



Developing an intrapreneur-led three-phase model of innovation

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Abstract

Purpose – The paper seeks to demonstrate an intrapreneur-led three-phase model of innovation based on understanding the relationships between service delivery and product development thought, and the application of intrapreneurial-focused teams in the healthcare and manufacturing industries.

Design/methodology/approach – The research proposes a model that starts with effective teambuilding within an intrapreneurial context, then encompasses the relationship between service and product as a platform for the development of more effective innovation. A two-part qualitative case study provides insight and understanding of the model's application within both service and manufacturing environments.

Findings – Investigating service delivery shortfalls with effectively developed intrapreneurial teams leads to new and/or improved services. New service developments in turn lead to the development of new products. An action research model based on Deming's PDSA (plan, do, study, act) cycle determines the point of departure for each stage of innovation. The PDSA cycle provides a method for combining innovation, knowledge development and management.

Practical implications – Current approaches focus on the characteristics of intrapreneurs rather than on the linked activities that lead to successful product/service innovation. Important issues such as how teams progress through the stages of service and product development are not usually considered. As a consequence, there is little in the extant literature to guide prospective intrapreneurs or organisations.

Originality/value – Little research has been conducted into how intrapreneurship occurs in organisations. This paper provides insight into how intrapreneurship functions through new service and new product innovations in both the service and manufacturing sectors.

Keywords Innovation, Action learning, Teambuilding, Health services, Manufacturing

Paper type Research paper

Introduction

Intrapreneurship has been conceptualised as the actions of individuals within organisations leading to innovation of product, services or processes (Antoncic and Hisrich, 2003; Kolchin and Hyclak, 1987). Other research has suggested that intrapreneurship may also occur through the actions of groups or teams (Abraham, 1997; Bechtold, 1997; Stephenson, 1995; Walton, 2003). What previous research has not considered are the linkages between team development, services innovation and product innovation. Failing to consider linkages between the phases of team development, service innovation and product innovation has prevented organisations from optimising the benefits accruing from intrapreneurial activities. This research seeks to determine how team development, service innovation and product innovation are linked. Understanding how these items are linked informs research in the area of intrapreneurship by proposing an action research model that has utility in both the services and manufacturing domains. The model also provides a structure for practitioners wishing to implement innovation through intrapreneurship. The



structure that guides each of the three phases is Deming's (1986) PDSA (plan, do, study and act) cycle – a process of innovation, learning and continual improvement. First, the paper provides an overview of the literature on intrapreneurship. Second, the conceptual framework that guides the research is developed and discussed. Finally, a case study that demonstrates use of the framework in both service and manufacturing environments is presented.

Theoretical context

Intrapreneurship has been described as entrepreneurial action within an organisation (Antoncic and Hisrich, 2003) focusing mainly on the establishment of new ventures. Kolchin and Hyclak (1987) have suggested that intrapreneurship had been narrowly defined as the development of new products or businesses, proposing that intrapreneurship can also be the introduction of a new process or the adaptation of an existing one. Antoncic and Hisrich (2003) have described intrapreneurship as a sub-field of entrepreneurship, consisting of innovative activities within an organisation that create new services and products, which strengthen the competitive position of the organisation. Intrapreneurship often focuses on non-core business activities (Nielsen *et al.*, 1985) that serve to add value to organisations. Innovation also involves the introduction of new products, services, systems or processes, or the adaptation of existing ones. However, what distinguishes innovation from Kolchin and Hyclak's (1987) definition of intrapreneurship is the involvement of individuals in driving the process, or as Deming (1994, p. 108) emphasises, "within a joyful working environment".

Kuratko *et al.* (1990) attempted to measure the likeliness of intrapreneurial activity through the lens of organisational culture. A review of intrapreneurship research by Antoncic and Hisrich (2003) has identified three main areas of focus:

- (1) the individual, with an emphasis on individual characteristics and the way in which individual intrapreneurial efforts were supported;
- (2) the development of new ventures and the internal environment in which such ventures operated; and
- (3) the characteristics of organisations deemed to be intrapreneurial. The focus on the intrapreneur as an individual is also evident in Kolchin and Hyclak's (1987) notion of the "typical intrapreneur" as a manager who uses the system to conceal risk-taking entrepreneurial behaviours while appearing to be a traditional, risk-averse manager who follows policy. Individualism was also a theme in Robinson's (2001) account of intrapreneurship within 3M.

Intrapreneurship is primarily an individual activity, while corporate entrepreneurship is conducted at the organisational level (Kazanjian *et al.*, 2002). The ability to recognise opportunities is critical to innovation, often arising from a "discontinuous act" emanating from the activities of individuals rather than specific organisational activities or practices (Colarelli O'Connor and Rice, 2001). McGinnis and Verney (1987, p. 20) have suggested that intrapreneurship is based mainly around seven individual qualities or characteristics supported by nine organisational factors[1]. In discussing how these characteristics could be harnessed, McGinnis and Verney (1987) have argued that teams of individuals with complementary skills could be formed with a view to developing the level of innovation within an organisation, thus providing an

internal focus to complement the organisation's external focus (Hine and Howard, 2003) The authors believe that innovation through intrapreneurship is more likely to be achieved in medium-sized and large organisations through the use of teams than by individuals, an approach supported by Abraham (1997), Bechtold (1997), Stephenson (1995) and Walton (2003). This is not to say that intrapreneurship does not need a champion, rather that its attainment is likely to be a team event. Value adding through creative teamwork is both recognised and increasingly expected from organisational members (Wunderer, 2001).

