Managers' Perceptions of Innovation

An Exploratory Study

May 2004 Report

applied **innovation** centre

Results through INNOVATION

CONTENTS

1.0   EXECUTIVE SUMMARY

Innovation in the workplace has been interpreted in a variety of ways. The term has become trendy and so widely used that it is at risk of losing its true meaning. Hence, more knowledge and clarity on the subject of innovation is needed to successfully implement innovation strategies in organisations. This study aims to increase understanding of how innovation is perceived and applied in organisations.

Seventy two (72) managers from forty seven (47) organisations across several industry groups participated in this study.

Qualitative analysis of the interview data provides insight into:

◆ How managers perceive innovation as a tool for business and organisational effectiveness.

◆ How innovation is initiated and applied, and how innovation as a strategic process is recognised and rewarded in the workplace.

◆ The risks and rewards associated with adopting innovation and how these are addressed to reinforce and sustain innovation initiatives.

◆ How managers view innovation in their future operations and how various theories and models fit with various types and sizes of organisations.

Most respondents identified innovation as something new or different – a new technique or strategy used to improve efficiency and/or problem-solving. A smaller number of managers defined innovation in terms of improvement, while others saw it more as change and strategic planning.

More than half of the managers interviewed (69.5%) unequivocally identified their organisation as innovative or not innovative: 32 of these managers, from 22 organisations, considered their organisation innovative and 18 believed their organisation was not innovative. The other 22 respondents (30.5% of the sample) indicated that some sections or departments of their organisation were more innovative than others, that their organisation was somewhat or moderately innovative, or that becoming innovative was part of an ongoing agenda.

Of the 22 organisations said to be innovative:
◆ 11 were private companies
     4 connected to the oil and gas-related industries
     6 were information systems and technology-based companies
     1 was a financial institution;
◆ 6 were State Government Departments;
◆ 2 were public non-financial corporations (previously State Government Departments);
◆ 2 were non-profit organisations; and
◆ 1 was a Commonwealth Department.

Their sizes ranged between 12 and 6,000 employees.

Of the 32 respondents who assessed their organisation as definitely innovative, only three (9.3%) reported having a formal innovation strategy and an allocated budget in place.

The main factors identified as supporting innovation were:
◆ Leadership and support from top management;
◆ Culture and identity;
◆ Rewards and recognition;
◆ Competition, deregulation, need and diversity.

Organisational culture, resistance to change, corporate structure, workloads, difficulty in accessing capital to invest in R&D activities and lack of skills were identified as the main barriers to innovation.

Other findings included that there is a general lack of awareness related to:
◆ Innovation metrics;
◆ Ideas management systems; and
◆ Creativity or innovation-educational programs offered to employees.

Of all the managers surveyed only one respondent (1.39%) claimed his/her organisation utilised a system of innovation metrics in order to measure innovation efforts.

Three respondents claimed that their organisation had an idea management system in place.

None of the respondents could confidently claim that their organisation was offering its employees specific creativity or innovation education or training programs.

2.0 BACKGROUND

Many people equate workplace innovation with quality and continuous improvement. That is, refining or improving existing structures, systems and processes to come up with better products or services. While these elements are highly desirable and challenging, it could be argued that they are more characteristic of an 'adaptive' culture, as opposed to a truly 'innovative' one.

Innovation in a business context has been associated with ensuring the long-term survival of the organisation, as well as being its key source of distinct competitive advantage. In broad terms, innovation can be defined as *novelty that is useful.*

In an organisational context, and using a more elaborate definition, innovation can be defined as *new solutions or breakthroughs that address current problems and challenges and create new positive outcomes. These may include a mixture of processes, services, patents, licenses, new techniques, managerial and administrative tools, wider leadership practices, or brain-software.*

According to international research that has been verified by the experience of the Applied Innovation Centre, there appears to be a consistent link between an organisation's commitment to innovation and its success within its operational environment.

Innovation in the workplace can mean different things to different people. Hence, more knowledge and clarity on the subject are required to enable managers to compare and benchmark their practices against others in order to gain the greatest benefit from the risks associated with implementing innovation strategies in their organisations.

Innovation has become a trendy term. It is so widely used that it is now at risk of losing its meaning. Hence, there is a need to reclaim its true meaning.

Research in the area of innovation has consistently revealed gaps between what organisations say about innovation and what they actually do about it – the innovation gap.

This study explores this gap, focusing on issues around the beliefs, approaches, and barriers to innovation in Western Australian organisations.

3.0   KEY FINDINGS

The qualitative interviews conducted thus far produced the indicative results outlined in this report. It must be stressed that this is a progress report. Therefore, any findings and recommendations should be viewed as hypotheses that need to be tested through rigorous ongoing investigation before they can be considered conclusive.

3. 1   Managers' perceptions of innovation

Managers' definitions of innovation, according to frequency of responses, can be categorised in terms of four main concepts:

1   Newness or novelty
2   Improvement
3   Change
4   Strategic planning.

The majority of respondents (90%) identified innovation as something new or different. For example, new ways of doing things, new processes, new products or services, new solutions, questioning old ways or procedures, different perspectives or breakthroughs. A handful of managers from this group equated innovation to invention.

Not surprisingly, managers from engineering and technology-based companies defined innovation as being technology-based and directly related to research and development (R&D). That is, resulting from the development and application of new technologies to solve specific problems and/or satisfy customer needs. These same managers reported capital investment as the main factor supporting or precluding innovation.

Managers from the private sector tended to place greater emphasis on linking innovation to the development of new ways of exploiting new ideas or opportunities with responding to the need to become more competitive to attract more or better customers. They also linked innovation to financial risk-taking.

The next largest set of definitions, a proportion of which also included some of the responses from the previous category, had an emphasis on quality improvement or efficiency. For example, better ways of doing things within the current scope of the organisation's activities. Best practice was also mentioned within this context.

A small proportion of managers equated innovation with deliberate management processes such as planned change and strategy development.

