Chapter 11
Flexibility, Controllability and Risk Measurement Metrics in Changing Pattern of Business Environment

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1 Introduction

Today's competitive market companies are under pressure as customers want new and more innovative products that are tailored to their specific needs. They also want cost-effective, timely service and responsive support which meets their requirements. As always, reducing cost and improving quality requires ongoing initiatives within every enterprise. Delivering higher value, whether within the supply/value chain to partners and OEMs or to the end user, has become more and more important.

All businesses today operate in a marketplace characterized by change. The challenge is to become flexible in order to ensure an agile response to changing market conditions. Managing planned change, for example, through business process reengineering (BPR), is difficult in itself. However, managing unplanned change demands the ability to react faster and use new technology to match market conditions and customer demands in a way that maintains or creates competitive advantage.

As business strategies have evolved, the focus has shifted away from being big and stable with complete control to being small, nimble, and more responsive to the market. This evolution reflects the introduction of new technology, new trends, and, in particular, new customer behavior. New markets are up for grabs because being big and stable is no longer a competitive formula. Flexibility creates the chance to seize the market by responding faster to customer demands. Today's world leaders are characterized by their ability to deliver the products that customers want with minimum time-to-market and maximum capability to revamp products to meet market expectations.

This chapter is an attempt to identify, select, and establish Flexibility, Controllability and Risk Parameters that support effective way of doing business. The objective is

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Sushil and E.A. Stohr (eds.), *The Flexible Enterprise*, Flexible Systems Management,
DOI 10.1007/978-81-322-1560-8_11, © Springer India 2014

to focus on how a business house can fit into addressing the new paradoxical pattern in modern environment.

To become flexible, a company must recognize change in the marketplace and then manage and master that change.

Finally, flexible enterprises change the way that they interact with their business partners so that they can compete more effectively through cooperation. Today's successful enterprise knows that it does not dictate market demands – it listens to its customers. It finds its core competence and makes partnerships when it is necessary to provide the customer with a solution. Supply chain cooperation is only one aspect of becoming more cooperative – knowledge sharing is another. A competitive company is a company looking for partners to benefit its own products and services.

> The system age, is a synthesis of the Machine Age and its antithesis. The antithesis gives focus on synthesis rather than analysis, and is governed by the doctrine of expansionism. It is looking the reality to be much more integrated and unified, as the organic systems once disassembled could not be fully reassembled. Thus, it looks at the system under consideration to be part of a larger whole called as 'suprasystem'. The containing whole is to be first identified and its properties are to be explained. Then the role or function of the system within the containing whole needs to be explained (Sushil 2000).

The study tries to identify factors concerning flexibility, controllability, and risk and tries to identify a confluence among them.

2 Objective

The research objective is to establish list of flexibility, controllability, and risk measurement metrics in changing pattern of business environment.

This is an attempt to substantiate "No Tyranny of the OR" and "embrace the Genius of the AND." Instead of being oppressed by the "Tyranny of the OR," highly visionary companies liberate themselves with the "Genius of the AND" – the ability to embrace both extremes of a number of dimensions at the same time.

3 Research Approach

Figure 11.1 illustrates the approach to achieve the above research objective.

3.1 Review of the Literature

Literature survey is a background work that is made personally. It is based on books and academic publications. The topics of literature survey are selected so that they support the study. The main goal of a literature survey is to gather a basis for the

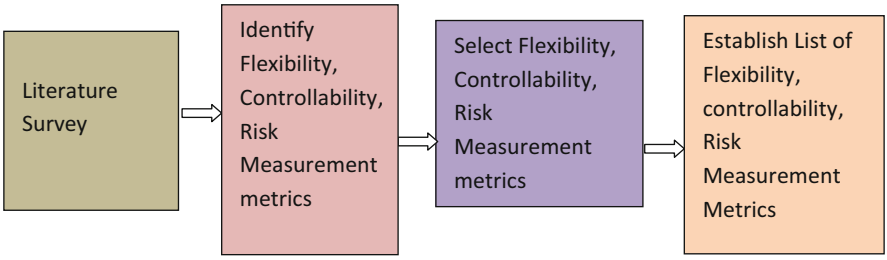

Fig. 11.1 Diagrammatic representation of research approach

practical work and to get familiarized with existing literature and research on the topic. The objective is not to reinvent the wheel and take a stock of work that has already been done in the area of the study.

3.2 Grounded Theory: Identify Flexibility, Controllability, and Risk Measurement Metrics

Grounded theory (GT) is a systematic methodology in the social sciences involving the generation of theory from data. It is mainly used in qualitative research but is also applicable to quantitative data. Grounded theory is a research method, which operates almost in a reverse fashion from traditional research and at first sight may appear to be in contradiction to the scientific method. Rather than beginning with a hypothesis, the first step is data collection, through a variety of methods. From the data collected, the key points are marked with a series of codes, which are extracted from the text. The codes are grouped into similar concepts in order to make them more workable. From these concepts, categories are formed, which are the basis for the creation of a theory or a reverse engineered hypothesis. This contradicts the traditional model of research, where the researcher chooses a theoretical framework, and only then applies this model to the phenomenon to be studied. Grounded theory was developed by two sociologists, Barney Glaser and Anselm Strauss. Their collaboration in research on dying hospital patients led them to write the book *Awareness of Dying*. In this research, they developed the constant comparative method, later known as grounded theory.

3.3 Delphi: Select Flexibility, Controllability, and Risk Factors/Parameters

The concept of Delphi was originally developed from a US Air force project named "Delphi" of the early 1950s, which was related to the use of expert opinions. The Delphi method involves selection of suitable experts, development of appropriate

questions to be put to them which is administered by remote correspondence and analysis of their responses.

The method is based on expert judgment of a specific subject area and does not rely on previous historical data being available. Because of this, Delphi method works well in new areas that are not easily quantifiable in most of the cases.

3.4 Statistical Test (t-Test): Establish Flexibility, Controllability, and Risk Factors/Parameters

A t-test is any statistical hypothesis test in which the test statistic follows a Student's t distribution if the null hypothesis is supported. The t-statistic was introduced in 1908 by William Sealy Gosset, a chemist working for the Guinness brewery in Dublin, Ireland. T-test was devised by Gosset to monitor the quality of stout. T-Test can be defined as a statistical examination of two population means. A two-sample t-test examines whether two samples are different and is commonly used when the variances of two normal distributions are unknown and when an experiment uses a small sample size. The test statistic in the t-test is known as the t-statistic. The t-test looks at the t-statistic, t-distribution and degrees of freedom to determine a p value (probability) that can be used to determine whether the population means differ.

4 Literature Survey on Flexibility, Controllability, and Enterprise Risk Management

4.1 Flexibility

The interest on organizational flexibility has been growing in the last decades, and different approaches have emerged with focus on dimensions of organizational flexibility (e.g., Eppink (1978), Volberda (1996), Sanchez (2004), Verdu Jover et al. (2005), Andrew and Hatum (2006)), on the interaction between firm size and organizational flexibility (e.g., Kraatz and Zajac (2001), Ebben and Johnson (2005)), and on context specificity of flexible capabilities (e.g., Eppink (1978), Volberda (1996), Verdu Jover et al. (2005), Nadkarni and Narayanan (2007)).

