

# Chapter 1 Introduction

“Flexibility is one of the most important adaptive criteria for realistic planning. Needs, as well a goals, change with great rapidity and we must remain flexible enough in our planning to adapt to these changes. We must not only handle the problems of today, but be prepared to meet the needs of tomorrow.”

(Mase, 1970)

## 1.1 Overview of research area

The phenomenon of flexibility in business organisations was observed and studied as far back as the late sixties. In a pioneering study Gordon Donaldson (1971) observed flexibility in financing of businesses. He saw that the behaviour and decisions of managers did not always follow the proposed optimising theory with regard to corporate finance. An aim of finance theory is amongst others, to find the correct mix of debt and equity that minimises costs and maximises value at a point in time. This aim is based on the basic assumption that the ultimate financial objective of a business is to maximise shareholders' wealth. In practice, however, Donaldson found that managers did not concentrate on optimising the use of debt, but rather on the magnitude of the debt *not* in use. These unutilised sources of funding served as a buffer against unexpected future events and the aim of management was apparently to achieve flexibility through having access to additional funding. This flexibility created alternatives or options for management when having to deal with an uncertain and unpredictable future. Thus, the aim of being flexible often supersedes the aim of optimising the use of debt in relation to equity.

Donaldson (1971, p.8) called the capacity of management to redirect the use of financial resources in response to new information, financial mobility. He validated the existence of this behaviour of management in three case studies that focused specifically on corporate finance decisions. His work on financial mobility (also called financial flexibility) indicates that the corporate finance theories do not adequately reflect reality. The behaviour in the real world differs from the approaches suggested in theory, and the phenomenon of flexibility provides an explanation for the deviance.

Flexibility may also explain deviating management behaviour in costing, investing, cash management and reporting.

Ansoff (1965, p.55) is another of the earlier authors who addressed the concept of flexibility. He described two types, namely internal and external flexibility. External flexibility is seen as positioning of the organisation by “not putting all one’s eggs in a single basket”, whereas internal flexibility is seen as “seeking to provide a cushion in response to catastrophe”. Both types are used by the management of organisations to deal with unforeseen change, contingency and catastrophe.

The concept of flexibility has been explored by a number of researchers in Management Theory (for example, Eppink, 1978; Kanter, 1982; Handy, 1995; Aaker & Mascarenhas, 1984). These and other studies recognise the importance of enterprises being flexible in a dynamic and unpredictable environment. Yet Volberda (1998) still believes that flexibility is only beginning to be explored. The aspect of flexibility that is the least researched is that of measurement. Gerwin (1993) suggests that the measurement of flexibility is the *single most important research priority* in this area.

Measurement of information is the domain of accountants. Until quite recently, however, the phenomenon of flexibility was not pursued in Accounting literature. Several authoritative textbooks in Accounting did refer, if only in passing, to the work on financial flexibility (Hendriksen & Van Breda, 1992; Kam, 1990; Correia, Flynn, Uliana & Wormald, 1993). Other research studies concentrated on aspects of flexibility such as flexibility in financing, in using cash, in manufacturing products and in entering new markets. In research on financial flexibility, for example, cash flow statements, liquidity and solvency are emphasised. Standard setters have several times attempted to mandate the inclusion of some information on financial flexibility in the financial statements but have not succeeded to date. Two important documents on the disclosure financial flexibility in financial reports were published by the FASB (*Discussion Memorandum on reporting funds flows, liquidity and financial flexibility*, 1980b) and the AICPA (*Exposure Draft on the disclosure of certain significant risks and uncertainties and financial flexibility*, 1993). In both documents it is acknowledged that the assessment of financial flexibility of an enterprise is an

important factor in the decision-making process of managers, and the suggestion is that information on financial flexibility would be useful to users of business information.

Another area of research on flexibility that is explored in Accounting concerns DCFs. Models of DCF are criticised for failing to incorporate the element of management flexibility, the consequence of which is that investment opportunities are often undervalued (Hayes & Abernethy, 1980; Hayes & Garvin, 1982; Trigeorgis & Mason, 1987; Trigeorgis, 1993). Researchers argue that the inclusion of the value of management flexibility options in the DCF models would enhance their usefulness and reliability.

A number of studies consider the importance of creating manufacturing flexibility in organisations. Kulatilaka and Marks (1988) link production flexibility and strategic choice, while Kulatilaka (1993) uses the ability of a business to choose between different types of machines to illustrate the value of flexibility. Parthasarthy and Sethi (1993) consider the relationship between quality and flexibility strategies and flexible automation. Abernethy and Lillis (1995) investigate the relationship between accounting information and firms with a commitment to manufacturing flexibility.

Marketing flexibility is recognised by Harrigan (1985) and is defined as the firm's ability to reposition itself in markets, change its game plans, or dismantle current strategies. The ability of MNEs to create geographical flexibility by hedging their positions against future changes in tax legislation, government policies and exchange rates of different countries is described by Kogut (1985) and Muralidhar (1992). Their research suggests that the management of MNEs may create additional value for their stakeholders through geographical flexibility.