Discussion

These findings are generally consistent with the literature that defines workplace innovation with novelty that is useful (Rixon, 2003; Katz, R. & Luecke, R., 2003; Holt, 1983; Zaltman, et al., 1997) or "coming up with ideas and bringing them to life" (Tucker, 2002, p. 62). More specifically, for a product, process or service to be innovative, three essential criteria need to be meet: Novelty, Resolution, plus Elaboration and Synthesis. Novelty determines the degree to which a product/service is original. Resolution examines the extent to which the product/service solves the problem which motivated its creation. Elaboration and synthesis relate to the stylistic qualities of the product/service and how they will make it appealing, or unattractive, to the ultimate user or consumer(s) (Besemer & O'Quin, 1987).

The Western Australia Government defines innovation as "the process of turning ideas, knowledge and creativity into new business opportunities or increased productivity through the adoption of new technologies, processes and work practices. Innovation can apply to both what a business does (product innovation) and how it does it (process innovation) (Government of WA, 2003, p. 24).

Hence, taking 'newness or novelty' as integral to innovative problem-solving, focusing on the way individuals, teams and organisations engage in ideas generation and decision-making processes becomes a critical issue. That is, creativity in problem-solving is the main driver of new knowledge (innovative solutions). However, this needs to be supported by appropriate mechanisms that include expansive research for information, allow risk in attempting innovative solutions, and accept challenge as a developmental tool.

Although less widely accepted – and, it could be argued, to be more typical of an 'adaptive' culture, as opposed to a truly 'innovative' one – the notion that innovation equates to continuous improvement (that is, refining or improving existing structures and systems to improve products or services) is also mentioned in the literature. Katz & Luecke (2003), for example, make the distinction between 'incremental' and 'radical' innovation. Similarly, Gryskiewicz &Taylor (2003) distinguish between 'incremental' and 'breakaway' innovation. The incremental approach improves on the original idea or performs a process better without fundamentally changing the existing system or framework. In contrast, the radical or breakaway approach challenges the definition of the problem and invites a new solution by presenting the challenge or problem in a completely new way. In a nutshell, while the first approach attempts to solve problems in an orthodox manner, the latter uses a less orthodox or conventional approach.

From a risk-taking viewpoint, the incremental approach defaults to making minor changes and 'safe' decisions. Contrastingly, the radical or breakaway innovation (sometimes also referred to as 'breakthrough' or 'discontinuous' innovation) requires taking more risk by pursuing a novel approach, which in turn is more disruptive to the system or organisation.

From a more rigorously tested and sounder theoretical perspective, and still in line with the distinctions above, Kirton's (1976) Adaptor-Innovator (A-I) theory is useful to consider. This approach views individuals' preferences or styles in problem-solving, decision-making and creativity in a continuum, as opposed to two different, or opposing, types. The continuum would appear as:

Adaption ➡ **Innovation**

In short, (A-I) theory is a model of problem-solving and creativity that aims to increase collaboration and reduce conflict within groups. It explores how wide diversity within a team affects problem-solving, creativity and effective management of change. Adaptors prefer to create change by working within the existing paradigm, while innovators prefer to create change by challenging the paradigm.

(A-I) theory also allows examining organisational structures, managerial functions and behaviours of adaptors and innovators. For example, organisations operating in relatively stable and predictable environments, and therefore tending to be more mechanistically structured, will require managerial skills that contribute to continuity and efficiency. In contrast, more market-oriented organisations operating in more frequently changing and competitive environments, which are more organically structured, require managers who can cope with external change and the strategies of competitors.

The table on the next page provides a summary of behavioural characteristics of each style in various contexts.

Summary of Characteristics of Adaptors and Innovators

Context	Style	
	Adaption	**Innovation**
General attributes	Individuals who are more adaptive approach problems within given terms of reference, theories and policies and strive to provide solutions aimed more at being 'better' than different.	Individuals who are more innovative tend to detach the problem from the way it is usually perceived, are able to produce less expected and more novel solutions that are seen as being 'different'.
Problem definition	Adaptors tend to accept the problem as defined within any generally agreed constraints. Early resolution of problems, limiting disruption and immediate increased efficiency are important considerations.	Innovators tend to reject the generally accepted perception of problems and redefine them. Their view of the problem might be hard to get across. They seem less concerned with immediate efficiency, looking to possible long-term goals.
Solution generation	Adaptors prefer to generate a few novel, creative, relevant and acceptable solutions aimed at 'doing things better'. These solutions are relatively easier to implement.	Innovators generally produce numerous ideas, some of which may not appear relevant or be acceptable to others. Such ideas often contain solutions which result in 'doing things differently'.
Policy formation	Adaptors prefer well-established, structured situations. They are best at incorporating new data or events into existing structures or policies, making them more efficient.	Innovators prefer less structured situations. They use new data as opportunities to set new structures or policies, accepting greater risk to the current paradigm.
In organisations	Adaptors are essentially for the ongoing functions, but in times of unexpected changes may have some difficulty moving out of their established role.	Innovators essentially excel in times of change of crisis, but may have trouble applying themselves to ongoing organisational demands.
Perceived behaviours	Adaptors are seen by innovators as sound, conforming, safe, predictable, inflexible, wedded to the system and intolerant of ambiguity.	Innovators are seeing by adaptors as glamorous, exciting, unsound, impractical, risky, abrasive, and in threatening the established system as causing dissonance.

Kirton (1999)

Needless to say, the above differences in styles, in which individuals approach problems or address challenges in organisations, have important implications for the management of diversity and organisational change. Therefore, an accurate understanding (A-I) theory is useful for leaders in assisting the management of change.

Invariably, as also identified by some respondents, innovation is linked to strategic commitment and change (Rixon, 2003).

3.2 Types of organisations that have or are developing a formal innovation strategy or methodology

3.2.1 Innovation in organisations

Responses to this question fell into three main categories:

1   Participants who confidently reported their organisation as <u>being</u> innovative:

   44.5% of all responses (32 of the 72 participants)

2   Those who reported their organisation as <u>not being</u> innovative:

   25% of all responses (18 participants)

3   Participants who provided an innovation rating or elaborated on their responses:

   30.5% of all responses (22 respondents) chose to rate their organisation on a Likert-type scale ranging from 0 (no innovation at all) to 7 (as innovative as is possible). This yielded an average innovation rating score of 4.25.

