

A study of the association between downsizing and innovation determinants

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Abstract

Using a survey data of UK firms that engaged in downsizing, this paper explores the link between downsizing and innovation determinants. We suggest that the relationship between downsizing and innovation determinants is contingent upon the speed of implementing the downsizing and the severity of downsizing. Overall, the results confirm our general proposition and shed new light on the relationship between downsizing and innovation enhancers, and barriers to innovation.

Introduction

The belief that downsizing has implications for firms' innovation has been prevalent among academics and practitioners for many years. Although, interest in this area has recently intensified, management scholars have not reached a consensus on whether and how downsizing affects innovation. Scholars and analysts disagree as to whether downsizing stifles or enhances innovation. Some scholars argue that downsizing has no effect and could even lead to improved innovation (Cascio et al., 1997; Love and Nohria, 2005; Mone et al., 1998) while others argue that it is damaging to innovation (Amabile and Conti, 1995; 1999; Boomer and Jalajas, 1999; Brockner et al., 1987; Dougherty and Bowman, 1995). Those who argue in the positive contend that organizations could use savings from downsizing to support innovative activities, and rejuvenate and upgrade their knowledge and skill base, and this would make the organization more innovative. Other scholars note that downsizing creates uncertainty that may lead to skilled employees, scientists, and top researchers leaving the organization, an effect detrimental to innovation (Drew, 1994).

This research is important for several reasons. First, given the pivotal importance of innovation (Brown and Eisenhart, 1995; Cefis and Marsili, 2005; Christensen, 1997; Cumming, 1999; Dougherty, 1992; Higgins, 1995; Hitt et al., 1996; Tushman and O'Reilly, 1997), the widespread practice of downsizing (Baumol et al., 2003; Cameron et al., 1991; Cascio, 1993; Cascio et al., 1997; Chorely, 2002; Fisher and White, 2000; Love and Nohria, 2005; Luthans and Sommer, 1999; McKinley et al., 1995; Mone et al., 1998) and the potential impact the latter has on the former (Amabile and Conti, 1995; 1999; Boomer and Jalajas, 1999; Brockner et al., 1987; Dougherty and Bowman, 1995), there is a practical and theoretical need to examine the link between the two. Yet, surprisingly little is known about the nature of this link. Second, past research on the association between downsizing and innovation provides contradictory findings. The answer to the question as to whether downsizing improves, stifles or has no significant effect on innovation has not been answered (Amabile and Conti, 1995; 1999; Boomer and Jalajas, 1999; Brockner et al., 1987; Dougherty and Bowman, 1995).

This paper aims to refine and expand extant research by focusing on the association between different types of downsizing and the factors that determine innovation. This is because organizations vary widely in the ways they implement downsizing (Cameron, 1994; Nienstedt, 1989).

The remainder of the paper is structured as follows. We begin with a brief summary of extant literature and identify the gap in current research. In the second section we propose the contingency thesis of the paper. In the third section, we discuss the association between innovation determinants and downsizing strategies and level of downsizing. In the fourth section, we describe and discuss the research methods used in the paper. In the fifth and sixth sections, we provide an analysis and discussion of the results and potential paths for future research.

Brief Summary of Past Research

The literature on the association between innovation determinants and downsizing is very limited. In addition to the scant attention paid by academic scholars to the understanding of the association between downsizing and innovation determinants, a review of prior research on the topic reveals conflicting results (Mellahi and Wilkinson, 2004). On the one hand, the lion share of extant literature contends that downsizing has a negative impact on factors that facilitate and support innovation. The underlying rationale for this argument appears to be the damage downsizing cause to firms' learning networks (Shah, 2000), which results in loss of knowledge and hurts their learning capacity (Fisher and White, 2000: 249). Overall, this body of research views downsizing as a practice that is harmful to organizational innovation capability as it produces an environment that inhibits innovation. For instance, several scholars argue that given that downsizing is often associated with cutting costs, downsizing firms may fail to develop their human resource assets by providing less training for their employees, and recruit less externally (Bommer and Jalajas, 1999). A subsequent study by Amabile and Conti's (1999) probed the effects of downsizing on the innovation environment in a large high-technology firm's. The study examined the firm's creative ability before, during and after the downsizing. The authors observed that the innovation environment deteriorated as a result of downsizing. Low employees morale was a main cause of the low innovation environment after

downsizing. In addition, a number of scholars argued that downsizing may cause stress as a result of uncertainties which subsequently have a negative impact on the innovation environment (Brockner et al., 1987; Greenhalgh, 1983). Overall, according to this stream of research, downsizing has a negative impact on the innovation environment and hence it is assumed on innovation.

On the other hand, several scholars have suggested that downsizing can spawn innovative activities when it is associated with formation of multi-skilled teams and flatter organizations structures (Baumol et al., 2003). Similarly, Boone (2000: 595) notes that although, overall, downsizing may have a negative impact on innovation 'there are examples of successful downsizing operations which substantially improved a firm's innovation record'. Similarly, Hammer (1996) argued that downsizing often results in better teamwork and an empowered multi-skilled workforce which encourage new idea generation, ingredients which are necessary for innovation. Further, elimination of positions and management layers by downsizing may create an internal environment favorable to the generation and survival of new innovative ideas (Ross, 1974). Employees working in flat organizations with few layers of management tend to work in diverse teams bringing together complementary skills, can frequently exchange ideas across teams, and have better communication channels than those working in centralized and hierarchical organizations, which in turn generate a high level of new ideas (Subramanian and Nilakanta, 1996). We hope to reconcile these conflicting and competing view points by examining the link between different types of downsizings and innovation determinants.

The intent of this article is to contribute to the on going debate on the association between downsizing and innovation by examining the link between different types of downsizing, downsizing implementation strategies and innovation determinants. As noted above, although scholars have looked at different aspects of the association between downsizing and innovation determinants, overall, much of the existing literature centres on whether downsizing in general is an inhibitor or a stimulus for innovation. This paper departs from past research by focusing on how *different types* of downsizing are associated with the innovative environment. The paper proposes that the association between downsizing and innovation varies depending on the level of downsizing and the method used to implement it.