External Flexibility is best described by the maxim of not putting all of one's eggs in a single basket (Ansoff 1965). Flexibility can be defined as "the ability to change or react with little penalty in time, effort, cost or performance" (Sushil 2000, 2000a). Flexibility is a multifaceted concept with different connotations, paradigms, foundations, and dimensions. Strategic, Organizational, Financial, Information Systems, and Manufacturing Flexibilities have been identified as cornerstones of Enterprise Flexibility (Sushil 2000). Flexibility is not shifting to

extremes, but to dynamically balance them. There are many connotations of flexibility like agility, adaptiveness, responsiveness, and versatility. One popular view of flexibility can emerge by mapping it on to functional structure (Sushil et al. 2000) – Strategic Flexibility, Manufacturing Flexibility, Human Resources Flexibility, Financial Flexibility, Technology Management Flexibility, Marketing Flexibility, Organizational Flexibility, and IT/IS Flexibility.

It is widely accepted that organizations today are facing the issue of responding continually to an environment, which is increasingly dynamic, complex, and uncertain as a consequence of demographic changes, a more global economy, the "hypercompetition," or knowledge-based competition (Daft and Lewin 1993).

A company's competitiveness will depend not only on being efficient in their organizational routines but also on their innovative ability at the same time (Abernathy and Utterback 1978; Hayes and Abernathy 1980) which represents the notion of balance between exploration (be innovative – radical change) and exploitation (be efficient in organizational routines – incremental change).

This is a common topic in literature related to organizational adaptation (Benner and Tushman 2002). Such balance allows the firm to obtain and sustain its competitive advantage which, according to Sommer has to be redefined in terms of organizational speed and flexibility (Sommer 2003). This characteristic is related to develop new dynamic processes that enable, for instance, a fast reconfiguration of the resource base (Teece et al. 1997; Eisenhardt and Martin 2000; Helfat et al. 2007), changing the nature of activities (Aaker and Mascarenhas 1984), or dismantling of current strategies (Harrigan 1985).

The interest on organizational flexibility has been growing in the last decades, and different approaches have emerged with focus on dimensions of organizational flexibility. Literature in organizational flexibility is still lacking of comprehensive modeling which explains the relationships between its key variables and consequent side effects of such iterations. Exploring these interactions and the dynamic adaptation processes towards the desired adjustment is the main motivation of the present research.

We decided to start our analysis with Volberda's model on organizational flexibility which addresses how the companies should manage their dynamic capabilities and organizational design, in order to achieve the desired fit by being flexible. He studied how the organizations deal with the paradox of flexibility over time, that means, how they continuously adapt to the changes in the environment and balance corporate discipline with entrepreneurial creativity. Exploring the paradoxical nature of flexibility, Volberda (1998) develops a strategic flexibility framework to configure the resources of the firm for effective responses to organizational change providing a comprehensive set of variables and their linear relationships. In addition to this argument, we found that Volberda anticipated the possibility of modeling the adaptation process from a dynamic point of view – "Flexibility is not a static condition, but it is a dynamic process. Time is a very essential factor of organizational flexibility" (Volberda 1998). However, he didn't focus on such adaptation process as a sequence of stages allowing to understanding key factors of organizational flexibility.

A lot of work has been done to examine Volberda's theory in detail in order to analyze its consistency and effectiveness, especially in terms of its causal explanation of organizational adaptation to changing environments. The causal argument Volberda presents is very detailed and relatively explicit. Therefore, lots of research use Volberda's theory as foundation for its systematic exploration.

4.2 Controllability

Management is the "the process of using organization resources to achieve organizational objectives through the functions of planning, organizing and staffing, leading, and controlling" (DuBrin 2000, p. 3). Each of these functions of management needs careful and detailed managerial attention (Sather 2004). As the purpose of the current chapter is the development of a framework for managerial control, a detailed review of management control literature is essential.

Control is considered a very important function of managers. Control is defined as "keeping things on track" (Merchant 1985, p. 1), and it has been identified as "the final function in the management process" (Merchant 1985, p. 2). Anthony et al. (1989, p. 5) provided a definition of control that emphasized command and control – control is the process of guiding a set of variables to attain a preconceived goal or objective. It is a broad concept applicable to people, things, situations, and organizations. In organizations, it includes various planning and controlling processes.

According to Simons (1995, p. 29), "control implies managing the inherent tension between creative innovation, on the one hand, and predictable goal achievement, on the other, so that both are transformed into profitable growth." This view is more practicable for an organization in which features such as increasing competition, rapidly changing markets, new forms of organizations, and customer orientation are more visible than in other organizations. Simons's (1995) definition is based on the notion that organizations are multifaceted. They are also social systems, collections of individuals bound together to meet personal and social needs. Group norms and patterns of power and influence affect internal decision processes. Organizations are also sets of relationships among self-interested participants, each of whom is balancing personal well-being and organizational needs (p. 13).

Control in organizations is achieved in many ways, ranging from direct surveillance to feedback systems to social and cultural control (Simons 1995, p. 5). Similarly, in the management literature, many definitions of control with differing theoretical perspectives can be found. Many researchers accepted that control means different things to different people. Chua et al. (1989, p. 4), for example, articulated three distinct meanings of control as follows:

1. As a means of steering or regulation, which is the classical cybernetic meaning
2. As a means of domination of one or more people or groups of people by other people or groups, which has more sociological and political overtones
3. As a process of the management control and power

Thus, control can be viewed from many different perspectives. As Otley et al. (1996, p. 6) explained, "'control' is itself a highly ambiguous term as evidenced by the difficulty of translating it into many European languages." In this chapter, the terms control and control systems are used to mean management control and management control systems.

In the literature of management, the term "control" is often used in a comparative sense. Control means a comparison between the planned and actual performance together with identifying possible corrective actions. For example, according to Stoner and Wankei (1986, p. 17), the control process of control consists of defining desired results, .establishing predictors of results, establishing standards for predictors and results, establishing information and feedback network, and evaluating information and taking corrective action.

Such a control process requires the listing of steps consisting of very specific goals and objectives and the measure of how well those goals and objectives are achieved. Many academics and researchers have argued in favor of such a control process. According to Merchant (1982, p. 43), "after strategies are set and plans are made, management's primary task is to take steps to ensure that these plans are carried out, or, if conditions warrant, that the plans are modified." Thus, the function of control is to take measures to increase goal congruence or prevent organizational participants from behaving in ways where goal incongruence exists.