   Elaborated responses included statements such as:

   ◆ *We are slowly becoming more innovative*
   ◆ *We are innovative to some extent*
   ◆ *Our organisation is innovative in patches*
   ◆ *We are innovative in distinct areas or departments of the organisation*
   ◆ *We are innovative compared with other organisations in the same industry*

It should be noted that there was more than one respondent from some organisations (the respondent average per organisation was 1.53).

3.2.2 Innovation strategy

Of the 32 respondents who assessed their organisation as definitely innovative, only three (9.3%) reported having a formal innovation strategy and an allocated budget in place. One organisation was reported as working towards that end, and two were apparently considering or contemplating doing so. The rest equated their strategic plan and/or vision, business model, decision-making processes, or conducting innovation groups with having a formal innovation strategy.

Even respondents who rated the innovation level of their organisation as above average reported a lack of an innovation strategy, allocated innovation budget, or appropriate innovation-related methodology.

3.2.3 Organisational size

The size of organisations that were rated as being currently innovative by the respective respondents ranged between 12 and 6,000 employees.

3.2.4 Industry sectors

Of the 22 organisations identified as being innovative by the 32 participants outlined above:
◆ 11 were private companies
  4 connected to the oil and gas-related industries
  6 were information systems and technology-based companies
  1 was a financial institution;
◆ 6 were State Government Departments;
◆ 2 were public non-financial corporations (previously State Government Departments);
◆ 2 were non-profit organisations; and
◆ 1 was a Commonwealth Department.

  The classification criteria used was the Government Finance Statistics (GFS) framework published by the WA State Government

Discussion

It appears that only around 6% of the sampled organisations actually have a formal innovation strategy in place. However, this builds to recognition in over 86% of individual participants of some consideration or development of innovation processes when a scale, as well as a simple yes/no response, is allowed.

It would appear that size does not necessarily influence the extent to which an organisation is innovative, or intending to be through adoption of innovative measures. Large organisations have traditionally been considered as less innovative; however, nothing related to organisational size precludes creativity and innovation. In fact, models to generate creativity and innovation in large organisations were described by Schumann (1993) at least ten years ago.

Our findings also indicate that a fairly large proportion of State Government organisations (typically 'large' bodies) are currently curious about innovation, have an awareness of the concept and its potential benefit, and have spent time in debate and discussion on the subject.

It may be that some organisations (eg: oil and gas related organisations) have inherited methodologies and systems from their overseas parent companies which are targeted at making innovation happen. These types of organisations may already support innovation as a part of the workplace culture. Others appear to have 'borrowed' or 'imported' innovation approaches from partners, owners or joint-venture collaborators.

Embracing innovation needs careful management in itself. For example, one organisation in the sample was reported as reviewing the re-introduction of an innovation strategy because the first attempt, which was installed by their parent company, was not fully embraced. In engaging in innovation strategy and implementation processes, distinctions can be made between emergent, imposed and imported innovation (Sauer & Anderson, 1992).

Emergent innovation refers to a type that is entirely developed by the organisation. Common sources of this are internal processes that assimilate and interpret intelligence gathered from customers, competitors and suppliers.

Imposed innovation refers to an innovation process imposed by an outside body. Typically, this might arise in the form of a CEO who is installed into an organisation by a parent body or shareholder group.

The term *imported innovation* is used where a department or sub-unit directly imports a work practice or system from another section within the organisation, or from another organisation.

Even with these definitions and processes, innovation is often 'articulated' but not 'enacted' (Anderson, et al., 1990). In other words, many organisations profess to support innovation, but little is actually done to install necessary resources, policies, systems etc. Consistent with this were those respondents who indicated that their organisation was innovative, but lacked an innovation strategy, allocated innovative budget, or innovation methodology.

A similar phenomenon occurs with the concept of values. Some organisations in the sample have the word 'innovation' included in their mission statement or as a corporate value. However, it is important to make a distinction between 'espoused values' and 'values in action'. Espoused values are the values to which the organisation claims to adhere. Sometimes, those values are also referred to as 'aspirational values' (that is, reflecting behaviours the organisation aspires to). Contrastingly, values in action are those that the organisation actually uses in its decision-making processes and that directly guide the behaviour of its members.

In fact, our research indicates that some of the most innovative organisations we spoke with did not necessarily have the word innovation included in their corporate literature, but rather displayed a strong culture of customer focus (enacted, as opposed to espoused). This included continuously gathering feedback from their customers, acting on it by patiently introducing and piloting small incremental changes, and measuring and evaluating outcomes.

Hence, it is important to determine whether innovation is philosophical or ethical in tone, or whether it provides quite specific everyday criteria by which decisions are made and priorities set. Needless to say, there will always be a gap or dissonance between the two. The critical question is: how big is that gap in your organisation?

3.3   Main factors identified as effectively supporting innovation

Effective support for innovation was categorised in five clusters. The rank order reflects the frequency of response provided by participants.

1   Leadership and support from top management
2   Culture and identity
3   Rewards and recognition
4   Environment, competition, need and diversity
5   Information technology infrastructure, policies and procedures

<u>Leadership and support from top management</u> was the factor mentioned most in the context of an organisation embracing innovation. Typically, leaders supporting innovation were described as strategic thinkers and individuals who are able to empower others. This factor was also supported, by inference, by a small number of respondents who reported that lack of leadership, commitment and support from top management had led to a decline, if not stagnation, of innovation efforts in the organisation.

<u>Culture and identity</u> were reported as critical in determining how innovation would develop. Generally, respondents from high technology industries and commercialised organisations were more likely to state that being innovative was part of organisational culture in their workplace. This environment was described by one respondent as a culture where innovation would be "celebrated".