Downsizing and Innovation: A contingency approach

In this paper we concentrate on two key factors that we believe have an effect on the way downsizing impacts upon innovation: level (severity) of downsizing, and speed of implementing downsizing. Level of downsizing refers to the level of reduction in personnel. This is measured by the percentage of employees downsized. In this research we categorized downsizing into three different levels of downsizing: high downsizing where a firm layoff more than 20 percent of its employees; medium downsizing where a firm layoff between 10-19.99 percent of its employees; and low downsizing where a firm layoff between 5-9.99 percent of its employees. Speed of implementation of downsizing refers to the length of time a firm takes to plan and execute the downsizing strategy. In this study we categorized downsizing implementation strategies into three different categories: short-term where the process takes less than 6 months; medium term where the process takes 6 months to one year; and long term where the process takes more than one year. Both contingencies are recognised as important within the downsizing literature, but studies on how they affect innovation do not exist. First, scholars have long suggested that the impact of downsizing can be affected by the severity of downsizing (Burton et al., 1996; Brockner et al, 1987; Cameron, 1994; Cameron et al., 1993; Lewin, 2001; Love and Nohria, 2005; Sutton and D'Aunno, 1989; Vahtera et al., 1997). This is because organizations undertake downsizing at different levels varying from a small reduction of workforce to a large scale downsizing (Cameron, 1994; Cameron et al., 1993; Love and Nohria, 2005; Mellahi and Wilkinson, 2006). Therefore, consistent with prior research of downsizing, we posit in this paper that the relationship between downsizing and innovation determinants is contingent upon the level (severity) of downsizing. As put by Lewin (2001: 152) 'the degree of reduction in workforce may significantly influence the strength of the anticipated effects'.

Second, the assumption underlying the impact of the speed of downsizing is that, like most strategic initiatives, the impact of downsizing depends, at least in part, on the way it has actually been executed. Broadly speaking, organizations have two options: 'shock and awe' or 'big bang' style (Cameron et al., 1993) where downsizing is implemented in a concentrated time frame or a gradual implementation approach

where downsizing is implemented over an extended period. Past research shows that most firms use the ‘shock and awe’ style. For instance, McCune et al. (1988) found that 94 per cent of human resource managers reported that they planned and executed downsizing in less than two months. There are several reasons why managers typically strive for speed in downsizing. Overall, speed of downsizing limits the effects of resistance to downsizing which could delay or derail it. In parallel, gradual downsizing increases anxiety and inter-temporal speculations often caused by uncertainties, such as who will be downsized and how many. However, while speed of implementation has its advantages, it is reasonable to argue that it also prevents management from having time to think the strategy through properly and communicate it to employees clearly. Under pressure of time, managers may decide who to downsize in an arbitrary way or use a crude rule of thumb involving seniority, salary and perhaps skills. This may result in a low “perceived distributive fairness” for survivors (Brockner et al., 1987) which is reported to result in lower organizational morale, less job involvement, and reduced work efforts (Bailey and Szerdy, 1987; Greenhalgh, 1983).

Innovation Determinants and Downsizing

Innovation depends on the interaction of a variety of factors ranging from organizational factors such as availability of resources to individual behavioural factors. This paper focuses on organizational and individual factors that past research has identified as being key determinants of innovation, while also possible outcomes of downsizing. This task was achieved in two-stages. First, we reviewed literature on innovation determinants and produced a list of the most important (for a recent review of this literature see: Becheikh, Landry and Amara, 2006). Second, we juxtaposed this list with studies on the possible impact of downsizing to identify and isolate specific determinants of innovation that are linked to downsizing. The downsizing and innovation literatures were identified from three main databases: Web of Science, EBSCO and ABI/INFORM. Our literature review revealed eleven factors grouped into two categories: *obstacles to innovation* and *stimulants to innovation*. This categorization is based on Amabile et al., (1996) and Amabile and Conti (1999). Obstacles to innovation are factors that are reported to stifle innovation in organizations. Stimulators to innovation are the factors that are known to increase innovation in organizations (see Amabile and Conti, 1999 for an extended discussion).

Obstacles to innovation and downsizing

We focus on five *obstacles to innovation*: i) risk-aversion; ii) lack of resources for innovation; iii) lack of qualified personnel; iv) low levels of employee morale and enthusiasm for innovation; and vi) high work load. Below we discuss each of these factors in detail.

The first obstacle to innovation is *risk-aversion* or lack of risk-taking. Research on innovation determinants suggests that for innovation to occur, the organization must create a climate for innovation by fostering belief that innovation is important, and encouraging a willingness to take risks and experiment with innovative ideas (Tushman and O'Reilly, 1997). O'Reilly's (1989) study showed that risk-taking is a key factor that promotes innovation across sectors. Organizations with an ethos for risk-taking tend toward innovation more than risk-averting organizations. Research on the impact of downsizing consistently reveals that downsizing is associated with a reduction in risk taking and tolerance of mistakes in organizations (Amabile and Conti, 1999; Bommer and Jalajas, 1999; Brokner et al., 1987 and McKinley et al., 1995; Cascio, 1993;). However, extant research did not examine whether all downsizing types lead to a reduction of risk taking. One could argue that implementing downsizing over a long period of time creates uncertainty surrounding the security of jobs (see Kivimaki et al., 2001) where, over a period of time, people are not sure who will be downsized and who is going to keep his or her job. Employees in such situations tend to be less flexible in the way they carry out their tasks; and exhibit a tendency to take less risk because of potential ramifications of making a mistake or rocking the boat, and adhere to habituated responses and previously learned and successfully applied practices (Staw, et al., 1981). Further, Sutton and D'Aunno (1989) found that an increase in the level of workforce reduction increases remaining employees' perceptions of uncertainty and anxiety about job security, which creates a psychological environment in which risk aversion becomes a dominant behaviour (Straw et al., 1981). Further, given severe downsizing is often a reaction to an actual or potential crisis, Mellahi and Wilkinson (2006) noted that when dealing with potential crisis, management tend to be narrow-minded and risk averse. *Based on the above, we propose that; a) speed of implementing downsizing is*

positively correlated with risk aversion; and b) level of downsizing is positively correlated with risk aversion

