Exploring IT-Enabled Innovation: a New Paradigm?

Abstract

In this paper we report on findings from ten case studies of successful IT-enabled innovation covering a wide range of organisations and projects. They were carried out as an exploratory study to identify practices that contribute to innovation and specifically consider the implications of a focus on innovation for earlier work on benefits-led approaches to IT.

We identified a number of practices from earlier work on benefits-led approaches to IT that contribute to IT-enabled innovation. We also identified organizations developing a new practice of ideation drawing on ‘crowd sourcing’ and exploiting social media technologies. Existing principles and practices for benefits realization can contribute to innovation, but the practices have to be applied in different ways according to the context. This amounts to a third paradigm, different from previous paradigms of technology implementation and a planned approach to benefits realization.

Keywords: Innovation, Practices, Benefits Management, Innovation capability, Paradigm.

1.0 Introduction

Innovation is seen as a critical driver of economic performance:

“We want to make sure that Britain is the best place in the world to run an innovative business or service - this is critical to the UK's future prosperity, our quality of life and future job prospects”

http://www.bis.gov.uk/policies/innovation accessed 17th Feb 2012

We are particularly interested in the role of IT as a driver and enabler of innovation. Brynjolfsson (2010) suggests that questions about the value of IT investment and the contribution to business performance have been replaced with emerging evidence that leaders in the exploitation of IT are pulling ahead of their competitors: ‘I really think that the way companies implement business processes, organizational change, and **IT-driven innovation** is what differentiates the leaders from the laggers. Rather than levelling the playing field, IT is actually leading to greater discrepancies. In most industries the top companies are pulling further away from the companies in the middle and the bottom of the competitive spectrum.’
We know that there are many factors that affect whether an organisation realises benefits from investments in IT. Brynjolfsson makes links with business process and organizational change, reflecting insights from a range of earlier work related to IT (socio-technical approaches, benefits-led approaches, resource based perspective). What is it that is enabling leading organisations to pull away from the rest? (How) do the issues for succeeding with IT-enabled innovation differ from the wider issues of benefits realization from IT? As one stating point for this research it was helpful to note that innovation does not necessarily require new technology: ‘If all technological progress in the economy stopped today, would productivity growth grind to a halt? We don’t think so. On the contrary, we believe that there are decades worth of potential innovations to be made in creatively combining (and making use of) inventions that we already have’ Brynjolfsson and Saunders, 2010; page 95.

2.0 Literature Review

The concept of competences for benefits realisation, which are brought to life in an organisation through a series of practices, is put forward by Ashurst et al. (2008). In subsequent work they identified a number of practices related to benefits realization from the IT portfolio as distinct from specific projects / investments (Ashurst et al., 2009). The project and portfolio perspectives on the benefits realization capability are set out in more detail in Ashurst (2012). Our focus in this paper is to explore benefits realization from IT-enabled business innovation, and specifically to consider the implications for previous work on competences and practices for benefits realization.

2.1 Benefits from Innovation

Previous work on innovation provides important foundations for this research. We note the ideas of adoption or diffusion of innovations (Rogers, 2003); disruptive innovation (Christensen, 1997) and open vs. closed innovation (Chesbrough, 2003). We also note the concept of absorptive capacity (Cohen & Levinthal, 1990) relating to how ideas and opportunities for innovation are shared within and across organisations, provides a link to broader concepts of knowledge sharing and organizational learning.

Recent work on social media (e.g. Hagel et al, 2010) suggests that new services enabled by IT are changing the way organisations innovate. The ability to connect
with people at a distance is creating opportunities for new forms of sharing problems, ideas and solutions within and across organisations (McAfee, 2006). Shirky also suggests (2010) that the adoption of social media is creating opportunities for knew forms of collaboration, as individuals devote time and expertise to tackling a wide variety of issues in ways that are made possible by the new technologies.

Rogers and Christensen are specifically considering new technologies, but as Brynjolfsson and Saunders (2010) indicated this is not the only scenario for IT innovation. How does this prior work on innovation relate to IT-enabled innovation within mainstream organisations? In addition, how does social media enabled collaboration, including open innovation, relate to organisational use of IT. How can it fit with what has been a mainly centralised top-down to IT approach in many organizations?

2.2 Intellectual Technologies: Implications for Innovation

A major factor we want to explore in this research is that many IT innovations are not straightforward cases of ‘adoption’ of new technology. They can be put to a very wide variety of uses with an organization, and benefits realization depends not just on the technology but complementary organisational resources and competences (Melville et al., 2004 Lee (1999: p7) makes a similar point and suggests that “MIS involves not just information technology but also its instantiation”: “There are rich organisational and political processes whereby a set of information technology is instantiated and there are also rich organisational and political processes pertaining to the continual managing, maintaining and changing of the information technology instantiation” (Lee 1999: p7). Secondly, he suggests, “MIS involves, as reactive and inextricable elements, both an information system and its organisational context”. Lee suggests that an “information system and its organisational context each have transformational effects on the other”. He refers to work by Markus and Robey (1988) that suggests that there are emergent properties of information systems, as also described by Checkland (1981). This is also in line with a socio-technical perspective, which implies that the focus should be on the system as a whole, not the separate social and technical systems alone. As a result “the information system and the organisational context must be studied, understood and managed together, not separately” (Lee 1999: p8).
Lee (1999) also suggests “MIS involves information technology as a form of intellectual technology”. Information technology is an intellectual technology not an industrial technology in that it has properties that are not fixed on implementation but can be “innovated endlessly, depending on its interaction with the intellect of the human beings who implement and use it” (Lee 1999: p8). This can lead to an ongoing cycle of innovation and change as the technology extends the intellects of its users leading to further innovation. This suggests a much more complex process than ‘adoption’ or diffusion of an innovation. We suspect that there are macro and micro level processes at work. For example, Benefits Exploitation (Ashurst et al., 2008) will in many cases involve further local innovation as the technology is used. A key challenge will then be communication and wider adoption of these new innovations in order to realise further benefits.

