

**USERS AS CO-INVENTORS: A MODEL OF INVOLVING USERS IN THE
EARLY STAGES OF NEW PRODUCT DEVELOPMENT**

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ABSTRACT

Despite the increasing importance attributed to the involvement of lead users in the early stages of product development, there have been only limited attempts that comprehensively detail how the lead user involvement approach is implemented in practice. How to effectively involve these lead users and manage the process remains a central dilemma? Based upon a critical literature review and case research, this paper will make a unique contribution to a very significant gap in the user involvement and innovation literature, by presenting a framework that models the processes that enables a company to successfully involve their lead users in their predevelopment activities and in so doing, will obtain implementable guidelines that can be used by firms to enhance the delivery of innovative and appealing new product concepts.

INTRODUCTION

It is only through the creation of new products that most firms can hope to sustain growth and profitability in the long term (Booz-Allen and Hamilton, 1982). However, new product development is a difficult task and failure rates of new products are regarded by most as been unacceptably high (Crawford, 1987; Cooper, 1988; 1999). Why some products fail and others succeed has been the topic of a myriad of investigations (Crawford, 1977; Calantone and Cooper, 1979; Cooper, 1979; Madique and Zirger, 1984) dating as far back in time as the 1964 NCIB study (National Industrial Conference Board, 1964). While it would be erroneous to attribute product success to any single factor, there has been an emerging consensus that the factors which contribute to success are determined much earlier in the project's life, explicitly in the early or pre-development stages (Booz-Allen and Hamilton, 1982; Stevens et al. 1999; Khurana and Rosenthal, 1998; Cooper and Kleinschmidt, 1996; Cooper, 1993; Lynch, 2007). Developing a new product that delivers superior benefits presupposes an understanding of user¹ needs and wants, a process that should ideally be undertaken prior to the commencement of any actual development (Stevens et al. 1999; Cooper, 1988). Without this up-front user knowledge, significant problems in later stages of the development process can be expected including likely product failure (National Industrial Conference Board, 1964; Cooper and Kleinschmidt, 2000). However, customer need information can be costly, complex and often sticky (von Hippel, 2001; Von Hippel and Katz, 2002). Moreover, in business markets, conventional market research tools are often of limited utility (Tidd et al. 2001). Due to the relatively small number of users, many companies in these markets tend to involve lead users in their development process, rather than engage in a large-scale survey of user requirements (Johnsen and Ford, 2000; Lynch and O' Toole, 2003).

¹ In this paper, the term 'user' is employed in the context of a business-to business relationship and refers to companies who do not manufacture an innovation but incorporates it to the assembly of a finished product or process (Gales and Mansour-Cole, 1995; von Hippel, 1988). The concept of lead user involvement refers to the process of interaction between the manufacturer and their industrial users. We provide this definition clarification because in the literature, the term user involvement has also being used in the context of end users being involved in the product development of consumer products (Shah, 2000) and also in an intra-organisational context (Leonard and Rayport, 1997; von Hippel, 1988).

Indeed numerous theoretical and empirical studies imply that coordinating new product development activities and resources with lead users in these predevelopment stages (idea generation, screening, preliminary assessments, concept development and testing) can be a valuable means of reducing the uncertainty associated with new product development, enhancing the development process and also increasing the likelihood of generating innovative new product concepts (Cooper, 1988; Gruner and Homburg, 2000; Lilien et al. 2002). However, while the lead user method is frequently cited in the literature, prior research has shown a slow up take of the phenomenon among practitioners (Biemans, 1992). More recent evidence suggests that while most firms consider lead user involvement in pre-development activities to be beneficial, they nevertheless felt that collaborating with users was a difficult and often messy endeavor that tended to complicate the development process and made it more problematical to control and manage (O'Toole and Lynch, 2004), often jeopardizing the continuation of the collaboration and the commitment of the partners to the success of the collaboration. (Lynch and O'Toole, 2007). We view this apparent contradiction as an indication that an investigation is warranted. Despite the growing body of theory, there have been only limited attempts that comprehensively detail how the lead user involvement approach is implemented in the innovation and development process. Indeed, despite its theoretical and empirical foundation, little is actually known about the critical success factors of involving lead users in predevelopment activities. How to effectively involve these lead users and manage the process remains a central dilemma?

Based upon extant research, this paper will make a unique contribution to a very significant gap in the user involvement and innovation literature, by modelling the processes that enables a company to successfully involve their lead users in their predevelopment process and in so doing, will obtain implementable guidelines that can be used by firms to enhance the delivery of innovative and appealing new product concepts. The rest of the paper is structured as follows. Next, a synthesised discussion on the most salient aspects of the literature on the lead user concept that led to this investigation is presented. Subsequently, the methodology employed in this research is discussed. Based on the foregoing, an integrated model for lead user involvement is presented. In the concluding section, observations are drawn for future theoretical and empirical development in the field of lead user involvement.