A third obstacle to innovation suggested by the literature is a *lack of resources for innovation*. This factor is different from the preceding one. This factor deals with unavailability of resources put aside for innovative projects (i.e. organizational slack), whereas the preceding factor deals with willingness to allocate available resources. Availability of resources or lack thereof, is an important innovation determinant. Extant research provides evidence to suggest that generally lack of organizational slack is negatively correlated with innovation (Nohria and Gulati, 1996; Singh, 1986). Researchers have conceptualized downsizing as a firm's strategy to dispose of a significant portion of its human resource slack (Lawson, 2001; Love and Nohria, 2005, p. 1088). While the jury is still out on the nature of the association between levels of slack and innovation, generally downsizing is viewed as 'an attempt to improve performance by reducing organizational slack' (Love and Nohria 2005, p. 1087). As far as downsizing types are concerned, it is reasonable to suggest that severe downsizing has more impact on availability of financial resources than low level downsizing (Mellahi and Wilkinson, 2006). Extant research shows severe downsizing reduces profit, slow dividend growth and lower stock prices (c.f. De Meuse and Tornow, 1990). Further, we do not envisage a relationship between speed of downsizing and organizational slack. *Therefore, we propose that level of downsizing is positively correlated with lack of resources after downsizing.*

A fifth obstacle to innovation is the unavailability of *qualified personnel*. The development and execution of new ideas relies quite heavily on the ingenuity and knowledge of skilled workers (Johns and Snelson 1988; Kay, 1979). Downsizing creates uncertainty and when this occurs the first people to jump ship are those with marketable skills. As a result, downsizing could 'hollow out' the firm's skills capacity and subsequently its ability to innovate (Littler and Inns, 2003, p. 93). Understandably, past research provides evidence to suggest that excessive workforce reduction strategies are often associated with a loss of a significant level of skills with consequent negative effects on a firm's ability to innovate (Cheng and Kesner, 1997). Further, one could argue that when downsizing is implemented quickly, under pressure of time, managers may decide who to downsize in an arbitrary way

downsizing the ‘wrong people’ which may cause the loss of skilled and experienced employees. Cameron et al., (1993: 32) noted that when downsizing is implemented to cut costs quickly ‘it is difficult to predict exactly who will be eliminated and who will remain’. As a result, the organization may no longer possess the necessary range of skills needed to produce new innovative products or processes. *Thus, we posit that; a) level of downsizing is positively correlated with loss of qualified personnel, and b) and speed of downsizing is significantly correlated with loss of qualified personnel.*

At the individual level, research shows a strong link between *employees’ morale and enthusiasm* and innovation, and that lack of these inhibits innovation. Literature suggests that motivated and committed employees engage in activities that go beyond the call of duty with a zeal that creates a supportive climate for innovation (Eisenberger et al., 1990). Large-scale downsizing is more likely to have a negative effect on surviving employees morale, and enthusiasm for innovation than smaller scale downsizing (Brockner et al., 1987; Brockner, Grover and Blonder, 1988; Tombaugh and White, 1990). For example, a study by Cody et al. (1987) found that severe downsizing of 30-50 per cent impacted negatively on employees’ morale and commitment. Downsizings implemented within short time-spans are often poorly planned and not effectively communicated to employees. Thus, employees may not understand the rules used to determine who was laid off. This may result in a low perceived procedural fairness for survivors (Brockner et al., 1987) which is reported to result in lower organizational morale, commitment, and reduced enthusiasm for innovation (Bailey and Szerdy, 1987; Greenhalgh, 1983). In contrast, when managers take time to implement downsizing, they are able to communicate the reasons and method of implementation to employees. In doing so, managers ensure that employees’ positions and opinions are brought to bear about the level and method of downsizing. It is likely that consensus would be enhanced under longer-term implementation since employees feel that some of their issues have been addressed. Consensus among the different parties is essential to reaching the level of mutual commitment, acceptance and support necessary for successful implementation of strategic initiatives. Dooley and Fryxell (1999) reported that when teams take time to resolve dissent during the implementation of strategic initiatives they tend to have higher commitment to the decision, and favorable attitudes to change, thereby increasing the chance of a successful implementation. *Based on the above, we posit*

that a) level of downsizing is positively correlates with low morale after downsizing; b) speed of downsizing is negatively correlated with low morale after downsizing.

The final barrier to innovation as a result of downsizing is *workload*. Workload is of primary importance to innovation (Unsworth, 2004). A large body of literature suggests that work overload and time pressure stifles innovation (Amabile and Gyskiewicz, 1987, Amabile et al., 2002; Amabile and Conti, 1999). Cheng and Kesner (1997) reported that severe downsizing leads to an increase of work load which may influence the time and efforts employees spend on innovation activities. The impact of downsizing on workload level and work intensity varies according to level of downsizing, whereby severe downsizing is expected to result in an increase in workload which may reduce the time and efforts employees spend on innovation activities (Cheng and Kesner, 1997; De Meuse et al., 1994: 160). Mellahi and Wilkinson (2006) noted that under such excessive workload pressure, employees would struggle to complete their tasks, let alone carry out new tasks that may lead to innovative activities. Further, given the lack of planning when implementing short term downsizing, management may not have time to re-organize the organization, and as a result, firms may place insurmountable demands and excessive workload pressure on surviving employees. *Thus, we propose that a) level of downsizing is positively correlated with workload after downsizing; and b) speed of downsizing is positively correlated with workload after downsizing.*

Innovation enhancers

Two innovation enhancers are reported in the innovation and downsizing literatures: i) empowering people through decentralised organizational structure; and ii) multi-skilled workforce and multi-tasking environment.