<u>Rewards and recognition</u>, both in monetary and non-monetary terms, were also highlighted as important factors that fostered innovation. Insufficient data is available thus far to establish precisely the nature, size and distribution of rewards offered by organisations (eg: whether rewards are team or individually based).

<u>Environment, competition and need</u> referred to the role of innovation in an organisation becoming more competitive and/or flexible because of market forces, legislation and other factors outside the control of the organisation - in short, the need to adapt and change to ensure the long-term survival of the organisation. Two participants stated: "Necessity is the mother of invention".

<u>Diversity</u> - namely different fields of expertise, skill variety, and cultural backgrounds - was also identified as a factor supporting innovation. This finding refers to the 'Origin of developmental solutions' section of the model proposed in Section 3.1.

This quest for information and solutions from diversified fields is again reflected in <u>information technology, infrastructure, policies and procedures</u>. These are identified in terms of resources, technology and systems that are required to make innovation happen in a practical and consistent fashion.

A smaller portion of managers identified <u>personal drive</u> as a factor contributing to innovation.

Discussion

The finding that leadership is critical to innovation is consistent with the literature (Scott & Bruce, 1994), and reports by international CEO's using cutting-edge practices (Nasser, 2003, personal communication).

Such practices formulate and articulate clear and compelling organisational vision - painting the big picture and providing a road map to some required destination. Support from executives in this way is obviously required to commit resources (the 5th factor) necessary to make the vision a reality.

Based on our experience, which is consistent with the latest research in this area (Puccio, 2003, personal communication), innovation is clearly the product of teamwork, as opposed to the single efforts of gifted individuals. More specifically, innovative output increases in direct proportion to three key factors:

1. Team diversity
2. Frequency and quality of face-to-face interaction
3. Time invested in reflective activity

Interestingly, time spent in formal meetings and insufficient time to think were identified by respondents as barriers to innovation (details in Section 3.4).

Teamwork and diversity can be powerful forces resulting in innovation. However, turning a traditional group into a high performing, innovative team does not happen without investment in time, effort and resources. This includes integration of the most relevant approaches or methodologies (the options can be diverse) that are suited to the task. In fact, diversity in the quest for innovation requires insight and clear processes to be successful, and unless properly managed can be problematic. High culturally diverse teams, for example, are less effective over the short-term, but over time outperform less diverse teams (West, 2003, personal communication).

Reward systems, both in monetary and non-monetary terms, are also clearly identified in the literature as facilitating innovation (Kao, 1991; Gomez-Mejla, et al. 1997). Given the acceptance of diverse inputs as a platform for innovation, it would be expected that rewards and recognition would be predominantly group-based (Savvides, 2003, personal communication) and used to support and reinforce teamwork.

This balance between team or individual rewards and recognition strategies is still in need of more detailed examination in order to fully understand the optimum reward processes for Australian organisations.

3.4   Main barriers that constrain innovation

The main barriers constraining innovation fall into four categories:

1. Culture
2. Structure
3. Workloads (and time management)
4. Difficulty in accessing capital for R&D and lack of skills

The major barrier identified was rigid organisational <u>culture</u>. These climates of 'strong culture' - organisations where entrenched meaning and common interests around specific and specialised fields or domains of expertise prevail (eg: a strong 'engineering' or a 'risk averse' culture) – were particularly unlikely to embrace innovation. This was especially the case in large bureaucracies with hierarchical structures (in some instances, reported as featuring a high degree of 'control'). Various respondents referred to such cultures as self-perpetuating and difficult to change - "the nature of the beast". Other respondents alluded to "resistance to change" as a peculiarity of these cultures.

Examples of the above are organisations with a strong safety culture, where risk-aversion prevails over risk-taking. In these types of cultures, old behaviours are 'legitimately perpetuated' rather than challenged (this issue will be addressed in the following discussion).

Organisational <u>structure</u> as a barrier was closely related to the types of culture described above, especially in large organisations. This style of organisation might actually resist any 'face-to-face interaction' (perhaps other than formal meetings) and preclude or discourage reflective activities.

<u>Workload</u>, or being 'too busy', was also identified as a major barrier to innovation – and mentioned across industries. This links to both culture and leadership factors – the need for philosophy and policy that facilitates the search for *optimum* outcomes from an organisation's goals through prudent and thorough consideration of alternatives.

<u>Difficulty in accessing capital for R&D purposes</u> and <u>lack of skills</u> were also identified as barriers to innovation. This was particularly the case in small to medium sized private organisations.

Discussion

Responses in this section were consistent with the innovation literature. Neely, et al. (2001) detail how culture is a key ingredient in the management of innovation, and various models to generate innovation in large and complex organisations with strong cultures are provided by Kuhn (1993).

Distinction needs to be made in relation to risk-taking. Risk is inevitably required to make innovation happen. However, when referring to the need to take risks in order to become innovative (clearly acknowledged in the literature), some participants expressed concerns over compromising safety standards. If innovation is perceived as a threat to safety standards, strong resistance is bound to occur. Clearly, this tendency is more prominent within some industries than others.

This important issue can be addressed first through the distinction between risk-taking and risk analysis. Risk can be managed if analysed in measurable, objective and identified criteria terms. That is, risk can be defined before an idea or decision is implemented. In fact, any sound innovation methodology should have a convergent process of developing, assessing and selecting new ideas prior to their implementation. Ultimately, there is always a choice of action.

Secondly, it is important for everyone in the organisation to understand the distinction between 'safety risk-taking', 'legal risk-taking' and 'business risk-taking'. While the first are related to issues of personal safety and ethical policy (which are not to be compromised) and subsequent legal implications, the last relates to broader organisational or team-related outcomes and consequences where perhaps more latitude exists.

Hence, it is important that organisations developing innovation policies actively educate their workforce. Certainly, this would be applicable more to organisations with strong safety cultures, where a culture of risk-aversion inherently prevails over risk-taking. Nonetheless, a common shared meaning around the concepts of innovation and risk becomes critical to success in an innovative organisation.