From the above it is apparent that certain aspects of flexibility have been addressed in the literature. Yet there appears to be few coherent frameworks or structures which encompass the nature, attributes and types of flexibility in business organisations. Financial flexibility, for example, addresses the ability of a business to raise finance whenever unexpected events occur. However, this is only one area of a business in which flexibility may be created. It could for example be created in such

diverse areas as the design and manufacture of products, in the mind set of employees and in positioning of the organisation in global markets. *A research opportunity therefore exists for the development of a construct of flexibility that includes all attributes of flexibility within the organisation and for the exploration of the nature of these different types of flexibility.*

The interest in flexibility in the literature may be explained in terms of the relationship between flexibility and uncertainty. Current literature indicates that the extent of uncertainty has increased substantially since the 1970s and that change in the environment is becoming more unpredictable and discontinuous (Nadler & Tushman, 1995). It follows that enterprises should place a higher premium on flexibility as a business attribute and the phenomenon of flexibility should become increasingly important to organisations in the current dynamic business environment. *A research opportunity therefore exists to explore the role and importance of flexibility in organisations.*

If flexibility is important to the well-being of organisations in a changing business environment, information on flexibility should be useful and be communicated to both internal and external users of business information. The accounting information system provides a means of communicating such information. Although the accounting system has been criticised recently for being unable to adapt sufficiently to changing needs of users of information, it has an existing infrastructure for the communication of information. *A research opportunity exists regarding the introduction of the construct of flexibility into Accounting and the development of procedures for the recognition, measurement and communication of information on the different types of flexibility within the accounting information system.*

## 1.2 Problem area and purpose of research

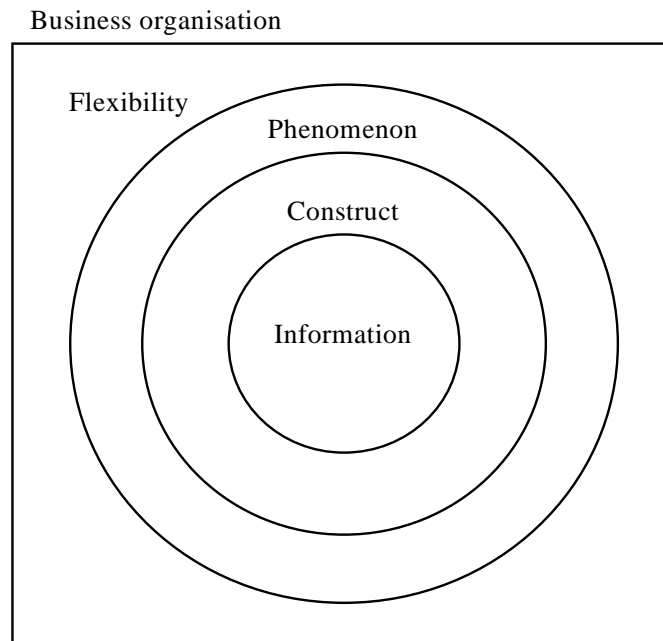
The problem addressed in this thesis concerns the apparent inability of Accounting and its accounting information system to adapt quickly and efficiently to the changing demands of users regarding business information. The accounting system has been described as an inflexible information system which fails to adapt sufficiently to rapidly changing business environments (see Lee, 1987; Turney & Anderson, 1989; Allen, 1994).

The introduction of flexibility into Accounting may address the problem in two ways. First, the inclusion of information on flexibility may enhance the usefulness of accounting information. As uncertainty increases and flexibility becomes more important to the success of organisations, information on the different types and levels of flexibility in organisations should provide users with decision useful information. The lack of information on flexibility in the information system may result in incomplete information, uninformed decisions and an inefficient allocation of scarce resources. Second, the creation of an awareness of the importance of flexibility in the current business environment may sensitise accountants, standard setters and academe to the need for Accounting and its subsystem to become more flexible itself if it is to retain its relevance in an environment of increasingly discontinuous change.

The phenomenon of flexibility has been observed in the behaviour of management in organisations. A confusing array of definitions and terms has however been used in the literature to describe this complex and elusive phenomenon. The purpose in this thesis is to conduct exploratory research on the phenomenon of flexibility. The research therefore commences with a refinement of “flexibility” into a construct. The construct is developed by defining the term, delineating the field of study, categorising the different types and levels of flexibility and their strategic dimensions and discussing the role of these categories in the organisation. The main purpose of the research is to introduce the construct into Accounting and its information system by identifying information on flexibility that can be measured and communicated to users. This is followed by proposals on procedures that management and

accountants may use in developing the necessary measures. The procedure followed in this thesis in developing information on flexibility is illustrated in figure 1.1.

**Figure 1.1 : Development of information on flexibility**



Source: Own observation.

In addressing the first research opportunity, the importance and role of the construct of flexibility in the organisation and the nature of the different types and levels of flexibility in the organisation is explored.

