptable such that unanticipated situations can also be raised and managed in a fair way?
- Are there any risks that were previously hidden and what were the reasons behind these risks being hidden in the first place?
- Is there sufficient trust between the parties for risks to be declared without the fear of retribution or blame?
- Are there any inherited risks that transcend the boundaries between organisations?

This chapter has been written to provoke thought and to open up a list of potential issues. It should not be considered as an exhaustive list of issues to be considered nor would every issue apply in all circumstances. As in all matters of risk, there is no substitute for expertise.

In conclusion the Board and Risk Practitioner should be comfortable they can answer the following:

1. How dependent is the organisation on innovation in the supply chain and is that in balance with innovation taking place within the organisation?
2. Are all parts of the organisation willing to innovate and change to suit changing market demands?
3. Are there any areas where the propensity to control (see IRM on Risk Appetite) is stifling innovation within the organisation?

References


Mudambi, R., & Swift, T. Multinational enterprises and the geographical clustering of innovation. *Industry and Innovation, 19*(1), 1-21.