The issues of workload and 'being too busy', which are intimately related to time management, appear to be endemic across most organisations and sectors:

> "In our experience, managers have a great deal of difficulty understanding critical problems and opportunities. Confronted with the relentless pressures and complexities of day-to-day business, operating managers frequently lack the time and distance necessary to define objectively the problems they face." (Tushman & O'Reilly, 1997:41)

We believe these issues can be addressed in at least two ways. First, by eliminating unnecessary tasks that lie embedded within the hierarchical structure of most large organisations. Preferably, tasks associated with such a trimming should be accomplished by the individuals and teams involved as a way of promoting ownership of the change process. Innovation strategies work better when greater autonomy for a workforce leads to improved work design and efficiency.

A second strategy to deal with high workloads (and related stress) is to explore individuals' perceptions of reality and their related coping strategies. Leaders can benefit from understanding that "the real art of discovery consists not in finding a new land but in seeing with new eyes" (Binney & Williams, 1997:80). The 'land' equates to current workloads and the 'new eyes' to the innovative ways managers can reframe the reality of an unchanging business 'landscape'.

This highlights the importance in innovation implementation of leaders clearly communicating a vision that affects collective thinking and shapes new realities. This challenging task needs to be facilitated by drawing on a wide range of creative and innovative processes to promote collective thinking and sharing - which in turn leads to change and transformation in teams and organisations.

Many small to medium-sized companies have difficulty in accessing capital to invest in R&D - hence, the various Government initiatives aimed at increasing innovation in Western Australian industry. Namely:

- ◆ A $500,000 'Innovation Capability Development Scheme' to assist local companies prepare submissions for private sector and federal funding programs;

- ◆ The establishment of a $750,000 'Innovation Centre' at Technology Park, as a focal point for innovation support and an incubator for emerging firms; and

- ◆ The development of a SoftwareMark Demonstration Project to enhance the business processes and software development standards of Western Australian ICT companies.

According to the State Development Minister, Clive Brown: "Western Australian industry must continue to innovate if we are to keep pace with a rapidly changing world, and the Government has prioritised these new innovation initiatives to highlight the importance of innovation to our economic future".

3.5   Innovation metrics

Recognising that a level of innovation is evident in an organisation would suggest that some form of measurement system existed to quantify its application and/or influence. Such measurement is termed innovation metrics and refers to the systematic measuring of outcomes resulting from innovation initiatives.

We asked participants:

Does your organisation use innovation metrics?

Only one participant claimed his/her organisation had any system of innovation metrics that would allow objective determination of this.

Discussion

Innovation metrics require the development of criteria to assess the impact of innovation efforts within the organisation and the use of systems that are capable of quantifying innovative outputs. With identifiable outcomes and measurable achievement criteria, confidence and the pace of idea implementation are likely to accelerate and be celebrated in business climates that embrace innovation. The old adage 'that which gets measured gets done' applies here. Valid and reliable innovation metrics systems motivate managers and teams across an organisation to embrace and give priority to innovation.

Hence, innovation metrics are also considered as a leadership strategy and are a vital part of imbedding innovation (Tucker, 2002). Once innovation goals are broadly communicated and rewards for achieving milestones established, the pace of implementing new ideas is bound to accelerate.

For example, a simple innovation metric used by 3M, is "percent of current year sales due to new products released in the past year".

Other simple innovation metrics may include:
- New products or services
- Annual revenue from new products or services
- Research and development (R&D) – usually measured in terms of money spent or R&D as a percentage of a company's total expenses
- Patents, as a record of innovative activity
- Export of products
- Surveys of technical experts that can be useful to describe markets, industries or economies
- Technometrics: measuring and comparing the various dimensions of technical performance of a product or production process.

3.6   Idea management systems

Most successful innovations do not spring from a flash of genius. Rather, in business, these result from a conscious, purposeful and deliberate search for opportunities (Drucker, 2002). To pursue this notion of idea generation, we asked participants:

Does your organisation have an ideas management system in place?

While many respondents claimed their organisations were innovative to some degree and seemed to be aware of the importance of new ideas in innovation, the notion of managing ideas appeared somewhat foreign. Only three respondents confidently claimed their organisation had an integrated idea management system via their intranet.

Discussion

Idea management is the practice of gathering and evaluating ideas in a structured fashion, with the goal of selecting the best ideas with the greatest bottom-line potential (or according to another given criteria) for implementation.

An effective idea management system is consistently used to identify and clarify problems or challenges, elicit ideas, develop and refine potential ideas, and implement and evaluate solutions.

The capacity to effectively manage and transform human intellect in such ways has become a critical executive and organisational capability. Outcomes from these capabilities can be identified in knowledge management processes and measured as innovative outputs (Soo et al., 2002).

On average, it takes around 3,000 raw ideas to lead to a commercially successful product or process (Stevens & Burley, 1997). This is the case because when using a sound innovation methodology 'divergence' is required during the early stages of the process. That is, the goal is to elicit as many ideas as possible to address the problem or challenge at hand (quantity of ideas is more important than quality at this stage). However, as the process progresses, 'convergence' is required. That is, the new ideas are filtered or selected using pre-determined criteria (quality now becomes more important than quantity).

Tucker (2002) identifies eight idea management models and explains how ideas systems assist organisations to make innovation a discipline. Similarly, ideas systems encourage extensive employee involvement and participation.

Historically, large organisations have relied upon suggestion box systems to gather ideas from their employees. However, these systems often suffered from a number of common shortcomings, such as:

◆   The tendency to attract a small volume of low-quality ideas because they are not usually focused on specific business goals.

- Once an employee submits an idea, s/he usually never learns what became of it. As a result, employees often become cynical, and no longer contribute their ideas to the program.

- Paper-based suggestion box systems make it hard to ensure that all ideas are evaluated on a timely basis and in a consistent manner.

A good idea management system should go beyond the traditional old 'suggestions box'.

In contrast, idea management software tools are designed to help organisations focus their employees on specific business issues. This tends to result in a larger quantity of very high quality ideas. Also, because today's idea management systems are powered by databases, setting up and managing a closed-loop evaluation process, which automatically reminds evaluators of upcoming deadlines and unevaluated ideas, is much easier to set up and administer.