Two main assumptions are made regarding the nature of flexibility:

- Flexibility is a function of *uncertainty*. The higher the levels of uncertainty in the organisation and its environment, the greater the value attached to flexibility in an organisation.
- Flexible organisations are more likely to *survive* in a turbulent and competitive business environment than inflexible organisations. This implies, provided all other variables remain constant, that a flexible organisation will have a lower risk profile than an inflexible organisation.

Although several authors on flexibility support these assumptions, they are not backed by sufficient empirical evidence.

To meet the second stated purpose of the study, the following secondary assumptions are made:

- Flexibility is a *discriminate* construct. In other words, flexibility is a phenomenon that may be used to distinguish the “good” from the “poor” performers in situations of uncertainty and instability.
- Flexibility is an *observable* construct. This implies that its influence can be observed in the behaviour of persons both inside and outside the business organisation.
- Flexibility is a *measurable* construct. This means that different levels of flexibility can be measured, thus allowing comparison over time in one company and between companies and industries. Here “measurement” is used in an accounting context, although it is not restricted to financial or quantitative measures.
- Flexibility is an *operational* construct. This implies that it can be implemented and used by the management of a business to improve its performance, strategy and competitive position.

From the above assumptions follows the proposition:

- Information on flexibility is useful to *decision making*. This means that information on flexibility can influence the decisions of a broad spectrum of internal and external users if it is recognised, measured, communicated and understood.

Flexibility arises from the capability of management to proactively adapt the organisation to changes in the environment or the influence to environment, so as to avert unforeseen threats and catastrophes and exploit opportunities. The construct as developed in this study is not presently recognised in Accounting. While some attributes of flexibility are described in Accounting, it is not done in a coherent or

organised manner. The term financial flexibility is for example used often in the analysis and interpretation of cash flow statements. Areas that have been researched in Management Accounting concern management flexibility, which is achieved through flexibility in the production of goods and services and flexibility available to MNEs through arbitrage. In this thesis the construct flexibility is introduced into Accounting and the accounting information system and a coherent framework as well as procedures for the recognition, measurement and communication of information on flexibility are proposed.

The impact of this construct will of necessity extend beyond the borders of the discipline of Accounting. Related disciplines such as Auditing, Finance, Business Management, Management Information Systems, Management Science, Communication Theory and Organisational Theory will also be influenced by flexibility. However, it is not the aim of this research to consider the impact of flexibility on these disciplines.

The thesis cannot presume to achieve more than providing an introduction to and demarcation of a new field of research in Accounting. It will require further research and validation before a robust framework for the inclusion of information on flexibility in the accounting information system is likely to emerge.

The research on flexibility should be useful to –

- *management* in positioning their organisations advantageously in an increasingly volatile and competitive business environment. The different types of flexibility should create an awareness of the multi-faceted aspects of the construct and the potential for using them to create competitive advantages for a business. The suggestions on the type of information on flexibility and the procedures for measurement and recognition may assist management of organisations to develop their own set of flexibility targets, which may be monitored over a period and be compared to the performance of competitors;



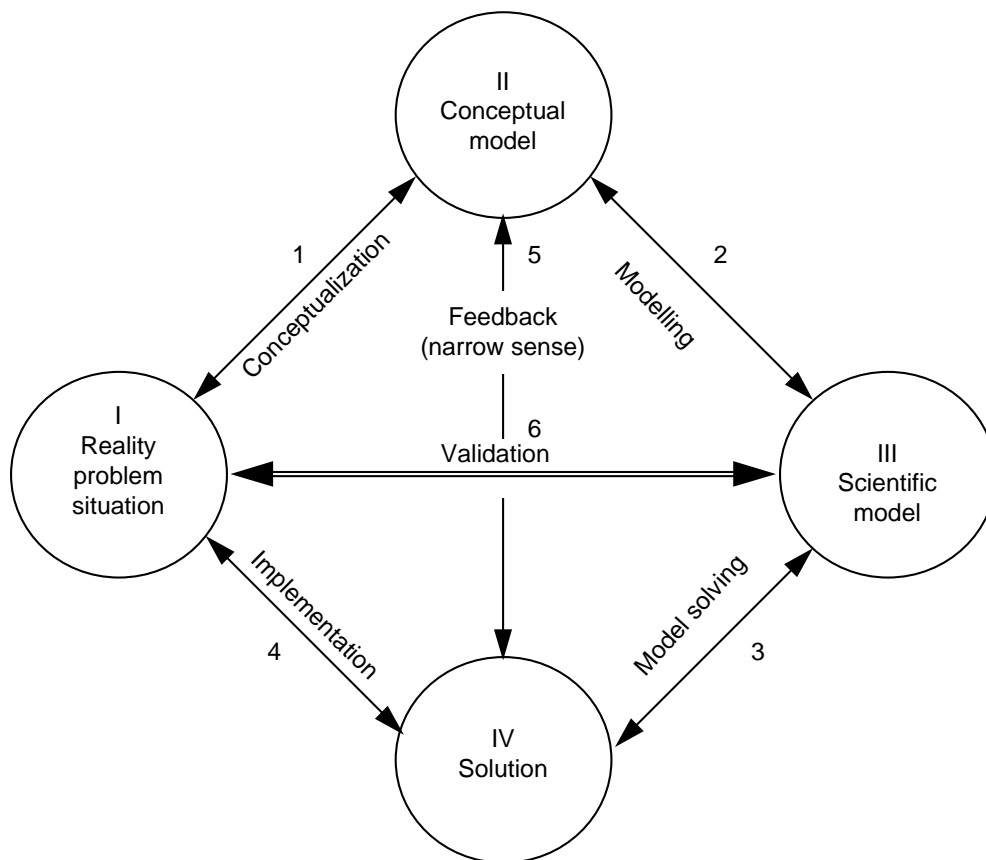
- *employees* of organisations in developing an awareness of the importance of being flexible oneself and creating and sustaining a flexible organisation which is able to survive and succeed in an unstable business environment. Flexibility enables the rapid and effective adaptation and repositioning of an organisation and its people ahead of its competitors;
- *accountants* in creating an awareness of the importance of flexibility to the information age company. The suggestions on the information on flexibility that may be communicated to both internal and external users of financial information and the procedures for developing such measures may serve as guidelines for developing and implementing custom-made targets of flexibility for their organisations;
- *investors and other external users of financial information* in creating an awareness of the importance of flexibility for the survival of organisations in a volatile and competitive business environment and therefore the importance of including measures on the flexibility of companies in the assessment of company performance;
- *standard setters* in emphasising the need for organisations to provide more information on flexibility in financial reports. The introduction of the construct of flexibility into Accounting may also help to address several of the shortcomings of current reporting practice;
- *researchers in Accounting* in suggesting a new field of research to be explored;
- *researchers in related disciplines* in considering the impact that the construct of flexibility may have on them; and
- *educators* in creating an awareness of the importance of flexibility in an information age organisation, which may in turn result in the inclusion of this construct in syllabi and its introduction to students.