Support for a team or group approach to innovation is provided by Stephenson (1995), who argued that virtual groups, which although initially formed on an *ad hoc* basis, and therefore lacking legitimacy in the eyes of the organisation, often achieved better results than formally established organisational groups. Also, achievements of virtual groups often exceed the expectations of group members themselves, given the uncertainty that is inherent in the formation of such groups (Stephenson, 1995). Virtual groups tend to form in times of uncertainty, and are often recognised as threatening the *status quo* of organisational life. Despite the threats they pose, the paradox of virtual groups is that they still form. The reason for their formation is a recognition that innovation often requires a departure from conventional approaches, and one way to achieve this is through the formation of virtual entrepreneurial groups (Stephenson, 1995). Support for the *ad hoc* nature of intrapreneurship was also provided by David (1994, p. 39) who has described intrapreneurs as emerging as a result of a "favorable corporate environment" rather than as a result of deliberate corporate policy.

"It is necessity to innovate, to predict needs of the customer, to give them more" (Deming, 1994, p. 10). Innovation requires allocation of resources, long-term planning and a belief in the future. This provides insight into what is relevant in terms of new products and services. In addition to faith in the future, innovation needs top-management committed to quality and productivity and the unmasking of policies and procedures that make middle management and those they lead, sceptical of the efforts to create greater effectiveness. At the centre of this approach is the appropriate application of education within an environment that communicates and promotes innovative, thought-aligned actions (Deming, 1994). Success through a planned and structured approach to innovation can contribute to corporate growth and competitive advantage (Cates, 1987). A review of three approaches adopted by successful companies suggested that multi-disciplinary teams have an important role to play particularly in screening proposals and developing strategy (Cates, 1987).

In discussing the development of new services and physical products it is important to distinguish between what may be classified as services and what as products. Beyond the definition of services as intangible products and the challenges of delivering such outputs to the marketplace (Rodie and Martin, 2001), Bateson and Hoffman (1999) suggested that the outputs of many organisations now combine the characteristics of services and products. In some instances it has been convenient to describe outputs as a bundle of products and services with products at one end of the continuum and services at the other (Davis *et al.*, 2003, p. 12). Customer contact is the variable that increases from minimal at the product end of the continuum towards maximum at the service end.

Using customer contact as the distinguishing feature enables each output to be regarded in terms of its constituent parts; that is its service and product components. In

this situation the service component of any output is easier to improve through teamwork activities than the product component. This is based on the nature of services with their high customer contact component being more amenable to team-based strategies such as effective communication and interpersonal skills together with greater opportunities for change due to the visibility of the service attributes. New product innovation based on intrapreneurship is more likely to be successful if undertaken by an effective team when requirements for appropriate education and resources are met as the team members can clearly experience the imperative for change (Deming, 1994). This is supported by Zhao's (2005) findings in relation to entrepreneurship and innovation and fits well within this intrapreneurship context where she found that supportive management style and culture are critical. Here innovation becomes a dynamic component of organisational life and is linked to success. The use of intrapreneurial teams utilising this approach addresses the barriers to innovation raised by Tidd *et al.* (2001) and McAdam *et al.* (2004) in terms of organisational hierarchy, structure, bureaucracy and non-participative management styles. The use of intrapreneurial teams is consistent with the importance of moving past the individual as a source of creativity and understanding the importance of social, situational and environmental influences together with the role that the team can play in relation to these factors (Walton, 2003).

It follows that successful new product innovations, with a lower customer contact component, will usually be more difficult to achieve. There will also be an expected lowering of commitment and motivation within the individuals responsible for achieving the change, as evidence for the need to change and its success is more difficult to provide in the short to medium term. Given the composition of outputs as a bundle of products and services, innovation of the service component should occur prior to innovation of the product component.

Conceptual framework

A conceptual framework to facilitate understanding of how organisations achieve innovation in services and manufacturing through intrapreneurial activities is proposed. From research undertaken by the authors it appeared that successful new products often result from a process involving the development of new services. Also, the area of service delivery often acts as an indicator of the need for service and/or product innovation. Underpinning the innovation process is the development of intrapreneurial teams. Such teams function effectively when they receive extensive support and facilitation. This allows teams and their members to reach high levels of effective performance. The interaction of teams, service innovation and product innovation, where knowledge is acquired and outcomes achieved through a process of planned incremental change, suggests an action learning approach (Argyris, 1976; Deming, 1986; Revans, 1982a, b). Achieving an appropriate level of knowledge and outcomes at a previous phase is the point of departure for the next phase. The structure that guides each of the three phases is Deming's (1986) PDSA (plan, do, study and act) cycle – a process of innovation, learning and continual improvement. The innovation process operates as a continuous spiral at the team development, service innovation and product innovation phases. Achieving appropriate levels of knowledge and outcomes indicate the point of departure for the next phase of the process.