2.3 Insights from a Dynamic Capability Perspective

The foundations for our research are in a resource-based view of the firm as we are building on the idea of benefits realisation competences (Ashurst et al., 2008). More recent work on ‘dynamic capabilities’ provides an important perspective, alongside specific research on innovation. Dynamic capabilities can be defined as:

‘The firm's processes that use resources – specifically the processes to integrate, reconfigure, gain and release resources – to match and even create market change. Dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die’ (Eisenhardt and Martin, 2000)

Zahra et al. (2006) refer to a dynamic capability as the ‘dynamic capability to change or reconfigure existing substantive capabilities’. This requires a definition of substantive capabilities, which they give as ‘the ability to solve a problem’ (page 921). A dynamic capability is the ability to change the way a ‘firm solves its problems.’ If a an organization does not have or use dynamic capabilities any advantage from substantive capabilities may be short lived due to changes in the environment or competitor action.
A dynamic capability has some patterned element; it is repeatable (Zollo and Winter, 2002). Also dynamic capabilities are not synonymous with strategic change, for example changes may occur through adhoc interventions, through emergent processes that have not been deployed by managers, or by luck (Ambrossini & Bowman, 2009). There is also room for some exploration of what represents a dynamic capability in a particular organization: differing from Eisenhardt and Martin (2000), Zhara et al. (2006) see new product development as a substantive capability, and the ability to change how the firm develops new products as a dynamic capability (page 921).

Bowman and Ambrosini (2003) explain that dynamic capabilities comprise four main processes: (examples omitted)

- ‘Reconfiguration: transformation and recombination of assets and resources
- Leveraging: replicating a process or system that is operating in one business unit into another, or extending a resource by deploying it into a new domain
- Learning: to perform tasks more effectively and efficiently as an outcome of experimentation, reflecting on failure and success
- Creative integration: ability to integrate assets and resources resulting in a new resource configuration’

In addition Augier & Teece (2008) and Teece (2007) highlight:

- ‘Search – identifying opportunities & threats
- Sensing – changing customer requirements’

‘Organizations realize value from their dynamic capabilities in the choices they make in how they are applied to develop new or improved ‘substantive capabilities’ (Zahra et al., 2006). Value is then realized through the resulting substantive capabilities. This parallels the way value is realized from IT, with the direct impact being on business process performance, which in turn contributes to improved organizational performance (Melville et al., 2004) As a result a key contributor to realizing value from dynamic capabilities is the ‘entrepreneurial alertness’ (Sambamurthy & Bharadwaj, 2003) that helps an organization recognize the opportunities and take action. Lockett (2005) builds on work by Penrose and emphasizes the need for entrepreneurial skills, including imagination, to contribute to change and gaining competitive advantage and not just managerial competence of running the current
business. The split between dynamic and substantive capabilities (reflects the importance of both exploration and exploitation (March, 1991) in the ambidextrous organisation (Birkinshaw & Gibson, 2004).

The dynamic capabilities perspective provides further foundations for our research. There are useful parallels to previous work on benefits: shared routines across organizations (benefits practices); the importance of the selection of opportunities (an element of portfolio management); and the different elements of a dynamic capability reflect the breadth of the benefits realization competences. We are considering innovation as contributing to the dynamic capability of the organization.

2.3 Benefits from Innovation
While we draw on a significant body of prior research in carrying out this project, we note that there are also significant gaps to be tackled. Specifically previous work on benefits realization has not considered the implications of a focus on innovation for competences and practices. Previous work on innovation has not addressed the challenge of IT as an intellectual technology as it is exploited within organisations. There has been limited empirical work on dynamic capabilities (Ambrosini and Bowman, 2009) and the implications of innovation for the nature and development of a benefits realization capability have not been explored.

3.0 Research Methods
Our research was an exploratory study with the aim of exploring practices for benefits realization from IT-enabled innovation. A case study approach (Silverman, 2000) was adopted to ensure that IT-enabled innovation could be explored from a number of different organizational perspectives.

The project began with two workshops with members of a local IT Directors Forum. The workshops provided valuable orientation for the work by identifying examples of innovations as well as barriers and enablers of innovation as perceived by senior practitioners at a wide range of organizations. As a second stage of the work we carried out case studies of specific innovations at ten organizations. The questions
used as a starting point for the semi-structured interviews are in Appendix 1. (See Appendix 2 for notes on each case study organization).

Throughout the work ‘theory is used as a sensitizing device to view the world in a certain way’ (Klein and Myers, 1999: p75). There was an ‘iterative process of data collection and analysis, with initial theories being expanded, revised or abandoned altogether. A simple metaphor for this latter case is the use of scaffolding in putting up a building, where the scaffolding is removed once it has served its purpose’ (Walsham, 2002: p105). In this research the benefits practices framework was used as an initial guide to design and data collection, as part of an iterative process of data collection and analysis. Data analysis was based on the principles put forward by Klein and Myers (1999) and drawing on techniques put forward by Miles and Huberman (1994). At this stage individual cases were documented in short papers of 1500-200 words and agreed with the interviews at the organizations. These cases are intended to share examples of specific innovations and innovation practices and will be made publically available during 2012.