Control is also discussed in the literature as part of the strategic implementation process. The argument for this is that without control, proper execution of strategy may be impossible. Anthony (1988, p. 10), for example, defined management control as "the process by which managers influence other members of the organization to implement the organization's strategies." However, this work "emphasizes the behavioral aspects of control more strongly, still takes strategy as given" (Berry et al. 1998, p. xvi). Anthony (1988, pp. 30–34) further defined strategic planning as a means of formulating strategies. Merchant (1985, p. 3) held the view that "strategy is seen as related to, but usually separable from, control".

Literature reveals that control is considered a principle of management too; the others include planning, organizing, staffing, directing, and coordination. It is assumed that a certain degree of control is necessary to keep things on track in any organization. Control is used as a means of ensuring that participants will do what the organization wants to do and they will not do something that the organization does not want to do. In the words of Merchant (1985, p. 4), control, as the word applies to a function of management, involves influencing human behavior, because it is people who make things happen in an organization. In other words, control involves managers taking steps to help ensure that human beings do what is best for the organization (original emphasis).

Otley (1989, p. 32) pointed out that ". . . a great amount of management activity seems to be concerned with influencing the behavior of others with the object of producing desired outcomes." Organizational participants sometimes fail to act in the organization's best interest so that a set of controls has to be implemented to protect their behavior from undesirable behavior and ensure desirable actions. To establish control over organizational participants' behavior, adequate measures for

both expected and actual behavior should be taken into account. Merchant (1985) held the view that "Control is seen as having one basic function" to help ensure the proper behaviors of the people in the organization. These behaviors should be consistent with the organization's strategy, if one exists, which, in turn, should have been selected as the best path to take towards achievement of the organization's objectives.

The absence of adequate control can have many harmful organizational consequences. Problems such as defective products, unsatisfied customers and workers, inability to compete successfully in the marketplace, and weak coordination within the hierarchy levels of the organization might be the results of poor control. On the contrary, too much control can also be harmful for effective and efficient organizational performance. On one hand, tight control may reduce the organization's flexibility and innovation. On the other hand, it may increase the operational cost and employee pressure. Control being a supportive activity will not directly contribute to the value added. Accordingly, too much control may create unwanted financial as well as behavioral consequences. Therefore, maintaining an optimal balance between stability and flexibility through control is very important and has always been a major challenge for organizations. With the changes in the way organizations observe measure and evaluate them, however, an obvious change in both control mechanisms can be seen. The following sections are devoted to a brief discussion of control systems.

The literature holds a large number of definitions of management control. The modern views of management control originated with the influential work of Robert Anthony who drew boundaries between management control, strategic planning, and operational control. Anthony (1965, p. 17) defined management control as "the processes by which managers assure that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives." Anthony declared that functions of managers of an organization consisted of planning and control systems and management control was supposed to be a linking process between strategic planning and operational control. Anthony and Govindarajan (2004) defined control as, "The process by which managers influence other members of the organization to implement the organization's strategies" (p. 7). Garrison and Noreen (2000) suggested a different definition of management control as follows: "those steps taken by management that attempt to increase the likelihood that the objectives set down at the planning stage are attained and to ensure that all parts of the organization function in a manner consistent with organizational policies" (p. 378).

4.3 Enterprise Risk Management (ERM)

ERM is a data-intensive process that measures all of a company's risks. This includes providing managers with an understanding of the full array of a company's risks including financial risks, investment-oriented risks, operations-based risks,

and market risks, as well as legal and regulatory risks for all of the locations in which a company operates or invests (Peterson 2006). Risk can also be a result of political or social conditions in locations where a company has operations, suppliers, or customers (Egelkraut et al. 2005). Risk to a company's reputation is also an important aspect and element of ERM (Ruquet 2007).

In each of the risk areas, there are two primary types of risks that companies face:

- External risk
- Manufactured risk

External risk is the risk of events that may strike organizations or individuals unexpectedly (from the outside) but that happen regularly enough and often enough to be generally predictable.

Manufactured risk is a result of the use of technologies or even business practices that an organization chooses to adopt. A technological risk is caused or created by technologies that can include trains wrecking, bridges falling, and planes crashing (Giddens 1999). Business practice risk is caused or created by actions which the company takes which could include investing, purchasing, sales, or financing customer purchases.

ERM analytical models should encompass both external and manufactured risks which can be identified through historical analysis as well as reviews of current operations and exposures ("Expect the Unexpected," 2009). Once identified, risks can be validated through discussions with corporate executives, operations managers, production managers, and business unit executives. In addition to gaining a better understanding of risks the overall health of a company should be assessed (Coccia 2006; Panning 2006).

Investment advisors, institutional investors, and credit rating agencies are adding to the pressure for companies to develop ERM systems and disclose their risks (Karlin 2007). ERM enables top managers of a company to aggregate, prioritize, and effectively manage risks while enabling business unit managers to improve decision making in operations and product management (Kocourek et al. 2005). In managing risks there are several options that corporate executives can take including accepting, preventing, mitigating, transferring, sharing, or avoiding the risks (Egelkraut et al. 2005).

The ERM process can also support strategic planning activities as well as provide insight into alternative business practices and goals (Millage 2005). One of the biggest challenges in implementing ERM strategies is to make sure that selected analytical methods are appropriate for the type and size of organization to which they are being applied (Milligan 2009). ERM strategies and models as well as the utilization of ERM analyzes will vary with corporate culture, business goals, and risk management objectives. This means that a one-size-fits-all approach towards ERM is not likely to be successful (Lenckus 2006).

Risk and uncertainty are an inescapable part of investing. Fredman and Wiles (1998) called risk "the possibility of loss, damage, or harm" where risk depends on the individual and the individual's appetite or tolerance for risk. Managing risk is very important for successful long-term investing. Investors can use various

strategies such as diversification and asset allocation to reduce risk. Ultimately, the investor must compare financial objectives to the risk and return rates of investments.

5 Primary Data Analysis

While structuring the research, the grounded theory approach was chosen to identify the Enterprise Flexibility, Enterprise Controllability, and Enterprise Risk Parameters. Thirty-two industry experts were selected and interviewed to identify the pattern. Once the pattern is identified, the parameters were segregated. Delphi methodology was applied followed by statistical t-test analysis to select and establish the factors.

The study was conducted over a period of 1 month interviewing experts across various industries covering several sectors. Consent was obtained and a copy of the signed consent form was given to each participant. Two face-to-face interviews were conducted with each of the 32 study participants. Interviews lasted 60–90 min and were conducted at intervals convenient to the participant (i.e., usually 20–40 min).

The first interview with each participant was exploratory in nature and involved open-ended questions. At the start of the study, participants were asked general open-ended questions, in order to abide by the grounded theory methodology stance of limiting the influence on participants of previous theoretical constructs of caring (Strauss and Corbin 1990a, b). Furthermore, in grounded theory methodology, it is the incoming information from participants that sharpens the focus of the research question and related general questions (Strauss and Corbin 1997).

One reason for this practice is that in grounded theory methodology, the incoming information from participants determines the information sought. This is referred to as theoretical sampling (Strauss and Corbin 1990a, b). In the study, theoretical saturation of data was achieved with 32 participants (Full list of parameters identified is shown in Appendix 3).