### **1.3 Scope and structure of research**

In this section the extent of the research and the chapter organisation are addressed. As suggested by the title, the aim in this thesis is to introduce a new

construct, namely flexibility, into Accounting and the accounting information system and to develop a framework for the identification and measurement of information on flexibility. This information can then be communicated to users by means of the existing accounting information system. More specifically, the scope of the thesis may be explained in terms of the model for problem solving designed by Mitroff, Betz, Pandy and Sagasti (1974). The Mitroff model is represented diagrammatically in figure 1.2.

**Figure 1.2 : A system view of problem solving**



Source: Mitroff, I. I., Betz, F., Pandy, L. R. & Sagasti, F. (May, 1974) On managing science in the systems age: two schemes for the study of science as a whole systems phenomenon. *Interfaces*, Vol.4, No.3, pp.46-58.

The model takes a holistic or systems view of the different varieties of scientific activities. Because of the circularity inherent in this view, the diagram actually has no predefined start or end points. A research project could begin at any of circles I, II, III or IV. For instance, it could start at circle I, with an existing problem situation. The

first phase of problem solving would then entail the performance of activity 1 so as to devise a conceptual model in circle II. The conceptual model sets out in broad terms the definition of the particular problem that will be solved, it then specifies the field variables that will be used to define the nature of the problem and the level at which the variables will be treated.

The next phase would entail the performance of activity 2, namely the formulation of a scientific model in circle III. A scientific model is a set of either qualitative or quantitative logical relationships, which link together the relevant features of the reality with which we are concerned (Rivett, 1972, p.9).

The third phase would concern the performance of activity 3 to derive a solution (circle IV) from the scientific model while an implementation activity 4 would entail a feedback of the solution to the original problem situation. In validation activity 6 the degree of correspondence between reality and the scientific model may be evaluated. Finally in activity 5, namely feedback in the narrow sense, problem-solving activities (circles II, III, IV, II) is applied, with the goal being to derive better scientific solutions.

Given the simple system of interconnected elements of figure 1.2, the authors computed that a total of 3 555 research subsystems can be formed by considering all possible combinations of two, three and four elements (Mitroff *et al.*, 1974). Each of these subsystems represents a different type or form of scientific activity. This implies that legitimate research need not address all of the activities and elements in the model.

The scope of the research on flexibility in this thesis is confined to circles I, II, III and IV and activities 1, 2, 3 and 5. Activities 4 (implementation) and 6 (validation) are not undertaken.

Chapter 1 commences at circle I and demonstrates the existence of a *problem situation*. The problem situation is the apparent inability of Accounting to adapt quickly and efficiently to the rapidly and continuously changing demands of users of business information.

In chapters 2, 3, 4 and 5 the *conceptual model* of circle II is developed. Here the elements or variables necessary for defining the nature and extent of the problem, as well as the perspective adopted in the research, are specified.

Chapter 2 contains a review of the purpose of accounting information in the organisation and in society. It is based on a dominant paradigmatic perspective that accounting information should be decision useful (SAICA, 1990; FASB, 1978; Belkaoui, 1992).