Herr and Anderson (2005: 61-64) provide an interesting discussion of generalizability (external validity). They draw on work by Lincoln and Guba (1985: 298) to make a distinction between generalizability and transferability:

‘If there is to be transferability, the burden of proof lies less with the original investigator than with the person seeking to make the application elsewhere. The original enquirer cannot know the sites to which transferability might be sought, but the appliers can and do. The best advice to give to anyone seeking to make a transfer is to accumulate empirical evidence about contextual similarity; the responsibility of the original investigator ends in providing sufficient descriptive data to make similarity judgments possible.’

They also refer to work by Stake (1986) who in turn draws on work by Polanyi (1958) and Schon (1983) to argue that practice is often guided less by formal knowledge than by knowledge based on personal and vicarious experience. Stake refers to the value of a ‘naturalistic research report’ in which the reader gets a sense of the individuals and the unique situation. Readers recognize similarities with situations of their own and may be stimulated to think about their situation in new ways. This perspective fits
with practitioner culture where ‘stories are shared daily among practitioners as part of an oral craft tradition’ (Herr and Anderson, 2005: 63). The case reports from this research follow this line of reasoning and are intended to make a contribution to practice.

Following the within case analysis, a variable oriented cross-case analysis (Miles & Huberman, 1994) was conducted to identify key themes and patterns across the sample. To ensure that a rich and valid interpretation of the data was achieved, the within-case and cross-case analysis was not conducted in a single iteration. Indeed, the researchers sought to ‘understand the whole’ by continually revising it in ‘view of the reinterpretation of the parts’ (Myers, 1994; 56). Consequently, the researchers continued to re-visit the documentary evidence and the interview responses to help integrate the individual pieces of evidence into a coherent whole (Butler, 1998).

The findings as reported in this paper are due to be reviewed at two workshop sessions including the ITDF members consulted at the beginning of the work, and the case study participants, to further refine and validate the work to date.

### 4.0 Findings: Exploring Important Innovation Themes

This section aims to highlight key findings from the ten case studies investigated. This is achieved by choosing eight innovation themes that are currently being discussed and debated within literature. By analysing innovation approaches and processes within successful yet different sized and geographically spread firms, we hope to explore how innovation is managed and encouraged in various contexts and whether there are any common factors that enable these firms to innovate successfully.

#### 4.1 Exploitation or Exploration

Case study A investigates innovation processes within an infrastructure management firm. The company draws on decades of blue chip IT infrastructure management experience as the foundation for an innovative approach to outsourcing that delivers ‘zero-client’ desktop functionality for business customers. Cloud computing is an IT innovation that is still unexploited and unexplored by many organisations, thus this infrastructure management firm is able to offer an enabling technology that brings
benefits of Cloud computing to a mass business market. The case highlighted that the firm combines exploration processes of the cloud technology with an IT strategy that fits with their client’s needs,

“Our (IT) solution is not just about the software, it’s also about delivering CIO level input to business planning to give them an IT strategy that’s fit for the future”

The company is able to profit from their exploration processes by offering this CIO level input to business planning and thereby support their clients in exploiting the technology while avoiding undue risks. Similarly case study D represents a software development company that also focuses on exploration processes to produce a technology solution. This firm delivers data capture software that is easy to use by busy clinical staff in hospital settings. This company is also able to benefit from its exploration processes by working closely with its clients before, during and after the client adopts the technology.

Conversely case study G investigates an airline company where its innovation efforts are focused on adopting existing technology to improve its own operational efficiency, thus this firm naturally focuses on exploitation processes.

Two firms that successfully combine both exploitation and exploration processes were investigated in case study E, representing a tyre-manufacturing firm, and case study F, a petro-chemical production company. Both these firms supply physical products, whether it be polymer-based products or car tyres, and both firms use existing technology solutions to improve their responsiveness and operational effectiveness. Yet both firms also pride themselves on being innovation leaders within their own industries. The tyre-manufacturing firm states:

“The company has built its reputation as market leader through constant product innovation in all of its key markets...maintaining ‘innovation leader’ status in the industry is a core and explicit component of our strategic score-card”
The case study investigating the petro-chemical producer also stressed its focus on exploration processes to develop new innovative products,

“Successful innovation in product and process technology is absolutely essential to the business to ensure it is sufficiently competitive and differentiated...(the company) works in innovative ways to become the world’s preferred leader in chemicals”

The rest of the cases, placed in the Figure 1 below, represent a UK university with global networks and a large student body striving to adopt innovative technologies to enhance learning (case study J). Case study I represents an IT group that adopts cutting edge existing technology to apply it in new ways to improve business processes. While case study J investigates a professional services firm interested in exploiting technology to aid internal communication to better serve their customers. Taken together, the cases highlight innovation in both exploration and exploitation scenarios.

