Innovating the Innovation Process: 
The Gateway Process at ASSA ABLOY

Research paper submitted to the University of Cape Town
in partial fulfilment of the requirements for the
Masters of Business Administration Degree

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December 2009

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Abstract

Academic research into innovation culture has been traditionally from qualitative perspectives, focussing on sometimes uni-dimensional aspects of firm innovativeness. Using a construct developed in recent research to empirically measure a firm’s innovation culture, the research attempts to apply this procedure to test the predicate to innovation:- the generation and sharing of ideas, collaboration and the implications of new media for social networking. Whilst the findings are not conclusive, the research is an important step into the empirical assessment of firm innovation enabling managers to chart the progression of a firm’s innovation culture.
Dedication

to my wife, Charity, for all her patience.

Acknowledgments

I wish to thank my supervisor, Professor Jonathan Foster-Pedley for an educational roller coaster that has changed my outlook on life.

I also wish to thank:

Åsa Christiander, Project Manager, Product Development ASSA ABLOY Sweden, and,

Stefan Zintgraf, Director, Product Management ASSA ABLOY EMEA Region.

Without both their assistance this report would not have been possible, for...

...in the battle of life, it is not the critic who counts...the credit belongs to the person who is actually in the arena; whose face is marred by dust and sweat and blood, who strives valiantly... who knows the great enthusiasms, the great devotion, spends oneself in a worthy cause... far better it is to dare mighty things, to win glorious triumphs even though chequered by failure, than to rank with those timid spirits who neither enjoy nor suffer much because they live in the grey twilight that knows neither victory nor defeat.

- Theodore Roosevelt
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Michael Chidede
# Table of Contents

**Introduction** ............................................................................................................1  
  Background ..................................................................................................................1  
  Area of Interest ...........................................................................................................5  
  Research Questions and Scope ..................................................................................6  
  Research Assumptions ................................................................................................7  

**Literature Review** .................................................................................................8  
  The Conceptual Age ..................................................................................................8  
  Creativity & Innovation .........................................................................................12  
  Open Innovation ......................................................................................................16  
  Prediction Markets .................................................................................................18  
  Web 2.0 ..................................................................................................................19  
  Conclusion ...............................................................................................................23  

**Research Methodology** .........................................................................................25  
  Research Approach and Strategy ............................................................................25  
  Survey Questionnaire .............................................................................................29  
  Research Design, Data Collection Methods & Research Instruments .................33  
    Quantitative Analysis ............................................................................................35  
    Data Analysis Methods ........................................................................................37  
    Qualitative Analysis ..............................................................................................39  
  Research Ethics ........................................................................................................40  
  Research Criteria (Validity & Reliability) ..............................................................41  

**Research Findings** .................................................................................................42  
  Discussion of Feedback ............................................................................................53  
  Limitations of the Study ..........................................................................................55  

**Research Conclusions** ..........................................................................................57  
  Implications for Management ................................................................................58  

**Future Research** .....................................................................................................59  

**References & Bibliography** ......................................................................................60  

**Appendices** ............................................................................................................70  
  Appendix 2 ...............................................................................................................73  
  Appendix 3 ...............................................................................................................75  
  List of Figures ..........................................................................................................85  
  List of Tables ............................................................................................................85
Introduction

Background

The ASSA ABLOY® group of companies, established in 1994, is a conglomerate of over 100 companies in 50 countries across the five continents within the lock industry, an annual turnover of over R33bn and employing approximately 30,000 people of various nationalities. Whilst individual companies primarily operate in their respective markets there is now an active push to harness the synergies of not just operational and logistical efficiencies but also of such things as innovation. Innovation has been identified as a key driver of creating value for the organisation (Drucker, 1988, Jagersma, 2004, Hurley & Knight, 2004, Algre, Lapedra, & Chiva, 2006, Kilroy, 1999). The principle idea being competitive advantage is gained companies that engage in Schumpeterian innovation and confers economic rents, (Nonaka, 1991, Hamel & Pralahad, 1990).

The innovation process at ASSA ABLOY is managed by a system called the Gateway Process based on the ‘Stage-Gate’ system introduced in the early 1980’s (Cooper, 2009). This process is well defined and driven by top management and is seen as a key component of improving the conglomerate’s performance by setting benchmarks within the group to which all companies must strive to achieve. ASSA ABLOY operates in a very fragmented industry that has been characterised by the growth of small family-owned businesses into larger national companies. The entry barriers to the industry were traditionally very low and therefore lock standards have been developed around existing companies in their particular countries. As a result there is wide variation in lock style, design, dimensions, and in general the standards to which they needed to meet.

AA’s is the largest lock manufacturing company in the world and has a global market share of the order of 10%. Global competitors include Ingersoll-Rand, Black & Decker, Dorma and Kaba.
With over 100 companies, ASSA ABLOY has a unique problem in aligning the innovation efforts across all these companies due to the very different products they all manufacture. Performance gains have been mainly due to benchmarking across the group of operational efficiencies brought on by global scales of economy and adoption of best practice. Whilst there is probably still money on the table relative to adoption of lean and kaizen philosophies, these have become hygiene factors, necessary to compete but no longer a competitive edge. The challenge therefore is benchmarking of the innovation practices in group companies and as Jagersma (2004) asserts ‘innovation is a very complex undertaking, but it is manageable and not inherently random by nature.’ This represents a paradigm shift from managing typically linear systems such as kaizen to managing complex systems that are inherently non-linear, i.e. innovation.

**The Gateway Process at ASSA ABLOY**

The introduction of a new product generally follows the path described by Fig.1 below. At each stage of the process is a sign off required prior to commencement of the next stage, i.e. a go/kill decision is made and resources committed to the subsequent stage for that particular project.
Fig. 2: Gateway Process at ASSA ABLOY

Pre-study
A product idea, (the BIG idea!), project proposal and initial business case are presented along with expected resources and capital expenditure. If the proposal meets all product development requirements, a project is created.

Requirements definition
The product model has been deemed viable and a more detailed business case, with consumer and market input from different countries, is now required. Based on all input a product requirement document is produced.

Specification
Product requirements, materials and methods etc., are specified in detail and decisions are made regarding manufacturing and/or suppliers. A preliminary marketing plan and design samples are developed. A master specification, including a business case, is the main outcome of this phase.

Products & Process Design
Prototypes are developed and tested and consumer input is collected. Detailed drawings, documentation, and a final business case and marketing plan are created and the design is frozen.
Industrialization & Market Preparation

Gearing up for mass production and invest in new machines and tools as required commences. Real products are beta tested. Distribution plans and training come into effect.

Launch

The new product is launched and customer and market feedback is collected. The product is transferred to line production. Following the launch and feedback, a final follow-up report is prepared before the project can be closed.

Prior to the Gateway Process, there was no standard process of generating new products due to the fact that as companies were acquired, they brought with them their own culture. The Gateway Process is therefore an attempt to streamline the innovation process across the group. However, there seems to be inordinate emphasis on the subsequent stages of the process and less so on developing ideas that are less likely to be ‘killed’ in subsequent gateway reviews. The model also seems to be characterised by idea generation at the entry to the portal only, whereas it is our contention that ideas need to be injected throughout the process.
**Area of Interest**

Whilst the process is fairly well defined at each ‘gateway’ there seems to be less emphasis on the initial stage of the process. Within each company feedback in terms of product design/improvement (ideas) from the customers primarily comes from the sales agents’ interaction and is colloquially known as ‘voice of the customer’ (VoC). Between the sales agents and the engineering/R&D departments an idea for a new product is generated. This interaction is therefore quite limited to within individual companies with little sharing of data or ideas between companies.

**Shared Technologies**

The group also has a central R&D centre based in Sweden, called Shared Technologies, whose main thrust is to develop core technologies that the group companies can then integrate into their products with specific requirements for their markets. As part of this R&D centre uses a ‘Future Lab’ to present concepts still under development to test their market acceptance.

**Group Intranet**

The company presently has an intranet, called keyPoint, that is used primarily to disseminate information from ‘head office’ to its 30,000 employees. Employee participation, based on my own observations as well as feedback posted onto the site, is limited. On this platform are various subgroups such as Sales & Marketing, R&D, Innovation, Manufacturing, Supply Chain Management, amongst others and are supposed to communicate between themselves. The generation of ideas between separate units has been historically restricted to the individual companies R&D units. The platform is therefore one dimensional in many respects, particularly in information flow. The question is whether making it more interactive would improve the level of innovation of across the group.

The study shall have implications on how companies view their research and development process vis-à-vis ‘crowdsourcing’ within, and perhaps more importantly, without the organisation improve the innovation process, generate more and better ideas faster, reduce time-to-market for product development, and improve the organisational
knowledge. The side effect of this process would be to make this tacit knowledge explicit, enabling quicker learning processes for new employees. The mobility of knowledge workers has also impacted on the traditional thinking of small firms with heavy investment in small R&D groups that hold a veritable repository of the company’s knowledge base (Chesbrough, 2003).

By looking outward to other group companies, in terms of idea generation at the beginning of the process, project proposals would have already have an improved chance of being launched as a finished product. Stage 1 of the process should be an open funnel and not a tunnel of ideas (Cooper, 2009).

The level of profitability of group companies varies by a wide degree, with the electronics based companies showing much higher margins than ye olde world mechanical lock companies. By using metrics as a means of benchmarking, innovative practices can be implemented across companies and managed appropriately.

**Research Questions and Scope**

The research shall centre around the generation and sharing of new ideas and their effect on the creativity as an innovation driver measured by the number of new products’ revenues of a firm.

**Hypothesis:** Companies that generate a large quantity of ideas within their innovation system will achieve higher creativity and therefore innovative performance than companies that don’t.