Empowering people through a decentralised structure facilitates innovativeness by encouraging new idea generation (Subramanian and Nilakanta, 1996). Decentralization helps facilitate the circulation of knowledge, and expose people throughout the organization to new possible innovations. Hage and Aiken (1970) found that when people at the lower levels are empowered, they acquire a sense of ownership and often propose innovative ideas to improve performance. Similarly, Beyer and Trice (1978) reported that while centralization of decision making was

found to inhibit innovation, decentralization facilitated it. Sutton and D'Aunno (1989) found that depending on the type of downsizing, downsizing can generate centralized or decentralized structures. In particular, Mishra and Spreitzer (1998) noted that survivors of downsizing feel more empowered when they are involved in and or consulted about the downsizing implementation, without which they “will withdraw into an utter state of helplessness”. Based on the above analysis, one would assume that speedy downsizing would not involve employees in the process, whereas managers downsizing over a long period of time are more able to involve employees in the implementation of downsizing. Further, speedy downsizing is often carried out by centralized organization where employees’ voice is not heard. Thus, *we propose that speed of downsizing is negatively correlated with increase in decentralization of decision making and empowerment.*

Extant research suggests that availability of *multi-skilled workforce* is tied to successful innovations. Multi-skilled employees and teams seem to innovate more than single-task employees because the likelihood of new innovative ideas is greater when employees or teams are able to mix skills and tasks than when they are only exposed to single activities (Larson and Gobeli 1988). Hammer (1996) argued that downsizing may result in better teamwork and an empowered multi-skilled workforce which encourage new idea generation, ingredients which are necessary for innovation. Appelbaum, Bethune and Tannenbaum (1999) argue that slow and careful implementation of downsizing may lead to a creation of multi-skilled teams that support innovation in the post downsizing period. This is because, while hasty downsizing may destroy existing teams without carefully planning for the creation of new ones, by taking time to implement downsizing, organizations have the necessary space to think about replacing old teams with new ones. Further, severe downsizing often leads to multitasking as surviving employees are often requested to carry out tasks previously completed by downsized employees. Hence, we propose that a) *speed of downsizing is negatively correlated with an increase in multi skilled workforce after downsizing; and b) level of downsizing is positively correlated with an increase in multi skilled workforce after downsizing.*

Research Methods

In this study we combined both survey and interview methods. The sample for this study consisted of a UK population of firms that met four key criteria: First, the firm had to be a single business located in the UK. This is to eliminate the risk of including firms that reduced the number of their employees in the UK as a result of relocating their activities abroad and not because they downsized. We chose to focus on single business firms in order to exclude firms that downsized in one line of business but expanded or did not change the other lines. Second, the firm must be at least a medium-sized firm employing 250 employees or more because small firms are sensitive to the usual small fluctuations in the number of their employees that would have shown as downsizing. Third, the firm must have downsized by at least five per cent in any given year during the observed period. Our five per cent cut-off point is in line with previous research that considers this level as a significant reduction of workforce (see Cascio et al., 1997). Fourth, the firm must have at least one accepted patent during the observed period and thus our sample included only firms that had evidence of innovation. We combined data from two major datasets to identify the targeted sample. First, we identified firms that downsized by at least five percent from FAME (Financial Analysis Made Easy) database. Firms that reduced the number of their employees by five per cent or more and met the above criteria were identified. Second, we included only firms that produced at least one patent. We used the European Patent Office database to identify firms that have patents.

Survey and Interviews

We surveyed 466 UK firms that met our criteria. The first wave of the survey was sent out in September 2005. Out of the 84 firms that responded 63 responses were deemed usable. In November 2005, we sent a second wave to firms that did not respond and obtained 18 responses giving a total response rate of 17 per cent.

We used a self-assessment by firm insiders to examine the relationship between downsizing and factors that stifle or encourage innovation. Self-assessment by firm insiders is commonly used in studying organizational innovativeness (Santarelli and Piergiovanni, 1996). Top managers of participating firms were asked to report the impact downsizing had on the eleven innovation determinants examined in this study. Given that downsizing strategies are developed and executed by top management and the fact that the impact of downsizing is often felt in different departments – human

resources, operations, R&D, finance and so forth – general managers are ideally positioned to provide reliable information on all the issues examined here. Several studies on organizational innovativeness used R&D managers and engineers as key informants (see for example: Bommer and Jalajas, 2002), but we believe that while R&D managers might be able to report on investment in research and innovation climate in their particular department, they would not be able to report on issues located in other departments such as morale of employees, and loss of skilled people throughout the organization.

Respondents were asked to categorise the speed and level of downsizing; and report changes in the innovation environment since the last time they downsized. Respondents were also asked to report the change in the number of new product development (NPD) projects as a result of downsizing. The level of downsizing was measured by the percentage of workforce reduced. We categorized downsizing into high downsizing – more than 20 percent; medium downsizing – 10-19.99 percent; and low downsizing – 5-9.99 percent. We categorized downsizing into three different categories: short-term – less than 6 months from consideration to implementation; medium term – 6 months to one year; and long term – more than one year. The survey was followed by six interviews from three firms that downsized over the last few years. Interviews lasted from between two and three hours. All interviews were recorded and transcribed.

The eleven factors used to measure innovation climate after downsizing were based on the KEYS: Assessing the Climate for Creativity instrument (Amabile et al., 1996). We selected only relevant items and changed the wordings of some of the items for three reasons. First, the original instrument has 78 items and was designed to assess individuals' perceptions towards stimulants to creativity and obstacles to creativity in the workplace (Amabile et al., 1996). However, our key informants were top managers and therefore would not be able to rate statements regarding individual issues (e.g. my supervisor serves as a good work model). Second, the statements were written with individual employees in mind, and therefore we had to change the wording of statements to address top managers. Third, the KEYS instrument is designed to measure all the factors effecting creative behaviour of individuals in organizations, whereas this study focuses specifically on factors that are reported in

prior research to be affected by downsizing. The content validity of the instrument was tested by three experienced researchers. The questionnaire was screened for items that were irrelevant, redundant or difficult to understand by a top manager.

Respondents were asked to rate the degree of change in the factors after downsizing using a mix of single-item and multiple items rating on a Likert scale ranging from 1 (not at all – no change) to 5 (very much-significant change). For becoming *risk averse*, participants were queried whether, after downsizing, people now feel they cannot afford to make mistakes, and whether the level of tolerance of mistakes has decreased; for *availability of resources for innovative projects*, respondents were queried whether, after downsizing, managers started focusing more on short term than long term issues, and whether people engaged in innovative projects find it hard to obtain funds to pay for required resources; for *loss of key personnel*, respondents were asked whether the organization lost key people as a result of downsizing and hasn't been able to replace them; for *employee morale and enthusiasm*, respondents were asked whether the overall morale has been low, and whether employees have been less enthusiastic about creativity as they used to be; for *workload*, respondents were asked whether after downsizing people have too much work to do in too little time; for *new work practices*, respondents were asked whether there are more diversely skilled work groups compared with before the downsizing, and whether teams are encouraged more to work together and solve problems creatively in the organization; for *organizational structure and empowerment*, respondents were asked whether generally, decisions are now more decentralized, and whether people have more freedom in deciding what work to do and how to do it.