THE LEAD USER CONCEPT

In the late 1970s, a new research impetus occurred in the new product development literature with the publications of Eric Von Hippel's two seminal investigations (1976; 1977), where he advocated the involvement of users in the idea generation stage of the new product development process. Von Hippel's conceptualisation of a customer active paradigm (1978) gave focus to a new generation of researchers and an emerging field of study into the involvement of users not only in the creation of ideas but to the whole new product development process. Indeed, empirical analyses from numerous research studies offer convergent evidence of the positive influence user involvement has on the development process and consequently commercialisation (Foxhall and Tierney, 1984; Shaw, 1985; Voss, 1985; Parkinson, 1982; Biemans, 1991; Hakansson, 1987; Grooner and Homburg, 2000).

Von Hippel's research has led to one particularly influential framework: the concept of 'lead users' (1986). Since not all users innovate to the same extent, the 'lead user' concept was used to describe a particular type of customer who are

described as knowledgeable, often technically trained, have considerable interest in and experience with the manufacturers product (Kaulio, 1998) and who perceives key economic benefits from an innovation or a solution to a problem and experiences needs ahead of the market (von Hippel, 1986; Morrison et al., 2004). The method of incorporating these highly innovative users in to the early stages of the development process has been operationalised by four generic steps with varying definition over the years: [1] Identify the key company stakeholders and select the general target market and the type and level of innovation required, [2] Identify leading experts in the field who understands and recognises the important market and technical trends in that field, [3] Identify, learn from and analyse lead users in the field of interest, and [4] Improving the preliminary concepts and evaluating them in terms of technical feasibility, market appeal and management priorities (references Lilien et al, 2002).

However, recent research has shown that while the lead user method can be a valuable means of generating ideas and concepts, its implementation and management requires extensive effort on the part of manufacturers and so can be quite easily discontinued by manufacturers (Olson and Blake, 2001). Although various attempts (von Hippel, 2001; von Hippel and katz, 2002; Biemans, 1992) have been made to provide some form of detail to the lead user process, “little is known about critical success factors of its implementation in the context of the fuzzy front-end phase of innovation projects. Although published applications of the method provide a first insight with respect to promising actions and decisions when working with lead users, empirical findings are scarce” (Luthje and Herstatt, 2004: 567). Moreover, normative prescriptions that do exist tend to be few and are so broad in nature that they are far from helpful. This absence of empirically tested normative guidelines has serious consequences for practitioners. Without a clearer understanding by academics of the managerial guidelines necessary to effectively involve users in the development process, the benefits of actually collaborating with users in practice will be even more difficult to achieve.

For Lynch and O’ Toole (2004) this does not imply that lead user involvement is not warranted, it merely emphasises that greater attention must be directed at how best managers should incorporate users in to predevelopment activities and how the relational dimension of the involvement should be managed. In essence, pre-development and relationship activities work together (Biemans, 1992). Each supports the other and the strength of the manufacturer-user cooperation becomes difficult when attention is diverted from either component. Spekman et al (1998) states that successful collaborations are built through combing the business of the collaboration with attention to the relational interplay between the key actors. This is analogous to social exchange theory (Blau, 1964), where self interest is best achieved by the returns available through cooperation in a relationship, indicating that exchange and cooperation have a social dimension, which has an utility that extends beyond the transactional elements of the relationship (Dwyer et al. 1987). To the best of our knowledge, no study has proposed a managerial model that incorporates the transactional and relational dimensions of involving lead users in the early stages of new product development.

METHODOLOGY

Because our goal is to develop a model of lead user involvement in predevelopment activities, we adopt a theory development orientation. We use the literature on user involvement and relationship marketing as a starting point to motivate model development on the critical processes underlying the management of

this involvement. In tangent with the development of our model from the theory base, data gathered from one case study examining both sides of the manufacturer-user dyad in predevelopment activities was used to counteract potential validity concerns in relation to our theory development, because multiple lines of enquiry converged towards a particular proposition (Yin, 2003). The case company utilised is a small to medium size electronic accessories manufacturer, which represents the dominant characteristic of Irish firms.