4.2 Diffuse or Dedicated Responsibility

In case study B an online educational publishing firm (offering a portfolio of online assessments and management resources) was investigated, more specifically the Technical Studio team within the firm was explored as they are responsible for developing their IT products/services and managing customer support. The Technical Studio is valued for its detailed understanding and knowledge of customer experience. As the key delivery channel for products is increasingly online, the Board now appreciates more than ever before, the need for early involvement of the Studio team. This arguably ‘dedicated’ or ‘focused’ innovation responsibility is combined with organisation wide involvement in developing new product strategies. For instance strategy away-days are held for a mixed group of people across the firm where
collective voting determines priorities for action and then the raw ideas are developed using the AGILE and ITIL frameworks.

In case study C, where innovation processes within a pioneering IT services business were explored, it was highlighted that ideation sessions are the primary tool driving innovation. It is a process based on the theory of the ‘Wisdom of the Crowds’ where employees across the organisation are asked 1–3 focused questions to help generate ideas within a collaborative on-line environment. Subsequently, there is a rapid evaluation process that needs as much focus as the ideation campaign. In case study C it was also stressed that this ‘diffuse’ innovation responsibility is facilitated by the business culture that is conducive to sharing and being constructive.

Case study E, explores innovation in the tyre-manufacturing firm, which has created an ‘Advanced Concepts Team’ enabling change in product innovation and thus in charge of innovation projects across the entire organisation. However, at times this team also organises ideation workshops to capture new ideas to encourage ‘grassroots engagement’, i.e. engage people from across the organisation from the start. It was explained that,

“Ideation needs careful scoping and direction, but ultimately it’s all about using energy to effectively ‘pull’ people together to create a workable solution”.

Thus, ‘pull’ is more compelling than ‘push’ as participants need to feel valued and trusted. This combination of diffuse and dedicated innovation responsibility reflects the firm’s drive to exploit, as well as explore, both product and process technologies.

---

**Figure 2. Diffuse vs. Dedicated Innovation Responsibility**

---

*Diffuse* C, D, A, I, J  
* Dedicated  
B  
E  
G, F, H *Dedicated*
4.3 **Alignment or Co-evolution: the Role of IT**

Case study F highlights that the petro-chemical producer focuses its innovation efforts on achieving operational effectiveness. Thus, all the business support functions, including the IT team, are devoted to optimising production efficiency and responsiveness. Even though the firm does invest in exploration of new products, IT aims to enable the firm to meet its business goals, i.e. meet the needs of their local manufacturing colleagues. Hence, the business strategy drives the IT exploitation and exploration strategy. Equally, the airline company explained that 80% of the IT team’s activity is devoted to ensuring core and strategic projects are delivered through the support of technology. Thus IT is again viewed as an enabler to achieve wider business goals.

Case studies A and D, the infrastructure management firm (virtual desktop outsourcing through cloud computing) and the data capture software firm (aimed at hospitals), are both pioneers in developing their own software solutions for other businesses. Due to their focus on exploration of their respective technology solutions and their drive to shape their strategy together with their product as they work with other firms adopting the software and learn how to best meet their needs, company A and D have arguably chosen to co-evolve business and IT together.

Figure 3 provides a matrix mapping Exploration vs. Exploitation and Alignment vs. Co-evolution. The case studies to date show a link between exploration and co-evolution.
4.4 Planning Approach: Discovery-Driven or Benefits-Led Innovation

In case studies, such as E, F, J and G, investigating innovation in businesses offering products or services to end customers, it was found that the innovation process was benefits-led due to business strategy leading the IT strategy and thus IT investments are chosen based on the argued economic benefits it can bring.

However, in case studies such as A, C, I and D, investigating innovation in firms operating in the IT industry where IT leads or co-evolves alongside business strategy, it was identified that the innovation process is much more emergent or ‘discovery-driven’ as benefits emerge as the project develops. For instance, company A adopts a discovery-driven innovation approach which reflects the co-evolution of IT and business strategy. As the firm invests in exploration of software and introduces a new IT solution to the business market, it is important to learn from doing and develop its product as they work with clients.
4.5 Leadership Approach

Case study B, the leading publisher, operates in locations across the UK, including one site hosting a dedicated Technical Studio for 25 developers and customer support specialists. The case highlighted that the technical team have experience varying from highly centralised management structures of large multi-nationals to more organic, just-do-what-you-need approach. However, the firm believes in a third way: to occupy the middle ground between these two extremes. It was stated, “We aim for a healthy balance between good housekeeping and keeping it agile.”

Case study E, a leading tyre-manufacturing firm, believes that it is the role of top management to encourage potential contributors to develop new ideas. The technical team together with the top managers and CEO thus believe that visible leadership from the top will encourage ‘grassroots engagement’. Case study D, the data capture software developer, stress that a key enabler in their firm is having visible senior leadership on site working with the senior clinical leaders. Thus, in case study D the leaders of the firm implement the technology and also argue that this drive from the top enables them to keep a close link to strategic goals.

In case study I, representing an IT Group formed of 12 people with strong IT knowledge, it was stressed that the firm has become strongly decentralized through leadership of the former CEO, however a move is being seen towards a more semi-centralized, global standardization oriented company. The challenge for the firm is to continue to work with strategic business-units to encourage global learning and adoption of the solutions developed in order to maximize the value of the solutions to the organization.