In chapter 3 the rapidly changing business environment is considered. It is noted that the increasing volatility in the environment may pose a threat to the survival of business organisations that fail to adapt swiftly to environmental changes.

Chapter 4 consists of a literature survey to identify the responses required of businesses and their management in adapting to such a volatile and competitive business environment. These responses are addressed as prescriptions to organisations and their management in managing change.

Chapter 5 consists of a literature survey in Accounting. It identifies both criticisms levelled at Accounting and the variables of the conceptual model as challenges confronting Accounting and accountants in adapting to the changing environment, consisting of the organisation, industry and society. The challenges can be used as criteria with which the suggested changes to Accounting and the accounting information system, through the introduction of flexibility, may be compared. The suggestion is made that the introduction and development of the construct of flexibility may help to solve some of the challenges encountered in the field.

In chapter 6 the *scientific model* envisaged in circle III is developed. By means of the execution of the activity which is located between circle II and circle III, namely modelling, the construct of flexibility is defined, the field of study is demarcated and the significant relationships of the construct are formulated. The modelling activity leads to the development of six categories or types of flexibility, that is, production, marketing, financial, informational, human, cultural and organisational and

geographical flexibility. Further the suggestion is that three levels of flexibility exist, namely required, actual and potential flexibility, and that flexibility can be achieved through the four strategic aspects of cost, quality, time and range.

The first two research opportunities, which are identified in the section 1.1, namely development of the construct and exploration of the role and importance of flexibility in the organisation, are thus addressed in chapter 6. The division of the construct into six categories promotes the development of a coherent framework for identifying and measuring information on flexibility.

In chapter 7 the scientific model is applied to the *solution* in circle IV. The classification model is then used as the basis for developing accounting information on flexibility within each category. The third research opportunity identified in section 1.1, namely the development of procedures for the identification, measurement and communication of information on the different types and mixes of flexibility, is thus addressed in this chapter

In chapter 8 the *feedback in a narrow sense* envisaged in activity 5 is performed. Proposals for information on flexibility are compared with the criteria for change required in Accounting, as was identified in chapter 5. A conclusion is reached on the contribution of the introduction of the construct of flexibility and the recognition, measurement and communication of information on flexibility in addressing the challenges confronting Accounting and accountants.

Finally, chapter 9 assesses the viability and usefulness of the construct of flexibility in Accounting and its information subsystem. It contains a comparison between the outcome of the research and the assumptions and proposition identified in chapter 1. It closes with a discussion of the areas requiring further research, and provides a brief preview on possible future developments in this field.

The *validation* of the research in activity 6 has not been performed. As the construct of flexibility as proposed in this thesis is relatively new to management and accountants, an empirical validation, both with regard to the manner in which flexibility is managed in the company and the current practice in the accounting

information system, is deemed to be premature. This would be viable only once an awareness of the importance of flexibility to the organisation has been created among management, employees, accountants and other stakeholders. The construct should thus first be developed and tested in individual organisations and its impact observed before it can be validated.

As a result of the above motivation the *implementation*, activity 4, has not been performed either. The implementation of the proposals on information of flexibility has to be effected on a company by company basis. The types of targets and indicators developed to measure different kinds of flexibility in each company will depend on the goals, core competencies and critical performance areas of each one. Prior to implementation in the accounting information system, each company will thus have to develop and test its own customised measures of flexibility. Because of the need to create an awareness of flexibility before implementation and particularly customised implementation could be brought about, the implementation activity was not performed in the research.

In the next section the underlying theoretical and philosophical assumptions adopted in this research are identified, followed by a discussion of the research methods which were used.

