

A dynamic balance model for analysts and managers

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Abstract

Thinking and research in respect of accounting and finance over the past three decades have been dominated by a methodology that is primarily based on the predictability of accounting data and its relationship to certain phenomena. The magnitude of change in business makes the future unpredictable. Analysts and managers are confronting an entirely new business environment in which traditional approaches are no longer valid. A systems approach provides a new way of looking at financial analysis. The purpose of this study is to focus on the present, on the ability to cope and the capacity to change in a changing environment. The ability to create an own future is being seen as more important than the art of predicting the future. This paper describes an empirically tested dynamic balance model to establish whether entities are able to adapt, survive and prosper.

Key words

Financial analysis
Interpretation

Dynamic balance
Financial health

1 Background

The production of information for users is the *raison d'être* of accounting. The objectives of financial reporting state emphatically that useful information for decision making is the basic goal. In order for accounting information to be useful for users, accounting authorities and researchers are future oriented. Whereas stewardship mainly implies looking at the past to evaluate what has happened, prediction focuses on the future. Because the objective of accounting is to provide useful information for decision making, this objective implies an approach that is forward looking, futuristic and focused on predictability. Such an approach is helpful in

assessing the paradigm, irrespective of whether accounting achieves its objectives.

In terms of the current view, accounting information is useful if it "... provides a reasonably sound basis for the user to assess the amount, timing and uncertainty of future cash flows ..." (FASB 1980; Kam 1990). In terms of the traditional view (FASB 1980), relevant information is information about the company's financial position – that is at the present date – and financial performance, which covers the past. Financial performance is directly linked to profitability and cash flow. Financial condition has to do with the financial "health" of a company (Kam 1990). The health of a company is assumed to have a direct bearing on its ability to achieve its goal of making profits. Users of accounting information wish to assess the financial condition of a company in order to predict its future performance.

Thinking and research in respect of accounting over the past three decades has been dominated by a methodology that is primarily based on the predictability of accounting data and its relationship to certain phenomena. The importance of this research is driven in part by its implied promise of delivering a simple measure to assess the usefulness of accounting information. Although the methodology has provided a valuable framework for approaching accounting problems, the limitations inherent in this methodology necessitates new approaches. The usefulness of accounting data and information is too important to be viewed from the predictability perspective only.

Traditionally, accounting authorities have concluded that relevant information about a company consists of information about the financial performance and financial position, which enable users to assess the amount, timing, and uncertainty of future cash flows. The FASB (1980) defined the concept of predictive value as the quality of information that helps users to increase the likelihood of correctly forecasting the outcome of past or present events. If accounting information are to be relevant and useful, it should provide or permit predictions of future events.

The emphasis on the future as detailed above is rejected in favor of a more realistic present approach. For this purpose the present was investigated from several different perspectives. The main aim was to provide an alternative approach to view financial information that can establish whether an entity does have the capacity to change and the ability to cope in a changing environment. The ability of an entity to create its own future is considered to be more important than the art of predicting the future.

The study of interpretation and decision making involves an understanding of how analysts and managers behave when interpreting financial data and

information in order to establish whether a dynamic balance exists for an organization. For this reason, various relevant phenomena and facets related to the survival of systems were investigated. There is an "... inadequacy of our understanding as to what sustain success ..." (Pascale 1995:21). The results were then combined into a dynamic balance model. The empirically developed proportional model (Gouws & Lucouw 1999) provides a suitable reference base for determining whether an organization is out of dynamic balance.

The aim of this paper is to describe a dynamic balance model which can be used as an aid in interpreting financial data. Furthermore, it attempts to bring accounting closer to its goal of decision usefulness for users by empowering users with a proven tool.

In the first section of this article, systems theory is applied to accounting and relationships within a whole are considered. The second section emphasises the need for adaptation and change in a system. In the following section, the importance of relationships between the systems variables is stressed. This is followed by the presentation of a new view of the predictability concept. The final section concentrates on the self-renewing abilities of entities in order to adapt, survive and prosper. An empirically tested model is presented to facilitate management and interpretation. The paper concludes with a summary of the benefits and uses of the model.