The scope of the study shall be limited to a group of companies in the EMEA region due to constraints in access to data. There are few empirical studies in the area of innovation culture and its link to a firm’s innovative performance (Dobni, 2008; Wang & Ahmed, 2004) and hence the value of this research.
Research Assumptions

The extant literature does not show any conformity in terms of how innovation is measured, with most authors using the number of filed patents (Hitt, Hoskisson, Ireland & Harrison, 2007; Pakes, 1985) (new products launched/revenue is difficult to access from external documents) although it is clear that innovativeness is an antecedent of business performance (Hult, Hurley & Knight, 2004; Algre, Lapiedra & Chiva, 2006). This metric is easier from an external point of view; however, the author has access to much of this data for the firm at hand as this is what the company uses as a metric in monitoring innovation performance of group companies, (Chesbrough, 2004).

The research looked at companies in the EMEA region and therefore the factors affecting the bringing a product to from inception to fruition were be assumed to be the same across all companies, primarily due to globalisation. These factors, including economic and market conditions amongst others, therefore do not affect the factors relating to individual company innovation performance.

This innovative performance shall be measured by the number of new products generated and their associated revenues. The standard definition of a new product shall be a product with a unique part number which is less than three years old. New product revenue as a fraction of total company revenue is measured using these sku’s identified. ASSA ABLOY’s target of 25% is driven by the requirement to maintain a constant level of innovation in order to maintain a competitive edge and not be overtaken by the competition (Hamel & Skarzynski, 2001).
Literature Review

The Conceptual Age

According to Pink (2005), we are at the dawn of the conceptual age, just as we transcended from the industrial era to the knowledge age. As knowledge age was characterised by a shift in economies from producing widgets to services and information the conceptual age is characterised by a shift from information to conceptual R-directed thinking and design (Pink, 2005). In the information age the use of left-brain analytical skills to dissect and synthesise data to produce useful information dominates. However, with the dawn of the internet, information explosion has resulted in the commoditisation of the product (notably some information peddlers such as ‘The Economist’ have just recently started charging). The rise of Asian & Indian knowledge workers, who are paid less than 20% of their European counterparts, mean professions previously held in high regard, such as software engineers, no longer have that aura of mystery around them. Companies therefore outsource such services offshore to low cost countries, for example, half of GE’s software development is in India.

Fig. 3: The Conceptual Age (Pink, 2005)
Learning

Webster’s defines learning as ‘knowledge acquired by systematic study or process of acquiring knowledge or skill’. This acquisition of knowledge is directed at existing data. This current definition of learning can no longer hold for the new paradigm we find ourselves in. “Learning must now mean a greater ability to process and synthesise new information that leads to … understanding and wisdom”, (White, 1994). White also goes on to say in a world of increasing complexity, we need to be comfortable with constant discovery, viewing the world with wider lens instead of trying to control and categorise data. We need to unlearn the way we have been taught to learn in order to learn. To do so we need to be able to work collaboratively as insights generated by synergy in diverse groups will always be richer than the individual (White, 1994, Foster-Pedley, 2009).

Imagination is more important than knowledge.

- Albert Einstein (1929)

There is a growing movement recognising the importance of creativity, and divergent thinking in the education system (Epstien, 2008., Geist & Hohn, 2009). The dominant teaching culture of ‘transmission’ from teacher to student – sage-on-the-stage - can no longer work in a world that is rapidly changing and no longer predictable, linear and stable, (McWilliam, 2008, Allam, 2008, Garcia-Cepero, 2008, Ghysels, 2009). She also proposes a model where the student and teacher are co-creators of the learning environment – meddler-in-the-middle – where the teacher is in the thick of the action experimenting, designing, collaborating and evaluating the learning process. Indeed our traditional teaching methods are steeped in ‘critically’ analysing other people’s creations and not enough in being creative ourselves. It seems inconceivable that we have been surviving only on half our brain power! Our education systems have been geared towards producing left-minded graduates to fulfil the need of an industrial age where countries that produced the most goods prospered, (Robinson, 2001) and some curricula seemingly actively discourage creative and divergent thinking (Geist & Hohn, 2008). Indeed although “L-directed thinking remains indispensable. It is just no longer sufficient”, (Pink, 2005, p.51).
Robinson (2005) argues that everyone has creative capacities that they often don’t know what they are or how to tap into them. Most education systems have been predicated on a separation of the arts and sciences, with undue emphasis on the latter, in order to feed the industrial juggernaut requiring more and more scientists and engineers. The unfortunate result is we have been educated out of our creativity because of the current narrow perception of intelligence. The main premise of Robinson’s (2005) argument is that intelligence is complex, multi-faceted, richer and more dynamic than traditional measures of such as IQ which are uni-dimensional and tend to measure the left half of the brain only.

Due to the pace of change in the world today, (Obeng in Foster-Pedley, 2009), we need to fail often, learn faster. Our learning cannot keep up with the rate of change in the world, lessons learnt are not valid indefinitely, the rules have changed and we are in the world after midnight - we cannot rely on old lessons for new problems. Shenkman, (2004) argues that mentoring is essential to bringing out the creative side of people. Employees require more than just the raise, bonus, even promotion as these are just a signal of the company’s fairness and good intentions. Mentoring can engender intrinsic motivation where employees truly care about their role in making the firm a success and therefore internally driven to perform. Indeed, according to Herzberg’s two factor theorem of motivation, more money only motivates people for a short time. After which it becomes a hygiene factor, (Grobler & Wärnich, 2007).

“Design is a high concept aptitude that is difficult to outsource or automate – and that increasingly confers a competitive advantage in business,” - (Pink, 2005, p.86).

The parallels in industry are striking, where, instead of the traditional top-down approach to managing employees and dictating the strategic and creative direction the company should go, we should be collaborating at all levels and view employees as co-creators of value. (Senge, 1998)

Indeed, countries such as Japan are finding it difficult to compete on a global level because their advantage in efficient production has been eroded. $6\sigma$ quality, kaizen and lean principles are now hygiene factors, a necessary but not sufficient requirement, for
any company to be permitted onto the market. This is because these principles have been taught in many a business school that virtually all companies have implemented these in their factories, be they manufacturing widgets or providing an intangible service. Conversely, Alfa Romeo (and indeed the FIAT Auto group) struggles to sell cars even though they have the probably the most evocatively styled cars on the market today because of their long association with poor quality. So design is not a sufficient condition either, quality is still a requirement to enter the market.

Pink (2005) & Robinson (2001) advocate using the right side of the brain together with the left as opposed to the left half only in order to capture the next competitive advantage. What is now required is high conceptual thinking, good design as the only differentiation between products will now be the aesthetics and design.

“For businesses, it’s no longer enough to create a product that’s reasonably priced and adequately functional. It must also be beautiful, unique, and meaningful, abiding [by] the aesthetic imperative”. - (Pink, 2005, p.33).

Customers no longer make purchasing decisions based on functionality and quality, they expect it. Design has become the only differentiation between products. Faced with a choice, a product that doesn’t fulfil their emotive needs, that doesn’t engage them (Pink, 2005) will be left on the shelf to gather dust.
Creativity & Innovation

You can have creativity without innovation but you can’t have innovation
without creativity.

- Hargreaves, (2000, p.2)

Breakthrough Creativity

What is creativity? The most common concept of creativity is producing something
breakthrough that is both novel and useful (Sternberg & Lubart, 1999 in Haier & Jung,
2008) that has some intrinsic utility be it aesthetic, theoretical or functional. This is the
traditional view of creativity.

A product or response will be judged as creative to the extent that (a) it is
both a novel and appropriate, useful, correct or valuable response to the task at
hand, and (b) the task is heuristic rather than algorithmic.

- Amabile (1996)

Generally when people refer to creativity they mean creativity by special breed of
employees with a unique genetic makeup - the ‘creatives’ - who sit in some melting pot
on their own and come up with hair-brained ideas, characterised by divergent thinking,
for new products. Creativity has been shrouded in mystery and the very act of being
creative seemingly involves divine intervention and that divergent thinking is difficult to
apply metrics to the notion of creativity by using brain imaging techniques to delve into
the inner workings of the human computer and identify the individual’s intelligence and
creative abilities. To further complicate things Mayfield & Mayfield (2008) pose the
question of the perception of creativity and its influence on employees and therefore
overall organisational performance.

Garden Variety Creativity

Garden variety creativity refers to everyday innovations by employees as they develop
new ways of doing their work on an operational level to meet competitive pressures,
improve efficiencies etc. on a daily basis. Although they may seem mundane, these improvements generally lead to organisations that have better performance and overall effectiveness by becoming learning organisations. However, the company culture must actively encourage such innovation by offering motivational rewards such as company-wide recognition programmes and financial incentives, and by eliminating unnecessary bureaucracy (Mayfield, 2009).

Involvement of staff at all levels in generating and sharing ideas can lead to a sea change in culture that some of those big ideas can eventually come from the floor. Oke (2002) speaks of innovation quadrants as a guide for idea generation and in that model a full 90% of the innovative ideas are incremental improvements (or elimination) of existing processes. As in the case of AXA Ireland (Oke, 2002), a large proportion of the company’s improvement in bottom line was due, not to the breakthrough innovations, but the incremental ones.

**Divergent Thinking**

Divergent thinking is the process by which we generate many novel, unusual and differing ideas (Williams, 2004). It is the predicate to creativity, in fact, the terms are often used synonymously (McCrae, 1987; Paulus, 2000, in Williams, 2004, Mostafa, 2005,). Divergent thinking is necessary to solve heuristic problems where the solution is fuzzy i.e. we cannot use a paint by numbers approach to solving complex problems (Foster-Pedley, 2009).