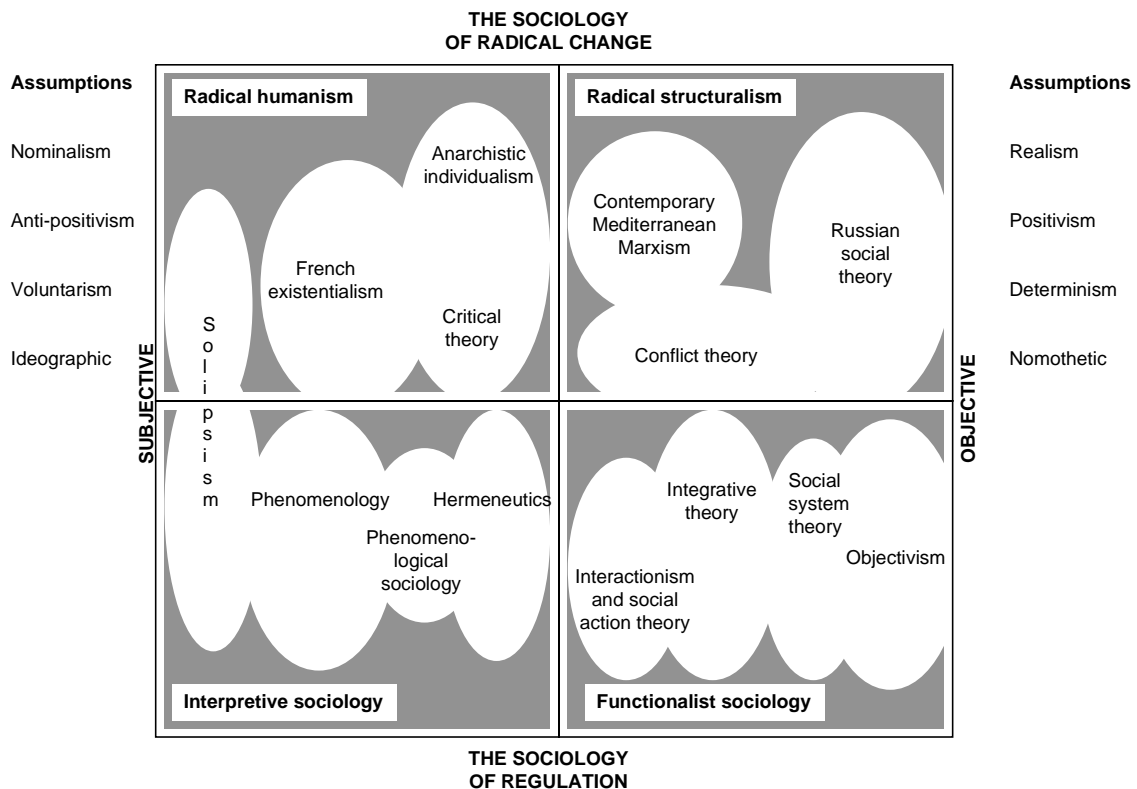
## **1.4 Methodology and research method**

Certain philosophical assumptions underlie each of the approaches to research in the Social Sciences. Puxty (1993, p.4) believes that in order to understand research it should be viewed in the context of the underlying web of beliefs and reasoned arguments. Hopper and Powell (1985) contend that certain fundamental theoretical and philosophical assumptions are fundamental to any piece of research and that there is no such thing as a totally objective and value free investigation. It is therefore important that researchers state explicitly in their research their views on the nature of reality, the grounds of knowledge and the interactions between human beings and their environment. These assumptions which underlie research tend to

incline social researchers towards adopting certain methodologies and research methods. Research methods selected may also be influenced by fashions in social science research (Sperber, 1990).

Burrell and Morgan (1979) developed a framework of the different research assumptions underlying Social Science. This model is used to identify the underlying theoretical and philosophical assumptions adopted in this thesis. Their framework, presented in the form of a matrix, consists of two dimensions or sets of assumptions about Social Science and society. The social science dimension is based on a subjective–objective dimension, as shown in figure 1.3. It consists of four assumptions about research in Social Science, namely ontological assumptions about the social world, epistemological assumptions and assumptions about human nature and about methodology.

**Figure 1.3: The four sociological paradigms**



Source: Burrell, G. & Morgan, G. (1979), *Sociological paradigms and organisational analysis: elements of the sociology of corporate life*. London: Heinemann p.22.

The *ontological* assumption involves the nominalism–realism issue. The issue centres around whether the social world external to individual cognition is a compound of pure names, concepts and labels which gives structure to reality – as in nominalism – or whether it is a compound of real, factual and tangible structures – as in realism (Belkaoui, 1992, p.513).

The *epistemological* issue addresses the grounds and nature of knowledge and centres around the positivism versus anti-positivism debate. Positivism holds a belief in the utility of searching for general laws applicable to Social Sciences while anti-positivism refutes the approach of finding general laws and supports individual participation as an integral condition for understanding the social world.

The *human–nature* issue is based on the relationship between humans and their environment – the so-called voluntarism–determinism debate. Determinism holds



that human activity is determined by the environment or by situation, while voluntarism suggests that human activity takes place of free will.

The *methodology* issue addresses the research methods used to study the social world and involves the ideographic–nomothetic debate. The nomothetic view supports a method of rigorous, structured and scientific testing of hypotheses, while the ideographic view supports the analysis of subjective accounts by participating in the situation being researched.

The second dimension of the matrix which may impact on the research approach of social scientists concerns the assumption about the nature of society. Society may be viewed as stable and orderly or subject to radical change and conflict. According to Burrell and Morgan (1979) the sociology of regulation is concerned with the *status quo*, social order, consensus, social integration, cohesion, solidarity, need satisfaction and actuality. The sociology of radical change, in contrast, is concerned with structural conflict and models of domination, contradiction, emancipation, alternation, deprivation, alienation and potentiality. They combine these two dimensions to form a matrix in terms of which the different approaches to research in the Social Sciences may be classified.