2 A systems approach

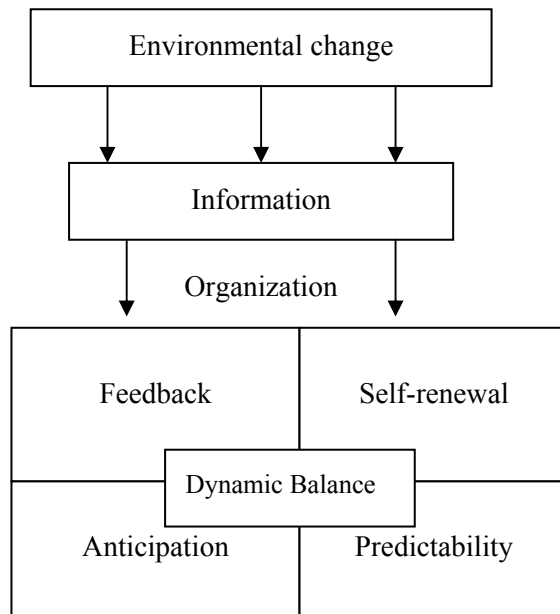
Laszlo (1972) observed that to have an adequate grasp of reality we should look at things as being systems, which have properties and structures of their own. A systems approach towards organizations yields a different kind of knowledge than analysis does. Analysis involves dissecting the whole into parts in an effort to understand how it works. Analysis is fundamentally a mechanistic way of examining organizations. Systems thinking moves towards a larger framework by determining the major subsystems of the organization. Therefore, if analysis can be said to yield know-how, systems thinking can yield "understanding". Both forms of knowledge are useful (Suchan & Dulek 1998). Laszlo (1972:4) criticized analysis as follows:

"We are drilling holes in the wall of mystery that we call nature and reality on many locations, and we carry out delicate analyses on each of the sites". "... we are beginning to realize the need for connecting the probes with one another and gaining some coherent insight into what is there."

Systems thinking is used in this paper to provide an alternative to financial analysis to uncover new dimensions within organizations that could enhance our thinking in terms of business survival and success.

Diagram 1

A Systems view in perspective



Accounting is a social science which lends itself to analysis as an information system, because it has all the attributes of a system (Glautier & Underdown 1995). The systems approach permits the integration of accounting into a coherent framework in which its role is concerned with the provision of information for decision making. The fact that accounting information is required for decision making purposes, is widely accepted.

2.1 Accounting as a system

The systems view of life is an appropriate basis not only for the behavioural and life sciences but also for a social science such as accounting. The application of system concepts to describe financial and accounting processes and activities is particularly urgent because certain problems and phenomena can no longer be understood via only the traditional approach. The systems approach to accounting makes it possible to bring some new perspectives to the present state of the art. There is an emerging paradigm – a new way of systematising the information we already have (Laszlo 1972). It retains the focus of attention on the big picture and ultimate objective, something that tends to fade when the focus shifts away from the whole and towards the parts of the system.

The systems view looks at reality in terms of relationships and integration. Systems are integrated wholes of which the properties cannot be reduced to those of smaller units. What is relevant in a business area is not individual assets, liabilities, income or costs, but the complex web of relationships between them. Because it is processed-orientated, it is impossible to convey an accurate visualisation by means of static drawings/positions. Business systems have to be understood in terms of processes that reflect the system's dynamic organization.

According to the systems view, the essential properties of a system are properties of the whole, which none of the parts have. They arise from the interactions and relationships between the parts. The belief that in every complex system the behaviour of the whole (company) can be understood entirely from the properties of its parts (assets, liabilities, sales, etc) is central to the Cartesian paradigm. Systems cannot be understood by means of analysis (Capra 1996). The properties of the parts are not intrinsic properties, but can only be understood within the context of the whole. Analysis means taking something apart in order to understand it; systems thinking means putting it into the context of the larger whole. Ultimately there are no parts at all. Each "part" is merely a pattern in an inseparable web of relationships.

2.2 Dynamic Balance

Homeostasis is the self-regulatory mechanism that allows organisms to maintain themselves in a state of dynamic balance with their variables fluctuating between tolerance limits (Cannon 1939; Emery 1981). Organizational crises manifest as a breakdown of the existing systematic balance, and at the same time represents an organizational transition to a new state of balance. Systems are open when they operate far from equilibrium. Closed systems are open systems that have settled into states of thermal equilibrium while open systems maintain themselves far from equilibrium through continual flow and change – a dynamic balance.

Insight facilitated by such a systems approach is the realization that:

- 1) All the social choices we make and decisions we take are choices between principles of self-organization. In making these choices it is necessary to bear in mind that the dynamic interplay of complementary tendencies is an important characteristic of self-organizing systems. Schumacher (1975) refers to the "reconciliation of opposites which, in strict logic, are irreconcilable". There is a need to balance.
- 2) Because the dynamics of a system is likely to be dominated by fluctuations, it will only be healthy if it is in a constant state of dynamic balance, characterized by continual fluctuations of its variables (Capra 1996). To achieve and maintain such a balance it is crucial to be

flexible. Capra (1996:9) states: “What is good or healthy, is a dynamic balance.”