Diverse groups generally perform better at producing great ideas. As Amabile (1998) points out, homogenous teams will reach consensus easily as they come to the table with the same mindset and will therefore leave with the same, have high morale but will unlikely produce creative solutions. However, Wilson & Stokes (2005) beg to differ. They argue that creativity is essentially an individual process even though it needs interaction with others to bring it out, and innovation requires collaboration of effort in order to implement those ideas.
Convergent Thinking

Generating radical and novel ideas is in itself no panacea to improving company performance. The ability to vet and implement those ideas that matching user benefits (value proposition) and new technology will garner success (Gurteen, 1998; McAdam & McClelland, 2002). Firms have limited resources and these must be allocated with a view to maximising returns on their creative assets, if a firm continually launches products the market is neither ready for nor does not want, it will consume itself. Sifting through ideas and selecting which ones to refine, fertilise and ultimately implement is much harder to do (Gurteen, 1998, Unknown, 2008).

According to Man (2001), ‘creativity brings forth innovation which in turn produces creative solutions’. Essentially Man asserts that a culture of innovation can only be developed if we are still able to question our assumptions at the height of our success, and that we can only be innovative if we are constantly searching to challenge our strategies even when they appear to be successful. Indeed, culture is inexorably linked to innovation and therefore creativity, (Martins & Terblanche, 2003; Ahmed, 1998; Amabile, 1995; Johnson, 1996, Judge et al, 1997) that organisations attempt to create norms within their operations, the way they do things, that foster creativity and innovation.

Notably the creativity process in the traditional sense is being taken outside the R&D lab and unfortunately companies must adapt or perish (Unknown, 2007). ‘Creative ideas, in contrast to physical resources, can be re-used and are non-rival in use’, asserts Yakhlef (2005), which leads us to the case for open innovation.

Organisations therefore need to develop and exploit the creative capacities of all their employees (Hamel, 1999) and not just the ‘creatives’ who are housed in a separate department, if they are to compete on a global level. In order to do so they must promote a culture that supports the development of individual creativity, for example, at Google – half of its new products are the result of giving their employee’s dedicated tinker-time to dabble in their own ideas. A similar culture exists at Intel Corporation. Innovation is a process of failure, (Senge et al, 1999 in Mostafa, 2005) but unfortunately most companies
do not tolerate failure. The literature is riddled with ‘failures’ that have become best sellers for companies, e.g. 3M ‘Post It Notes’.

**Collaboration**

“We do not have creative ideas in a vacuum. Creativity is stimulated by the work, ideas and achievements of other people”,

(Robinson, 2001, p.171).

Collaboration is a key driver of fostering creativity in the organisation. It prospers under conditions where there is a flow of ideas between people of different backgrounds and experience, where experimentation is encouraged rather than stifled, because we depend on other people’s knowledge to enhance our own understanding (Robinson, 2001). Kakko & Inkinen (2009) also argue that diverse social networks encourage idea creation and sharing; and the higher the diversity the higher the likelihood of breakthrough innovations. “The creativity of a culture depends on how open these [knowledge] networks are and how easily we can access the knowledge of other people”. (Robinson, 2001, p.169). Sawyer & DeZutter (2009) talk about ‘distributed creativity’ where collaboration enables generation of creative ideas leading to novel solutions. Indeed Pixar’s success in the animation movie space is driven by its collective process for solving problems (Catmull, 2008).
Open Innovation

“We depend, for much of our own understanding of the world, on the knowledge of other people,”


Open innovation sits at the nexus of all these factors and by paying attention to all can a company create the necessary culture that will motivate and stimulate their employees to create value through the discipline of bringing those ideas to fruition. Ever since Chesbrough’s seminal article ‘The Era of Open Innovation’ (2003) whence he coined the term, (‘open innovation’ that is) the traditional business model of investing in large amounts of capital into R&D is coming into question and rocking the traditional big business to its core. Big industrial giants that are predicated on the very proposition that in order to be competitive companies needed multi-millions, if not billions, of capital to invest in research and development. This therefore maintained their strategic and competitive advantage based on intellectual property ownership, high entry barriers and switching costs, and rivalry (Porter, 1985).

Open innovation can be defined as;

“a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology.” - Chesbrough (2006).

Companies have to generate their own ideas, finance & develop the products, and take them to market (Chesbrough, 2004) in the so called ‘closed innovation’ model. However, as the era of the knowledge worker is about to close, the fundamental tenet of this traditional theory i.e. the linear closed model of innovation has been turned on its head. A theorem can only be valid if the underlying boundary conditions still hold and these have now changed. In order to be successful, firms ability to collaborate may become more important than their ability to undertake pure scientific research, (Collins, 2006). Firms such as Intel and IBM are actively promoting Linux as this essentially increases the size of the pie (brings the cost of purchasing a PC down without compromising their revenue) and hence their share rather than trying to slice the same pie differently.
Control of the innovation process by funnelling ideas in at one end, employing all the best intellectual powerhouses, develop the best products, and then reaping the rewards at the other end is no longer possible. Knowledge/creative workers are now much more mobile and this becomes a difficult driver of this linear system to control. The traditional view of the firm owning and controlling the key resources is being challenged in technology-based industries, (Chesbrough et al, 2007). Another problem with the closed innovation strategy is the pace of development. Product life cycles are getting shorter and shorter. The short turn-around-times from idea to product means companies are under immense pressure to maintain their competitive edge (Kessler & Chakrabarti, 1996). The traditional business strategies may no longer hold for the new paradigm of creativity. Indeed Pink (2005) contends the era of the ‘creatives’ has arrived as design and creativity take centre stage in the new world.

Innovation has traditionally focussed on providing tangible products with better efficiency, but as best practice becomes commonplace, competitive edge can only be found by focussing on better fit with customer’s experiences i.e. creating offerings with more user value (Kumar, 2009).

“The innovation process is radically changing as customer and user experience has become a central part of the innovation process”

For example, Apple does not sell laptops, it sells ‘cool’. The iPod is not a music player but a cool music-listening experience. Central to this change is the phenomenon that is the internet age and Web2.0 and its impact on users’ expectation of any product.
The traditional business strategy therefore requires re-think. Chesbrough (2006) proposes a strategy map taking into account the fundamentally different landscape that business must now operate in.

“Nothing endures but change.” - Heraclitus

Chesbrough (2006), succinctly maps out the strategic differences between open and closed innovation. The main take away is the need for companies to purchase options in future step change developments in any particular industry by horizon scanning and monitoring of developments in industries that may affect their own (Gordon, 2008).

**Prediction Markets**

The underlying premise behind open innovation is the ‘wisdom of the crowds’ as the knowledge and creativity of many people surpasses that of a few individuals –‘WE > me’ (Surowiecki, 2005 in Ebner et al, 2009). As people share ideas and build upon others ideas (Robinson, 2001), new ways of thinking are likely to result. One application of wisdom of the crowd is prediction markets. Prediction markets essentially ‘aggregate the knowledge and judgement of participants around uncertain future events and by doing so they surface subtleties and information that may not have otherwise come to light, resulting in predictions that are often more accurate than traditional methods,’ (Young, 2008).
The decisions made by participants in a prediction market tend to be well thought out because there is a compelling reward for getting it right, be it financial or reputation. Traditional prediction markets offer financial rewards but on occasion the bragging rights if getting it right are often worth more (this may be an interesting method of getting participation within a company). They will therefore invest more time in investigating the question at hand than would ordinary management in a company. The decisions made by prediction markets are therefore more likely to be correct as the diversity of people involved means the information used to arrive at those decisions is much wider and deeper.

O’Reilly, (2007) talking about Web 2.0 says companies must fundamentally change their business models in the wake of Web2.0 in that consumers must now be treated as co-creators. Consumers have always been considered mere users of products and not as a source of ideas and hence their perceptions of what value features a product should have have generally not been systematically tapped (Bretschneider et al, 2008). Although this has been referred to mainly in open source software development, this is certainly going to affect more and more industries. ASSA ABLOY’s products are increasingly becoming software driven and therefore this is likely to influence the company’s future business models. Users will expect constant software upgrades at no cost. On the web the software has become a commodity and only the services behind the software are of commercial value.

**Web 2.0**

Even as early as 1996, there was already the notion of computer networks for collaborative work, (Wellman et al, 1996) as well as online communities. However, the concept of Web 2.0 emerged after the O’Reilly Media Web conference in 2004. Web 2.0 applications that appeared in the last few years the allowed static pages of Web 1.0 to change dynamically as they communicated with the back end servers enabling interactivity, allowing content to be created by users with no knowledge of programming (Baumbach, 2009).
A more formalised definition of the concept of Web2.0 was defined by Hoagg et al (2006):

“Web 2.0 is defined as the philosophy of mutually maximizing collective intelligence and added value for each participant by formalized and dynamic information sharing and creation.”

Web users were no longer just consuming information, they were producing it. This has the side effect of reducing hierarchical boundaries; anyone can have a conversation with someone more powerful and therefore power distance relationships associated with most cultures is reduced. Power distance intervals can be high in certain cultures such for example Korea, and therefore the self-censorship of ideas is likely to occur, (Williams, 2008).

At Pixar, the communications protocol is such that ideas can be pitched to anyone even if the line manager is the last to know (Catmull, 2008). The airline industry reviewed communication protocol in the cockpit after it was found that power distance intervals in certain cultures had been contributory to a several airline crashes. In most of these cases the second officer had been unable to impress the urgency of a situation simply because it would have been considered rude! Indeed individuals may judge their own ideas to be too far our, weird or infeasible particularly if they perceive the work culture to be too severe towards unconventional thinking (Meichenbaum, 1975 in Williams 2008). One wonders how many firms have ‘crashed’ because their deputies were not able to voice their ideas.