A tentative preliminary model emerged from the first round of interviews with each of the participants. The second interview was used as an opportunity to affirm, modify, add, clarify, and elaborate on what was said in the first interview. The questions were based on the information introduced by participants during the first round of interviews and were effective in checking the content areas introduced and for verifying the emerging output.

5.1 Profile of the Sample

Thirty-two industry experts were identified. Out of 32 experts, 7 belong to countries outside India. Most of the respondents belong to the top management level (CXOs).

Information provided by participants earned its way into the theory when constant comparisons of data revealed the repeated presence of specific content areas in actual participant data. In grounded theory methodology, this is referred to as the constant comparison method of data analysis (Strauss and Corbin 1990a, b, 1998).

In our study, the constant comparison method of data analysis was accomplished by constantly comparing new information with previously identified information (Rinaldi 1995). This was to identify information that was repeatedly present and relevant to participants. These questions were asked to identify (1) categories, (2) relationships between and within categories, and (3) a central phenomenon or core category around which all the other categories revolved.

Through the constant comparison of data, categories that needed further refinement and development were identified and developed. Each happening, incident, idea, and event were given a name or conceptual label that represented what was happening in the data (Strauss 1987). Interviews were transcribed on the left-hand side of the transcript page. Then the categories identified were transcribed on the right-hand side of the transcript. A file folder, labeled according to the category identified, was established and copies of the corresponding section of interview transcript were placed in the folder. As new data were compared with previous data, different levels of codes or labels, corresponding to different levels of the theory (i.e., concepts, categories, subcategories, and basic social processes), were developed. Consequently, as conditions change, it is expected that the theoretical formulation presented will also change in order to reflect new conditions, different settings, and diverse samples (Fig. 11.2). Therefore, one of the limitations of the study is what cannot be found in the actual data at the time of the study (Strauss and Corbin 1997).

6 Delphi Method: Selecting Enterprise Flexibility, Enterprise Controllability, and Enterprise Risk Parameters

The original Delphi method was developed by Norman Dalkey of the RAND Corporation in the 1950s for a US-sponsored military project. Dalkey states that the goal of the project was “to solicit expert opinion to the selection, from the point of view of a Soviet strategic planner, of an optimal U.S. industrial target system and to the estimation of the number of A-bombs required to reduce the munitions output by a prescribed amount” (Dalkey and Helmer 1963, p. 458). Rowe and Wright (1999) characterize the classical Delphi method by four key features:

- Anonymity;
- Iteration;
- Controlled feedback; and
- Statistical aggregation of group response

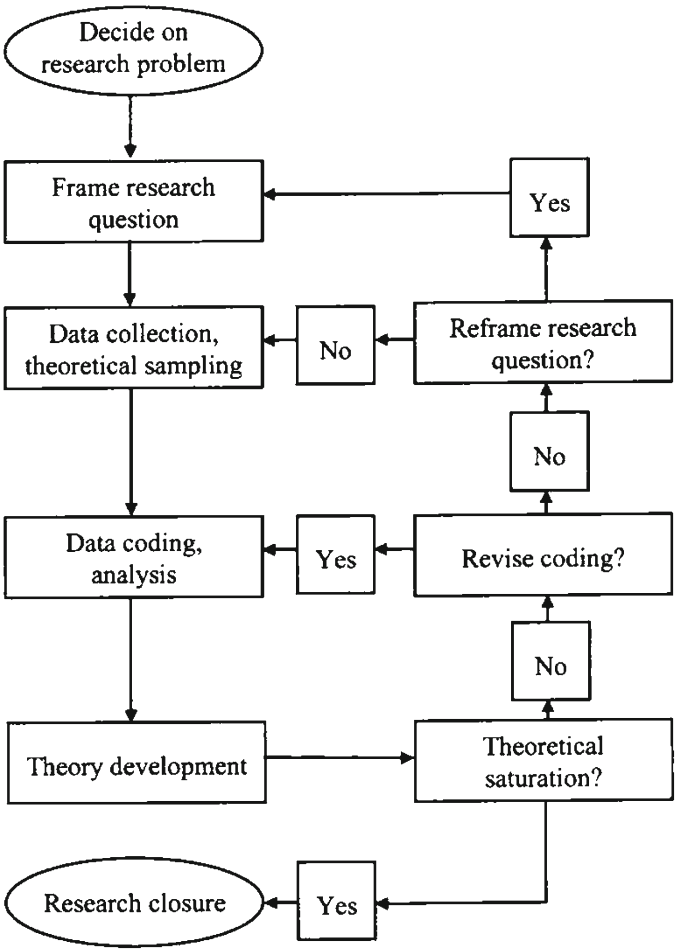

Fig. 11.2 Flow diagram of grounded theory method

Some (Rowe and Wright 1999) suggest that only those studies true to their origins that have the four characteristics should be classified as Delphi studies, while others (Adler and Ziglio 1996; Delbecq et al. 1975; Linstone and Turloff 1975) show that the technique can be effectively modified to meet the needs of the given study. Perhaps a distinction might be made by using the term Classical Delphi to describe a type of method that adheres to the characteristics of the original Delphi as summarized by Rowe and Wright (1999).

The Delphi process has been comprehensively reviewed elsewhere (Adler and Ziglio 1996; Delbecq et al. 1975; Linstone and Turloff 1975), and so I present only a brief overview of how I have used the Delphi in this study (Fig. 11.3).

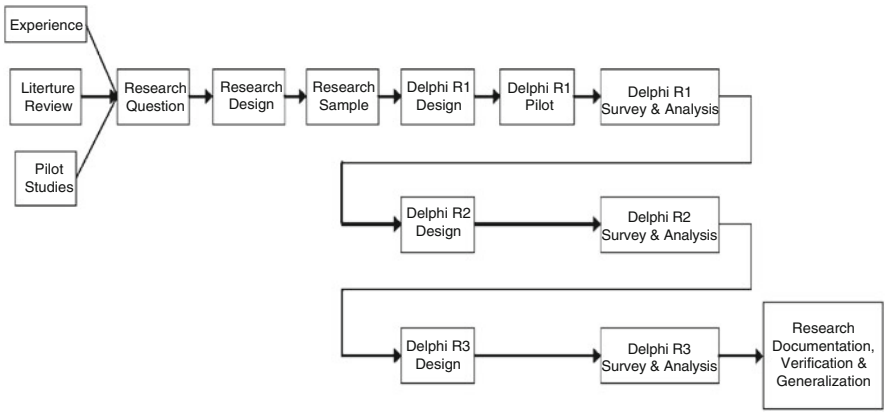

Fig. 11.3 Three-round Delphi process

(i) *Develop the Research Question* – The research question is derived by a number of ways. For example, it might be codeveloped by the student with the help of the supervisor, or the researcher's own industry experience often contributes to his interest in the research area. A review of the literature is also conducted, among other things, to determine if a theoretical gap exists. Often pilot studies are undertaken for numerous reasons: (i) identify the problem, (ii) conceptualize the study, (iii) design the study, (iv) develop the sample, (v) refine the research instrument, and (vi) develop and test data analysis techniques (Prescott and Soeken 1989). Completing a pilot study can also help ascertain the relevance the research question has to industry; some supervisors strongly favor applied rather theoretical research.