Idea management systems also share some common roots with knowledge management systems such as web-based technologies that help organisations to capture, share and leverage their collective knowledge, expertise and wisdom. However, many companies that have implemented knowledge management systems are finding it hard to measure their bottom-line impact.

Because they track ideas from inception to implementation, idea management systems make it much easier to track key metrics, including the percentage of ideas submitted vs those that have been implemented, and the estimated cost savings or new revenues generated by ideas that the company has implemented.

There are various ways of implementing an idea management process, ranging from the paper suggestion box to advanced collaboration systems on a corporate intranet. Some organisations have opted for a seemingly harmless middle option: the e-mail-based suggestion program.

The basic approach with e-mail idea management is to solicit ideas from employees as broadly as possible by encouraging people to send ideas into a single dedicated inbox (ideas@company.com). More advanced approaches involve the creation of web-based forms for idea submission - even evaluation - that are received in a central system for processing. E-mail idea management systems, however, have advantages and disadvantages.

The claimed benefits of e-mail idea management include:

- Ease of use - Everyone is familiar with e-mail, and users are comfortable with programs such as Microsoft Outlook that can handle interactive forms in an e-mail message.

- Low cost - E-mail programs can be deployed at practically zero cost; although systems based on web forms can cost around half the expense of an advanced Idea Management application like Idea Central;

- Wide Audience - E-mail is accessible to most employees and is a near universal tool, so all e-mail users can participate freely.

E-mail idea management has some real attractions, particularly in reducing the cost of the technology investment. However there are several disadvantages that rapidly overshadow the initial perceived benefits:

◆ Unstructured - E-mails can be submitted in almost any format, and individuals often ignore the structured forms and revert to plain text mails.

◆ Unfocused - It is nearly impossible to focus people on important, timely business topics.

◆ Disorganised - E-mailed ideas become chain letters within an organisation.

◆ Crushing Volume - E-mail communications multiply rapidly, causing stress and overwork for the people involved.

◆ No Idea Sharing - It is almost impossible to share ideas effectively with an e-mail system.

◆ Security Risk - It is all too easy for people to forward ideas and related content to inappropriate readers, causing the company to lose control of intellectual property, and potentially lose rights to protect inventions through patents and trade secrets.

Idea management technology is a new type of enterprise software that can become part of an effective innovation strategy. These new Web-based applications enable companies to solicit targeted ideas from all employees - regardless of their geographic location - and gather them into a centralised online database. Idea management systems also provide structured processes for evaluating and sharing ideas, so managers can quickly follow through on those with the greatest potential.

We believe, however, that an effective idea management system will incorporate not only a good repertoire of tools and processes to generate new ideas (diverging tools), but also a suite of tools to select, refine and strengthen ideas (converging tools). This filtering or converging process sometimes referred to as an 'idea funnel' or 'stage-gate-system' (Katz & Luecke, 2003), requires clear and concise customised criteria to allow effective conversion.

Similarly, we believe that organisations that are committed to innovation should invest in advanced idea management systems as communication conduits to drive high quality concept creation and development. As innovation grows in importance for an organisation, idea management systems will become the catalyst that can help companies to compete at levels never before possible.

In summary, idea management systems are an idea whose time has come. If they are web-based, they enable organisations to gather, share and evaluate ideas with a speed and flexibility never before possible. This, in turn, can help corporations to compete at a new, higher level and surprise and delight customers in exciting new ways. Above all, idea management systems enable managers to measure the bottom-line impact of ideas collected and implemented, making it easier than ever before to determine the 'return on ideas' that these idea management systems provide.

3. 7 Education and training programs for employee creativity and innovation

A further question asked was:

Does your organisation offer creativity or innovation-educational programs for its employees?

All respondents answered NO to this question. While many managers reported that their organisation would support its employees' request to attend various types of training programs, none of the respondents could confidently claim that their organisation was specifically offering creativity or innovation-educational programs to its employees, or encouraging participation in such programs.

Discussion

Despite the efforts of leaders, the concepts of creativity and innovation are surrounded by myths. This is partly because formal education has provided us with scant or no information about either concept. Therefore, such myths will become barriers to change if not dealt with properly and promptly in advance of introducing an innovation strategy.

The most effective way to dispel myths is by educating individuals. This requires the implementation of an educational process, which will result in a change in people's perceptions of innovation. In addition, an effective educational and training initiative will provide the use of a common language, a specific methodology, and a set of appropriate innovation tools across the organisation.

We believe a good educational/training program for managers who are responsible for the development of innovation within their organisations should include the following elements:

◆ Modern understandings of the nature of creativity and how innovation comes about.

◆ Techniques for managing the innovative process.

◆ How innovation and creativity are encouraged or discouraged.

◆ Why individuals and organisations can be resistant to change, and how to overcome such resistance.

◆ How to assess the levels of creativity and innovation for yourself, your team and your organisation.

◆ How to improve the potential for innovation for you and your team.

3. 8 Contemporary leaders, authors and authorities on innovation, or methodologies that respondents associate with workplace innovation

The most mentioned author associated with innovation was Edward de Bono (12 responses made reference to him).

Other names mentioned were (in alphabetical order):

3M
Alistair Mant
Anthony Robbins
Barry Urquhart
Bill Gates
Corning Worldwide
Eli Goldratt -Theory of Constraints (TOC).
George Lichtenberg
IBM
Karl Albrecht
Leonardo da Vinci
Louis Tice
Michael Gerber - E-Myth
Michael Porter
Microsoft
Paul Keating
Peter Checkland
Peter Senge
Ricardo Sembler
Richard Branson / Virgin Airlines
Richard Pascale
Steve Jobs
University of British Columbia
Thomas Edison
Tony Buzan
Tom Peters
Tushman and O'Reilly
Wesfarmers
Xerox

Methodologies respondents associated with workplace innovation were:

Change management
Creative thinking
Google internet search system
Organisational learning
Out-of-the-box thinking
Peak performance
Pursuit of excellence
Risk-taking
TQM

Discussion

This variety in responses indicates the various perspectives from which managers view innovation and the readings they have found useful. A relatively extensive bibliography of what we consider innovation-related reading is provided at the end of the paper.