4.6 Organisational Structure

Company B explains that they have a flat structure with employees across three sites which means the firm is big enough to create credibility with customers, yet small enough to be agile and responsive. The technical team is also co-located across these sites, which means innovative ideas can be applied across the organisation effectively. This structure clearly complements their strive to occupy middle ground between a highly centralised leadership approach and an agile approach. Figure 4 illustrates how the various cases studied combine structure with leadership approach.
Company F, the polymer-based production firm, believes in being flexible to respond in their dynamic operating environment and so all the projects that the team undertake are conducted using AGILE principles which have become part of the common culture, custom and practice. Further, Company F states that they undertake ‘3D projects with structure’, i.e. there is a set structure for how to deal with every project. Projects that are approved follow Prince2 project management principles.

4.7 Sharing and Learning
The petro-chemical production firm, company F, stress that as well as adapting and learning from customer feedback, the technical team are actively encouraged to attend learning events relevant to the firm’s business and IT professional development. Of particular importance to the IT team are the TIF Corporate IT forum meetings where the team has an opportunity to share current challenges with other technology
professionals. Thus, sharing and learning occurs on both internal and external dimensions.

The tyre-manufacturer, company E, highlights that they strive to share best practice and adopt a philosophy of continuous learning through actively engaging with universities and research institutes, not just to gather ideas but also share them with others outside the business. Thus, sharing of best practice occurs mostly through external relations.

The publisher firm, company B, stress their ‘design thinking’ as the technical team works closely together with customer support colleagues to rapidly adapt their products and services as they go along. In this case the firm prioritises the importance of learning from its own activities and applying these lessons to its internal processes.

In case study J, investigating the professional services firm, a number of pilots of different social technologies have been carried out, e.g. blogs. Lessons are captured from these activities through a lessons learned exercise. The organization is very much a learning environment and to allow continuous development and leaving room for failure in trials is seen as necessary. Thus, internal learning systems are prioritised as a way of improving future innovations.

4.8 Practices of Innovation
We also explored the case studies for specific practices that are being adopted to enable innovation, as well as broader factors that enable innovation. The table in Appendix 3 outlines key practices and enablers contributing to innovation that were identified in the case studies. In summary:

A new practice for open innovation (i.e. crowd sourcing / ideation) is rapidly being established across a range of organisations (case A, B, C, D, E, I & J). These early adopters are thus establishing similar approaches to embedding the ideas into their organizations.
Existing agile practices are being used by organisations (cases B & D) to contribute to innovation. These practices form existing organizational capabilities and can be applied to exploration or exploitation with some adaptation to the context.

Other practices and enablers (leadership, aspects of culture, etc) are familiar from work on benefits and form an important element of the overall innovation capability.

**4.9 Future Innovation Goals**

Continued development of their innovation capability is a high priority for the participants in the case studies. The Figure below illustrates four common future innovation goals that were expressed in the majority of the case studies.

![Figure 5. Future innovation goals.](attachment:image-url)
4.10 Reflections on Findings

The ten cases have provided a range of insights into how the different teams and organisations are succeeding with innovation. They reveal innovation taking place in a very wide range of organisations and in very different contexts.

A next stage of the research is to review the findings in a workshop with participants from each of the case study firms. We expect this to provide further valuable information and to help crystallise lessons for other organisations as well as areas for further research.

5.0 Discussion

The ten cases were selected as successful examples of IT-enabled business innovation. It is interesting to note that in a number of cases (5 out of 10) there was either no, or limited, involvement from the IT function. This reflects the view of Peppard (2007) that exploitation of IT to realise benefits is embedded in the organisation and is not exclusively the remit of the IT function. It also raises interesting questions of how to organise IT for innovation (Cash et al., 2008). From a CIO perspective, our sample to date suggests that innovation may be a missed opportunity for IT and that the function may be bypassed as organisations develop a greater focus on innovation. On the other hand, we did see a number of organisations where the IT function was taking advantage of IT-enabled innovation to bring benefits to existing processes. In this sense the evidence from the cases suggests innovation is a pervasive organisational capability relevant to both exploration and exploitation.

We found a number of organisations adopting agile principles and practices and doing this as the core of their overall approach to business projects rather than simply in relation to coding software. This agile approach is also incorporating ‘design thinking’ (Brown, 2008) in terms of product and service design as well as usability. While organizations were not explicitly adopting Benefits Management (Ward and Daniels, 2005) we did find a strong focus on customer and stakeholder benefits. This agile / design approach was implied in earlier work on practices for a benefits-driven approach (Ashurst et al., 2008 and Ashurst et al., 2011) but may need much greater emphasis. Similarly, work by Ward and Daniels (2005) does identify different ways
Exploring IT-Enabled Innovation: a New Paradigm?

of applying benefits practices (page 294-8) but in these cases we saw strong examples of design / discovery approaches, where the benefits emerge based on work to tackle a problem or achieve a vision. This is different from how benefits management is often approached, i.e. as a top-down activity, effectively adopting a waterfall, requirements-led mindset. Based on the evidence from these cases it is important to emphasise the agile / design aspects of benefits practices and make clear that they can be a key part of a discovery-led framework for innovation.

Open sourcing / crowd-sourcing approaches to ideation emerge as an additional practice for benefits planning. This practice is being used by a number of the case study organisations and guidelines for effective adoption of the practice are rapidly evolving. This provides a valuable addition to benefits planning practices and it can be applied in both exploration and exploitation contexts, reinforcing the opportunity to embed innovation as an organisation-wide capability.