- 3) “Healthy equilibrium in organizations is always dynamic, never static or mechanistic” (Pascale 1995:186).
- 4) Koehler (1981:71) stated that the “... law of dynamic direction and the second law apply to the organism; in other words, that the organism regulates towards a balance of directed vectors no less than it does toward a most probable situation”.

A dynamic balance requires the ability to create a holistic view of the interconnection between apparently contradictory trends in that environment; and the ability to balance the internal and external dynamics of one’s organization to balance organizational effectiveness against organizational efficiency” (Garratt 1995). The state maintained in and by organizations is “... a dynamic balance of energies and substances, always poised for action” (Laszlo 1972:43).

Because new opportunities are always being created by the system, it means that it is essentially meaningless to talk about a complex, adaptive system being in equilibrium: the system can never achieve that state. It is always unfolding, always in transition. A system explores its way into an immense space of possibilities, with no realistic hope of ever finding the single ‘best’ place to be (Holland 1990:167).

2.3 Environmental Change

When an organization is experiencing disruption by internal or external forces, it can either try to hold on to stability, and lose its ability to adapt and survive, or it can respond in a dynamic manner – the creation of a flexible, versatile organization. Emery (1981) describes flexibility as the capacity of an organization to suffer limited change without severe disorganization. Companies are capable of learning and adapting even while conducting operations. For a system to remain alive, information must be generated continually. “In fact, information is an organization’s primary source of nourishment; it is so vital to survival that its absence creates a strong vacuum” (Wheatly 1994:107). Information is therefore the source of power to adapt. New technology initiatives can provide decision-makers with far more and better information about where they are.

All complex adaptive systems anticipate the future (Holland 1990). To anticipate change in the external environment will impact positively or adversely on both the organization’s goals and means of achieving them. Organizations have demonstrated outstanding abilities to maneuver rapidly in response to unexpected change. This requires direction-givers to create,

develop and maintain the organization's brain, heart and soul – the sources of both emotional and physical energy which drive the organization forward. Therefore, some balance has to be struck between rates of external change and rates of internal adaption to change (Garratt 1995)

In the past analysts (Bernstein 1999; Helfert 1998) studied organizations by focusing primarily on the overall structure of the system without observing or understanding the processes of change and growth that make a system viable over time. Analysts looked for the influences that would support stability, which is the desired trait of structures, whereas "... open systems use disequilibrium to avoid deterioration." (Wheatly 1994). Prigogine called the systems dissipative structures, because they dissipate their energy in order to recreate themselves into new forms of organizations – self-organizing or self-renewing systems. Finally, the system, that is the organization and its variable environment, should ideally be evaluated as a whole (Kuhn 1986).

Communication channels across the organization's external boundary – from the uncontrollable environment to the controlled set of variables and back again – are necessary to ensure that the business is synchronized, or in step, with its variable surroundings. The more uncertain an organization's environment becomes, the greater its need for external information.

"Organizations ... can accomplish their purposes in various ways and they do best when they focus on direction and vision, letting transient forms emerge and disappear" (Wheatly 1994:16). Directing an organization in the information age has become a different challenge from when predictability and stability were the norm.

2.4 Relationships between variables

Systems consist out of a "... list of variables" (Ashby 1956) which represent measurable quantities, which at every instant has a definite numerical value. A business system is then defined as any set of variables that the analyst selects from those available on the real organization. The set of variables yields according to Ackoff, a system of decisions needed to specify all the variable values (Ackoff 1969). "... each system has a specific structure made up of certain maintained relationships among its parts, and manifests irreducible characteristics of its own" (Laszlo 1972:12). If we want to know more about them we have to treat them as systems, that is as wholes with properties of their own. By using the decision as its unit of analysis a model can be postulated for establishing a "dynamic balance" based on the organization's set of variables. The big question is how to distinguish between the important variables to be fixed as parameters and the less critical to be left out.

Discovering the systematic relationships among the entity's many relationships and variables promises the greatest chance for improving the business's performance regulation. We are to understand the importance of relationships and non-linear connections as the source of new knowledge. The challenge is to create organizational forms that facilitate these processes. According to Wheatly (1994:32) relationships are all there is to reality. Furthermore, power in organizations is the capacity generated by relationships. Because power is energy, it needs to flow through organizations. Ultimately the underlying currents are a movement towards holism, towards understanding the system as a system and giving primary value to the relationships that exist among seemingly discreet parts. When we view systems from this perspective, we enter an entirely new landscape of connections, of phenomena that cannot be reduce into simple cause and effect.