The first phase

The first phase involves the establishment and development of an effective intrapreneurial team. Initially, the team develops through the stages proposed by Tuckman (1965) and then advances through the process of becoming a self-managed team in a form as presented in the literature (Ankarlo, 1993; Carr, 1991; Holpp, 1993; Manz *et al.*, 1990; Manz and Sims, 1987; Salem, 1992; Salem *et al.*, 1992). The further development of self-managed teams is progressed through an approach that has a knowledge development and management system that utilises the PDSA cycle (Deming, 1986). Progression is far removed from the more commonly used continual improvement cycle, originally proposed by Shewhart (1931, 1939), of specification, production and inspection. The PDSA approach is more in line with the action learning models of Revans (1982a, b) plan, act, observe, reflect, revised plan; and Argyris's (1976) four-step model of discover, invent, produce and generalise. The essential core of quality, as seen by Deming (1994) is product or service innovation by the systems and processes that deliver them. This fosters the twin dimensions of innovation, namely radical versus incremental (Cooper, 1998), and provides multiple starting points depending on team development and the issues at hand.

In operation, PDSA moves through the elements of the cycle as a spiral, with each complete iteration advancing an element of understanding, application, implementation or operation. Advancement provides a different and stronger point for the start of the next cycle. Intrapreneurial team development reaches an effective stage when the four key alignments of Covey's (1990) leadership model are achieved within the team and the communities they serve. These four levels are:

- (1) *the personal* – trustworthiness;
- (2) *the interpersonal* – trust;
- (3) *managerial* – empowerment; and
- (4) *organisational* – alignment.

The “plan” element is the essential platform of the cycle and requires the team to analyse the current situation and to visualize the impacts of any decision before making it. At this stage of the cycle it is also important to consider and then develop appropriate measures in order to ensure that desired outcomes have been achieved. All processes should be considered and a plan of implementation drawn up and communicated until effective understanding is achieved. It is essential to have a philosophy with all involved, one that emphasises the importance of this stage as people often wish to move to the “do” phase prematurely as it is easier to conceptualise, and is usually a focus for rewards in most immature organisations.

The “do” element of the cycle involves trialling change on a small scale, as per the “plan”, with appropriate measures in place. These measures provide an understanding of the level and type of success obtained. The “study” element of the cycle involves analysing the results of the plan and its implementation. The main purpose at this point is to gain greater understanding and insight through assessing how effective the test has been across a number of variables other than just the obvious. The “act” element of the cycle is informed by the previous stages and involves incorporating the innovation into standard operations of deciding on amended actions or changes to the original concept, or whether abandonment of the concept is required (Deming, 1994).

Following each iteration, the PDSA cycle recommences. This ongoing spiralling cycle provides greater knowledge development and management. At each stage of the cycle key questions should be asked (Imai, 1986) – who, what, why, where, when and how. When a team reaches the point in its development where the required level of knowledge in relation to the requirement of new service development has been achieved, the point of departure is reached and the intrapreneurial activity moves to the next phase – the actual development of a new service or improvement of an existing one.

All aspects of team development were facilitated and supported through the use of an internal team of experts, initially providing the intrapreneurial teams and their members with an understanding of the issues and important facts that influenced success and failure. The process then moved to the facilitation of two main functions:

- (1) that of coach or guide in the management of team performance and technical issues; and
- (2) a human expert knowledge system that assisted with problem identification and solving.

Both functions were of equal importance, the first addressing the subtle and sometime pervasive issues that occurred within the dynamics of human behaviour. The second provided a rapid and timely problem solving or knowledge creation system that removed barriers and provided alternative thinking scenarios. This, in turn, stimulated creativity and innovation while removing factors that may have restricted or stifled the team's intrapreneurial focus.

The second phase

In the new service phase, the team again employs the PDSA model as a knowledge-based approach to innovation whether radical or incremental. In all phases of the model the PDSA cycle utilises the questioning approach outlined above (Imai, 1986). In most cases the organisational output will not be pure service or product but a bundle of products and services (Davis *et al.*, 2003, p. 12). Here, we propose that a team would commence innovation through intrapreneurial activity on the service component until the point of departure is reached through operation of the PDSA cycle. At the point where new service development has been achieved innovation on the product component commences. The service phase is important in human terms as it is often more visible which aids the team and other parties involved in the design and management of the intervention required.

The third phase

The final phase commences when the preceding two phases have been successfully completed. As in the previous phases, the PDSA cycle is employed with key questions being asked at each stage of the cycle (Imai, 1986). Product development is achieved through a sequence of spirals through the PDSA cycle with each spiral driving the knowledge development and management required for the activity, until the required level of development is achieved.