(ii) *Design the Research* – After developing a feasible research question, we begin designing the research from a macro to a micro perspective. Typically we review different research methods (both qualitative and quantitative) and after considering the pros and cons of each, we select the most promising method(s) to help answer our research question. The researcher would select the Delphi method when he/she wants to collect the judgments of experts in a group decision-making setting. Both qualitative and quantitative methods can be used in the Delphi process. The Delphi method may be only one component of the research project; for example, the Delphi outputs may be verified and generalized with a survey.

(iii) *Research Sample* – Selecting research participants is a critical component of Delphi research since it is their expert opinions upon which the output of the Delphi is based (Ashton 1986; Bolger and Wright 1994; Parenté et al. (1984). There are four requirements for "expertise": (i) knowledge and experience with the issues under investigation, (ii) capacity and willingness to participate, (iii) sufficient time to participate in the Delphi, and (iv) effective com-

munication skills (Adler and Ziglio 1996). Since expert opinion is sought, a purposive sample is necessary where people are selected not to represent the general population, rather their expert ability to answer the research questions (Fink and Kosecoff 1985). The student may need some help from the supervisor to identify the initial group of experts but may use the "snowball" sampling technique to generate subsequent participants (Hartman and Baldwin 1995; Mason 1996).

(iv) *Develop Delphi Round One Questionnaire* – Care and attention needs to be devoted to developing the initial broad question which is the focus of the Delphi because if respondents do not understand the question, they may provide inappropriate answers and/or become frustrated (Delbecq et al. 1975). Sometimes, the purpose of the first round Delphi is to brainstorm (Schmidt 1997).

(v) *Delphi Pilot Study* – A pilot study is sometimes conducted with the goals of testing and adjusting the Delphi questionnaire to improve comprehension and to work out any procedural problems. The researcher may also pretest each subsequent questionnaire. The Delphi pilot is especially important for inexperienced researchers who may be overly ambitious regarding the scope of their research or underestimate the time it will take a Delphi research participant to fully respond to the Delphi survey.

(vi) *Release and Analyze Round One Questionnaire* – The questionnaires are distributed to the Delphi participants, who complete and return them to the researcher. The results of Round One are then analyzed according to the research paradigm (e.g., qualitative coding or statistical summarizing into medians plus upper and lower quartiles). Reality Maps can also be developed and shared with the Delphi participants. Reality Maps are graphical representations of the key constructs under investigation. They depict reality from the participant's perspective and often illustrate interactions, causes and effects, process flow, and other aspects of their reality. Reality Maps can greatly improve understanding and facilitate the emergence of collective intelligence in subsequent rounds about the topic under investigation (Lindstone and Turloff 1975).

(vii) *Develop Round Two Questionnaire* – The Round One responses are the basis with which to develop the questions in the Round Two Questionnaire. Depending upon the research goals, the researcher may direct the focus of the research or be directed by the opinions of the participants. If the purpose of Round One was to generate a list, then it is common to pare down that list in Round Two (Schmidt 1997).

(viii) *Release and Analyze Round Two Questionnaire* – The Round Two Questionnaire is released to the research participants and, when completed, returned for analysis. However, the participants are first given the opportunity to verify that the Round One responses did indeed reflect their opinions and are given the opportunity to change or expand their Round One responses now that the other research participant's answers are shared with them. Ranking and rating the output of the first round is common (Schmidt 1997).

Continuous verification throughout the Delphi process is critical to improve the reliability of the results (Adler and Ziglio 1996; Delbecq et al. 1975; Linstone and Turloff 1975) and should be factored into the research design. Again, a similar process of analysis is often used in Round Two.

(ix) *Develop Round Three Questionnaire* – The Round Two responses are used to develop the Round Three Questionnaire with additional questions to verify the results, to understand the boundaries of the research, and to understand where these results can be extended. Typically, the questions become more focused on the specifics of the research at each round.

(x) *Release and Analyze Round Three Questionnaire* – The final round of analysis is conducted following a similar process used to analyze the data in Rounds One and Two; use the appropriate technique for the question type (e.g., coding for open-ended, qualitative questions). Again, the research participants are given the opportunity to change their answers and to comment on the emerging and collective perspective of the research participants. The process stops if the research question is answered – for example, consensus is reached, theoretical saturation is achieved, or sufficient information has been exchanged.

(xi) *Verify, Generalize, and Document Research Results* – The Delphi results are verified (usually continuously through the Delphi) and the extent the results can be generalized are also investigated.

The Delphi was conducted over 32 samples (experts) and please find below the parameters selected after two rounds of Delphi.

6.1 General Pattern

1. Flexibility can be measured in three areas – Options, Change Mechanisms, and Freedom of Choice.
2. All risks can be categorized into two major types of risks – risk of not having flexibility and risk of having flexibility.
3. Controllability parameters can be classified into two groups: (1) internal in the system (known as the self-governance) and (2) external (this is controlled from outside the system) (Fig. 11.4).

6.2 Flexibility Parameters

The following flexibility parameters were selected through the Delphi study

(i) Productivity
(ii) Dynamism

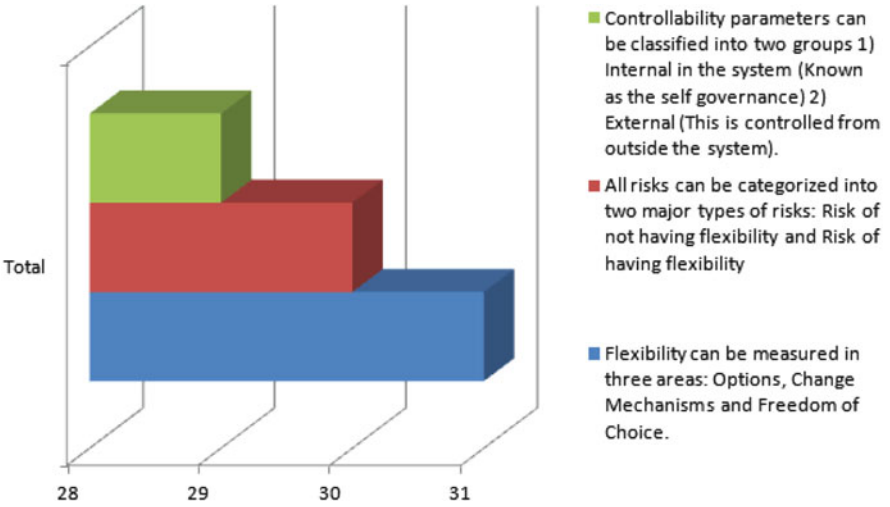

Fig. 11.4 Flexibility, controllability risk confluence pattern bar diagram

(iii) Flexi-Structure
(iv) Adaptability to change
(v) Change Management Procedure
(vi) Manufacturing Process flexibility
(vii) Sales Flexibility measured by time to respond to a change in the market
(viii) Market-side flexibility
(ix) Supply side of people – the variability is in the general economic conditions.
(x) Measure of On-time Delivery
(xi) Sensitivity to the Quality requirement
(xii) Learning Environment measured by the number of initiatives taken to create the Learning Environment
(xiii) Flexibility lies in Business Direction, i.e., allocation of investments across new and old product portfolio, flexibility in Business Direction (e.g., make vs. buy).
(xiv) Flexibility is resilience in customer handling, i.e., openness to customer queries and complaint management across channel (e.g., services handled equally when request placed telephonically, on the web-channel, at the retail store).
(xv) Flexibility in Leadership (in a complex case)
(xvi) Supply Chain Flexibility – demand and supply lines should have sufficient flexible capacity to absorb business demands (Fig. 11.5).