The research approach adopted in this thesis is based on Systems Theory and may be classified as *functionalist sociology*, and thus falls into the fourth quadrante of figure 1.3. This implies that the social world is deemed to consist of artefacts and relationships that can be identified, studied and measured. The functionalist approach appears to be the dominant approach adopted in Accounting research (see Puxty, 1993, p.17). Financial reporting in particular is based on a functionalist approach and one of the main objectives is to provide information that is measurable and useful in decision making. The functionalist approach supports the view that the continued existence of Accounting hinges on its usefulness to society. A logical deduction from this statement is that if Accounting and its product, accounting information, cease to be useful and to fulfil its function in society, it will not survive in its present form. In terms of a functionalist perspective, an institution or artefact functions in a certain manner, because that suits the social system. If for any reason

it fails in future to suit the social system, it will have to adapt for survival (Puxty, 1993, p.17).

Based on a functionalist perspective, the finding in this thesis is that Accounting no longer meets the demands of the social system as is witnessed by the extent of criticism levelled at the discipline (see chapter 5). Accounting is confronted by a number of challenges in adapting to the changing needs of society, so that it can retain its utility and relevance. In chapter 8 it is submitted that the introduction of the construct of flexibility in Accounting may to some extent assist the discipline and its information system to adapt to the changing demands of society.

Systems Theory is based on the work of Von Bertalanffy (1972), who identified two main categories of systems, namely closed systems and open systems. He maintained that conventional physics deals mainly with closed systems, that is systems which are considered to be isolated from their environment (Burrell & Morgan, 1979). A controlled experiment in the laboratory, in which the subject being studied is taken out of its environment, is an example of a closed system. A characteristic of a closed system is that it always moves towards a state of equilibrium.

Open systems are quite different in that they are characterised by an exchange with their environment (Burrell & Morgan, 1979). Examples of open systems are living organisms, including human beings and organisations, which are maintained through a continual two-way process of exchange between itself and its environment. That a system is open means not simply that it engages in interchanges with the environment, but that interchange is an *essential factor* underlying the system's viability, its reproductive ability or continuity and its ability to change (Buckley, 1967). An open system may achieve a steady state called homeostasis, but this is not a necessary condition of an open system in the way in which equilibrium is essential to closed systems.

In this thesis both the accounting information system and the business organisation in which the accounting information system operates, are viewed as open systems

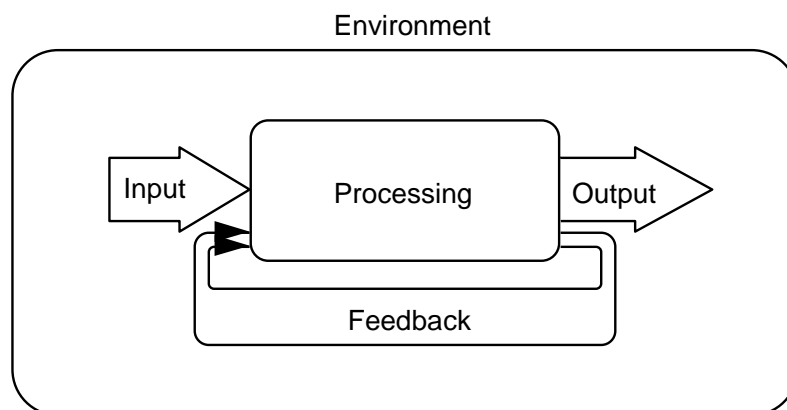
that are characterised by a constant exchange with the environment. It is through such interaction and relationships that open systems can be studied and understood.

An open system can be viewed as a physical or conceptual entity which (Koornhof, 1992, p.38)

- has identifiable boundaries;
- is composed of independent and interacting parts or subsystems;
- functions in harmony with other systems directed towards achieving the goals of the whole, namely survival or homeostasis;
- exists in a continually changing environment with which it interacts dynamically; and
- is normally part of a higher-level system or suprasystem.

The elements of a simple open system can be conceptualised in terms of a simple model which focuses on input, processing, output and feedback, as illustrated in figure 1.4.

**Figure 1.4 : Model of an open system**



Source: Own observation

In times of rapid change and turbulence, the relationship between the open system, such as a business organisation, and its environment is likely to be affected in the following manner:

- The achievement of homeostasis or survival becomes increasingly elusive;

- The boundary separating the system and the environment becomes increasingly thin and permeable (Peters, 1991);
- The organisation attempts to expose more of its subsystems directly to the environment, so as to “expand” its boundary with the environment and make itself more sensitive to changes in the environment;
- The two-way traffic between the system and its environment increases substantially;
- The subsystems within the system constantly changes, renews, disappears and grows to meet the needs of the system;
- Feedback becomes increasingly important in the process of constant and rapid repositioning;
- The system creates controlled instability within itself (Stacey, 1992a) in a bid to create or anticipate changes in the environment and foster more creativity and innovation from within;
- The interdependence and interaction between subsystems becomes increasingly complex to monitor as the subsystems mutate, merge or disappear; and
- Anticipating the timing and effect of boundary transactions, both internally between subsystems and externally with the environment, becomes increasingly difficult and unpredictable as turbulence increases (Stacey, 1992a).