The three-phase model, “the participative intrapreneurship model”, is shown in Figure 1. The PDSA cycle operates continuously within each of stage of the model and also draws on the environment. This model started in its original form as presented in

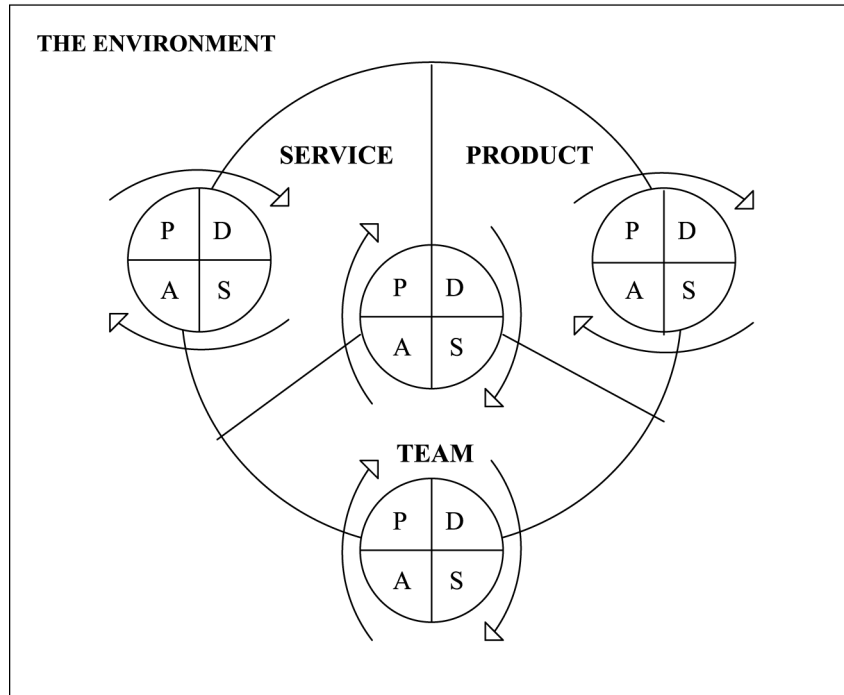


Figure 1.
The participative
intrapreneurship model

Figure 1 before the start of the first intrapreneurial projects. Figure 2, the application of the model, grew from the understanding gained from the action research undertaken during the implementation process within the service organisation discussed elsewhere in this research.

Implementing the model

The initial model evolved through the application of the principles of action research, which saw the following unfold. In most instances a service decline or failure indicates a workplace issue to individuals within the relevant work area. This triggers the participative process whereby individuals, being involved together in an issue, form a team or teams. Training and development is used to develop team skills specifically relevant to the team, its members and the innovation required to reinvent the product/service continuum. Teams assess initial aspects in order to place the problem in context, and also to identify additional variables not originally identified. Teams initiate the first phase of problem identification. Here, service and produce issues are identified and a plan is formulated, leading to creative processes or innovations being developed and assessed. In turn, this leads to possible solutions being developed which can lead to a service or product development plan being established, an innovation in itself, resulting in an integrated service/product mechanism being developed. The outcome leads to the effectiveness of the process being studied and finally to implementation as shown in Figure 2.