Although the survey consisted of primarily single-item measures, reliability was assessed for a number of measures with multiple items which are: risk taking, availability of resources, decentralized organizational structure and empowered and refocused people, employee morale, and introduction of work practices. Cronbach α reliability scores for multiple-items range from .75 to .82 for all factors except “new work practices” which has an alpha of 0.61 which is still within the acceptable range (see Robinson et al., 1991).

Finally, change in innovation output was measured by the relative change in new NPD after downsizing. Top managers of participating firms were asked to report whether after the firm had downsized the firm abolished all NPD projects, the NPD decreased, did not change, or increased. Abolishing all NPD projects was coded as 1, a decrease in NPD was coded as 2, no significant change as 3; and an increase as 4.

Findings

We begin the analysis by examining changes in the number of NPD projects after downsizing. Table 1 shows that 24 (30 percent), 18 (22 percent) and 39 (48 percent) firms in our survey implemented downsizing over a long period of time (over 12 months), medium period of time (6 to 11 months), and short period of time (less than 6 months), respectively. Only four per cent of NPD projects were abolished when downsizing was implemented over a long period of time compared to 20 per cent when implemented over a short period of time. Similarly, 29 per cent of respondents reported that the number of NPD was reduced compared with 56 per cent when implemented over a short period of time. That is, 76 per cent of NPD were impacted negatively when downsizing was implemented over a short period of time compared with 33 per cent when implemented over a long period of time. In contrast, 29 per cent of respondents reported that the number of NPD was intensified when downsizing was implemented over a long period compared with 5 per cent when implemented over a short period of time.

Regarding the level of downsizing, 18 per cent of the firms in our sample downsized between 5 and 10 per cent, 44 per cent downsized between 10 and 20 per cent, and 36 per cent downsized more than 20 per cent. It is interesting to note that 59 per cent of firms that downsized over 20 per cent of its workforce reported a reduction in NPD compared with 37 per cent in firms that downsized between 5 and 10 per cent. Furthermore, 10 per cent of high downsizing firms reported an intensification in NPD after downsizing compared with 19 per cent in low downsizing firms. Overall, the data show that 12 per cent of firms abolished NPD projects after downsizing, 44 per cent experienced a reduction in the number of NPD, 28 per cent did not experience significant change in the number of NPD, and 39 per cent reported an intensification in NPD.

[insert Table 1 about here]

Table 2 shows the means and standard deviations of the role of each factor in stifling innovation (barriers to innovation) or supporting innovation (innovation enhancers) after downsizing. Table 2 shows that increase in workload after downsizing (Mean=3.89) is the key hindering factor for innovation. Interviewees revealed that after downsizing, teams became smaller and employees did not have the time to carry out innovative activities.

Lack of resources for innovation (Mean=3.49) follow post-downsize workload (Mean = 3.89) as the key hindrance factor. Respondents reported that low levels of employee' morale and enthusiasm for innovation after downsizing played the least part in hindering innovation after downsizing (Mean= 3.20). For innovation enhancers, both empowering people through decentralised organizational structure (Mean=4.41) and availability of multi-skilled workforce and multi-tasking environment (Mean 4.17) are reported to have improved significantly after downsizing.

[insert Table 2 about here]

Results for all the propositions are reported in Table 2. We used Spearman correlation coefficients to evaluate the relationship between downsizing types and innovation determinants. We used Spearman coefficients, a non nonparametric measure, because our data is ordinal rather than continuous. A number of anticipated relationships between types of downsizing and innovation determinants were supported. As expected both level of downsizing ($r=.632$) and speed of downsizing ($r=.721$) were positively correlated with risk aversion after downsizing. Interestingly, and perhaps understandably, length of time of downsizing is negatively associated with lack of qualified personnel ($r= -.508$). The negative direction of the relationship indicates a lower score in terms of the association between speed of downsizing and a negative change in the level of qualified personnel after downsizing. Interviewees

repeatedly mentioned the importance of getting the timing right. For instance, while downsizing over a long time-period gives management time to think it through, interview data suggest that it also has a negative effect on retaining skilled people because of the uncertainties surrounding job security which subsequently leads high skilled people, who are marketable, to jump ship. Similarly, the relationship between speed of downsizing and a decrease in employees morale was found to be significant and negative ($r = -.423$). Again, this is due to the uncertainty created by what interviewees called 'death by a thousand cuts'. As put by one manager:

most people (started) thinking is it ever going to end? Six months is a long consultation...some of them will have just, you know, feel like agony. Just get the operation over. Stop waiting. Either let me go or keep me on...so everybody was knackered.

Therefore, one could think of medium term downsizing as a middle ground between inadequate -short term downsizing- and excessive – long term downsizing- planning. As expected, level of downsizing was found to be positively correlated with a decrease in employees morale after downsizing ($r = .842$).

As far as innovation enhancers were concerned, the results were mixed. Only one significant relationship was detected between speed of downsizing and innovation enhancers. Speed of downsizing and increase in multi-skilled workforce after downsizing was found to be negatively correlated ($r = -.784$). The lack of strong significant (positive or negative) relationships indicates that there is no clear relationship between the timeframe for downsizing and innovation enhancers. As for the relationship between level of downsizing and innovation enhancers, we found support for the relationship between level of downsizing and empowering people after downsizing which was found to be significant and positive ($r = .791$).