The survival and growth of a business system is made possible by the combination of key patterns or principles, that express the system's overall identity.

3 Predictability

3.1 Search for predictability

In the accounting search for order and predictability, we have broken into parts and fragments the financial information about an organization (in the form of different ratios), and have believed that was the best way to understand them. We think of prediction as being something that humans do consciously (Waldrop 1992). Virtually every accounting-based decision has been based on a single premise – the future is predictable. At present, our most sophisticated way of acknowledging an organization's complexity is to build elaborate accounting systems and process maps, which are often influenced by a Newtonian quest for predictability. When we create the map to reveal all the variables and what we expect from such knowledge, we will be able to manipulate the system to achieve the outcomes we desire. Users and analysts have a need to predict. "There is no escaping the need to predict. A key issue is when we should not respond to that need" (Weinstein 1998:141).

3.2 Predictability is dead

The magnitude of business change in terms of customers' needs and demands, rules of competition, innovation, etc. make the future unpredictable. Accounting decision makers are being confronted by an entirely new business environment in which all the traditional assumptions and practices are no longer valid.

It should be realized that all rational predictions are based on past experiences with an uncontrolled environment. If the past did not repeat itself, prediction would be totally impossible.

Many studies in the past have examined the use of accounting information and ratios. While most of the studies have provided insight into the use and interpretation of accounting information and ratios in a forecasting context, researchers have stated:

- “Predictability is dead” (Fradette & Michand 1998)
- “exact prediction is often impossible” (Capra 1996)
- “Absolute prediction and uniformity are, therefore, impossible” (Wheatly 1994).
- “... it simply means that future earnings changes cannot be forecasted from past changes” (Ball & Kothari 1994:354).
- “... conventional wisdom combined appear no better at predicting an organization’s ability to sustain itself” (Pascale 1995:22).
- “Prediction isn’t the essence of science. The essence is comprehension and explanation” (Waldrop 1992:255).
- “Data about the future – predictions – are commonly the weakest points in our armor of fact” (Simon 1982:170).
- “There is no predictability, the system never is in the same place twice” (Wheatly 1994:21).

The frequency with which the plans of organizations need major or minor adjustment, as a result of external factors beyond not only their power to affect, but even the capacity to foresee them, is testimony to the fallibility of predictions. Although the struggle to achieve accurate predictions will and must continue, there is little or nothing to indicate that the art of predicting has substantially improved in recent years. Weinstein (1998:142) gave the following advice: “... whenever it is practically possible, do not predict: make predictions only when we feel we must. By deliberately restricting the range of prediction making, the mental space is opened for an alternative approach – different possible futures. Forecasting usually meant extrapolating recent trends. So we almost never predicted the critical discontinuities in which the real money was made and lost – the changes that really determined the future of the business”.

3.3 Emphasis on the present

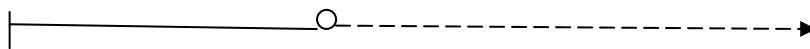
Future events can only be conjecture. As such it are not reliable and cannot serve as a basis for decision-making without considerable risk. Closest to a future time span, but still grounded in reality, is the *present*.

Strategic thinking is the process by means of which an organization's decision makers (direction givers) can rise above the daily managerial processes to gain different perspectives on the internal and external dynamics causing change in their environment, and thereby give more effective direction to their organization. Such perspectives should be both future orientated and historically understood (Garratt 1998).

Looking both forward and backwards, while knowing where an organization is **now**, is necessary to achieve the organization's purpose.

Diagram 2 **Emphasis on the present**

PAST	PRESENT	FUTURE
Reality	Condition	Predicted reality
(Performance)	Position	(Amount, Time and Uncertainty)



If the past is not relevant and the future unpredictable, the emphasis must shift to the present in order to anticipate and to react. With relationships, we give up predictability for potentials. There are a number of dimensions to which financial analysts have directed their attention when reviewing the financial performance and financial position of an organization.

<u>“Flow dimensions”</u>	<u>“State of being” dimensions</u>
Financial performance	Financial condition
Profitability	Financial position
Operating capability	Solvency
	Liquidity
	Risk

The above dimensions, as measured and constructed in ratios, are not directly observable. Although the meaning of each is imprecise, there is a general understanding amongst analysts of what they are. Income determination for a company is not a simple task. The cash flows are not known with certainty, and the time horizon is not ascertainable. We can measure position and condition, and thereby obtain a fixed view on the particles; or we can study the momentum and thereby observe the flow.