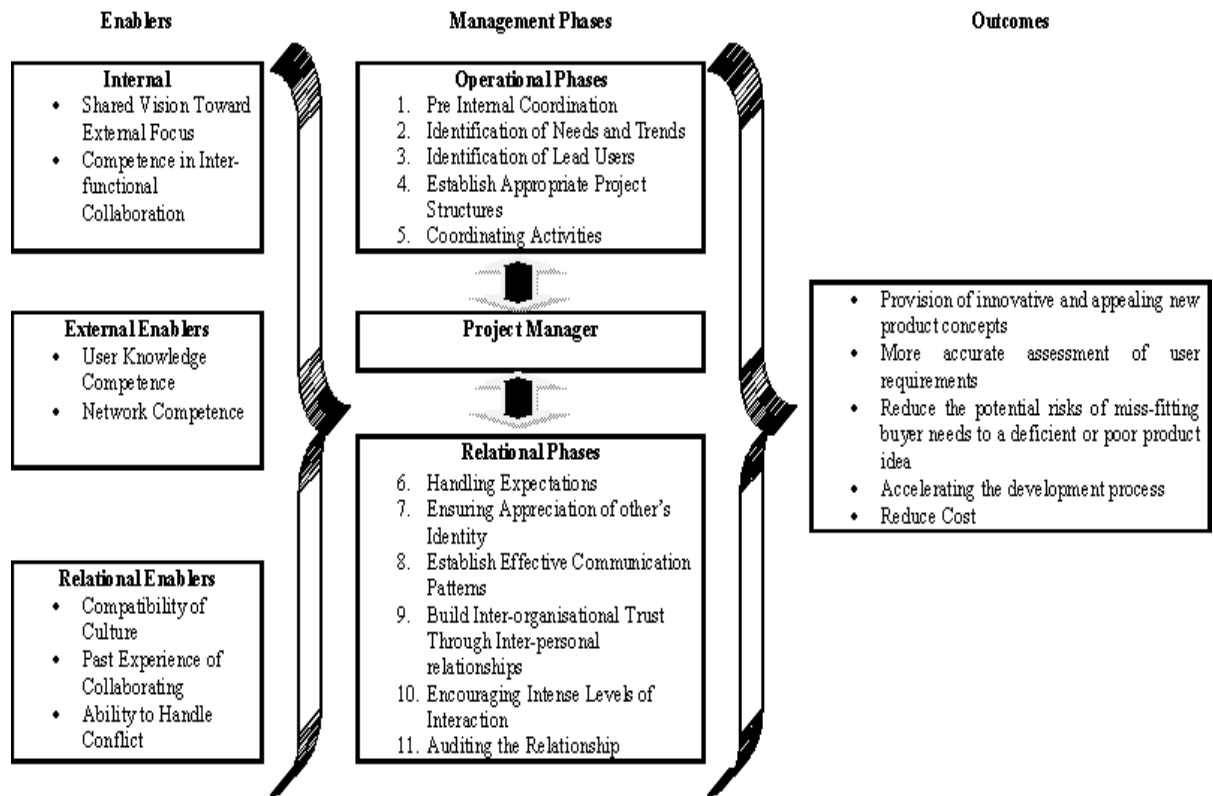
Data Collection and Analysis. Data was collected from two main sources: interviews, and observation. Although an interview guide was made before each interview, they nevertheless took an unstructured format. The individuals that were being interviewed were highly educated, competent executives and understood the cooperation process between their companies. Thus, they talked freely, only to be interrupted by the researcher on some follow-up issue. The role the interviewer played was only that of a guide. For instance when it was felt that a topic was exhausted, the researcher would introduce a new topic, based on the interview guide, or some issue that may have materialised in the interview. Thus, the interviews had a very relaxed feel to them, even conversational, and rich insightful data about the interaction processes involved in their cooperation, emerged. Observations influenced and contributed to casework, to the extent that *a picture paints a thousand words*. For instance, the researcher was allowed to observe manufacturer-user meetings and brainstorming sessions. These observations allowed the researchers to gain insight in to knowledge that was hard to communicate without actually experiencing it, and in this fashion, fertilised the researcher's understanding of concepts that the participants were talking about in their interviews.

Following good practice presented by Madhavan and Grover (1998), when analyzing the collected data, we looked for data that supported our current thinking, conflicted with our current thinking and data that presented new insights. Intertwined in this process of extant and emergent thinking was the essential feature of going back and forth between theory and data, iterating toward a theory that closely fits the data and the extant literature (Orton, 1997). The notion of the evolving project that is presented here, is that, understanding of complex phenomenon materialises over time from an iterating cycle of deduction (prior theory) and induction (theory emerging from the data) (Pettigrew, 1997). The study does not qualify as a pure deduction nor as a pure induction, as there certainly was a pre-understanding before data collection. Nevertheless, it has to be stressed that the purpose of the case study research was not to provide proof of our framework, but to help us confirm our theory based assertions were in line with managerial experience and so provide a solid foundation for more in-depth theory development to occur in the future (Madhavan and Grover, 1998). The process resulted in the theoretical framework presented subsequently.

AN INTEGRATED MODEL FOR INVOLVING LEAD USERS IN THE EARLY STAGES OF NEW PRODUCT DEVELOPMENT

Although the conceptual framework was developed *ex post* from analysing reviewed literature and informed case research, it is useful to provide an introductory overview of its major components, before launching into its more detailed discussion. The model commences with *Enabling Factors* which are necessary prerequisites to successfully involving lead users in the early stages of the new product development process. Without the presence of these enablers, the relationship maybe unsound and consequently, collapse and fail. These enabling factors and can be divided into (1) internal enablers (2) external enablers and (3) relational enablers. The three sets of

Figure 1. An Integrated Model for Involving Lead Users in the Early Stages of New Product Development



enabling factors combine to influence the ways in which the manufacturer and user structure and manage their interactions. The *managerial phases* can be divided into (1) operational transactions between the manufacturer and user, (2) the relationship dynamics between the actors and (3) the role of the project manager in providing coordination and integration between the cooperating partners. Although the term, phase, may connote hierarchical progression from one stage to another, it is important to realise that this is not so. The conceptual framework is not presented as a linear model. Indeed, the temporal occurrence between operational and relational phases may be almost simultaneous. They overlap through recurrent sequences of actions and interactions. The final component this integrated model reflects the outcomes that result from user involvement in predevelopment activities. The overall structure of the framework is illustrated in Figure 1.

ENABLERS

These enabling factors relate to the inter-organisational and internal characteristics that both the manufacture and lead user respectively bring to their interactions in the early stages of new product development and are presented under internal, external and relational enablers.