The cases have revealed a number of implications of IT as an intellectual technology. We see technologies for ideation and social media technologies for collaboration being widely deployed within major organisations. Initial technology implementation has not been an issue. The interest and value comes as the technologies are exploited over a period of time and embedded in broader business practices (e.g. for ideation). In these cases the formal IT department role has been very minor (the initial implementation) but the exploitation has required multi-disciplinary teams to take advantage of the new IT capabilities. The agile / design / benefits practices have been adopted by these teams as part of their approach to innovation. Organisational leadership for innovation and the creation of roles, structures and an organizational environment to encourage innovation has facilitated this. It remains a question for further research to see if the role of the IT function can and will evolve to provide support for exploitation of these technologies or whether as here, its role will be restricted to technical delivery role or perhaps none at all, when the technology is available from outside the organisation.

From a dynamic capabilities perspective the cases have revealed, as predicted (Eisenhardt & Martin, 2000), shared routines across a range of organizations. Leadership, at different levels, has provided search and sensing, for example in
identifying the scenarios to be tackled in ideation challenges. Learning has occurred in various ways including a number of examples of crowd sourcing. Reconfiguration has been observed as innovation relates to existing processes. We have seen fewer examples of leveraging and creative integration, perhaps because of the cases selected and the limited breath of our engagement with each organisation. We have identified a number of groups working to develop the innovation capability of their organisation by providing leadership, demonstration projects, deploying social media technologies and by creating an environment where innovation is encouraged. This seems an important contribution to developing the dynamic capability of these organisations.

The manufacturing and services firms investigated that were not traditionally associated with being pioneers within IT, are not only exploiting existing technology to improve production efficiencies but also adopting information technologies that enable and enhance learning and communication across the organisation allowing them to increasingly generate their own innovative solutions and develop exploration processes. Thus this focus on knowledge integration (as opposed to merely adopting and implementing IT) is enabling non-IT firms to successfully combine exploitation with exploration without incurring damaging costs. Knowledge sharing and learning both internally and externally with the help of existing information technologies is enabling all types of firms to not only be operationally efficient but also become innovation leaders no matter what market they operate in.

Further, in five out of the ten cases, innovation was not the responsibility of the IT department. Instead it was top management that primarily encouraged innovation and ‘grassroots engagement’. This arguably ensures that the strategic business goals of the overall organisation will be aligned with the IT strategy adopted and also the technologies chosen will match the needs of employees as they will be involved in the ideation stages. Thus, despite most cases investigated having hierarchical structures and relatively centralised leadership approaches, this open innovation strategy (enabled by knowledge sharing and often online collaboration) is able to create a corporate culture that effectively encourages organisation-wide innovation.
6.0 Conclusions

A major contribution of this research is to share the ten individual case studies, which provide rich stories of innovation sharing both what’s possible and effective practices. The case studies are available at www.xxxxxxxx.com (actual reference only in the final paper as it identifies the authors). Further case studies are currently in progress to extend the research.

This paper is an initial cross-case view of the research. It will evolve based on further analysis and specifically as a result of workshops with case study participants and IT Directors Forum members. A key contribution of the research is to provide evidence that practices that contribute to benefits realisation for IT are also relevant to IT-enabled innovation. The challenge is effective application of the practices in a way that is appropriate to the context. Our conclusion, at this stage of the work, is that an innovation approach to IT represents a ‘third paradigm’, which is significantly different from previous paradigms (technology implementation and benefits-led). The difference is the attitude or mindset more than the specific practices and we envisage that this will be the major barrier to change in many organizations and IT functions.

We also highlight five questions for further consideration:
1. How can/will the role of the CIO and IT function evolve to encompass IT-enabled business innovation? Will IT be marginalised as other areas of the organization take the lead?
2. Would it be helpful to reinterpret work on benefits practices to provide a clear focus on innovation? Would this be helpful in communicating the creative collaboration/design paradigm that contributes to innovation?
3. How can we evolve practices of innovation (and the role of the IT function) to more directly address IT as intellectual technology? Agile and design approaches do this to an extent but they do not seem to be the final answer and in any case are not (yet) widely adopted.
4. What guidance can we provide in applying innovation principles and practices in a very wide range of scenarios and how can we develop this as a core element of establishing on organisation-wide innovation capability?
5. How can we most effectively share the learning from these early adopters of innovation practices more widely in these large organisations and to other organisations? How can we overcome the significant barriers to agile approaches and design thinking?

References


Appendix 1: Interview Questions

Exploring Specific Innovations & Practices
The context for innovation: how important is innovation for your organization? What are the implications of your strategy and market?
How are people encouraged to innovate? Is innovation part of the job description? How is innovation rewarded?
Are there specific approaches to encourage and enable innovation? (conferences, strategic alliances etc etc) Are there specific activities to develop and share ideas?

The innovation: What was the innovation? Does it relate to process / product (service / ways of working) / paradigm (business model) /position (markets)? Was it incremental / radical? How does it build on existing resources / capabilities?

Getting the idea: Where did the idea for the innovation come from? (customer / supplier / staff / top down, bottom up..)
How was the decision taken to act on the idea?
Was there a business case – how was this handled?
Who decided?
Was it easy to take the decision?
What evidence did you have / need that it was a good idea?
What were the problems / barriers to overcome?

Turning the idea into action: What steps did you take to evaluate / test out the idea?
How did you approach the project to turn the idea into action (setting scope, approach eg related to the portfolio, practices, teamwork)?
What was important about the people involved (how were they chosen)?
How did you approach involving customers and other stakeholders?
How did the idea evolve during development and implementation?
What problems did you face at this stage?
What is different about the approach taken to this project? (how specific do we want to / need to be?)