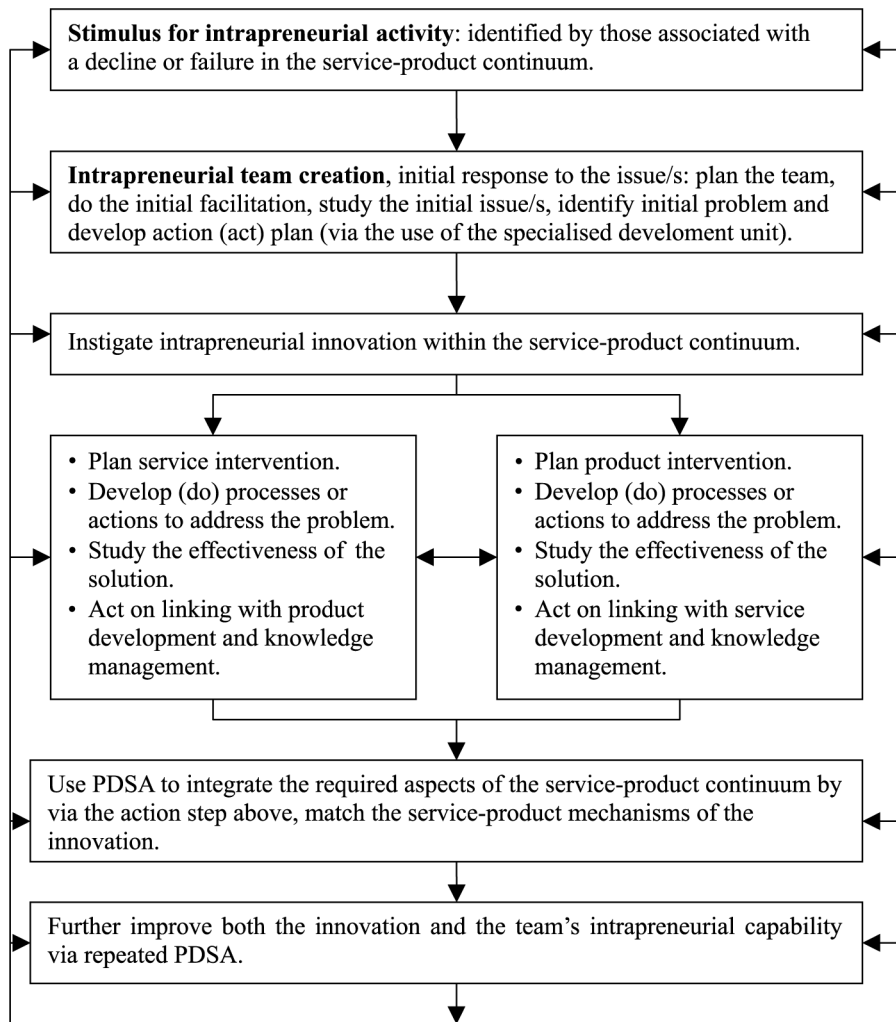


Figure 2.
Application of the
participative
intrapreneurship model

Methodology

Research design

The research is a qualitative study utilising an action research methodology (Lewin, 1951). Action research is appropriate for the study reported in this paper as it involves organisational transformation together with the involvement of individuals affected by the change. Action research permits the dual focus of organisational development, namely the practical aspects of attaining individual competencies together with organisational learning and the advancement of knowledge concerning organisational change (Hill and McGowan, 1999; Lewin, 1951). Furthermore, the concept of action research can be understood in terms of its axiomatic and empirical components. Where the axiomatic focuses on the following: people reflecting upon their own practice and

improvement; individual's and/or groups delving deeply into the relationship between their reflection and action; and the expression of these ideas to the public that influence the processes whether directly or indirectly (Altrichter *et al.*, 2002). The rules or approaches related to the empirical aspects that can be applied to action research are lengthy. However within the context of this research the key aspects that assist in learning and development are those that support sustainability: by being participatory, the process emancipates the participants; development and pre-testing of instruments so as to retain the integrity of the data and information sort; and ownership of the data amongst the participants, which is essential to create an environment of collaboration and participation (Altrichter *et al.*, 2002). While such an approach can be seen by some to be weak, it is exactly these aspects that provide the strengths of action research; as this research seeks to understand the development of knowledge and learning as an outcome of the processes or actions of the intrapreneurial teams themselves and how through this teams can create an innovative environment or outcome.

The research seeks to understand and compare the application of the model within two organisations. Given its explanatory nature, with a focus on contemporary events, this initial research has been undertaken as a comparative case study (Hill and McGowan, 1999; Yin, 2003). Material developed within the case study is based on a number of interviews with senior management responsible for the intervention. As an outcome of this approach, the actual development of the innovation teams has been informed and refined through this investigation. Hence the research contributes to its own philosophy of plan, do, study, act, with the actions from the iterations of the case study being integrated into the process. Such an approach, with its information-rich data, allows researchers to gain a great deal of understanding of the core issues through the depth they provide rather than the breadth of information obtained from sampling a wider population (Patton, 1990). When delving into the volumes of material validity was improved through two actions: the use of multiple and independent raters and, in line with Berg's (1995) approach, greater emphasis on the latent meaning conveyed rather than the shallower means of literal content.

Across both organisations, actants were located in multiple levels of the organisations. Actants were the senior managers responsible for developing and managing the process, those that made up the development team that facilitated the process, and a sample of teams undertaking the process. Here, the sequencing from top down was important, as this provided a reflective element to the process, allowing levels of trust and commitment to develop. In turn, this allowed the teams to become independently critical and self-reporting, thus developing a philosophy of learning by doing. This approach addressed issues of organisational defensiveness and the espoused versus in-use approaches argued by Argyris (1976). Further identification of individuals involved is not available as it forms part of the agreement to undertake the research.

The service organisation

The first organisation is a major service provider in the healthcare industry in Australia. The organisation has a reputation for knowledge based activities and is prominent in the areas of healthcare and medical research. The organisation was formed over 100 years ago by a religious order initially with a single private hospital located in a donated building. Funding for this pioneering effort was predominantly

through benefactors and the assets of the founders, based on a philosophy of “God will provide”. The organisation now has three public and four private hospitals, numerous specialised services and world leading research centres. In 2001, the individual entities were incorporated into a single Health Services Organisation. A new Board of Directors and CEO were appointed, along with a new senior management team and Executive. The new CEO made three significant changes early in his tenure. He changed the organisation’s structure in an attempt to move from a silo to a matrix model, centralised many of the support or back-of-house facilities, and introduced more traditional management functions such as marketing. It is a knowledge organisation that employs approximately 4,500 people. Over 70 percent of employees have university degrees, while around 20 percent have two or more. Despite the high level of education there was little demonstrated commercial knowledge and expertise. Managers charged with leadership and other accountabilities appeared to lack the competencies required to manage knowledge workers.

This research occurred as a component of a much larger project to be undertaken within the organisation over the next five years. Interviews with relevant senior management started prior to the intrapreneurial team interventions and were undertaken over a 12-month period, initially to occur every three months, thus providing a clear track of the approach. Frequency of interviews increased as the organisation found the interaction and reflection beneficial to improving the actual intervention. In all six formal interviews were held, supplemented with a number of phone calls and informal discussions. This paper provides a summary of a complex and detailed set of qualitative data.