3. 9   Key areas in which to pursue more comprehensive and quantitative future research

Rewards and recognition, both in monetary and non-monetary terms, are areas that could be explored further.

At the macro-economic level, the areas of technological and non-technological innovation are currently being addressed by the Australia Bureau of Statistics through the Innovation Survey (ABS, 2003). The two broad areas being explored are expenditure on innovation and the current proportion of innovative businesses in the Australian business community.

At the mrico organisational or business levels, however, and given that creativity and innovation within organisations are relatively new areas of investigation, the opportunities for future research are many.

Firstly, industry sectors and types of organisations engaging in formal innovation-related activities could be investigated with quantitative research, with the aim of testing the findings of this exploratory study.

Further, a range of factors affecting organisational innovation could be explored. These would include:

◆ Leadership style
◆ Organisational structure and systems
◆ Resources and skills
◆ Organisational climate (participation, freedom of expression)
◆ Organisational culture (risk-taking, rewards and recognition)

4.0   RECOMMENDATIONS

Based on outcomes from this study, interpretations of international research and innovation literature, and our experience in areas of organisational effectiveness, we would suggest organisations consider the following points to close the gap between desired outcome/strategy and effective achievement of innovation implementation. The following are applicable regardless of organisational size and industry sector:

1. Secure commitment and support from senior management prior to implementing broad, long-term organisational innovation strategies.

2. Develop a clear picture of the outcomes you wish to achieve from the innovation strategy.

3. Conduct a GAP (audit) analysis to determine what areas need to be addressed to achieve desired innovation outputs. This should include an assessesment of organisation climate for change and innovation.

4. Select a suitable methodology or system to implement the overall innovation strategy.

5. Conduct a pilot to assess outcomes and feedback against GAP (audit) results.

6. Develop an innovation strategy that is fully integrated with the organisation's vision and strategic intent, and/or any existing change management strategy. The strategy should address the gap analysis results identified in Step 3 and encompass innovation within the context of strategic and cultural change, opportunity-finding, ideas generation, problem-solving, decision-making and teamwork.

7. Design and implement an innovation metrics system to evaluate innovation initiatives, efforts and outcomes.

8. Use an idea management system and team-based reward system to encourage exploration and diversity as opposed to solely individual effort.

9. Implement broad-based organisational education and training programs to ensure a common understanding and terminology for innovation, thus creating a culture for the successful implementation of innovation strategy.

10. Celebrate and reward milestones and keep things as simple as possible.

5.0   METHODOLOGY

Sample

Seventy two (72) individuals, mainly senior managers, from forty seven (47) organisations were interviewed. The organisation sectors were as follows:

18 Private Organisations;
16 State Government Departments;
 2 Agencies Outside State's Public Sector;
 2 Public Non-Financial Corporations;
 3 Departments of the Commonwealth;
 1 Local Government; and
 5 Non-profit Service Organisations
_____

47

The classification criteria used was the Government Finance Statistics (GFS) framework published by the WA State Government

The semi-structured telephone and face-to-face interviews were conducted between September 2003 and April 2004 in the Perth metropolitan area, Western Australia.

The size of the organisations ranged from 12 employees to around 6,000 employees.

The duration of telephone interviews were between 15 and 60 minutes and were conducted from the Centre's office by one researcher.

Face-to-face interviews of between 20 and 75 minutes were conducted in-house (at the respondents' organisations). Group in-house interviews were conducted by two researchers from the Centre.

Research Ethics

All participants were assured of confidentiality, as detailed in the guidelines provided by the Code of Professional Conduct of the Australian Psychological Society and the Market Research Society of Australia. Records are kept secured by the Applied Innovation Centre.

Research Instrument

The research instrument was a questionnaire developed and administered by The Centre during a semi-structured interview with each respondent. Depending on the respondent's answer to a preliminary question in each of three categories, 15 to 25 questions were canvassed.

Procedure

Spoken comments and observations of respondents were entered into the questionnaire by the researcher(s), in their own handwriting. The completed questionnaires were then analysed by the Centre.

6.0   REFERENCES AND RECOMMENDED READING

Australian Bureau of Statistic. (2003). Innovation Survey. Commonwealth of Australia.

Amabile, T.M. (1988). A model of creativity and innovation in organizations. Research in Organizational Behaviour, 10, pp: 1213-167.

Anderson, N.; Hardy, G. and West, M. (1990). Innovative teams at work. Personnel Management, September, pp: 48-53.

Andrews, M. and Langmaid, R. (2003). *The breakthrough zone: harnessing consumer creativity for business innovation.* Chichester: John Wiley & Sons, Ltd.

Basadur, M. (1995). *The Power of innovation.* London: Pitman Professional Publishing.

Binney, G. and Williams, C. (1997). *Leaning into the future: Changing the way people change organisations.* London: Nicholas Brarly Publishing.

Bean, R. (2002). *The business of innovation.* New York: AMACOM.

Besemer, S. P. and O'Quin, K. (1987). Creative product analysis: testing a model by developing a judging instrument. In Isaksen, S. G. (Ed.). *Frontiers of creativity research: beyond the basics*, pp: 341-379. Buffalo (NY): Bearly.

Besemer, S. P. and Treffinger, D.J. (1981). Analysis of creative products: review and synthesis. Journal of Creative Behavior, 15, pp: 158-178.

Clayton C. (2003). *The innovator's dilemma.* New York: Harper Business Essentials.

Clayton C. and Raynor, M.(2003). *The innovator's solution.* Boston (MA): Harvard Business School Press.

De Bono, E. (1992). *Serious creativity.* London: Harper Collins Business.

Drucker, P. (2002). The discipline of innovation. Harvard Business Review, August, pp: 95-103.

Firestien, R.L. (1996). *Leading on the creative edge: Gaining competitive advantage through the power of creative problem solving.* Colorado Springs: Pinon.