An advantage of brainstorming via electronic means may preclude the ability of people to criticise ideas (Kay, 1995, Pissara & Jesuino, 2005), i.e. collaborators are forced to delay their judgement, and therefore it is more likely that more ideas will see the light of day rather than be censored. Osborn (1963), Rickards & Freedman, 1978, Henry, 1991 (in McAdam & McClelland, 2002) all recommend that the idea generation be separated from the idea evaluation, i.e. there is a period of ‘deferred judgement’ needed for ideas to percolate and incubate to prevent overly critical assessment that will kill the idea generation altogether.
Electronic brainstorming also prevents productivity block that is associated with large groups as people tend to forget their train of thought because someone more senior is speaking or a lot of people are talking at the same time (Kay, 1995, McAdam & McClelland, 2002). The actual idea takes precedent because it is not attached to anyone. Pissara & Jesuino (2005) found some beneficial effect of anonymity of electronic brainstorming to the generation of ideas, albeit in a student setting. However, motivation to generate ideas in a corporate environment may be the recognition one gets and therefore in a soup of anonymity people may choose to withhold their ideas.

Ideas can come at any moment, and usually we don’t have a place to jot them down. Use of social media may encourage employees to immediately post their ideas on a company intranet. Generation of ideas is not necessarily done in brainstorming sessions (Gurteen, 1998, Foster-Pedley, 2009) and capturing them immediately is vital.

Karakas (2009) argues that Web 2.0 shifting the world ecosystem in the way people interact with one another. This affects the way companies must operate due to the rise in prominence of aesthetic value (Postel, 2003 in Karakas, 2009); design is the fundamental difference between products as technological differences become less pronounced. The new world is characterised by what he terms the 5 C’s:

- **Creativity:** the importance of creativity as the next big advantage
- **Collaboration:** emerging power of participation, cooperation
- **Convergence:** ICT technologies merge the various media (mobile, internet etc.)
- **Community:** virtual communities, social media are becoming mainstream
- **Connectivity:** the ease and speed of connecting to the net, always ‘on’.

The proliferation of interactive media, commonly known as Web2.0, has resulted in people interacting in totally new ways using platforms such as Facebook, MySpace, and YouTube etc. People tend to spend significant amounts of time on these media and unfortunately the general view held by most corporates is that they impact negatively on overall productivity of their employees and actively restrict their use during company time.
The emergence of Web 2.0 has initiated a step change in the dynamics of innovation (Chanal & Caron-Fasan, 2008). The interface between customers and the firm are being blurred as users become more and more involved in the process. The traditional definition of open innovation comes from the software field. The development of open source software (OSS) has fundamentally shifted this industry. A prominent case is the development of the Linux OS. The traditionally pricey operating systems produced by such giants Microsoft etc. are coming under pressure from consumers who are unhappy with issues such as stability (bugs are a fact of life for initial product launches), value for money, and launching of products that aren’t market ready. Linux is generally perceived to be a more stable operating system and this is chiefly accredited to “Linus’ Law”, which states that given enough eyeballs all bugs are shallow, i.e. they are easily seen.

On the other hand, the value add of these media has been primarily in marketing related efforts of firms. Companies will tend to have a Facebook page purely to market itself to a niche audience. However, there are some platforms such as Atizo that are harnessing the power of crowd-sourcing by actively rewarding people for their ideas to specific problems.

According to Bugin et al (2008), internet traffic to user generated media sites is doubling every year compared to ordinary sites which are only growing by approximately 20-30% per year. Of the total traffic, at least 25% of European users leave comments on all sorts of topics including product reviews.

**Use of Existing Employees to Generate Ideas**

‘The best way to have a good idea is to have lots of ideas’,
- Linus Pauling

Gordon et al, (1997) & Judson et al, (2006) lament the failure by companies to leverage the creative potential of their existing employees in idea generation and developing creative new products. In the case of ASSA ABLOY, the group has nearly 30,000 employees. This qualifies as a ‘crowd’ by any measure. Although the group uses an
internal company portal, it tends to be uni-dimensional with emphasis on information dissemination rather than interaction.

**Innovation Speed**

According to Kessler et al (1999), innovation speed has become increasingly critical in firms’ competitiveness and survival as product life cycles progressively get shorter and shorter, particularly in less regulated industry such as electronics. This is less of an issue in highly regulated industries such as pharmaceuticals. In the case of ASSA ABLOY the company is progressively moving towards electromechanical products which are typified by this fast product cycle, rapid obsolescence. Meyer (1993 in Kessler & Chakrabarti, 1999) also argues that rapid innovation, characterised by rapid prototyping, reduces development costs and improves product quality. This is usually as a result of discovering faults sooner due to earlier testing and prototyping. However, Crawford (1992) points out that increased resources are required for rapid innovation. The days of the slow innovation in mechanical products at ASSA ABLOY are coming to an end and the business strategy must change with it. In 2008, over 30% of group turnover was from electronic/electromechanical products and is increasing year on year.

**Conclusion**

‘To defeat the rivals’ forces without fighting is the supreme amongst all strategies’

- Sun Tzu, *Art of War*

To improve innovation performance it must be a collaborative activity, people with competencies in various fields coming together to make a process thorough and therefore more complete (Ahonen et al, 2007, Brown, 2008, Andersson, 2009). One of IDEO’s principal strategy in generation of ideas is to have a ‘project room’ where people collaborate and share stories and this is critical in getting the insights required to get innovative solutions to problems, (Brown, 2008). Crowd-sourcing can therefore effectively be used to increase the innovation performance of a company as Surowiecki, (2005; quoted in Ahonen et al, 2007: 15) argues a large group of enthusiasts can outperform a small number of professionals. Hargadon & Bechky (2006), also point to
creativity increasing in a collective and even this collective creativity having a significant reciprocal effect on individual creativity (Thompson et al, 1999; Hutchins, 1991 in Ahonen et al, 2007).

Open innovation is sure to become best practice in terms of standard business strategy (Enkel et al, 2005,). Indeed, companies that fail to exploit external sources of knowledge and R&D will be at a severe competitive disadvantage, (Chesbrough et al, 2006). Firms therefore need to innovate their business models as a sustainable competitive strategy, (Chesbrough, 2007).

The key question many companies have is moving from a paradigm of predictability to one of uncertainty. Chesbrough (2004) likens this changing the game from chess to poker. In chess, the players can plan many moves ahead based on past experience and in fact need to do this. Poker, on the other hand, one purchases options to stay in the game as the next play cannot be determined. Business needs to view this in terms of complexity rather than in terms of chaos (Snowden, 2005) in the shift from ordered states to that of complex systems. By approaching innovation with an integrated perspective, companies can choose not to have to fight in the dirty trenches of price wars and instead sail in the tranquility of blue seas ().

With reference to the Gateway Process at ASSA ABLOY, the research study is therefore to test the argument for front-loading the process so that the pre-study phase (idea generation) captures more ideas, more of the customer feedback, and therefore improves product specification and prototyping. Sharing of ideas, for example, in product manufacture techniques, would also improve the product development process and this would enable faster time-to-market, less failures, and greater organisational learning.
Research Methodology

Research Approach and Strategy

A mixed mode of qualitative and quantitative methods shall be applied, informing a triangulation of the phenomenon under study (Bryman & Bell, 2007). There have been few empirical studies in measuring innovation culture in organisations, with Dobni (2008) and Wang & Ahmed (2004) being the most notable exceptions, and as such it is difficult to compare across companies or industries the relative innovation performance. Research in innovation has generally been of the qualitative variety emphasising on management practices that foster creativity and innovation.

Multiple-Indicator Measurement

Select factors/dimensions of innovation shall be used using the Dobni factors as a basis for development (Dobni, 2008: 546). Innovation culture is multi-dimensional and therefore requires the same treatment in measurement. Existing research has generally tended to latch onto an innovative practice and then investigate the culture of the organisation in order to explain the innovation itself (Wang & Ahmed, 2004). Cooper (1998) also argues against the research focussing on classification of an organisation’s innovation culture using uni-dimensional approaches such as process innovation or radical innovation as this fails to account for the other components of the firm culture that may also influence innovation outcomes. The construct therefore measures ‘to what extent organisations are innovative, rather than simply dividing them as either innovative or not’, (Wang & Ahmed, 2004). The study therefore uses all dimensions of innovation culture in the investigation because they are encapsulated in the final NPR performance figure.
The dimensions concerned with innovation culture under investigation are:

- Innovation Propensity
- Organisational Creativity
- Organisational Learning
- Employee Creativity and Empowerment
- Implementation Context
- Market & Value Orientation

These factors shall be used as a proxy for the organisation’s creativity, particularly factors with high degree of impact on the innovation culture as measured by the factor loading developed by Dobni (2008), as shown in Table 1 below in the right hand column.

<table>
<thead>
<tr>
<th>INNOVATION PROPENSITY</th>
<th>α</th>
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<tbody>
<tr>
<td>1. Innovation is an underlying culture and not just a word</td>
<td>0.763</td>
</tr>
<tr>
<td>2. Our business model is premised on the basis of strategic intent</td>
<td>0.516</td>
</tr>
<tr>
<td>3. Our senior managers are able to effectively cascade the innovation message throughout the organization</td>
<td>0.713</td>
</tr>
<tr>
<td>4. We have an innovation vision that is aligned with projects, platforms, or initiatives</td>
<td>0.745</td>
</tr>
<tr>
<td>5. This organization’s management team is diverse in their thinking in that they have different views as to how things should be done</td>
<td>0.511</td>
</tr>
<tr>
<td>6. There is a coherent set of innovation goals and objectives that have been articulated</td>
<td>0.653</td>
</tr>
<tr>
<td>7. Innovation is a core value in this organization</td>
<td>0.755</td>
</tr>
<tr>
<td>8. We have continuous strategic initiatives aimed at gaining a competitive advantage</td>
<td>0.414</td>
</tr>
<tr>
<td>9. Our strategic planning process is opportunity oriented as opposed to process oriented</td>
<td>0.455</td>
</tr>
</tbody>
</table>

Table 1: Factors affecting innovation propensity in a company (Dobni, 2008)
With the Dobni paper as the basis for our survey, questions with higher loading factor were selected to include in our survey. The Dobni survey had a total of 78 questions and this made the questionnaire long and time consuming and was likely to reduce the response rate (Bryman & Bell, 2007). The 78 were pared down to 30 questions and together with 4 demographic questions, one open question, this made up for a total of 35. This kept the survey more manageable and the expected completion time was 15 minutes.