The initial research investigated the complexity of managing, marketing and delivering healthcare services within a tight financial environment. Pressures from federal and state governments, and customers, are increasing while the original values of the organisation are still being delivered. These values are based on love, respect and the delivery of care to all in need regardless of their background or ability to contribute to the cost of their treatment. The values may be summarised by the following five concepts:

- (1) *mercy* – the spirit of responding to one another;
- (2) *dignity* – the spirit of humanity, respecting the worth of each person;
- (3) *care* – the spirit of compassion;
- (4) *commitment* – the spirit of integrity; and
- (5) *quality* – the spirit of professionalism.

The organisation’s external brand is “Exceptional People Exceptional Care”. In the main this vision has been achieved so far. The challenge was how to manage present and future business environments while still maintaining the original values of the organisation. In the early stages of this research, the levels of skills held within the organisation in the area of research and development (R&D) were seen as an asset. When this point was discussed with members of senior management, it became clear that while R&D was viewed as effective, the process was still far from optimal. In fact, the organisation had just committed to improving the level of innovation of both services and products by investing in the human/soft skills components of a number of innovative projects being undertaken within the organisation. This provided a clear

platform for the initial research to investigate the development of the internal innovation methodology, its success and its limitations, while also gaining a deeper insight into the organisation and its people in terms of the larger study.

Application of the model to a service organisation

As emphasised earlier, the organisation has a strong national and international record in clinical and healthcare research. This led to the question “How well do we manage and support this process?”. The answer to this question was “It appears to happen in isolation and with no real understanding of the process until an outcome is or is not achieved”. On further investigation it became clear that “we employ highly skilled people and have assumed that the skills of managing people, things and processes is automatic, when in fact it is true some of the time but mostly we employ high levels of technical competence (hard skills) and lower levels of enabling skills”. Most of the work activities undertaken, except in the area of externally funded research of which there is a substantial amount, are in addition to existing workloads other than the project or innovation under investigation.

Initial discussions

In order to demonstrate a commitment to the staff involved in innovation, and to increase the positive outcomes, a number of discussions were held with both successful and unsuccessful teams. A number of themes appeared in relation to project support and development. The major issues identified were:

- Developing effective teams through addressing problems in a timely and conciliatory way.
- Access to mentoring, facilitations, supportive counselling and other reflective processes.
- Assistance in managing timelines, deadlines and complex project issues.
- Effective communication requirements, both within the development of the project and across other departments and projects including communication of the final outcomes of the project.
- Effective access to data and information. Access relates not only to the project itself but also to material to assist in the soft skills development required.
- Access to a supportive environment that included other teams and senior management.

Establishment of a project management team

In response to these findings, a three-person project managing team was established consisting of a team leader who was a highly skilled female project manager with a background in engineering management, a skilled report writer with both nursing and business qualifications, and a person with both library and medical records skills. The project managing team was not only made available to all other teams but was also charged with meeting, assessing and developing all other teams. This team provided a focal point for the process, and enhanced understanding and communication across the teams as well as the organisation. The project managing team and all the project teams reported directly to the Executive via a senior manager who was charged with improving the process. This manager commented:

The organisation is a unique place to work and has some of the most highly committed, caring people I know. Making this work not only supports them, it will be essential to the long-term viability of the organisation.

Team development

In the initial phases, 28 projects were identified by the organisation. These projects were already in existence or had been identified by senior management as highly important. The projects in existence were encouraged to recruit actively and expand their membership, while new projects were staffed by recruiting motivated members. Senior management also made direct contact with the teams to enhance communication and as a sign of commitment to the process. It was at this stage of the research that the researchers questioned the nature of the teams, previously described as innovation teams. It was clear to us that the teams were a combination of improvement teams, teams that focused on service innovation and product innovation teams. This first was seen to be at odds with the research, but has become an important aspect as it highlighted a number of important developments in relation to the role of teams and cooperative behaviour in the development and delivery of innovative, rather than individualistic responses to the process.

Identifying innovation components

Discussions with senior management highlighted the following as important components in fostering innovation within:

- Service innovation often leads to product innovation.
- Quality improvement is often an identifier of a service innovation.
- Product innovation can often fail, or be less successful, if it is not linked to the appropriate service innovation.
- Problem solving within a creative and supportive group/team environment is an acquired skill that can be improved and enhanced if correctly supported, not an existing skills set as often assumed.
- For creativity and innovation to grow rapidly the ability to work within teams is essential. However, this skill is often more readily developed in an environment where the problem/project provides quick results that are significant to the organisation and the outcomes are achievable. These are characteristics more commonly identified with quality improvement issues rather than service or product innovations, which are often longer-term issues, the significance and outcomes of which are not always readily definable.

The use of human technology

The project management team took the view that increases in knowledge management were effectively the “soft technology” of the creative capital of organisational members. Qualitative data obtained from interviews with relevant staff provide insights to the above points and are presented below:

We found that bringing cross-functional and disciplinary teams together highlighted why product (e.g. clinical applications) and service innovations were not up to scratch. It also highlighted the types of products and services that were lacking. Working on issues at the coalface often stimulated bigger behind the scenes innovations.

Working with people provides valuable insight into abilities, knowledge and capabilities that you never knew were there in the first place.