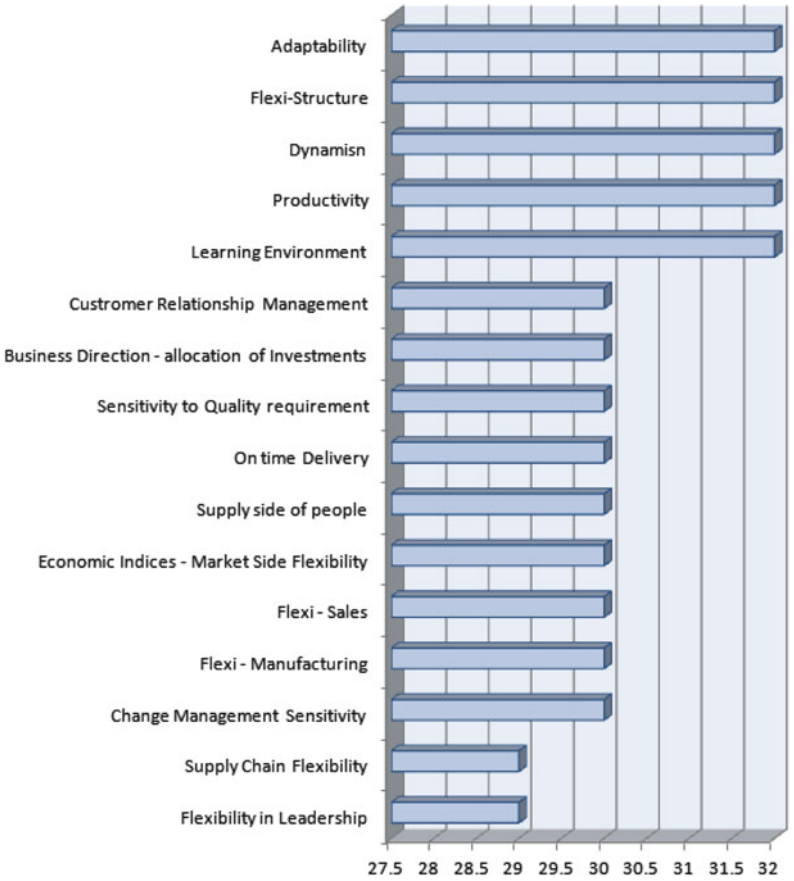

Fig. 11.5 Flexibility Parameters bar diagram

6.3 Controllability Parameters

The following controllability parameters were selected through the Delphi study.

(i) Financial System (Triple Audit System – internal, external, and statutory).
(ii) Clearly laid down authority and responsibility metrics.
(iii) Importance of Vigilance department.
(iv) Tools like Performance, Coaching, and Development systems to control the pockets of lower performance and/or morale before it is too late.
(v) Adherence to Information Governance Policy (information leakage is restricted).

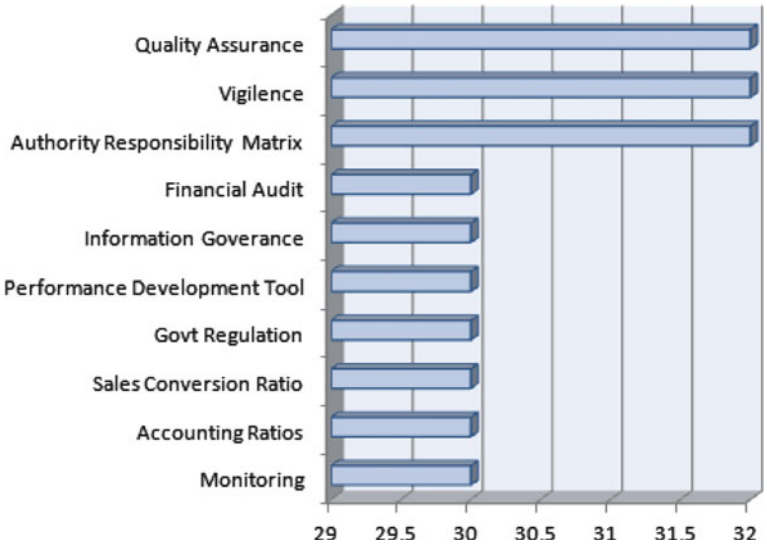

Fig. 11.6 Controllability Parameters bar diagram

(vi) Quality Assurance in purchase.
(vii) Monitoring/measuring aberrations from normal result of process input and output.
(viii) Margins/Accounting Ratios.
(ix) Order book, pipeline, and conversion ratio.
(x) Govt. Regulation (Fig. 11.6).

7 Risk Parameters

The following risk parameters were selected through the Delphi study.

(i) Multitasking may affect output because people may not be good in every area. Expertise may be in one field and may not be that good in other (People Risk).
(ii) Attrition can be termed as loss of knowledge.
(iii) Data Dependency and sanctity of data can be a big threat to the organization.
(iv) Rate of Change of Decisions.
(v) SCM turnover ratio.
(vi) Political uncertainty.
(vii) Monetary policies and cost of finance.
(viii) Risk of Lending because of diversified portfolio.