The questions were grouped into four key dimensions (Dobni, 2008) that modelled innovative performance with emphasis on idea generating and sharing. The factors are shown in Fig. 6 hereunder.

![Fig. 6: Dimensions of Innovation (Dobni, 2008)](image)

In contrast Wang & Ahmed (2004) use five factors of innovativeness:

- Behavioural
- Product
- Process
- Market
- Strategic

However, Dobni’s construct captures these in his four dimensions as shown previously. The two authors therefore are in substantive agreement in the factors affecting innovation culture.
For this research in particular an additional group, Social Networks, was added to elucidate the new media influence on idea sharing and innovation culture. This is, however, not included in the analysis as the questions have not been tested for reliability and validity as a factor in innovative performance. A qualitative treatment shall be given in the discussion.
Survey Questionnaire

The survey questionnaire was developed as follows;

Demographics

1. What is your age?  
   Possible answers: 20-30; 31-40; 41-50; 51-60; 60+
2. Sex: M, F
3. Which field are you mainly operating in?  
   Possible answers:
   - Sales & Administration
   - Electronics/Software
   - Electro-Mechanical
   - Mechanical
   - Research & Development
   - Design
   - Other
4. How many years have you been employed by ASSA ABLOY or your company?  
   Answers:
   - 0-4,
   - 5-10,
   - 11-15,
   - >15yrs

Innovation Propensity

1. Innovation is an underlying culture, a core value in our company.
2. This organization’s management team is diverse in their thinking in that they have different views as to how things should be done.
3. We have continuous strategic initiatives aimed at gaining a competitive advantage.
4. There is a coherent set of innovation goals and objectives that have been articulated.
5. Our senior managers are able to effectively cascade the innovation message throughout the organization.

Employee Creativity and Empowerment

1. I consider myself to be a creative person
2. Innovation in our organization is more likely to succeed if employees are allowed to be unique and express this uniqueness in their daily activities
3. I am open to ideas from other employees not directly involved in R&D.
4. I am willing to share my ideas with other employees.
5. I am given the opportunity to develop my creative potential.
6. I actively search for new ideas and innovations at all stages of new product development.

Organizational Creativity

1. My contributions towards innovation are valued by my fellow employees.
2. I am encouraged to challenge decisions and actions in this organization if I think there is a better way.
3. We have an effective environment for collaboration within and between departments.
4. We are rewarded intrinsically (non-monetary rewards) for being creative.
5. We are rewarded financially (in terms of bonuses and higher salaries) for being creative.

Organizational Learning

1. There is an expectation to develop new skills, capabilities and knowledge that is directed toward supporting innovation.
2. Continued organizational learning is encouraged and there is time/opportunity to develop new skills and capabilities
3. I am empowered to apply what we have learnt.
4. The management team acts as coaches and facilitators in support of training.
5. There is an understanding that mistakes will occur and are part of the learning process.
Implementation

1. We are quick to turnaround ideas into new products and offerings.
2. We are prepared to commit new resources or redirect current resources to support ventures that result from our innovation pathway.
3. We are prepared to launch a new product even when it is not clear how successful it may be.
4. Our company uses ideas from other industries and integrates them into our own products.
5. Our company integrates new ideas & encourages creative solutions to problems at every stage of the product development process.

New Technologies

1. Which social networking sites are you familiar with? (You may choose more than one).
   - Facebook
   - MySpace
   - LinkedIn
   - Twitter
   - Flixter
   - Ning
   - Other

2. Which social networking sites are you a member of? (You may choose more than one).
   - Facebook
   - MySpace
   - LinkedIn
   - Twitter
   - Flixter
   - Ning
3. How often do you visit these social networking sites of which you are a member?
   - Once a week
   - 2-6 times a week
   - Once a day
   - 7-14 times a day
   - 3-5 times a day
   - Always Connected
   - N/A

4. Do you agree with the following statement?
   Social networking sites can improve connectedness and sharing of ideas within the company.

5. Do you have any suggestions/feedback on what could improve creativity and innovation in your organization? (As many ideas as you can think of, you need not identify your company.) This is an optional question.
   [text box for response]
**Research Design, Data Collection Methods & Research Instruments**

The research is an experimental study into the application of metrics to measure the influence of innovation culture on generation and sharing of ideas using the framework proposed by Dobni (2008) and also Wang & Ahmed (2004). Both papers propose scales to measure innovativeness as a function of organisation culture based on four main dimensions as expounded in Figure 6.

The research shall be primarily aimed at professionals within the ASSA ABLOY group, mainly in the management and operational levels of the company involved in new product development in some form or fashion. A web survey was used to collect data from this group of employees.

In the EMEA region 25 companies were selected based on the available data with respect to innovation performance measurements i.e. new product revenue. Of these 9 were selected based on the following factors:

- Significant manufacturing footprint
- Type of Industry
  - Availability of data
  - Significant product development

Restrictions on the number of surveys sent out was also an issue as the requirement to consult a much wider range of stakeholders would have ensued with the consequent time penalties. The buy-in of each of the companies being surveyed as well as 6 other regional managers had to be sought in order to conduct the survey.
Respondents to the survey were randomly selected using the company group directory based on whether their job descriptions fitted the following departments:

- Sales & Administration
- Electro-Mechanical Engineering
- Mechanical Engineering
- Electronics & Software Development
- Aesthetic Design
- Research & Development

In total, 538 employees fitted the above profile. The survey was automatically administered via this distribution list. Of the 538, 163 started the survey during the allotted time. Of the 163, a total of 108 completed surveys were received – an effective response rate of just over 20%. In general, company surveys in ASSA ABLOY tend to have high response rates, generally over 50%. The last survey done achieved over 61%. It had been hoped that a similar response rate would be achieved in order to accurately model the culture at individual companies. It would seem the fact that the survey was not related to work per se may have resulted in the lower response rate.

**New Product Revenue Performance Data**

Secondary data in the form of company financial records shall be mined for new product revenue as a proportion of total revenue. The group defines a new product as one that has been launched in the past 3 years. This period is used due to the fact that a lot of the products have a high tech component. A reasonable period is therefore required for the product to take off in the market (Moore, 2006). The group target for new product revenues as a proportion of gross revenue is 25%. These records are fairly accurate as they are based on audited results of the group.
Quantitative Analysis

In order to measure the extent to which the company views itself as inventive and creative, we need to apply some metrics. The seminal article by Dobni (2008), ‘Measuring innovation culture in organisations’, breaks new ground in applying metrics to what has been generally a qualitative field. The extant literature has generally focussed on culture as a requisite antecedent for innovation but has not analysed this in a manner that allows comparability across disciplines/industries due to the qualitative nature of the research methodology.

Data collection was by way of an online web survey. The principal advantages are (Bryman and Bell, 2007: 680):

Faster response: due to the tight schedule required by the research this will enable deeper analysis of the results.

Unrestricted compass: Due to the geographical distribution of the respondents data collection can only be efficiently done via web.

Unanswered questions: Fewer unanswered questions are likely to result due to the nature of the questionnaire.

Open Questions: It is likely that these will be answered more openly and completely. Confidentiality and anonymity will also more likely ensure honest responses.

Response Rate: The company, from time to time, conducts online surveys and these are usually mandatory at all levels of the organisation. It is envisaged that management buy-in shall be secured prior to the survey. This ensured a higher response rate as the sample size is restricted to the group company. The survey was not mandatory as this may elicit acquiescent responses (Bryman & Bell, 2007: 235).
The company does have an existing web survey based function on their intranet and this was used to administer the survey. The raw data is compiled via this web survey generator and stored at a database. SQL-type queries can then be executed and the results tabulated in a spreadsheet. Only the author has access to this database further enhancing ethical considerations.

A 7-point Likert scale was applied to enable coding of the questions for statistical analysis (Bryman & Bell, 2007:260). Coding of the responses will allow for statistical analysis of the results.

**Sampling**

Selection of the sample companies was mainly from the European bloc of countries. The group’s major business interest is architectural ironmongery, i.e. mechanical locks, keys, door closers, padlocks etc. - some recognisable brands (in South Africa are Union & Yale). In the last 10 years though the company has now shifted focus to electromechanical products such as VingCard hotel locks, Abloy electromechanical locks, HID access control products, Besam automatic doors. The sample space therefore contains very diverse companies within the group itself. Although generally in the same type of industry, the differences can be quite vast. For example, HID, whose products are predominantly electronic/software and Union, which does mainly domestic mechanical locksets.

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<tr>
<th>Effeff</th>
<th>IKON</th>
<th>NEMEF</th>
<th>Litto</th>
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<tr>
<td>Keso</td>
<td>Vachette</td>
<td>JPM</td>
<td>Bezault</td>
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<td>Fichet</td>
<td>Laperche</td>
<td>Stremler</td>
<td>TESA</td>
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<td>Azbe</td>
<td>Spuk</td>
<td>Chubb Locks Custodial</td>
<td>ASSA Italy</td>
</tr>
<tr>
<td>ABLOY</td>
<td>ASSA Industrial</td>
<td>Ruko</td>
<td>TrioVing</td>
</tr>
<tr>
<td>Mul-T-Lock</td>
<td>Shared Technologies</td>
<td>Abloy Joensou</td>
<td>Viro</td>
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Table 2: Initial Selection of Companies
These were then narrowed down to 9 companies with >50 employees.