Systems Theory is a useful tool for studying the response of a system in turbulent times. Its holistic approach and patterned thinking help to create order in complex relationships and to distinguish how the change in patterns over time. However, Systems Theory is only one of the suitable research methods that may be used to deal with the complexity of modern times. It is furthermore not without limitations. It does not necessarily distinguish between types of change. Consider that certain changes may be forced on the organisation, such as legislation, while others are chosen, in the sense that they are recognised and selected by the people in the organisation. This screening process by which certain changes are selected and others ignored, result in organisations which may not respond so much to their environments as “enact” them, that is, create them by selectively choosing to define

certain aspects as important (Kanter, 1982). Weick (1979) questions what an organisation who tries to “see” its environment might do to create the very display it sees, and how the environment could change when it “knows” that it is being watched. These complex issues are not necessarily addressed in Systems Theory.

If the accounting information system is viewed as an open system, it implies that it interacts freely with the environment; the organisation and society and that during turbulent periods, this interaction should increase substantially. The environment imposes conditions and limitations on the system and a radical change in environmental circumstances will influence the system directly. The open accounting information system will therefore have to be *adaptive*, as it will need to respond to changes in its environment in order to survive. If the system does not respond timeously, the environment may either force it to change or no longer support it, in which case it becomes extinct. Alternatively, it may react as a dissipative structure by regenerating to higher levels of self-organisation (Prigogine & Stengers, 1984).

A further aspect of an open accounting information system relates to its instrument for controlling performance, namely feedback. Feedback is a form of input that enables a system to evaluate its internal performance, thus creating the means for the recognition of and adaptation to environmental change. Feedback on internal performance is concerned with system efficiency while feedback on environmental issues is concerned with system effectiveness (Nolan & Wetherbe, 1980). An open accounting system will be productive when it acts purposefully with its environment in the selection of input data and transforms these into output information which is useful to society, and in this way ensures its continued existence and relevance.

In conducting this research, an *interdisciplinary* approach is adopted. A literature survey was conducted which spanned several disciplines, including Accounting, Business Management, Strategic Management, Organisational Theory, the Theory of Change, Systems Theory, Management Information Systems, Investment Theory and Finance. An interdisciplinary research approach complements Systems Theory, as Systems Theory adopts a holistic view of science. It thus recognises that only by viewing the accounting system as a whole, in relation to its environment and including areas addressed by related disciplines, can it be comprehended. Mitroff *et*

*al.* (1974) point out that there are certain aspects of science which can only be studied from a whole systems perspective and anything less than a holistic view result in failure to identify some of its most essential characteristics. To understand Accounting and accounting information in terms of a systems approach, one needs to view it first in its total organisational context (Puxty, 1993, p.32), and then in a business and societal context. This implies that information gained through a literature survey should not be confined to Accounting but should be extended to include information on the organisational system or suprasystem, and on the broader business and societal environment in which the organisational system operates.

System Theory provided a simple means of categorising, understanding, synthesising and structuring the knowledge gained from specialised and complex disciplines and which resulted from the *interdisciplinary* approach that was followed. Boulding (1956) described Systems Theory as the skeleton of science which provides a framework or structure on which to hang the flesh and blood of particular disciplines and particular subject matters so as to create an orderly and coherent corpus of knowledge. Systems Theory is a vehicle for providing structure in this thesis. The thesis therefore commences with the general environment of society and more specifically the business environment (chap. 3), progresses to the next level of open system, the organisation (chap. 4) and then to the open subsystem, Accounting and the accounting information system (chap. 5). The interdisciplinary literature survey is used to identify first the changes in the environment, secondly the interactions between the environment and the organisation, and finally the interactions between the environment, the organisation and the accounting information system. The literature survey served to identify the nature and role of flexibility in organisations and also to provide input into the measurement and communication of information on flexibility.

In the research a *non-formal* rather than a formal approach was used to introduce the construct of flexibility. Churchman (1961) defines the formal approach as one which values well-specified hypotheses which are laid down prior to the initiation of the inquiry, remain fixed throughout the course of the inquiry and are tested according to specified, fixed rules. In contrast, the non-formal approach emphasises the discovery of new hypotheses. As such, it is suitable when the aim of inquiry is to

discover new ideas and not to test preconceived ones. A similar non-formal approach was used by Simon (1955) when he introduced the new constructs of “bounded rationality” and “satisficing” into Economics.

Because the idea of flexibility, as proposed in this study, is a new construct in Accounting, the research conducted is of an *exploratory* nature. Therefore a largely *normative* approach is followed throughout the text. The logic used in the research is mainly *deductive* with logical deductions and conclusions being supported by main and secondary assumptions and propositions.

Flexibility is a complex and multidimensional concept. Consequently extensive use is made in the text of *diagrams*. The use of diagrams is warranted as it makes the construct of flexibility visible, more understandable and concrete. The diagrams are used to explain relationships, indicate the borders of the study field, to show direction, identify procedures and highlight the complex nature of the central construct. *Examples* are further used to explain the nature of the different types and levels of flexibility in organisations and to serve as guidelines to management and accountants in recognising, measuring and communicating flexibility measures.