The role of IT: what was the role of IT (technology not function) in identifying, assessing, and delivering the idea?
Assessing the results: what was the impact of the innovation (customers, staff, other stakeholders, the organization)? How did you assess the impact? When?
In relation to other innovations: what made this innovation particularly successful?
How did it differ from other innovations?
To what extent were key factors planned?
Were key practices/factors repeatable?
Appendix 2: Outline of Cases

Case A: Infrastructure Management
This Infrastructure Management firm was founded in 2010. The company team brings decades of blue chip IT infrastructure management experience to bear in the form of an innovative approach to outsourcing that delivers 'zero-client' desktop functionality for business customers. Now in its second year of operating, company A has already started to deliver the benefits of this Cloud based technology to a number of business clients. With high growth potential, even in currently constrained economic conditions, the firm offers virtual desktop solutions to customers in all market segments. Any business that needs to reduce in-house IT costs, increase the agility of IT infrastructure, accommodate fluctuating staffing numbers, or reduce their computing energy costs, can benefit greatly from adopting this firm's solutions.

Case B: Publishing
This leading publisher is a player in key markets in the UK and overseas. Over the last few decades, the business has developed a robust portfolio of online assessments and its successful assessment portfolio is complemented neatly by its unique range of management resources and training opportunities, designed specifically for schools. Over the last decade, the business has grown its capacity considerably and has now delivered millions of online tests to customers and users in the UK and in a huge number of countries worldwide. The business operates in locations across the UK, including one site hosting a dedicated Technical Studio for a team of around 25 developers and technical customer support specialists. The Technical Studio is the focus of the case study.

Case C: IT Consulting
Established in the 1950s and now employing over 90,000 people worldwide, this firm is one of the biggest and most pioneering IT services businesses. Always at the vanguard of technology, the company has most notably been the long-standing IT partner for NASA and was integral to the Shuttle programme amongst other stellar projects. Today, company C’s worldwide client portfolio is impressive and includes some of the leading global corporations, governments
and institutions. An integral part of the firm’s business strategy from the very start has been a clearly declared focus on Innovation.

Case D: Clinical Systems
Founded in 2010, a core part of this company’s vision is, “to bring Apple-like user interface experiences to the clinical world”. The firm develops data capture software that is easy to use by busy clinical staff in hospital settings. With a background in healthcare strategy, user experience and web application development, one of the founders and his colleagues set out to transform the way key clinical data is captured. In its first 18 months, company C has successfully developed and implemented CaptureStroke software for six hospitals in North East England. Stroke patient data, from first arrival in Accident and Emergency, through to and beyond discharge from the hospital ward, is now fully captured. Now, crucial care performance information is already being gleaned from the system, and there is great potential for other clinical care pathways to benefit from this innovative data capture system.

Case E: Tyre Manufacturing
Company E is known worldwide as a leading tyre company. With over 73,000 employees, the firm has a significant footprint in most leading countries across the globe. Its corporate history spans over a century and in 2010 the firm achieved worldwide sales in excess of $18bn. The company has built its reputation as market leader through constant product innovation in all of its key markets. In 2011 and beyond, maintaining ‘Innovation Leader’ status in the industry is a core and explicit component of the organisation’s strategic scorecard. In 2009 the firm launched the ‘Advanced Concepts’ Team at the Company’s Innovation Center in Luxembourg. The team focus specifically on Ideation, the practice of crowd-sourcing innovative ideas from a wide group of contributors.

Case F: Petro-chemicals
The company acquired its site, its production and operational facilities in 2006. The company specialises in the development and production of a wide range of polymer-based products. With an annual turnover of around £25bn in 2010, the firm is focused on maximising efficiencies and responsiveness across its global network of facilities.
On the company home page, ‘innovation’ is actively featured in the corporate language, our firm “...works in innovative ways to become the world’s preferred leader in chemicals”

**Case G: Airline**
An airline thrives or flounders according to its performance on two key measures: Operational effectiveness and customer delight. Company G, like all leading airlines, must innovate in both of these areas in order to remain competitive in today's volatile air travel markets, as well as to sustain and grow its business in the future. As one of the longest serving and most prestigious airline brands in the world, company G also has the challenge of maintaining and enhancing its position as a trusted and sought after airline for its passengers. Now operating as part of global airline conglomerate, IEG, the organisation has the opportunity to draw on the strength of its pedigree, whilst also contributing to the wider strategic strength of the group through effective business innovation.

**Case H: University**
The vision for the project was clear from the start: to enhance student learning, in particular, to provide a resource to help international students; to enable students to think about concepts during lectures without having to worry about taking notes; to support revision; and to enhance support for different learning styles. The system is now in place in 50 lecture theatres to provide automatic recording of lectures and is being widely adopted.

**Case I: Oil Exploration & Production**
The Digital Technologies Group (DTG) sits across all business areas of the organisation with the focus of scanning the horizon to find new emerging digital technology solutions and to aid the adoption of such technologies to solve real business problems. The DTG is formed of around 12 people with strong IT knowledge and a good general knowledge of the business, taking a venture capital-like approach to bringing external knowledge into the organization. Innovation for the DTG is seen as being “Problem solving and improving existing business processes making them more effective and efficient using the latest cutting edge technology tools”
Case J: Professional Services.