Discussion, Limitations and Future Research

The theoretical thesis underlying our study is that the impact of downsizing on innovation determinants is contingent upon the speed of implementing the downsizing and the severity of downsizing. This study aims to extend existing findings by probing further at the relationship between downsizing and innovation determinants by looking in particular at time frame and severity of

downsizing hence providing a more useful and sensitive approach to this topic of research. First, the time-frame for downsizing was significantly associated with a number of factors that determine innovation. Respondents reported that 75 percent of NPD projects were abolished or reduced when downsizing was implemented over a short time frame. As expected, our results confirm that speed of downsizing is significantly and positively associated with risk aversion and increase in workload. The increase in workload is perhaps due to the fact that downsizings implemented within short time-spans are often poorly planned, and as such, may result in significant disruption to firms' structures and procedures which lead to an increase in workload as people try to cope with lack of clear structure and procedures. Surprisingly, speed of downsizing is found to be negatively associated with loss of qualified personnel after downsizing. This goes against our proposition that a 'big bang' style of downsizing does not give managers the time to think about downsizing in a strategic way and results in the haemorrhage of key talent from their workforce (Cameron et al., 1993). The latter result suggests that it is not the case that taking time to downsize is always better when it comes to the timeframe. Indeed our interviews data suggest that the longer the timeframe, the more likely it is that talent walked out of the door as the length of time and associated uncertainty lead to staff exiting. So from a practical point of view this is a very delicate line for managers to tread. Similarly, contrary to our expectation, speed of downsizing is found to be negatively associated with low morale and enthusiasm for innovation. Interview data suggests that when downsizing drags on for a long period of time employees' enthusiasm for innovation wanes down, and elicits behavioural responses that damage innovation. For example, employees may adjust their

cooperative behaviour by reducing their workplace or team involvement, or by withholding information and treating knowledge and skills as confidential as they work without enthusiasm . The restriction of information exchange and cooperation between individuals during the downsizing event is likely to increase rivalry between individuals, draw work teams apart, reduce team cohesiveness and increase intra- and inter-group hostility.

The other key aspect we examined was in relation to the level of downsizing. Those who downsized more significantly reported a greater reduction in NPD (see Table 1). Our results show that the association between level of downsizing and obstacles to innovation is more consistent to that of the speed of downsizing. The analysis shows that, as proposed, three obstacles to innovation are significantly correlated with level of downsizing, namely: risk aversion, and low level of employee morale and enthusiasm for innovation. Interestingly, level of downsizing is not associated with high work load. This indicates perhaps that when it comes to workload it is not the level of downsizing that matters but the manner of implementation. As for the association between level of downsizing and innovation enhancers, the results are less consistent. Contrary to expectations, the results show that level of downsizing is not significantly correlated with an increase in multi skilled workforce and multi tasking environment.

What can we learn from the above results? These results confirm our general proposition that the way managers implement downsizing is associated with innovation determinants. More specifically, the results, while not conclusive, provide evidence to suggest that looking at the association between the speed of downsizing and level of downsizing helps fine tune the relationship between downsizing and

innovation. Further, our research sheds some new light on which, and how, innovation determinants are associated with speed and level of downsizing. We did not measure the impact of speed and level of downsizing on innovation output, but it was clear that a higher percentage of NPD projects were abolished or reduced when firms implemented severe or speedy downsizing (Table 1). However, we must be careful about the strength of the association between speed and level of downsizing and innovation determinants. The moderate number of significant correlations suggests that to say that the speed and level of downsizing determine post downsizing level of innovation may be too strong a claim. There is more going on than the time frame for downsizing and level of downsizing alone. Future research examining the relationship between obstacles to innovation and innovation enhancers after downsizing is needed. We also need to open up the black box of process. Different methods may be required to get close to how organisations operationalise the downsizing process .

Limitations of the Research

We must note three caveats with this paper. First, using a single informer in each firm is a limitation of the research design given innovation takes place in different parts of the organization although it reflects the usual customary practice of survey design, . Future research should consider alternative means of collecting data such as using multiple respondents. Further, improvements could be made in the measurement of innovation determinants. In the current study, a number of innovation determinants were measured using single item constructs. We suggest that future research consider the development of a reliable scale using multiple item constructs to measure innovation determinants.

Second, our study was of UK firms and one should be wary of generalising the findings to other countries. Interesting questions arise as to the generalizability of our findings in different country settings. While many of the issues raised in this study such as increase of work load as a result of downsizing are likely to be relevant in different settings, they may also be differences in employees' reaction owing to the different institutional and cultural contexts. Thus, the impact of downsizing on innovation may differ from one country to another, and there may be a need to take new specific innovation determinants into consideration.

Third, although interviews provided important insights, the number of interviews is small and future research conducting more extensive qualitative research on the process of how downsizing impacts on innovation is needed. Detailed cases tracing through the unfolding of the downsizing process would be very valuable in helping us understand the processes involved. Because of the relatively small sample size, a larger sample would provide stronger evidence on the nature of the relationship between downsizing and innovation determinants.

Finally, while this study was able to probe into the factors that shape the relationship between downsizing and innovation determinants, it was beyond the scope of the current study to cover several other potentially important factors that may shed more light on the relationship. For example, the level of human resource slack the organization has prior to the downsizing may affect the impact downsizing has on the innovative environment. Future studies would benefit from taking factors into consideration. Overall we feel that this research has shed some valuable and much needed light on the relationship between downsizing and innovation both theoretically and practically.

References

- Amabile, T.M. and Conti, R. 1995. What downsizing does to creativity? *Issues and Observations*, 15: 1-6.
- Amabile, T.M. and Conti, R. 1999. Changes in the work environment for creativity during downsizing. *Academy of Management Journal*, 42(6): 630-640.
- Amabile, T.M., Conti, R., Coon, H., Lazenby, J. and Herron M. 1996. Assessing the work environment for creativity. *Academy of Management Journal*, 39: 1154–1184.
- Amabile, T.M., and Gyskiewicz, S.S. 1987. Creativity in the R&D laboratory. *Technical report no. 30*, Center for Creative Leadership, Greensboro, NC.
- Amabile, T.M., Hadley, and C. Kramer, S. 2002. Creativity under the gun. *Harvard Business Review*, 80(8): 52-63.
- Appelbaum, S.H., Bethune, M. and Tannenbaum, R. 1999. Downsizing and the emergence of self-managed teams. *Participation and Empowerment: An International Journal*, 7 (5): 109-30.
- Baumol, W.J., Blinder, A.S. and Wolff, E.N. 2003. *Downsizing in America: reality, causes and consequences*. Russell Sage Foundation, New York.
- Becheikh, N., Landry, R. and Amara, N. 2006. Lessons from innovation empirical studies in the manufacturing sector: A systematic review of the literature from 1993-2003. *Technovation*, 26 (5-6): 644-664.
- Bommer, M. and Jalajas, D. 2002. The innovation work environment of high-tech SMEs in the USA and Canada, *R&D Management*, 32(5): 379–386.
- Bommer, M. and Jalajas, D. 1999. The threat of organizational downsizing on the innovation propensity of R and D professionals. *R&D Management*, 29: 27-34.