Internal Enablers

Explicit discussion in the literature has revealed that successful product development and successful lead user involvement in the predevelopment process depends upon the support of the internal organisation and can be conceptualised as follows:

Shared Vision Towards External Focus. A dominant uncertainty that emerges from the product development literature concerns understanding customer needs. There is little disagreement in the literature that meeting these needs is a prerequisite for successful product development. Tidd et al (2001) suggests understanding marketplace needs requires an organisational wide orientation to new stimuli from the outside, such as the involvement of lead users in the predevelopment process. Successfully involving an external party in the development process is a difficult task to achieve but is made even more complex when there is an absence of a shared organisational vision of the perceived importance of such an involvement (Tidd et al 2001). If a manufacturer does not understand nor appreciate the value and importance of lead user involvement to successful product development, it is likely that this will contribute towards a myopic view towards external interaction. Such a company is unlikely to pursue any collaborative activities with the necessary enthusiasm that is needed for success. Creating an organisational atmosphere conducive to lead user involvement also requires the support and commitment of top management (Biemans, 1992).

Competence in Inter-functional Collaboration. The importance of the inter-functional collaboration to new product development success is significantly highlighted by the amount of research that is emerging from the literature (Souder and Song, 1999; Song, Thieme and Xie, 1998; Jassawalla and Sashittal, 1999a; Kahn, 2001; Song, Montoya-Weiss and Schmidt, 1997; Souder, 1988; Olson et al. 2001; Norrgen and Schaller, 1999). In general, findings from these empirical studies have found a positive influence between cross-functional interfaces and enhanced new product advantage as intra-firm competencies are brought together to develop a product that meets user needs. To facilitate internal coordination between different boundaries, teams often referred to as cross-functional teams, are operationalized. Successful collaboration between functions requires a propensity from the participants to communicate, trust, coordinate, cooperate and to have an “integrated understanding of the breadth and often divergent motivations, agendas and constraints that exist at all times” (Jassawalla and Sashittal, 1999: 5). In actuality, the presence of these relational attributes is often cited as the cornerstones of most successful relationships, whether they are internal or external. However, the traditionally theoretician’s view of new product development contained no explicit recognition of the relationship between internal collaboration (e.g. the marketing – R&D interface) and external collaboration (e.g. manufacturer-user NPD relationship). On closer examination, these two forms of collaboration are highly interwoven, as the efficiency and effectiveness of the external relationship with the lead user depends upon and is influenced by the quality of the interface between the various functions within the organisation that are involved in the product development process (Biemans, 1991). Conversely, relationships with lead users can facilitate the inter-functional relationships as they often provide stimulation of communication and in some cases, adopt the mediating role of conflict reducer (Li and Calantone, 1998).

External Enablers

A frequently mentioned antecedent to successful lead user involvement is the consideration given to certain external issues such as:

Customer knowledge competence. An important trend that is emerging in the new product development literature is the conceptualisation by several authors that new product development is an organisational learning process involving the acquisition, dissemination and utilisation of information (Li and Calantone, 1998;

Adams et al., 1998). The extent to which a company has a competent customer knowledge process will be evident in the emphasis top management places on the perceived importance of involving customers in the development process. The ability of a firm to extract and integrate customer knowledge into the development process is considered by some as a strategic asset of the firm (Glazer, 1991), and by others as a core competence (Li and Calantone, 1998) that can have a serious impact on product success “because it enables a firm to explore innovative opportunities created by emerging market demand and reduce potential risk of miss-fitting buyer needs” (Li and Calantone, 1998: 16). Effective user involvement will be greatly enhanced by the presence of a competent customer knowledge process.

Network Competence. The business network concept suggests that in order to successfully involve lead users in the new product development process, the two relationship partners must take the activities of their partners in connected relationships into consideration, thereby widening the scope of management, to include a set of connected relationships in a business network (Hakansson, 1987). In a strategic context, managing networks is crucial as networks can act as an enabler or as a constraint to collaborative new product development relationships with lead users (Johnsen and Ford, 2000). The major disadvantages associated with developing new products with lead users in a network are the loss of proprietary information and critical knowledge, increased cost of coordination and dependency, the risk of dominance and exploitation and the lack of commitment of other parties. However, the literature reveals that the core issues of concern in managing user involvement within networks, is managing the position of the firm in the network and also managing the relationship with the firm's environment (McCloughlin and Horan, 2000).

Relational Enablers

The involvement of the lead user is also supported by the way the two companies interact, exchange resources. In essence, their cooperation is enhanced through the establishment of a relationship specific factors such as:

Compatibility of Culture. Published research on inter-organisational relationships and alliances have indicated, that failure to accommodate for differing organisational cultures can result in the demise of a partnership, as underlying qualities (e.g. management and decision making styles) inherent in both partners can inhibit the success of an cooperation if they are not properly identified (Hutt et al. 2000; Maron and VanBremen, 1999; Kanter, 1994; Handy, 1991). Indeed, cultural alignment or cultural compatibility is considered to be important in collaborations because it generates mutual understanding and co-operation between the partners and because significant differences between the partners' cultures could create conflicts and barriers to co-operative methods of working and interacting together (Saxton, 1997). Organisational culture provides the parties with a measure of certainty regarding norms of interaction. These cultural bound assumptions can result in quite different styles of management, structures, procedures and mindsets towards interacting with external parties. For example a manufacturer with a bureaucratic culture could have a climate not very conducive to interacting with a user in the early stages of product development due to the lack of decision-making authority of executives and the use of explicit rules to define roles, relations, communications, norms, sanctions and procedures (Moorman et al, 1993). Whereas, a manufacturer with a strong clan culture would be willing to enter into collaborative relationships with users, because the cultural norm is the establishment and maintenance of cooperative and trusting relationships (Handy, 1991). Different cultural types work on

quite different cognitive assumptions about what motivates people, how they think and learn, how they reason and make decisions (Pettigrew, 1979). Manufacturers and users can be expected to bring to a collaborative relationship very different socially constructed understandings of reality or systems of meaning and these culturally bound beliefs and mindsets will define the way in which the organisations interact. In the marketing and management literature, these different assumptions of understanding and systems of meaning, labelled “mental models” and “thought worlds” by various researchers (Senge, 1990; Madhavan and Grover, 1998) may affect the organisations ability to interact and synthesise their competencies with others. There is evidence in the organisational learning literature that suggests the same. Significant differentials in knowledge and skills between partners has been shown to impede learning from an alliance and without a common frame of reference integration between partners cannot occur beyond the most primitive level (Simonin, 1999).

Past Experience of Collaborating. Receiving considerable acceptance in the literature is the importance of the organisations experience in interacting with external parties (Bruce et al. 1995; Inkpen, 1998). Indeed it has been argued that ignorance and inexperience are often the root cause of failure in cooperative relationships (Simonin, 1999; Lei and Slocum, 1992). Studies in the area of cognitive and behavioural sciences are instructive. Research on organisational memory suggests that stored information from an organisations history can be brought to bear on present decisions and have behavioural consequences when retrieved (Walsh and Ungson, 1991). Conceptually, organisations learn and evolve as they accumulate cooperative experience (Senge, 1990). This common memory base of past organisational experiences are used to adjust interactions in new inter-firm relationships (Pennings et al. 1994). Inter-organisational experienced firms become more efficient and effective at interacting and cooperating with other organisations. Moreover, firms that have greater levels of collaborative experience are more likely to appreciate the benefits gained from such an interaction and recognise the similarities and differences between the organisations that can cause significant problems to the relationship (Simonin, 1997).

Ability to Handle Conflict. There is wide spread agreement in the literature conflict between a manufacturer and user during predevelopment activities is unavoidable (see Lynch and O’ Toole, 2007). This implies that at a strategic level, companies should see conflictual episodes as just part of doing business (Anderson and Narus, 1990) and therefore should integrate conflict management in to their training courses. This will equip their boundary spanners with the necessary skills to handle conflictual episodes. Such a training course could involve an assessment of each individual’s strengths/weaknesses, advice and guidance on corrective actions in situations concerning conflict. Moreover, for Dwyer et al (1987), inter-organisational relationships demands the establishment of mutually accepted redress norms in times of conflict. They propose the following (i) more frequent an effective communications between the parties and the establishment of outlets to express grievances, (ii) a critical review of past actions, (iii) a more equitable distribution of system resources, (iv) a more balanced power distribution in the relationship, and (v) standardization of modes of conflict resolution (24).

MANAGEMENT PHASES

The model distinguishes two management areas, explicitly the operational and relational phases for managing the processes related to lead user involvement in the

early stages of product development. Each management area consists of a set of specific activities, linked together by the project manager.

Operational Phases for Lead User Involvement

As detailed in Table 1 below, the operational methodology for lead user involvement involves five major phases, beginning with the delineation of internal competencies and ending with coordination of activities.

Phases	Activity
1. Pre-internal coordination	Establish internal core competencies
	Building an interdisciplinary team
2. Identification of Needs and Trends	Forecasting trends
	Selection of most attractive trends
3. Identification of Lead Users	Conduct screening and networked based-search for lead users
	Select appropriate lead users
4. Establish Appropriate Project Structure	Develop clear objectives and targets
	Establish clear roles
	Determine the extent of lead user involvement
	Determine the timing of lead user involvement
5. Coordinate Lead User Activities	Involve lead users in decision making and problem solving
	Share information extensively

Phase 1: Pre-internal coordination

Successfully involving lead users in the predevelopment process requires an understanding of the fit between the proposed collaboration and the existing competence base within the organisation (Tidd et al 2001; Campbell and Cooper, 1999). Johne (1994) suggest that companies must listen to their internal market in order to assess the extent to which the company is capable of meeting the identified challenge. Poor exploration of fit with business competence can result in insufficient allocation of resources (time, money, technology and human) to the development project which can cause significant problems in the development process such as development activities taking longer than expected, consequently increasing costs, delaying time to market and even product failure (Biemans, 1992). For Pitta et al (1996), vital to internal coordination is the establishment of an interdisciplinary team, which ensures continuous communication between departments and can avoid misunderstandings and conflict.

Phase 2: Identification of Needs and Trends

In this phase the interdisciplinary project team focuses on identifying and deeply understanding important market and technical trends in the field being explored. Team members begin by reviewing conventional information sources. Next, they systematically identify and interview leading experts in the marketplace that they are exploring - people who have a broad view of emerging technologies and leading-edge applications in that field or fields. They then select an important trend or trends as the central focus of further project work.