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<tr>
<th>Effeff</th>
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<tr>
<td>Chubb</td>
<td>ABLOY</td>
<td>ASSA</td>
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<tr>
<td>Ruko</td>
<td>Mul-T-Lock</td>
<td>Lips</td>
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<tr>
<td>Shared Technologies</td>
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</table>

Table 3: Final Selection of Companies

Employees were then selected randomly from the group directory matching the criteria that they were involved in product development. The sample space includes the population of research engineers, product development engineers, software engineers and sales executives within the ASSA ABLOY group from a selection companies with a manufacturing footprint. 538 questionnaires were sent out. This is quite a large number, given historically surveys in the group generally have response rates in excess of 50%. The sample size should therefore reduce the sampling error to acceptable levels. Questionnaires were sent out with an introductory email requesting participation in the survey and ensuring anonymity.

The Shared Technologies division does not manufacture nor sell products directly. It is an R&D centre that develops new platforms for group companies. These companies then adapt the new technology and integrate them into their products to suit their market and is used here as a control group to compare the creativity of the companies under investigation.

**Data Analysis Methods**

The questionnaire was modelled on a 7-point Likert Scale to quantify a ‘creativity index’ for each particular company, with ‘1’ indicating ‘Strongly Disagree’ and ‘7’ indicating ‘Strongly Agree’. This will enable respondents to quantitatively indicate the degree with which a particular practice in the company is associated with creativity and hence
innovation performance. These questions were mandatory, i.e. the respondents could not proceed with the questionnaire without answering a question.

Example Question: (Web Extract View)

**INNOVATION PROPENSITY**
Do you agree with the following statements?

5. **Innovation is an underlying culture, a core value in our company.**

Strongly Disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly Agree

Company data is available for measurement of new product development as a proportion of total revenue for group companies. This secondary data shall be correlated to the creativity index of the relevant company in order to assess the impact on new product development. This data is moreover very reliable as it is the building block of the group’s audited financial data (Bryman & Bell, 2007: 328).

The standard statistical analysis methods shall be used to measure the correlation and statistical significance between organisational creativity and ability to share and generate ideas as a driver of innovation performance.
Qualitative Analysis

Whilst quantitative methods use of metrics allows easier comparison across disciplines and contexts, they can be limited in that once the parameters to be measured are in place there is limited scope for flexibility taking into account emergent constructs in the data (Bryman & Bell, 2007:421). The questionnaire therefore included an open question requesting ideas on creativity to capture those subtle nuances that quantitative research is unable to. In using triangulation method (Bryman & Bell, 2007:59), the research hopes to capture both the context of the area under research as well as counter the criticisms of qualitative research vis-à-vis the problem of generalisation by applying metrics to some of the same factors associated with the research problem.
**Research Ethics**

The research shall be done considering the anonymity of all respondents and they shall be informed of such anonymity at the outset (Bryman & Bell, 2007:686). In this way no employees of the organisation shall be victimised for their comments and this will encourage more open and honest responses. The fact that the researcher is of much lower rank will more likely allow honest responses.

Data protection of company performance is also a consideration as the data will be of strategic importance to the group as a whole (Bryman & Bell, 2007:144). Protection of this information may require disguise of the underlying data whilst illuminating the pertinent points.

Permission to run the survey was solicited via the regional managers and the two senior managers responsible for new product development for the EMEA region. The questions were sent to them in advance to test the suitability of the survey with regards to protecting individual and company interests.

The only major concern to the company was the use of sensitive data in terms of the New Product Revenue performance of individual companies. This document is therefore not to be made public.
Research Criteria (Validity & Reliability)

As explained earlier using the multiple indicators of creativity within the organisation targeted at the employees who are directly associated with the innovation process and perhaps even influence the process as well. These have been tested in previous research (Dobni, 2008) and this paper uses elements of this research applied to this context. Further, Wang & Ahmed (2004) have also tested a similar set of questions for validity in measuring the innovation construct empirically. The questions have therefore been rigorously tested for internal validity.

In addition the ecological relevance is displayed in large corporations that have applied these tenets in their own R&D departments, Proctor & Gamble, Nokia, IBM, BT, Spalding, Cisco etc. ASSA ABLOY in particular has a well developed innovation agenda and is a key component of the management philosophy in all group companies. The survey will therefore measure the extent to which practices that influence the sharing of ideas within the organisation affect their creativity and innovation performance. Application therefore exists for practitioners to manage their company’s innovative potential by measurement.
Research Findings

The results shall be discussed as follows:

a) New Product Revenue (NPR) performance
b) Discussion of Likert Scores for each innovation dimension
c) Statistical Analysis of data
d) Discussion of Open Feedback received

New Product Revenue - Company Performance

New product performance data was obtained from ASSA ABLOY financials as reported to the department for New Product Development. The individual company performances are shown in Fig. 5 below.

![New Product Revenue %age of Sales](image)

Fig. 7: New Product Revenue Performance as at Q3 2009 (EMEA Region).

As can be clearly seen there is a marked difference in each company’s performance relative to the other companies in EMEA. Generally new products have higher contribution margins than mature products. Therefore improving the company’s proportion of revenue from these new products improves profitability.
Discussion of Survey Results

For each dimension, a discussion of the main highlights and scores shall be done.

Innovation Propensity

Innovation is an underlying culture, a core value, and not just a word.

<table>
<thead>
<tr>
<th></th>
<th>Score</th>
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<tbody>
<tr>
<td>TESA</td>
<td>4.30</td>
<td>7</td>
</tr>
<tr>
<td>Chubb</td>
<td>6.00</td>
<td>7</td>
</tr>
<tr>
<td>Shared Technologies</td>
<td>4.89</td>
<td>7</td>
</tr>
<tr>
<td>Ruko</td>
<td>5.57</td>
<td>7</td>
</tr>
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</table>

Chubb exhibited a high self perception of their own innovative culture scoring a very high 6 and TESA a low 4.30. The group R&D department, Shared Technologies, scored significantly lower with 4.68 and yet they should be considered the more creative division than any other within the group. This may be linked to cultural perceptions of creativity (Helms & Stern, 2001) – this shall be treated later.

This organization’s management team is diverse in their thinking in that they have different views as to how things should be done.

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<thead>
<tr>
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<th>Score</th>
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<tbody>
<tr>
<td>Mul-T-Lock</td>
<td>5.22</td>
<td>7</td>
</tr>
<tr>
<td>Shared Technologies</td>
<td>3.44</td>
<td>7</td>
</tr>
<tr>
<td>Chubb</td>
<td>5.44</td>
<td>7</td>
</tr>
</tbody>
</table>

The group think tank - Shared Technologies - indicated a low score in terms of diversity in thinking. This may be due to the fact the majority of employees in this department are
engineers and may suffer from a higher level of homogeneity than other departments. Chubb again registered the highest score relative to the other companies.

**We have continuous strategic initiatives aimed at gaining a competitive advantage.**

<table>
<thead>
<tr>
<th></th>
<th>Chubb</th>
<th>TESA</th>
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<tr>
<td></td>
<td>1</td>
<td>5.43</td>
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**There is a coherent set of innovation goals and objectives that have been articulated.**

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<tr>
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<tbody>
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<td></td>
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</table>

**Our senior managers are able to effectively cascade the innovation message throughout the organization.**

<table>
<thead>
<tr>
<th></th>
<th>Mul-T-Lock</th>
<th>ASSA</th>
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<tbody>
<tr>
<td></td>
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</table>

Generally, the companies surveyed, and notably ASSA, scored quite low on their management selling the concept of innovation to their employees even though the group mantra is innovation, innovation, innovation. The message may be too high level and may require translation into everyday garden variety innovation that employees can easily grasp. As indicated earlier it is the garden variety innovation that the majority of innovations are made of (Mayfield, 2009).
Employee Creativity & Empowerment

Generally employees regarded themselves as being creative and open to new ideas from fellow employees, regardless of their position in the company. Chubb scored a perfect 7 for willingness to share ideas with colleagues, which is interesting given their npr is 11% which is the second lowest figure. TESA scored the lowest, 5.92, which was still a fairly high score. Chubb also has a higher perception of their creativity at 6.33 as opposed to, say, ABLOY, which scores the lowest at 5.35, but has one of the higher new product revenue figures of 31%. This is significantly higher than the Shared Technologies division which is the group R&D think tank.

<table>
<thead>
<tr>
<th>I consider myself to be a creative person.</th>
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<tbody>
<tr>
<td><strong>Chubb</strong></td>
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<table>
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<table>
<thead>
<tr>
<th>I am willing to share my ideas with other employees.</th>
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Organisational Creativity

My contributions towards innovation are valued by my fellow employees.

Chubb       Ruko

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Intrinsic motivation is a key driver of creativity, extrinsic interventions such as rewards and evaluations seem to adversely affect the personal motivation (Ahmed, 1998). Whilst creativity is driven by internal motivation, Küng (2004) argues it is also affected by the context of the work environment in that the socio-environmental factors such as encouragement, autonomy, resources, challenge and team composition all influence the ability to express this. This may explain the lower scores for organisational creativity.

We have an effective environment for collaboration within and between departments.

Shared Technologies       ASSA

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As previously discussed, the concept of collaboration is extremely important and is the basis for releasing the creative potential of companies and individuals. The use of Web2.0 media could conceivably be used to enhance collaboration between companies and departments. In fact one company has already implemented a company blog to share ideas (Appendix 2:19).