- Boone, J. 2000. Technological progress, downsizing and unemployment. *The Economic Journal*, 110: 581-600.
- Brockner, J., Grover, S.L. and Blonder, M.D. 1988. Predictors of survivors' job involvement following layoffs: A field study. *Journal of Applied Psychology*, 73: 436-442.
- Brockner, J., Grover, S., Reed, T., DeWitt, R. and O'Malley, M. 1987. Survivors' Reactions to layoffs: we get by with a little help from our friends. *Administrative Science Quarterly*, 32: 526-542.
- Brown, S.L. and Eisenhart, K.M. 1995. Product development: past research, present finding and future directions. *Academy of Management Review*, 20: 343–378.
- Burton, G., Keels, J. K. and Shook, C. 1996. Downsizing the firm: answering strategic questions. *Academy of Management Executive*, 10: 38-45.
- Cameron, K.S. 1994. Strategies for successful organizational downsizing. *Human Resource Management*, 33: 477-500.
- Cameron, K.S., Freeman, S.J., and Mishra, A.K. 1993. Downsizing and redesigning organizations, in Huber, G. and Glick, W. (eds.), *Organizational change and redesign*, Oxford University Press, New York, 19-63.
- Cameron, K.S., Freeman, S.J. and Mishra, A.K. 1991. Best practices in white-collar downsizing: managing contradictions. *Academy of Management Executive*, 5(3): 57-73.
- Cascio, W.F. 1993. Downsizing: what do we know? What have we learned? *Academy of Management Executive*, 7(1): 95-104.
- Cascio, W. F., Young, C. and Morris, J. 1997. Financial consequences of employment change decisions in major U.S. corporations. *Academy of Management Journal*, 40(5): 1175-1190.
- Cefis, E. and Marsili, O. 2005. A matter of life and death: innovation and firm survival. *Industrial and Corporate Change*, 14: 1167-1192.

- Chadwick, C., Hunter, L.W. and Walston, S.L. 2004. Effects of downsizing practices on the performance of hospitals. *Strategic Management Journal*, 25(5): 405-427.
- Cheng, J. and Kesner, I. 1997. Organizational slack and response to environmental shifts: the impact of resource allocation patterns. *Journal of Management*, 23: 1-18.
- Chorely, D. 2002. How to manage downsizing. *Financial Management*, May: 6.
- Christensen, M.C. 1997. *The innovator's dilemma*. Harvard Business School Press, Cambridge, Mass.
- Cody A.M., Hegeman, G.B. and Shanks, D.C. 1987. How to reduce the size of the organization but increase effectiveness. *Journal of Business Strategy*, 8: 66-70.
- Cumming, B. 1999. *Understanding innovation from cradle to grave*. Butterworth-Heinemann, Oxford.
- De Meuse, K.P., Vanderheiden, P.A. and Bergmann, T. 1994. Announced layoffs: their effects on corporate financial performance. *Human Resource Management*, 33(4): 509-530.
- Dooley, R.S. and Fryxell, G.E. 1999. Attaining decision quality and commitment from dissent: the moderating effects of loyalty and competence in strategic decision-making teams. *Academy of Management Journal*, 42: 389-402.
- Dougherty, D. 1992. Interpretive barriers to successful product innovation in large firms. *Organization Science*, 3: 179-202.
- Dougherty, D. and Bowman, E. 1995. The effects of organizational downsizing on product innovation. *California Management Review*, 37: 28-44.
- Drew, S.A.W. 1994. Downsizing to improve strategic position. *Management Decision*, 32(1): 4-11.
- Eisenberger, R., Fasolo, P. and Davis-LaMastro, V. 1990. Perceived organizational support and employee diligence, commitment, and innovation. *Journal of Applied Psychology*, 75: 51-59.

Fisher, R.S. and White, M.A. 2000. Downsizing in a learning organization: are there hidden costs? *Academy of Management Reviews*, 25(1): 244- 254.

Greenhalgh, L. 1983. Organizational decline. *Research in the Sociology of Organizations*, Volume 2, JAI Press, Greenwich.

Hage, J. and Aiken, M. 1970. Social change in complex organizations. Random House, New York.

Hammer, M. 1996. *Beyond reengineering*. Harper Collins, London.

Higgins, J.M. 1995. *Innovate or evaporate*. New Management Publishing Company Inc, New York.

Hitt, M., Hoskisson, R., Johnson, R. and Moesel, D. 1996. The market for corporate control and firm innovation. *Academy of Management Journal*, 39(5): 1084-1120.

Isabella, L.A. 1989. Downsizing: survivors' assessments. *Business Horizons*, May: 35-41.

Johne, F.A. and Snelson, P. 1988. Success factors in product innovation: a selective review of the literature. *Journal of Product Innovation Management*, 5: 114-28.

Kay, N.M. 1979. *Innovating firm*. MacMillan Press, London.

Kivimaki, M., Vahtera, J., Pentti, J., Thomson, L., Griffiths, A. and Cox, T. 2001. Downsizing, changes in work, and self-rated health of employees: a 7-year 3-wave panel study. *Anxiety, Stress, and Coping*, 14: 59-73.

Larson, E.W. and Gobeli, D.H. 1988. Organizing for product development projects. *Journal of Product Innovation Management*, 5(3): 180-190.

Lawson, M. 2001. In praise of slack: time is of the essence. *Academy of Management Executive*. 15(3): 125-135.