Phase 3: Identification of Lead Users

In order to identify who the lead users are, the interdisciplinary project team must determine the indicators that will allow for their correct identification. These indicators centre around (i) users who actually do lead the trends (Von Hippel, 1986) that were chosen in Phase 2 and (ii) users that are dissatisfied with current marketing offerings (Luthje and Herstatt, 2004). Research has shown that while users often express their ideas on how to improve company offerings to members of the sales force, the information is rarely utilized or capitalised by the company. This implies that the project team must establish a mechanism by which internal information sources, such as user complaints can be used effectively to identify potential lead users. For Luthje and Herstatt (2004) the process of searching for lead users can involve either a screening approach in which the interdisciplinary team conducts quantitative surveys on existing product user databases or a pyramid networking approach which involves informally contacting industry experts to identify potential lead users, both in the target market and in other markets that face similar needs, and learn from those lead users about needs and solutions they are encountering at the leading edge. The pyramid networking technique is a variation of the "snowballing" technique used in market research practice and relies on the fact that knowledgeable individuals tend to know people more expert than themselves.

It is also important to realize that prior research indicates that the characteristics of the user will impact on product success, explicitly, characteristics such as the relative size of the two parties (Milson et al, 1996), the financial attractiveness of users (Gruner and Humburg, 2000), reputation (Gansen, 1994), technological expertise (Hakansson, 1987), knowledge (Shaw, 1985) and past experience with co-development (Bruce et al., 1995). Additionally, Biemans proposes that in order to fully optimise user involvement in new product development activities, manufacturers should "determine the partner's representativeness, knowledge, objectivity, willingness to cooperate, market position, ability to keep confidential information, and ties to competitors" (1992: 210). Otherwise, Johne (1994) warns that cooperative manufacturers "may end up acting as nothing more than a sub contractor for key customers" (52) and in order to overcome this limitation of collaborative relationships, manufacturers need "to discriminate between different types of customers" (52). Due to different user types and characteristics, lead users will vary in importance from stage to stage and so the identity of users employed will also vary during the predevelopment process (Lynch and O' Toole, 2006). The selection of users should be made very carefully and should be based on specific characteristics required for concept development (Gruner and Humburg, 2000).

Phase 4: Establish Appropriate Project Structure

Crucial to successfully involving lead users is the need for a good match between the demands for the development and the operating structure that enables it (Tidd et al 2001). This requires the establishment from the outset, of a set of clear objectives, which will provide direction for the partnership (Millson et al, 1996). Biemans determined that failure by partners to "unequivocally state their objectives, their expectations, and the criteria they will use to evaluate the cooperation...led to lack of commitment, unclear agreements, and delays and inefficiencies during the development process" (1992: 194). Similarly, Bruce et al (1995) states that establishing the roles and responsibilities of the parties is a necessity if the relationship is going to be successful. Joint participation in the setting of goals can establish mutual expectations and specifies to each party the extent of cooperative

efforts needed (Mohr and Spekman, 1996; Gales and Mansour-Cole, 1995). In relation to the timing of lead user involvement in the development process, most researchers concur that users should be involved as early as possible in the development process. Indeed, much of the literature on the involvement of industrial users in the development process has been positive (Biemans, 1992), and generally implies that contact with users early on in the process results in a higher probability of commercial success (Cooper and Kleinschmidt, 2000; Foxall and Johnston, 1987; Shaw, 1985; Voss, 1985; Foxhall and Tierney, 1984; von Hippel, 1976). Millson et al (1996) propose that new product development partners need written agreements as they “can provide clear direction for NPD programs and... eliminate some uncertainty” (43). Indeed, issues over intellectual property and compensation have to be addressed prior to the commencement of any activities.

Phase 5. Coordinate Lead User Activities

Both the manufacturer and user must meld the contribution of internal cross-functional teams and external teams into an inter-organisational boundary spanning team. Within these teams, lead users are considered partners in the development and have equal responsibility for problem solving and decision making. The exchange of information across organisations is especially important where joint decisions are made, as it reduces uncertainty and ambiguity in a relationship by achieving a shared understanding of the goals and objectives of the partnership (Hutt et al., 2000). Also the team must be structured to allow for managing performance. Vital to the success of boundary spanning teams are some of the factors already discussed such as having internal cross functional teams, clear roles and objectives and selecting the customer based on their characteristics and their commitment to contributing to the solution

Relational Phases for Lead User Involvement

Phase 6. Expectations Must be Handled.

Expectations are powerful realities and so the manufacturer needs to craft them carefully, when involving their lead users. Indeed, research has shown, cooperative relationships will ultimately go through periods of conflict as a result of expectations not being met (Buchel, 2000), and in some instances it can lead to a point where the relationship is being evaluated for continuity (Lynch and O’ Toole, 2007). This implies that both the manufacturer and user will base their ideas about each other, the tasks to be accomplished, their roles, and possible project outcomes, on their beliefs and expectations as a basis for their involvement (Weick, 1995; Gioia and Poole, 1984). However, these expectations may not be accurate and conflict will ensue. This implies that manufacturers need to access what they expect from their lead users, but also to be mindful of lead users expectations. In this fashion, a more truthful reality of what to expect from the joint cooperative activities will emerge.