The organisation is a global professional services provider, providing accountancy, tax, audit and corporate finance services. The company employees around 12,000 people through its UK entity. With a vision to become the distinctive firm in the industry, large investment has been seen in developing relationships and the innovation capacity of the organization. The case study explores the innovation activities supported by the relatively new Innovation Team and, in particular, the use of a social technology supporting the collection of ideas in the innovation effort.
## Appendix 3: Practices and Enablers of Innovation

<table>
<thead>
<tr>
<th>Case study</th>
<th>Practice/ Enabler of innovation</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Supplying technology solution with a matching strategy</td>
<td>Innovative cloud solution drawing on long experience of datacentre and infrastructure management</td>
</tr>
<tr>
<td>B</td>
<td>Leadership &amp; Team development</td>
<td>The IT team underwent a development programme</td>
</tr>
<tr>
<td></td>
<td>Flat structure</td>
<td>Employees are spread across three sites to enable agility</td>
</tr>
<tr>
<td></td>
<td>Co-located technical team</td>
<td>Able to respond quickly to customer issues</td>
</tr>
<tr>
<td></td>
<td>Design Thinking</td>
<td>Using customer feedback to develop services</td>
</tr>
<tr>
<td></td>
<td>Organisation wide Involvement in new product development strategy</td>
<td>Ideas applied to AGILE framework</td>
</tr>
<tr>
<td></td>
<td>Technical team with influence</td>
<td>Due to its strong relationships with its colleagues and other disciplines</td>
</tr>
<tr>
<td></td>
<td>Striking a balance between structure and flexibility</td>
<td>Balance between highly structured centralised approach and an agile approach - just do what you need to</td>
</tr>
<tr>
<td>C</td>
<td>Organisational readiness</td>
<td>Business culture is conducive to sharing and being constructive</td>
</tr>
<tr>
<td></td>
<td>Sponsorship</td>
<td>Clear leadership from the top driving the ideation process</td>
</tr>
<tr>
<td></td>
<td>Internal capability</td>
<td>Long term investment in internal skills base</td>
</tr>
<tr>
<td></td>
<td>Focused ideation sessions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Collaborative online forum</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Visible senior sponsorship</td>
<td>Drive from the top with close link to strategic goals</td>
</tr>
<tr>
<td></td>
<td>Overcoming resistance</td>
<td>By being visible on site and meeting resistant individuals in person</td>
</tr>
<tr>
<td></td>
<td>Constant user involvement in design</td>
<td>AGILE methodology followed</td>
</tr>
<tr>
<td></td>
<td>Benefits led</td>
<td>Plan and review benefits</td>
</tr>
<tr>
<td></td>
<td>Continuous improvement &amp; visibility</td>
<td>In person contact with users help deliver developments every week</td>
</tr>
<tr>
<td>E</td>
<td>Grassroots engagement</td>
<td>People from across all part of the org need to be engaged from the start</td>
</tr>
<tr>
<td></td>
<td>Experimentation</td>
<td>Promotes a experiment culture, encourage learning and trying new things</td>
</tr>
<tr>
<td></td>
<td>Sharing best practice</td>
<td>Actively engage with universities and research institutions</td>
</tr>
<tr>
<td></td>
<td>Pull is more compelling than push</td>
<td>Pull people together to create a workable solution, they need to feel trusted and valued</td>
</tr>
<tr>
<td></td>
<td>Balance of strategic and point-solution based projects</td>
<td>Implementing platforms into business that enable global business capability as opposed to short term solutions</td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>F</td>
<td>Exploiting commoditised platforms</td>
<td>SharePoint now and cloud computing</td>
</tr>
<tr>
<td></td>
<td>Flexibility</td>
<td>Responsive to environmental changes</td>
</tr>
<tr>
<td></td>
<td>Evaluating business impact</td>
<td>Use software platform that tracks business performance</td>
</tr>
<tr>
<td></td>
<td>3D projects with structure</td>
<td>Regular dialogue about resource availability for each project, project with most potential to add value gets most of the finite budget</td>
</tr>
<tr>
<td></td>
<td>Sharing and learning outside of the business</td>
<td>Attend learning events</td>
</tr>
<tr>
<td>G</td>
<td>Flexible IT team</td>
<td>Able to respond to challenging economic, political, natural disasters while ensuring IT aligns with strategic goals</td>
</tr>
<tr>
<td>H</td>
<td>Dedicated innovation responsibility</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Sponsorship</td>
<td>Senior leadership sponsorship, CIO and Business-unit partner leadership</td>
</tr>
<tr>
<td></td>
<td>Small</td>
<td>Small IT team (12) and lean budget</td>
</tr>
<tr>
<td></td>
<td>Systematic</td>
<td>Allow for flexibility &amp; informalities, however established processes for education events, technology transfer and business-unit partnering</td>
</tr>
<tr>
<td></td>
<td>Shared</td>
<td>Shared responsibility/successes between team &amp; shared input to innovation activity</td>
</tr>
<tr>
<td>J</td>
<td>Naturally Collaborative Workforce</td>
<td>Strong people culture of sharing knowledge – the technology enables this to happen effectively</td>
</tr>
<tr>
<td></td>
<td>Buy-in from senior management</td>
<td>Partner support – however need more to encourage further adoption of social technologies in the organisation</td>
</tr>
</tbody>
</table>