We always knew that there was a better system, we knew what it would look like and how it would work. How to start and what to do was daunting working around it. With different people it allowed the concept to grow into a solution rather than be an impossible dream.

Development of a model of participative intrapreneurship

At this point senior management commented that it was clear that the evolving nature of team development, from the improvement to service to product innovation within a supportive mentoring environment, was actually enhancing creativity and innovation. Detailed discussions with senior management and team members led to the development of the model presented as Figure 1. All parties agreed that it was an accurate representation of the process that had been undertaken.

The manufacturing organisation

The service organisation provided a platform for trialling the initial concept and further developing the “participative intrapreneurship model”. The second organisation is a supplier of manufactured products to the electricity industry both in Australia and overseas. Access to this organisation provided insight into the transferability of the model as a method for creating innovation through the development and application of intrapreneurial teams, and supports the model’s generalisability and transferability across both organisational and industry sectors. The results of the application of the model in the second organisation are presented in the following case study.

The organisation manufactures electricity supply metering boxes and electronic equipment racking. With approximately 180 employees it is a small to medium-sized enterprise, yet it is significant in a national context, supplying over 80 per cent of the domestic market. The organisation has also developed a successful partnership with a world-leading multinational company based in Germany. The organisation has been recognised as a successful knowledge and innovative business, winning a number of government innovation awards in direct competition with internationally recognised manufacturing organisations. Despite this high level of performance, a number of issues were targeted as significant threats to the long-term success of the organisation. These included the threats of new domestic competition, the possible relocation of production to China and the changing nature of the market place. As with the service organisation, senior management had been nominated to address the above issues through innovative practices. A number of interviews were conducted with the head of Research and Design and the Chief Financial Officer. This process was initially facilitated by the three-phase model presented in Figure 1.

Application of the model to a manufacturing organisation

Operation of the model, as interpreted by the two senior managers, is summarised below.

Initial discussion

The innovation team, consisting of two senior managers, met with the authors. These discussions were invited as a result of the managers' participation in a number of workshops and seminars held by the authors in the area of innovation and change management. Discussions included the conceptual framework underpinning the three-phase model. The authors advised the organisation's innovation team on the process, making it clear that the success of the project depended on its ownership being vested in the team.

Study tour and field research

The CEO provided the innovation team with the opportunity to undertake a number of study tours to gain insight into work practices in other parts of the world. The first aim from the CEO's perspective was to investigate strategies for increasing the profitability of the business through outsourcing areas of manufacturing to other parts of the world. This was a primary objective of the organisation prior to the development of the innovation team. The innovation team involved other managers on an *ad hoc* basis and undertook studies of manufacturing processes in both Europe (the home of the multinational partner) and Asia. Findings included not only financial and production data but also knowledge gained through dialogue and observation of other companies involved in the production outsourcing process.

Team development

The R&D manager on his return undertook a series of development exercises with the R&D team, together with other interested parties, in line with phase one of the three-phase model. During this stage the service aspects of their role became very clear, not only to the team but also within a wider organisational context. The team was the organisational link to the customers and provided an internal service role to all aspects of the organisation not just the manufacturing component. This finding clearly aligns with the second-phase of the three-phase model.

Thinking and creativity audits

An extension of the process suggested by the authors was the use of thinking and creativity audits. These audits provided a series of findings that were included in both team and organisational development. This led to a shift in management thinking and strategy with a move away from the more obvious actions such as the outsourcing of production, and led to the tailoring of the internal training and development for the R&D team and management. This shift in thinking and associated skills development became a key aspect in the successful uptake of the model and an improved level of innovation.

The use of human technology

As with the service organisation discussed above, the management team responsible for the manufacturing organisation project found that it was essential to view the increase in knowledge management as the "soft technology" of the creative capital of those within the organisation. So-called "hard technology" should support this process rather than drive it. A physical application of this was the removal of the R&D team from within the confines of the organisation to neutral, more stimulating surroundings:

The most valuable insights occurred at a meeting held in a nearby park that overlooked a lake [...] It seemed to give people the opportunity to discuss topics foreign to the workplace, but when understood were essential to better practice within the organisation (R&D manager).

Application of soft technology within the production environment

Analysis of the material from the study tours, when undertaken within the framework presented in the model and mirrored in the discussion presented above, provided the following outcomes:

- (1) The first question became "What are the real benefits of outsourcing?". More importantly, are there any implications of adopting this process? This question placed more emphasis on the data gained from observation and discussion than on financial reports. The major findings were that successful Japanese and Korean companies that outsourced were very particular in how this was managed, especially in what was actually outsourced. This was based on the importance of protecting intellectual property and operational and design knowledge, therefore limiting the type and amount of activities that could be outsourced. This is contrary to the organisation's previous examples and understanding of the process which followed the outsourcing of entire products. On further investigation complete product outsourcing appeared to provide short-term benefit that did not always translate into long-term success. Associated issues were quality and quality control. The findings from the study appeared to be that the simpler the task the easier it is to manage in terms of obtaining the required quality. Also, using the skills of the outsourced organisation in this area is important, rather than having to reveal your own internal knowledge and competencies. This then raised a number of issues in terms of supply chain and logistics management and the use of agents versus the development of internal competencies to manage the process. All in all the answers raised still more questions into the actual benefits of outsourcing.
- (2) The next question was "What is the alternative to outsourcing production?". When this was discussed, areas of cost over-run, production difficulties and possible sources of improvement were identified. Answers to these issues overlapped with the components considered for outsourcing. After reviewing processes used in these areas, a process of innovation occurred through the discovery of more effective and efficient means of production. For the outlay of a small amount of money the team identified a production process that could produce the identified units at a cost saving of between \$0.01 and \$0.10 per unit in comparison with overseas production costs. Annual demand for the units was in the range of tens of millions thereby providing significant savings. The additional benefits of keeping the production in-house addressed all the issues of intellectual capital, quality and logistics, while increasing the value of the decision to the organisation.