Phase 7. Appreciation of the Other’s Identity.

When there is no prior interaction experience, initial negotiations should centre on getting to know each other’s identity (Arino et al. 2001). Indeed, not taking time in the beginning, to appreciate how the other party operate, will cause significant delays later on in the development process. This implies that the intensity of interactions should be high, with frequent and bi-directional flow of information, to allow the establishment of a congruent understanding of each other’s identity (Ring and Van de Ven, 1994). The process of getting to know each other, will close

organisational distance on goals, values, perceptions, procedures and increases the benefits of joint action (Saxton, 1997). A shared understanding of expected and accepted behaviour will materialise which in turn should reduce ambiguity, help establish trust and increase the likelihood of successful cooperation (Simonin, 1999).

Phase 8. Establish Effective Communication Patterns

Central to a successful cooperative relationship between the manufacturer and user is the act of communication. It has been described “as the glue that holds together a channel of distribution” (Mohr and Nevin, 1990: 36) and as the lifeblood and circulatory system of the organisation (Schein, 1994). The communication process underlies most aspects of organisational functioning and without it “organising could not occur” (Euske and Roberts, 1987: 42). In order to ensure effective and efficient management of activities, responsibilities and people, between the manufacturer and user, an atmosphere conducive to frequent and timely communication (both internally and externally) must be created and maintained (Biemans, 1992; Bruce et al, 1995; Donaldson and O’ Toole, 2002; Mohr and Spekman, 1994; Hakansson, 1987). Regular communication (such as consultations at all levels, progress reviews etc.) reduces uncertainty and ambiguity in the relationship by achieving a shared understanding of the goals and objectives of the partnership (Hutt et al., 2000). Additionally, communication between the manufacturer and user should facilitate the development of trust and social ties between personal from both companies and result in a higher degree of reciprocity, closeness and sharing of proprietary information among the relationship participants (Reindfleish and Moorman, 2001). Underlying anxieties, concerns, frictions or conflicts may be resolved amicably in relationships characterised by good quality communication flows (Mohr and Spekman, 1996), as disagreements are seen as being “just another way of doing business” (Anderson and Narus, 1990). Nevertheless, the extent to which information is shared in the relationship is greatly dependent on the extent of emotional closeness that exists among the social actors (Reindfleish and Moorman, 2001).

Phase 9. Build Inter-Organisational Trust through Interpersonal Relationships.

Foremost among the cited influences on manufacturer-user relationships is commitment and trust as “successful alliances, like successful marriages, don’t just happen; both require commitment to make them work, and both can be destroyed by mistrust” (Morgan and Hunt 1994: 25). A posited consequence of trust and commitment is cooperation, firms learn that coordinated, joint efforts can achieve mutual or singular outcomes that far exceeds the benefits a firm can procure by acting solely in its own best interest (Anderson and Narus, 1990). Building and maintaining trust results from frequent communication among the partners and the belief that the other is reliable and has high integrity, which are associated with the partner’s consistency, competence, honesty, fairness, responsibility, willingness to act, helpfulness and benevolence (Morgan and Hunt, 1994; Buttle, 1996). Trust is also fostered, by encouraging individuals from both the manufacturer and lead user companies to interact with one another, in an attempt to develop interpersonal ties (Hutt et al. 2000). Indeed, research as shown that there is a strong connection between inter-organisational commitment and the development of inter-personal relationships (Biemans, 1992). This implies that manufacturers must recognise at a strategic level, the importance of developing inter-personal relationships amongst boundary-spanners, to the continuity of the inter-organisational relationship (Ring and Van de Ven, 1994). At a tactical level, members of the inter-disciplinary team must be

actively encouraged to develop multiple personal relationships with their counterparts, and feed information back in to the organisation. In times of conflict, these interpersonal relationships can act as a safety net (Arino and Torre, 1998). However, it would be naïve to suggest that a strong interpersonal relationship is sufficient for cooperation to succeed, there must also be a strong business concept and pledges of commitment (Spekman et al. 1998).

Phase 10. Encourage Intense Levels of Interaction.

One of the most perverse implications that emanate from this body of work, is that, manufacturers and users need to meet more, and in a more intensive manner. While this is hardly a pioneering suggestion, research nevertheless, has found that current practice has not yet encompassed the idea (see Lynch and O' Toole, 2004). Indeed, in predevelopment activities, users are more often than naught only superficially involved. What is being missed by manufacturers is that, through intensive encounters with their lead users, new product ideas can be generated or ambiguity around a problem idea can be resolved. Furthermore, intense interactions facilitate the development of a sense of the other's identity, which in turn promotes trust, psychological contracts, interpersonal relationships and the increase in functional conflict (Weick, 1995). The significance of meeting users in a more frequent manner is in the importance that face-to-face contact has in developing and communicating self-identity, and in the development of inter-personal relationships. During interactions, individuals communicate and evaluate the identity of the other through verbal and non-verbal behaviours. These face-to-face interactions are vital in the capture of those non-verbal cues about the other's identity. The absence of which could significantly slow down the development of a close relationship or even make the involvement of lead users in the predevelopment process an ineffective endeavour.