Fonseca, J. (2002). *Complexity and innovation in organizations.* London: Routledge.

Gomez-Mejla, L.R.; Balkin, D.B.; Milkovich, G.T. (1997). Re-thinking rewards for technical employees. In Katz, R. (1997). (Ed.). *The human side of managing technological innovation.* Chap.14, pp: Oxford: Oxford University Press

Gryskiewicz, S. and Hills, D.A. (1992). (Eds.). *Readings in innovation* Greensboro (NC): Center for Creative Leadership.

Gryskiewicz, S. and Taylor, S. (2003). *Making creativity practical: Innovation that gets results.* Greensboro (NC): Center for Creative Leadership.

Government of Western Australia. (2003). Building future prosperity: creating job and wealth through industry development. Draft Industry policy statement, July.

Holt, K. (1983). *Product Innovation Management.* London: Butterworths.

Isaksen, S.G.; Murdock, M.C.; Firestien, R.L.; and Treffinger, D.J. (1993). (Ed.).*Understanding and recognizing creativity: The emergence of a discipline.* Norwood (NJ): Ablex Publishing Corporation.

Isaksen, S.G. (2000). (Ed.). *Facilitative leadership: making a difference with creative problem, solving.* Kendal/Hunt Publishing, USA.

Jolly, A. (Ed.). (2003). *Innovation: harnessing creativity for business growth.* London: Kogan Page.

Kao, J. J. (1991). *Managing creativity.* Englewood Cliffs (NJ): Prentice Hall.

Katz, R. & Luecke, R. (2003). *Managing creativity and innovation.* Boston (MA): Harvard Business School Publishing Company.

Katz, R. (1997). (Ed.). *The human side of managing technological innovation.* Oxford: Oxford University Press.

Kelly, T. (2002). *The art of innovation.* London: Harper Collins Business.

King, N. & Anderson, N. (1995). *Innovation and change in organizations.* London: Routledge.

Kirton, M. (1976). Adaptors and innovators: A description and measure. Journal of Applied Psychology, 61, pp: 622-629.

Kirton, M. (1989). *Adaptors and innovators: styles of creativity and problem-solving.* London: Routledge.

Kirton, M. (1999). *Adaption and innovation: the theory and the implications for the management of diversity and change.* Hertfordshire: Occupation Research Centre.

Kuhn, R.L. (1993). *Generating creativity and innovation in large bureaucracies.* Westport: Quorum Books.

Morgan, M. (2000). *Making innovation happen.* Warriewood (NSW): Business + Publishing.

Nasser, J. (2003). Keynote address ("Leadership and innovation in a global corporate setting") at the Corporate Entrepreneurship & Innovation Conference, Melbourne.

Neely, A.; Filippini, R.; Forza, C.; Vinelli, A. and Hii, J. (2001). A framework for analysing business performance, firm innovation and related contextual factors. Integrated Manufacturing Systems, 12(2), pp: 114-126.

Nonaka, I. and Takeuchi, H. (1995). *The knowledge-creating company.* New York: Oxford University Press.

Norton, R.D (2002). (Ed.). *Creativity and leadership in the 21st century firm.* Oxford: JAI.

Puccio, G. (2003). Creativity and Change Leadership. International Center for Studies in Creativity. State University of New York (SUNY).

Rixon, D. (2003). Strategic commitment – the foundation stone for innovation. In Jolly, A. (Ed.). *Innovation: harnessing creativity for business growth*, pp: 5-11. London: Kogan Page.

Rubinstein, M.F. and Firstenberg, I.R. (1999). *The minding organization.* New York: John Wiley & Sons.

Sauer, J. and Anderson, N. (1992). Have we misread the psychology of innovation? Leadership & Organization Development, 13(2), pp: 17-21.

Savvides, G. (2003). Corporate Entrepreneurship & Innovation Conference, Melbourne.

Schumann, P. (1993). Creativity and innovation in large organizations. In Kuhn, R.L. (Ed.). Generating creativity and innovation in large organizations. Chap.7, pp: 11-130. Westport: Quorum Books.

Scott. S. G. and Bruce, R. (1994). Determinants of innovative behaviour: A path model of Individual innovation in the workplace. Academy of Management Journal, 37(3), pp: 580-6-7.

Sharman, D., Johnson, A., (1997) Innovation in all things! Developing creativity in the workplace. Industrial and Commercial Training. 29(3), pp: 85- 87.

Soo, C.; Devinney, T; Midgely, D. and Deering, A. (2002). Knowledge management: philosophy, processes and pitfalls. California Management Review, 44(4), pp: 129-150.

Sorensen, D. P. (1997). *Innovations: Key to business success.* London: Crisp Publications, Inc.

Sternberg, R.J. (1999). (Ed.). *Handbook of creativity.* Cambridge: Cambridge University Press.

Stevens, G. A.; Burley, J. (1997). Research-Technology Management, 40(3), May-June,16-27.

Syrett, M. and Lammiman, J. (2002). *Successful innovation.* London: Profile Books.

Terziovski, M.; Sohal, A.; and Howell, A. (2002). Best practice in product innovation at Varian Australia. Technovation, 22, pp: 561-569.

Tucker, R. B. (2002). *Driving growth through innovation.* San Francisco: Berrett-Koehler Publishers, Inc.

Tushman, M. and O'Reilly. C. (1997). *Wining through innovation: a practical guide to leading organizational change and renewal.* Boston (MA): Harvard Business School Press.

West, M. A. (2003). What are the conditions for creativity and innovation in teams at work? European Summer School, University of Paris, July, Paris.

West. M. A. (1992). *Innovation strategy.* New York: Prentice Hall.

West. M.A. and Farr, J.L (1990) (Eds.). *Innovation and creativity at work: psychological and organizational strategies.* Chichester: John Wiley & Sons.

Zaltman, G., Duncan, R. and Holbeck, J. (1997). *Innovation and Organization.* New York: Wiley.

7.0   SUBJECT INDEX