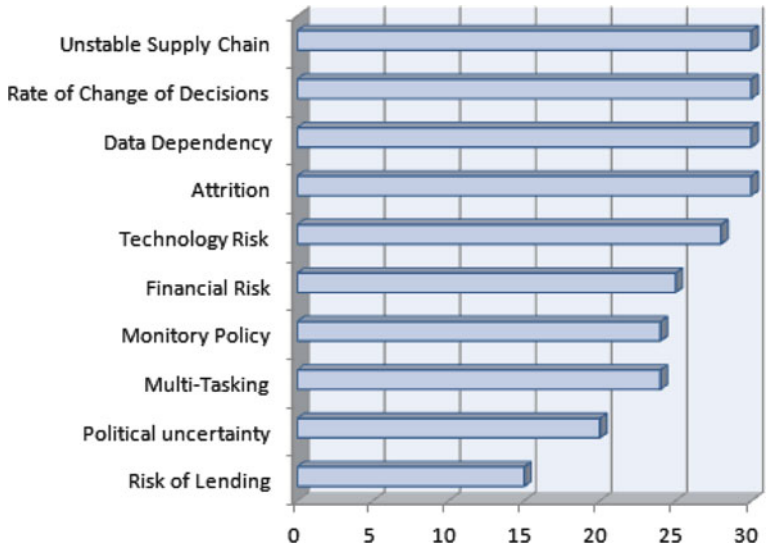

Fig. 11.7 Risk Parameter bar diagram

(ix) Technology Risks – obsolescence of a company's main technology platform.
(x) Financial Risks – these are standard for any company (over leveraged, high debt ratio impacted by high interest rates, etc.) (Fig. 11.7)

8 Inferences from t-Test

Established flexibility, controllability and enterprise risk confluence patterns are as follows:

Flexibility can be measured in three areas – Options, Change Mechanisms, and Freedom of Choice. All risks can be categorized into two major types of risks: risk of not having flexibility and risk of having flexibility. Controllability Parameters can be classified into two groups: (1) internal in the system (known as the self-governance) and (2) external (this is controlled from outside the system).

Established Flexibility Parameters are as follows:

Productivity; Dynamism; Flexi-Structure; Adaptability; Change Management Sensitivity; Flexi, Manufacturing; Flexi, Sales; Economic Indices, Market-side Flexibility; Supply side of people; On-time Delivery; Sensitivity to Quality requirement; Learning Environment; Business Direction, allocation of Investments;

Fig. 11.8 Identified, selected, and established Flexibility Parameters (the number signifies absolute number of respondents agreed to accept the parameters – considerable amount of consensus were achieved after three rounds of Delphi method)

Fig. 11.9 Identified, selected, and established Controllability Parameters (the number signifies absolute number of respondents agreed to accept the parameters – considerable amount of consensus were achieved after three rounds of Delphi method)

Customer Relationship Management; Flexibility in Leadership; Supply Chain Flexibility (Fig. 11.8)

Established Controllability Parameters are as follows:

Financial Audit; Authority Responsibility Matrix; Vigilance; Performance Development Tool; Information Governance; Quality Assurance; Monitoring; Accounting Ratios; Sales Conversion Ratio; Govt. Regulation (Fig. 11.9)

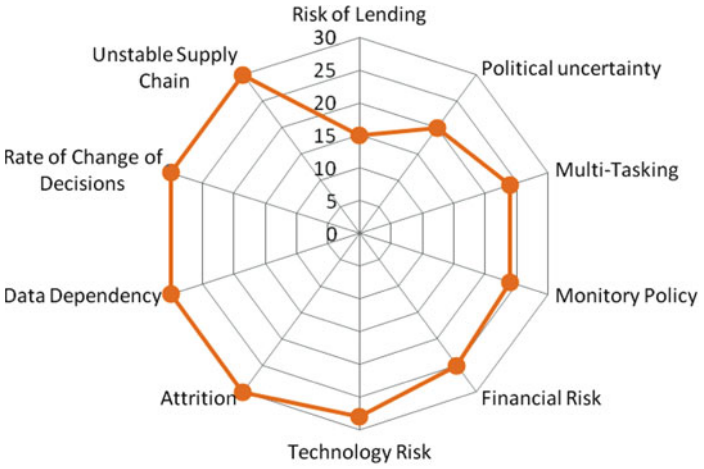

Fig. 11.10 Identified, selected, and established Risk Parameters (the number signifies absolute number of respondents agreed to accept the parameters – considerable amount of consensus were achieved after three rounds of Delphi method)

Established Enterprise Risk Parameters are as follows:

Multitasking; Attrition; Data Dependency; Rate of Change of Decisions; SCM turnover ratio; Political uncertainty; Monitory Policy; Risk of Lending; Technology Risk; Financial Risk (Fig. 11.10)

9 Synthesis of Learning and Proposed Parameters

The need for flexibility in management, both at the theoretical and practical levels, has been emphasized by researchers as well as practitioners. There are multiple connotations attached with the concept of flexibility, in different situations.

It implies openness in thinking, adaptiveness to environment, responsiveness to change, versatility of action, contingency, nonrigidity, variability of parameters and specifications, multiplicity of process setting, freedom, liberalization, informal attitude, adjustment, compromise, autonomy of function, agility in action, resilience in systems, elasticity, looseness, customized or tailor made solutions, and broadening of mind. This is only a representative list and many more connotations of flexibility can be identified.

9.1 Limitation of Research

The research is contextual and covers only some part of the industries. Though more than 25 % of the respondents belong to different countries but most of the respondents and industry experts belong to North India.

To form a comprehensive view of organizational flexibility, controllability, and enterprise risk parameters, the sample size needs to be big and should cover different regions of India and world pertaining to various industries.

9.2 Future Research Area

Literature in organizational flexibility mostly caters to the work done in European Business Environment. The literature is still lacking of comprehensive modeling which explains the relationships between its key variables and consequent side effects of such iterations. Exploring these interactions and the dynamic adaptation processes towards the desired adjustment would lead to frame a model which would explain organizational preparedness to response with the change and its adoption model. This idea of flexibility controllability equilibrium model and its adoption framework are the main motivation of the future research.

10 Concluding Remarks

The main objective of the research work was to identify the organizational flexibility, controllability, and enterprise risk parameters considering the complex paradoxical business scenario. The research reflects dynamic interplay between the thesis and antithesis. The change drivers can be depicted as risk parameters. The continua reflecting the thesis and the antithesis call for synthesis of two extreme business behaviors.

References

Aaker DA, Mascarenhas B (1984) The need for strategic flexibility. J Bus Strat 5:74–82
Abernathy WJ, Utterback JM (1978) Patterns of industrial innovation. Technol Rev 80
Adler M, Ziglio E (1996) Gazing into the oracle: the Delphi method and its application to social policy and public health. Kingsley Publishers, London
Andrew P, Hatum A (2006) Determinants of organizational flexibility: a study in an emerging economy. Br J Manag 17(2): 115–137. ISSN 1467–8551
Ansoff I (1965) Corporate strategy – an analytic approach to business policy for growth and expansion. McGraw-Hill, New York 2:20–26
Anthony RN (1965) Planning and control systems: a framework for analysis, Graduate School of Business Administration. Harvard University, Boston
Anthony RN (1988) The management control function. The Harvard Business School Press, Boston
Anthony RN, Dearden J, Bedford NM (1989) Management control systems, 6th edn. Richard D. Irwin Inc., Illinois
Anthony RN, Govindarajan V (2004) Management control systems. McGraw-Hill, New York