Phase 11. Auditing the Relationship.

Regular progress reviews on the relationship have been quoted as having a positive influence on the success of the relationship between the manufacturer and lead user (Lynch and O' Toole, 2003). A regular audit allows parties to assess the performance of the relationship, while also addressing issues relating to management and leadership, team building, control processes, conflicts etc. Audits can be particularly beneficial in identifying, isolating and rectifying any problems that may exist in the relationship, as well as creating the perception that each party must adhere to pre-determined agreements. An additional benefit of these progress reviews is that participants are continuously learning through communication, the process of interaction. Auditing the relationship also provides relationship benefits in terms of "identifying loose connections, key personnel who are not part of the central flow, and relationship ties that are a major asset – as well as those that require special attention" (Hutt et al. 2000:61).

The Project Manager

Relationships are socially constructed, people interact with one another across organisations and it is these individuals who construct relationships (Granovetter, 1985). The outcomes of a partnering initiative depend on the interaction of people (Boddy et al. 2000) and motivating certain individuals to take an active managerial role in the cooperative project can have a fundamental impact on its success. Numerous authors refer to these individuals [from both manufacturing and consumer companies] who are capable of marshalling support, overcoming obstacles and

virtually pulling the development project to completion by their sheer will and energy as product champions, mentors or managers (Biemans, 1992; Markham and Griffin, 1998). These are individuals characterised by energy and passion and who will act as the driving force behind the collaboration. Numerous studies have concluded that project managers can be an essential ingredient to the success of a new product (Biemans, 1992; Schilling and Hill, 1998). In the context of involving lead users in the early stages, the importance of a project manager becomes even more apparent. Past research tends to indicate that the critical early stages are managed by a single key analysts, acting as project leader and it is this individual; who coordinates the operational activities, who interacts with different internal functions; who interacts with lead users and; makes the recommendation about whether to proceed to development (Stevens et al. 1999). It seems logical to infer that this individual's characteristics are of great importance in determining collaborative behaviour. Interpersonal characteristics refer to a broad set of individual qualities (such as expertise, skills, sincerity, integrity, dependability, efficiency, confidentiality, congeniality, flexibility etc) that are required in order to successfully manage both the operational and relational dimensions of lead user involvement in the early stages of new product development.

THE OUTCOME OF LEAD USER INVOLVEMENT

A number of theoretical and empirical studies have implied that the outcome of coordinating product development activities and resources with users in the stages prior to actual development can be a valuable means of enhancing the development process and increasing the likelihood of product success (Lilien et al. 2002; Gruner and Homburg, 2000; Biemans, 1992; Cooper, 1988). Indeed, development projects that 'build in the voice of the consumer' have been reported with double the success rates and up to 70% higher market shares than those projects that do not involve users (Cooper, 1999). Convergent evidence does suggest that interacting with industrial users in these predevelopment stages can provide firms with a competitive advantage through the provision of innovative and appealing new product concepts (Stevens et al. 1999; Khurana and Rosenthal, 1998; Cooper and Kleinschmidt, 1996; Madique and Zirger, 1984; Cooper, 1993; 1979; Calantone and Cooper, 1979; NICB, 1964). Others (Von Hippel and Katz, 2002; Tidd et al. 2001; Cooper and Kleinschmidt, 2000; Voss, 1985) suggest that user involvement can also reduce need and market uncertainty by supplying manufacturers with a more accurate assessment of user requirements and consequently, reduce the potential risks of miss-fitting buyer needs to a deficient or poor product idea (Johnsen and Ford, 2000). Additionally, the involvement of users in predevelopment activities has been positively associated with accelerating the development process (Cooper and Kleinschmidt, 2000), reducing costs (Gruner and Homburg, 2000), stimulating inter-functional communication (Lilien et al. 2002), and making the development process more effective and efficient (Booz-Allen and Hamilton, 1982).

CONCLUSION

We present a theoretical framework that details the enabling and managerial processes for the successful involvement of lead users in predevelopment activities. Our model is based on the central argument that in order to understand and capture the complexity of lead user involvement, attention has to be given to both the operational and relational aspects of the cooperative relationship. For a managerial model to rely on normative prescriptions alone would be tangential. Lead user

involvement is a fluid, dynamic process that involves interactions and operational details. Capturing this process represents a methodology for change in practice and in the mindset needed for a partnering perspective.

However, because our framework is a first attempt, and is only a starting point on the path to understanding the complexity of the dynamics that is occurring in the manufacturer-user relationship, it has its shortcomings and raises perhaps many more questions than it answers. For instance, are there antecedent conditions in the internal or external environment that would influence how and whether lead users are involved? What are the most salient management practices that enhance involvement? Does lead user involvement in every predevelopment stage enhance the process? Further, in our model we did not address the content or the flow of information transferred during interactions or how can manufacturers assess the willingness of users to transfer their knowledge and if so at what cost? Although calling for future research has become somewhat of a cliché in academia, nevertheless, giving the small size of our Irish manufacturers in comparison to their counterparts in the EU and the OECD and the government imperative to improve firm innovativeness, such a call seems appropriate. Indeed, building upon the model presented here is a key part of our future research agenda.

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