We are rewarded financially (in terms of bonuses and higher salaries) for being creative.

Ruko       Chubb

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ASSA       effeff

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We are rewarded intrinsically (non-monetary rewards) for being creative.

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In general all companies scored low in terms of remuneration for creative results with Ruko scoring the lowest at 1.57 and effeff the highest at 3.80. The low Chubb score for intrinsic reward is in line with their perception of their own creativity, which they probably feel goes unrewarded.

However, Herzberg’s two factor theorem contends that money becomes a hygiene factor after a short period of time. Intrinsic motivation (Ahmed, 1998) is more long term and likely to engage employees better. Intrinsic motivators such as satisfaction derived from worthwhile and varied work will achieve better results (Grobler & Wärnich, 2007). In this particular context, the suggestion of allowing employees space and time to work on projects that interest them may be a possible solution.
**Organisational Learning**

*The management team act as coaches and facilitators in support of training*

### Overall Index

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</tbody>
</table>

In general scores were similar and so employees were expected to develop skills in aid of innovative capacities but that their management teams did not provide adequate mentorship and support. Leaders can exert a positive influence on creativity of employees by ensuring high quality relationships (Tierney et al 1999 in de Jong & Hartog, 2007).
Implementation

Overall Index

<table>
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<tr>
<th>Company</th>
<th>Score</th>
<th>Rank</th>
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<td>Ruko</td>
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<tr>
<td>Chubb</td>
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<td>Shared Tech.</td>
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<td>7</td>
</tr>
<tr>
<td>Lips</td>
<td>5.00</td>
<td>1</td>
</tr>
</tbody>
</table>

Most companies scored low in implementation i.e. converting those ideas into viable, marketable products. This is where the discipline of creativity is required (Foster-Pedley, 2009). Whilst divergent thinking may be considered somewhat chaotic and disorganised, convergent thinking requires a disciplined approach to ensure that adequate focus is maintained on the process of bringing the idea to fruition.

Social Connectedness

This question was not included in the analysis but was aimed at elucidating the potential of using social networks to improve idea generation and collaboration between departments within and without individual companies. The overall score was 4.62 with Mul-T-Lock scoring the highest at 5.80 and the bastion of creativity, Chubb was 3.00, a full unit left of neutral. It seems counterintuitive that this would be the case.

Overall Index

<table>
<thead>
<tr>
<th>Company</th>
<th>Score</th>
<th>Rank</th>
</tr>
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<tbody>
<tr>
<td>Mul-T-Lock</td>
<td>5.80</td>
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<tr>
<td>Chubb</td>
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</table>
### Statistical Analysis of Survey Results

The individual coded responses were cross-tabulated by firm and then the aggregate coded responses for each company were then factored into an innovation culture index as per Dobni (2008). An example calculation is shown hereunder.

<table>
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<tr>
<th>Section</th>
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<td><strong>74.067</strong></td>
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</tbody>
</table>

Table 4: Example Calculation of Innovation Index (Dobni, 2008)
Table 5: Innovation Index vs. Company New Product Revenue Performance

Regression analysis at the 95% confidence level was done on the two variables to determine the correlation between the innovative index and the new product revenue performance (npr) and the output is discussed below.

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<td>73.39</td>
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Table 6: Regression Statistics

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The complete statistical results are found in Appendix 2.
**Discussion**

Correlation $\beta = 0.15594$

R-Square = 2.43%

p-value = 0.53679

The resultant R-square shows the innovation index explains a minuscule 2.4% of the variation. The p-value shows there is no statistically significant correlation between the variables. The metrics measuring the innovation index therefore do not explain at all the performance of companies’ innovation. Removal of NEMEF and Lips data points, which may be regarded as outliers and correlation $\beta$ improves to 0.314; R-square improves to 9.9%. Although this is still not statistically significant, this shows that increasing the quantity of the data may result in a better approximation to the relationship as it would be easier to locate data points that are obviously outliers as well as improve the estimation.

As can be seen from the graph above, the calculated indices for innovation performance are quite scattered and show little correlation. The survey therefore did not show a significant correlation between the innovation index and new product revenue performance.
Discussion of Feedback

Question 35 was included to assess qualitatively employees’ perspectives on what could improve creativity in their organisations.

Do you have any suggestions/feedback on what could improve creativity and innovation in your organization?

Analysis of the responses to the open question resulted in three major themes emerging.

1. The use of a web-based technology to share ideas and improve learning.
2. Creativity sessions to brainstorm ideas.
3. Dabble time and Learning from mistakes

Social Networking

One respondent noted that their company had already implemented a blog on the company intranet to share ideas throughout the firm. This enables problems to be shared across the company and faster learning. Some called for company wide blog to share good ideas and encourage idea re-use in order not to have to re-invent the wheel. Such a company blog could be used for generating a company knowledge repository. One suggestion was to have a library with books on innovation and creativity. Obviously, this doesn’t have to be a physical library and could easily be implemented virtually. Social networking can therefore improve knowledge creation and collaboration across companies leading to a distributed creativity (Sawyer & DeZutter, 2009, Chang & Lee, 2008, Nonaka, 1991) that the group could use as a competitive edge.

Creativity Sessions

Brainstorming sessions at present are not an organised activity if a disciplined approach is established the respondent felt this would improve the generation of new products. Suggestions for these sessions included focus groups and seminars by inspirational people followed by creativity sessions.
Dabble Time & Learning from Mistakes

It is well known that Intel and Google ensure their employees have time to pursue their own ‘projects’ and these generally have resulted in a raft of new products for the companies. Feedback from respondents echoed the same concepts as one company had allowed teams ‘free’ weeks every year to work on their own ideas. Sometimes they worked on correcting things or mistakes that they didn’t usually find time to do. One response succinctly captures learning from these mistakes;

“I can put it in two words "Failure Stories" [author’s emphasis] in a format of:

1. What initiated the innovation?
2. How or what made this project launch.
3. What went wrong and why? And most important
4. What have we learned from this experience? So the investment in this failed project will pay back in shared experience.”

Arguably experiments are associated with risk, and management in general is aimed at mitigating any risk in whatever form (Ahmed, 1998). Intrinsic motivation is essentially the best kind (Grobler & Wärnich, 2007, Ahmed 1998) and if employees are permitted to indulge in their own experiments the rewards can be great. In the words of Kucsmarski, (1996), ‘quantity counts; success only comes after many failures.’

Summary

Networking via new media can integrate all three ideas of knowledge sharing, faster learning and permitting employees to dabble in their own interests onto one platform that would empower employees to engage their creative minds.
Limitations of the Study

The study is primarily confined to the particular industry within which ASSA ABLOY operates and the findings may not necessarily have external validity across other industries (Bryman & Bell, 2007:63). The model in use may not be generalisable across industries and replication of this investigation across other industries may also be required (Dobni, 2008).

Due to the limited number of companies investigated, the

Research Assumptions

The survey relies on individual perceptions of innovative/creativity culture and these may be based on personal historical experiences of organisational culture - which in itself is not monolithic but dynamic - relying heavily on memory and recall and may result in less accurate responses (Bryman & Bell, 2007:271).

The survey also showed personal perceptions of creativity to be, in general, quite variable and inconsistent with the measure of innovation of particular companies. Perhaps development of a normalised scale of measuring creativity needs to be investigated. Although the survey was of companies based in European, the cultural differences can be quite large. An Italian’s or Spaniard’s perspective of creativity will be very different from a German’s perspective. Research has shown that age, culture, ethnicity, and even sex have a marked influence on employees’ perception of their organisational culture (Helms & Stern, 2001; Binnewies et al, 2008). Organisational culture is not monolithic and may very well be a slippery concept to nail down.

Both Wang & Ahmed and Dobni do not specifically mention cross-cultural validity of their measurement constructs. Dobni identifies the survey sample as a financial service company in Canada which give a homogenous sample both in terms of organisational culture and national culture. Wang & Ahmed’s sample of 1500 companies was directed mainly at the senior management of the organisations in England, Wales and Scotland. Their perception of their organisational culture can be very different from the middle and lower level employees.
Table 7: Location of Survey Companies

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<td>Shared Technologies</td>
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The ASSA ABLOY sample contained a wider cross section of individual companies’ employees as well as covered several different countries. As a result the cultural differences are quite wide. In addition one respondent made the comment the questions were difficult to understand and therefore answer. Though the main language of communication within the group is English, the assumption that all employees command of the language may have been incorrect. The impact of cultural differences could be very well a confounding factor why there is apparently little correlation between the innovation culture and innovation performance for this particular study.
Research Conclusions

Whilst the research did not result in a describing a reliable empirical function describing the relationship between innovative practices that encourage creativity, collaboration and sharing of ideas with new product performance as an indicator of a firm’s overall innovativeness, it has illuminated a number of key issues that may be useful for further exploration.

One of the main themes emerging, particularly from open feedback, is the need for greater collaboration between departments as well as group companies. This would improve organisational learning in such aspects as re-use of ideas, designs etc. using a similar concept from the software industry - software re-use. The use of ‘failure stories’ has the potential to increase the organisational pace of learning in this fast paced era the world is entering. Allowing employees to learn from theirs and others mistakes by allowing them ‘dabble time’ can only increase their confidence in using their creative capacities and reduce re-inventing the wheel. The group’s resources would be more efficiently utilised further enhancing its innovative capacity. Organisations therefore have to actively manage those dimensions that affect innovation culture.