- Lewin, E.J. 2001. The effects of downsizing on organizational buying behavior: an empirical investigation. *Journal of the Academy of Marketing Science*, 29(2): 151-164.
- Littler, R.C. and Innes, P. 2003. Downsizing and deknawledging the firm. *Work, Employment and Society*, 17(1): 73-100.
- Love, G.E. and Nohria, N. 2005. Reducing slack: the performance consequences of downsizing by large industrial firms, 1977-93. *Strategic Management Journal*, 26: 1087-1108.
- Luthans, B.C. and Sommer, S.M. 1999. The impact of downsizing on workplace attitudes. *Group and Organization Management*, 24: 46-70.
- McCune, J. T., Beatty, R.W. and Montagno, V.R. 1988. Downsizing: practices in manufacturing firms. *Human Resource Management*, 27/2: 145-161.
- McKinley, W., Sanchez, C.M., and Schick, A.G. 1995. Organizational downsizing: constraining, cloning and learning. *Academy of Management Executive*, 9(3): 32-44.
- Mellahi, K. and Wilkinson, A. 2006. The impact of downsizing on innovation, *Academy of Management Best Paper Proceedings, 66 Annual Meeting of the Academy of Management*, Atlanta, Georgia, August 11-16.
- Mishra, A. K. and Spreitzer, G. M. 1998. Explaining how survivors respond to downsizing: the roles of trust, empowerment, justice, and work redesign. *Academy of Management Review*, 23: 567-588.
- Mone, M.A., McKinley, W. and Barker, V.L. 1998. Organization decline and innovation: a contingency framework. *Academy of Management Review*, 23(1): 115-132.
- Moore S., Kuhrik, M., Kuhrik, N. and Katz, B. 1996. Coping with downsizing: stress, self-esteem, and social intimacy. *Nursing Management*, 27: 28-30.
- Nienstedt, P.R. 1989. Effectively downsizing management structures. *Human Resource Planning*, 12 (2): 155-165.

- Nohria, N. and Gulati, R. 1996. Is slack good or bad for innovation? *Academy of Management Journal*, 39(5): 1245-1264.
- O'Neill, H.M., Pouders, R.W. and Buchholtz, A.K. 1998. Patterns in the diffusion of strategies across organizations: insights from innovation diffusion literature. *Academy of Management Review*, 23: 98-114.
- O'Reilly, C. 1989. Corporations, culture, and commitment: motivation and social control in organizations. *California Management Review*, 31, Summer: 9-25.
- Robinson, J.P., Shaver, P.R., and Wrightsman, L.S. 1991. *Measures of personality and social psychological attitudes*, Academic Pr., San Diego.
- Ross, F.P. 1974. Innovation adoption by organizations. *Personnel Psychology*, 27, 21-47.
- Santarelli, E. and Piergiovanni, R., 1996. Analyzing literature-based output indicators: the Italian experience. *Research Policy*, 25: 689-711.
- Shah, P.P. 2000. Network destruction: the structural implications of downsizing. *Academy of Management Journal*, 43: 101-112.
- Singh, J. 1986. Performance, slack, and risk taking in organizational decision making. *Academy of Management Journal*, 29(3): 562-585.
- Staw, B.M., Sandelands, L.E. and Dutton, E.J. 1981. Threat-rigidity effects in organizational behaviour: a multi-level analysis. *Administrative Science Quarterly*, 26: 501-524.
- Subramanian, A. and Nilakanta, S. 1996. Organizational innovativeness: exploring the relationship between organizational determinants of innovation, types of innovations, and measures of organizational performance. *Omega: International Journal of Management Science*, 24: 631-647.
- Sutton, R.I. and D'Aunno, T. 1989. Decreasing organizational size: untangling the effects of money and people. *Academy of Management Review*, 14: 194-212.

Tombaugh, J.R. and White, L.P. 1990. Downsizing: an empirical assessment of survivors' perceptions in a post-layoff environment. *Organizational Development Journal*, 8: 32-43.

Tushman, L.M. and O'Reilly, A.C. 1997. *Winning through innovation*. Harvard Business School Press, Boston, MA .

Unsworth, L.K. 2004. Firefighting: the effects of time pressure on employee innovation, Paper presented at the 18th Annual Conference of the Australian and New Zealand Academy of Management, 8-11 December.

Vahtera, J., Kivimäki, M. and Pentti, J. 1997. Effect of organizational downsizing on health of employees. *Lancet*, 350: 1124-1128.

Table 1. Downsizing Methods and Change in Innovation Measured by New Product Development

		NPD projects abolished	NPD reduced	NPD No significant change	NPD intensified	Total
		% (Frequency)	% (Frequency)	% (Frequency)	% (Frequency)	% (Frequency)
Speed of downsizing	Long term downsizing	4% (1)	29% (7)	37% (9)	29% (7)	30% (24)
	Medium term downsizing	5% (1)	39% (7)	39%(7)	17%(3)	22%(18)
	Short term downsizing	20%(8)	56%(22)	18%(7)	5%(2)	48%(39)
Level of downsizing	Low downsizing	6%(1)	37%(6)	37%(6)	19%(3)	18%(16)
	Medium downsizing	17%(6)	33%(12)	33%(12)	17%(6)	44%(36)
	High downsizing	10%(3)	62%(18)	17%(5)	10%(3)	36%(29)
Total		12% (10)	44% (36)	28% (23)	38%(12)	100% (81)

Table 2. Spearman Correlation Coefficients for Types of Innovation and Innovation Determinants

Variables: Innovation Determinants	Mean	s.d	Type of Downsizing	
			Level of downsizing	Speed of downsizing
1. Level of Workforce Reduction	2.16	.73	1	.003
2. Length/Time of Downsizing	1.81	.87	.003	1
3. Risk-aversion	3.42	1.24	.632*	.721**
4. Lack of resources for innovation	3.49	1.21	-.084	.154
5. Loss of qualified personnel	3.43	1.23	.298	-.508*
6. Low levels of employee' morale and enthusiasm for innovation	3.20	1.25	.842**	.423
7. High work load	3.89	.97	.175	-.294
8. Multi-skilled workforce and multi-tasking environment	4.17	.78	.174	.748***
9. Empowering people through decentralised organizational structure	4.41	.76	.791**	.057

N= 81

*p<.05

**p<.01

***p<.001