Discussion

Innovation is often discussed in terms of the individual with an entrepreneurial character or temperament (Walton, 2003), which can be seen in Littunen's (2000) use of the term "innovativity" when discussing the nature of successful entrepreneurs. This

research is in a similar though broader context to that of Lowe (1995), who investigated the role of social process in engendering innovation, and that of Bamber *et al.* (2002) on learning and the development of intrapreneurs within entrepreneurial organisations. The outcome is a three-phase approach to developing innovation – “the participative intrapreneurship model”. Evidence for the success of the model is demonstrated through case studies within the diverse industry settings of manufacturing and health care. In each case it was the teams that engendered intrapreneurial behaviours who were successful. The research brings into play the concept of intrapreneurship as entrepreneurship within an organisational context as proposed by (Antonicic and Hisrich, 2003) and Kolchin and Hyclak (1987).

Integral to the model is seeing outputs of the organisation as a bundling of products and services (Bateson and Hoffman, 1999; Davis *et al.*, 2003), with physical products at one end of the continuum and services at the other. This aids the development of innovation by providing a visual component with various forms of feedback that assist intrapreneurial gain or clarify understanding. The intrapreneurial team development moves beyond the general concepts of self-managed teams as the PDSA cycle provides a mechanism for both knowledge development and management. The research actively demonstrates, through applied findings that exemplify the earlier concepts of Abraham (1997) and others, the importance of teams as a source of intrapreneurial innovation.

The organisations addressed the core needs express by Deming (1994) of allocation of resources, education within an environment that communicates and sponsors innovation through aligned actions, long-term planning, and a belief in the future. This provided the context for the development of intrapreneurial teams building on Cates (1987) finding in this area. This approach is supported by the findings of Zhao (2005) and addresses many of the issues raised by McAdam *et al.* (2004) and Tidd *et al.* (2001). The extent and effectiveness of team development can be measured by assessing both the teams’ and organisation’s progression though the four levels from interpersonal to organisation proposed by Covey (1990).

The model’s three phases provide an effective method for developing intrapreneurship. The first phase engenders commitment and motivation by involving and developing the people who can either see the need for innovation or deal with the pressures and stressors created by a lack of innovation. The second phase provides visibility, which assists in developing the patience required for the application of deeper thought and planning prior to action, an issue in many organisations where action is often accelerated at the cost of understanding and long-term success. Customer contact or a service focus provides a visibility that increases success when managed through the PDSA cycle. Product development, often seen as a difficult proposition, becomes easier with the model as the process develops an extensive knowledge base in relation to the innovation. This knowledge platform occurs in a supportive, encouraging environment where creative experimentation drives innovation. There is also a level of structure provided by the model that assists in refining the process and indicates the level of success the innovation is likely to achieve upon application.

The successful application of the model is clear from the findings. In summary, the healthcare organisation’s acceptance of the model is seen in the number of interventions – 28 over an 18-month period. The management of the manufacturing

organisation demonstrated that the participative intrapreneurship model was transferred across organisations and industry sectors and provided a strong platform for the learning associated with the development of innovation through intrapreneurial teams. The combined outcome of both service and manufacturing examples shows that the model develops a high level of motivation to innovate and accept change through the magnitude of the intervention in terms of both of the actions taken and the shift in the existing mind set.

Conclusions

Most team-based approaches to innovation focus on improving processes, services and products yet remain at the lowest level, that of process improvement. The model proposed here demonstrates an approach that addresses the higher-order goals of innovation of process, service and product. The PDSA model within the correct environment with appropriate knowledge development at the individual, team and organisation level is a true action learning approach that has been shown to provide innovations through intrapreneurship across business sectors.

The authors believe that the model is intuitively appealing and has been shown to have utility in both service and manufacturing industries. At the micro-level, application of the model relates directly to the improvement of the service/product bundle that contributes to the success of the organisation in both short and long-term perspectives. At the macro level, application of the model provides the ability to inform strategy and improve management decision-making.

Note

1. Individual qualities: belief in innovation, creative but pragmatic imagination, psychological security and autonomous nature, achievement-oriented, interpersonal skills, great energy determination and persistence, sense of timing. Organisational factors: good user-designed working relationships, interaction with environment, ambiguity in goals and processes, high standards of performance, positive values for innovation, teams of professionals, diversity of experience, loose coupling/organisational adaptability, superordinate goals (problem solving orientation).

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