The impact of new media on creativity and collaboration influencing firms’ innovativeness will be high on the agenda in the near term. If companies do not actively embrace this, they may find themselves overtaken by events. The market will eventually determine success based on this new imperative.
**Implications for Management**

The greater choice of ideas from these new avenues of innovation will make it more challenging to select the best opportunities to allocate resources. It will be up to individual firms to select those forms of collaboration that best suit them as the cost of accessing ideas is dramatically reduced but the cost of assessing them is still high. (Pisano & Verganti, 2008). Not all models of open innovation are suited to all types of corporations. Developing and exploiting creative capacities calls for a systematic strategy to generate a culture of innovation across the whole organisations including – but not only – the creative departments.
**Future Research**

The data yielded in this particular case may be limited and a much wider investigation across the entire 100 companies in the group may yield better results. A principal investigation on normalising survey respondents’ perceptions of creativity with respect to cultural differences may also be useful. As indicated previously, these may be a confounding factor in accurately measuring the level of creativity within companies.

The effect of cultural differences in assessing organisational dimensions of innovativeness has a huge impact on the measurement of the factors of innovation. More research is required in this area in order to mitigate the impact of this to enable comparability of innovation indices across countries and cultures. As innovation culture is not monolithic a longitudinal study would be also useful to understand better the relationship between innovation culture and innovation performance as it develops.
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Vol.1, No.2, pp. 4-5
Appendices

Appendix 1: Responses to Open Question

Do you have any suggestions/feedback on what could improve creativity and innovation in your organization? (As many ideas as you can think of, you need not identify your company.) This is an optional question.

2. Demands for employees to participate in events which can inspire for innovations. Room and time for more brainstorming sessions. Regular focus group surveys. Inspirational office environment.

3. We must not forget quality; it should be in the process early. A uniformed quality strategy for ASSA ABLOY would be great if we had.

4. Skype & MSN or other IM's [instant messaging platforms] are good for social contacting and being able to throw out questions etc. and learn things faster. Wiki’s are also good. We have had success in trying out letting teams work freely for a couple of weeks per year performing something "good for the company" (trying out new ideas; correcting things they do not get time to fix otherwise; reading up on something; trying out new ideas).

5. We should live our vision - we will not be innovative just by saying so!

6. Creativity cannot be planned and executed but happens naturally among inspired people in an open environment of learning from mistakes and experiments. Our company must learn to let nine out of ten experiments or projects fail before one innovative idea is found. We must also learn how to be prepared to completely change our organization; our products and the way we market them in order to be able to really embrace innovation.
7. I can put it in two words "Failure stories" in a format of:
   1. What initiated the innovation?
   2. How or what made this project launch.
   3. What went wrong and why? And most important
   4. What have we learned from this experience? So the investment in this
      failed project will pay back in shared experience.

8. We should make mistake by thinking that innovative products should come just as
   a result of a real need from the market. Innovative new product can be something
   that was not asked; but if was developed as a new approach of existing need.
   Success stories of innovative products (ideas) are mainly questions of
   management priorities.

9. As an active employee in ASSA ABLOY; it is important to think global and act
   local; and listen to our customers how easy it can be?

10. Innovation teams to be involved in blue sky creation task force group wide.
    Involvement in S.W.O.T. activities to push the boundaries of the business

11. Incentive scheme.

12. Apply innovation thinking technique.

13. Effective brainstorming sessions would improve creativity and innovation when
    new products are required. At present brainstorming is not an organised activity.
    Also financial incentives help to motivate and focus designers in their day to day
    tasks.

14. Some of the questions was hard to understand because of the language.

15. -Each company should have one library with books about innovation and
    creativity with a frequent update. -At least once/year; it would be great if each
    company/R&D Department arranged one event related to innovation and
creativity. Invited speakers could hold interesting seminars with discussion afterwards combined with other activities where groups could come up with innovative ideas; etc.

16. Highlight good ideas in key point; the good ideas spread through the group; maybe we can implement something [so we] don’t have to "invent the wheel again". Meetings between the group companies on a lower level [to] let people try their ideas.

17. It would be much easier to find new innovations if we wouldn’t be forced to move all manufacturing to low cost countries. Now time what could be used for R&D goes to checking whether new components/products from China are good or bad (again and again...). Making new product ready for the market is much slower now than it was when we could make products locally.

18. Idea generation techniques when VOC is been obtained.

19. Method to discuss casually over organization borders with anyone who might have something to give to my work. Now all innovative ideas are left under our own business unit which is not the whole chain to customer. Alternatively there are "official" meetings arranged with strict time table - in my opinion that is not an innovation platform.

20. We have implemented a blog within the intranet to share ideas throughout all the organization.

21. Create more Prod. Man. & R&D resources to spend time on market analyses; customer interviews & brainstorms about possibilities.

22. none

23. It should be nice to have more access to items from other companies in our holding.
### Appendix 2

Summary of Survey Results

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Table 9: Likert Scores for Survey Questionnaire Cross-Tabulated by Company.
### SUMMARY OUTPUT

#### Regression Statistics

- **Multiple R**: 0.155941866
- **R Square**: 0.024317865
- **Adjusted R Square**: 0.115065297
- **Standard Error**: 14.81597088
- **Observations**: 9

#### ANOVA

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#### Coefficients

- **Intercept**: 58.38528562
- **Index**: 0.513572109

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### RESIDUAL OUTPUT

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Table 10: Summary of Regression Statistical Analysis
Appendix 3

Survey Results

Scores Cross Tabulated by Departmental area in which Respondent is Employed.

Innovation Propensity

Innovation is an underlying culture, a core value in our company.

Overall

1 5.07 7

Our organization’s management team is diverse in their thinking in that they have different views as to how things should be done.

Overall

1 4.42 7

We have continuous strategic initiatives aimed at gaining a competitive advantage.

Overall

1 4.70 7

There is a coherent set of innovation goals and objectives that have been articulated.

Overall

1 4.33 7

Our senior managers are able to effectively cascade the innovation message throughout the organization.

Overall

1 4.05 7

Employee Creativity

I consider myself to be a creative person.

Overall

1 5.60 7
Innovation in our company is more likely to succeed if employees are allowed to be unique and express this uniqueness in their daily activities.

Overall

There is general consensus here as there was little variation across departments.

I am open to ideas from other employees not directly involved in R&D.

Overall

I am willing to share my ideas with other employees

Overall

Generally employees recognised that ideas and sharing of ideas was a responsibility of all employees and not just from R & D and the ‘Creatives’, hence the high score and narrow deviation.

I am given the opportunity to develop my creative potential.

Overall

Design

1  6-44  7

Sales & Administration

1  5-33  7

I am given the opportunity to develop my creative potential.

Overall

Design

1  4-89  7
I actively search for new ideas and innovations at all stages of product/service development.

Overall

1

| 4.67 | 7 |

Design

1

| 6.11 | 7 |

Research & Development

1

| 5.45 | 7 |

Mechanical

1

| 4.44 | 7 |

Electronics & Software

1

| 5.50 | 7 |

Sales & Administration

1

| 4.94 | 7 |

Electro-Mechanical

1

| 5.2 | 7 |
Organisational Creativity

My contributions towards innovation are valued by my fellow employees.
Overall
1 4.94 7

I am encouraged to challenge decisions and actions in this organization if I think there is a better way.
Overall
1 4.90 7

We have an effective environment for collaboration within and between departments.
Overall
1 3.92 7

We are rewarded financially (in terms of bonuses & higher salaries) for being creative.
Overall
1 2.55 7

Design
1 1.78 7

Mechanical Engineering
1 1.63 7

We are rewarded intrinsically (non-monetary rewards) for being creative.
Overall
1 3.54 7
Design Staff

1 3-11 7

Mechanical Engineering Staff

1 3-63 7

Organisational Learning
There is an expectation to develop new skills, capabilities and knowledge that is directed toward supporting innovation in this organization.

Overall Index

1 4-41 7

Continued organizational learning is encouraged and there is time/opportunity to improve skills and capabilities.

Overall Index

1 3-88 7

I am empowered to apply what I have learnt.

Overall Index

1 4-88 7

The management team acts as coaches and facilitators in support of training.

Overall Index

1 3-67 7

Research & Development

1 3-50 7
There is an understanding that mistakes will occur or an opportunity will not transpire as expected.
Implementation

We are quick to turnaround ideas into marketable products/services.

Overall Index

1 3.84 7

Research & Development

1 4.10 7

Design

1 4.78 7

Mechanical

1 3.57 7

Electronics & Software

1 4.56 7

Sales & Administration

1 3.09 7

Electro-Mechanical

1 3.80 7

We are prepared to commit new resources or redirect current resources to support ventures that result from our innovation pathway.

Overall Index

1 3.99 7
We are prepared to launch a new product even when it is not clear how successful it may be.

Overall Index
1 4-28 7

Research & Development
1 4-40 7

Design
1 3-78 7
Our company uses new ideas from other industries and integrates them into our own products.
Our company integrates new ideas and encourages creative solutions at every stage of the new product development process.

Overall Index

Sales & Administration

1 3-84 7

Electro-Mechanical

1 4-30 7

Mechanical

1 3-29 7
List of Figures

Fig. 1: ASSA ABLOY Global Market Share
Fig. 2: Gateway Process at ASSA ABLOY
Fig. 3: The Conceptual Age (Pink, 2005)
Fig. 4a: The Closed Innovation Model
Fig. 4b: The Open Innovation Model
Fig. 5: Innovation Strategy Map
Fig. 6: Dimensions of Innovation (Dobni, 2008)
Fig. 7: New Product Revenue Performance as at Q3 2009 (EMEA Region).
Fig. 8: Innovation Performance vs. Index of Innovation

List of Tables

Table 1: Factors affecting innovation propensity in a company (Dobni, 2008)
Table 2: Initial Selection of Companies
Table 3: Final Selection of Companies
Table 4: Example Calculation of Innovation Index (Dobni, 2008)
Table 5: Innovation Index vs. Company New Product Revenue Performance
Table 6: Regression Statistics
Table 7: Location of Survey Companies