Ashton R (1986) Combining the judgments of experts: how many and which ones? Organ Behav Hum Decis Process 38(3):405–415
Benner MJ, Tushman ML (2002) Process management and technological innovation: a longitudinal study of the photography and paint industries. Adm Sci Q 47:676–706, Benner and Tushman (2001)
Berry AJ, Broadbent J, Otley DT (eds) (1998) Management control theory – history of management thought. Dartmouth Publishing, Aldershot
Bolger F, Wright G (1994) Assessing the quality of expert judgment: issues and analysis. Decis Support Syst 11(1):1–24
Carpenter RD (1995) Grounded theory research approach. In: Streubert HJ, Carpenter RD (eds) Qualitative research and in nursing: advancing the humanistic imperative. J.B. Lippincott Company, Philadelphia, pp 145–161
Carroll JJ (1987) Control methodologies for achievement of strategic objectives. Unpublished Doctoral Dissertation, Nova University, Fort Lauderdale
Chua WF, Lowe T, Puxty T (eds) (1989) Critical perspectives in management control. Macmillan, Basingstoke
Coccia R (2006) ERM plans cut costs, help risk managers bring added value. Bus Insur 40(21):4–4
Daft RL, Lewin AY (1993) Where are the theories for the 'New' organizational forms? Organ Sci 4(4):i–vi (An editorial essay)
Dalkey NC, Helmer O (1963) An experimental application of the Delphi method to the use of experts. Manage Sci 9(3):458–467
Delbecq AL, Van de Ven AH, Gustafson DH (1975) Group techniques for program planning: a guide to nominal and Delphi Processes. Scott, Foresman and Co, Glenview
DuBrin (2000) Fundamentos de administración, Soluciones empresariales, Edition 5. International Thomson Editores, S. A. de C. V.
Ebben J, Johnson A (2005) Efficiency flexibility or both? SMJ 26:1249–1259
Egelkraut TM, Woodard JD, Garcia P, Pennings JME (2005) Portfolio diversification with commodity futures: properties of levered futures. NCR-134 conference on applied commodity price analysis, forecasting, and market risk management, St. Louis
Eisenhardt KM, Martin JA (2000) Dynamic capabilities: what are they? Strategic Manage J 21: 1105–1121
Eppink JD (1978) Planning for strategic flexibility. Long Range Plann 11:9–15
Fink A, Kosecoff J (1985) How to conduct surveys: a step-by-step guide. SAGE, Beverly Hills
Fredman AJ, Wiles R (1998) How mutual funds work. Prentice-Hall, Paramus
Garrison RH, Noreen EW (2000) Managerial accounting. McGraw-Hill, New York
Giddens A (1999) Risk and responsibility. Mod Law Rev 62(1):1
Harrigan (1985) Strategies for joint venture. Lexinton Books, Lexinton
Hartman F, Baldwin A (1995) Using technology to improve the Delphi method. J Comput Civil Eng 9:244–249
Hayes RH, Abernathy WJ (1980) Managing our way to economic decline. Harvard Bus Rev 58:67–77
Helfat C, Finkelstein S, Mitchell W, Peteraf M, Singh H, Teece D, Winter S (2007) Dynamic capabilities: understanding strategic change in organisations. Blackwell Publishing, Malden
Kocourek P, Newfrock J, Van Lee R (2005) SOX rocks, but won't block shocks. Strat Bus 38(Spring)
Kraatz MS, Zajac EJ (2001) How organizational resources affect strategic change and performance in turbulent environments: theory and evidence. Organ Sci 12(5)
Lenckus D (2006) Risk managers name top threats. Bus Insur 3+. ProQuest
Linstone HA, Turoff M (1975) Introduction. In: Linstone HA, Turoff M (eds) The Delphi method: techniques and applications. Addison-Wesley Publishing Company, Reading, pp 3–12
Mason J (1996) Qualitative researching. Sage, London
Merchant KA (1985) Control in Business Organizations. Ballinger, Cambridge, MA, p 161
Merchant KA (1982) The control function of management. Sloan Manag Rev (Summer):43–55

Nadkarni S, Narayanan VK (2007) Strategic schemas, strategic flexibility, and firm performance: the moderating role of industry clockspeed. Strategic Manage J 28(3):243
Otley DT (1989) A strategy for the development of theories in management control. In: Chua WF, Lowe T, Puxty T (eds) Critical perspectives in management control. Macmillan, Basingstoke, pp 27–45
Otley D (1996) Some issues in management control. In: Vagnuer K, Wilkinson C, Berry AJ (eds) Beyond constraint – exploring the management control paradox. The Management Control Association, London
Panning WH (2006) Managing interest rate risk: ALM, solvency, and franchise value. Willis Re White Paper, January. Presented to the international conference of actuaries, Paris, May 2006
Parenté FJ, Anderson JK, Myers P, O'Brien T (1984) An examination of factors contributing to Delphi accuracy. J Forecasting 3(2):173–182
Peterson M (2006) Indeterminate preferences. Philos Stud 130:297–320
Prescott PA, Soeken KL (1989) The potential uses of pilot work. Nurs Res 38:60–62
Rowe, Wright (1999) The Delphi technique as a forecasting tool: issues and analysis. Int J Forecasting 15: 353–375
Sanchez R (2004) Understanding competence-based management: identifying and managing five modes of competence. J Bus Res 57(5):518
Sather (2004) Managerial control of faculty by physical education, Department chairpersons. A dissertation submitted in partial fulfillment of the requirements for the degree of doctorate of philosophy in the graduate school of the texas woman's university health science department
Schmidt R (1997) Managind Delphi surveys using nonparametric statistical techniques. Decis Sci 28(3):763–774
Simons R (1995) Levers of control – how managers use innovative control systems to drive strategic renewal. Harvard Business School Press, Boston
Sommer RA (2003) Business process flexibility: a driver for outsourcing. Ind ManagData Syst 103(3):177–183
Strauss A (1987) Qualitative analysis for social scientists. Cambridge University Press, New York
Strauss A, Corbin J (1990a) Basics of qualitative research: techniques and procedures for developing grounded theory. Sage, Newbury Park
Strauss A, Corbin J (1990b) Grounded theory research: procedures, canons, and evaluative criteria. Qual Sociol 13:3–21
Strauss A, Corbin J (eds) (1997) Grounded theory in practice. Sage, Thousand Oaks
Strauss A, Corbin J (1998) Basics of qualitative research: Techniques and procedures for developing grounded theory, 2nd edn. Sage, Thousand Oaks, CA, Street corner society revisited (1992) J Contemp Ethnogr 21(special issue):3–132
Stoner JAF, Wankei C (1986) Management. Prentice-Hall, Englewood Cliffs
Sushil (1999/2000a) Corporate flexibility. Glob J Flex Syst Manag
Sushil (2000) SAP-LAP models of inquiry. Manag Decis 38:347–353
Teece DJ, Pisano G, Shuen A (1997) Dynamic capabilities and strategic management. Strategic Manage J 18(7)
Verdu Jover AJ, Llorens-Montes JF, Garcia-Morales VJ (2005) Flexibility, fit and innovative capacity: an empirical examination. Int J Technol Manage 30(1,2)
Volberda HW (1998) Building the flexible firm. Oxford University Press, Oxford
Volberda HW (1996) Toward the flexible form: how to remain vital in hypercompetitive environments. Organ Sci 7(4):359–374