4 Self-renewing organization

4.1 Self-renewing capacity

Researchers are beginning to recognize organizations as being systems, construing them as learning organizations and crediting them with some type of self-renewing capacity. We have treated organizations like machines, acting as though they were dead when all the time they've been living, open systems, capable of self-renewal (Wheatly 1994).

Self-renewal is the ability to constantly change and adapt to changing circumstances. It is based on systems thinking in which "one strives to look at the entire problem, as a whole in context, and to compare alternative choices in the light of their possible outcomes" (Checkland 1981:137). Systems analysis developed as a problem-solving tool and later evolved to the view that a business organization is a living social system (Ulrich 1992). The level of self-renewal is indicative of the ability to survive in the future. Living organisms that have survived did so as a result of a developed self-organizing faculty.

A self-organizing system is a system that continuously creates internal order from chaotic inputs. New structures and new modes of behaviour are created in the self-organizing process (Capra 1996). It is therefore a constant process of staying in balance amidst a changing environment. Maintaining a balancing position does not imply a static position. It is an attribute of a self-organizing system that it is an "open system" whereby

there is a constant flow of energy and matter through the system. The capacity for self-renewal is a force that creates the notion of these systems (Wheatly 1994). Self-organization only occurs when the system is far from equilibrium (Capra 1996). The system must therefore be alive. A static system in equilibrium (rest) cannot maintain a balancing position.

4.2 Feedback

Few of the adaptive systems that have been shaped by man depend on prediction as their main means for coping with the future. Two complementary mechanisms for dealing with changes in the external environment are often more effective than prediction: “homeostasis mechanisms ... and retrospective feedback” (Simon 1982).

In order to benefit from self-organization, the system must have feedback loops. Results must be fed back into the system to improve the level of order with each iteration. Feedback is the essential mechanism of self-regulating that allows organisms to maintain themselves in a state of dynamic balance (Richardson 1992:17). Cybernetics can be distinguished in terms of two kinds of feedback:

- Self-balancing (negative)
- Self-reinforcing (positive).

For a business to be self-renewing it has to be alive with a constant inflow and outflow of energy (recourses). With a change in the environment, new structures and new forms of behaviour should develop, with the aid of feedback loops, to maintain balance and enhance internal order. Businesses are moulded by feedback (Waldrop 1992). The higher the level of self-organization, the better recourses can be utilized with improved efficiency. The extent to which the management of a business is able to develop the self-renewing activity of that business should be a measure of success.

Feedback mechanisms, by continually responding to discrepancies between a system's actual and desired states, adapt it to long-range fluctuations in the environment without forecasting (Simon 1982). It is therefore advantageous to omit prediction entirely, relying wholly on feedback.

4.3 Attributes of a self-renewing organization

Only living systems have a self-renewing facility. Capra (1996:158) claims that a theory of living systems lies in the synthesis of pattern, structure and process.

The pattern of a system is the configuration of relationships among the components that determine the system's characteristics. All components, in the correct proportions, should be present. In a business, the components that form the pattern are resources such as assets and labour, a market for

products and services, suppliers, capital and management. The relationships between the components and the presence or absence of various components form the pattern. The more dynamic the system or business is, the more the components should change with a change in pattern. In order to be self-organizing, a change in the environment should result in a change in pattern. Without a change in pattern when circumstances change, balance will not be maintained.

The structure of a system refers to the shapes of the components. In a business, the structure is determined by the size of resources, such as the level of liabilities and size of the labour force, the profit margin and the market size. The structure should change to enable a balancing position when conditions change.

The third criterion is the process. In biology, process implies cognition or mind, the process of knowing. Bateson (1979:89) pointed out that mind is not present in biological organisms only, but also in social systems and ecosystems. The effectiveness of the process can be measured by how the system interacts with the environment. The mind of a business is the various levels of management. Getting to know changes in circumstances and reacting to the change by changing the pattern and structure in the organization represent the process of life. Without an effective mind, or process of knowing, the organization will cease to be a living, dynamic system.

Pattern, structure and process form a unit that explains the difference between dynamic living systems with a self-renewing facility and a lifeless system without the ability to adapt to change. A business capable of self-renewal should be able to survive environmental storms and create value for all its stakeholders.

4.4 The bigger picture

A business as a whole, the pattern and structure of components together with the process of knowing how the components relate to each other and interact and change to maintain balance, is substantially more than the components separately. Viewing components in isolation or in small groups only provides isolated information. A full understanding can only be obtained by observing how the system operates as a whole. "The challenge for us is to see beyond the innumerable fragments to the whole ..." (Wheatly 1994:41).

This is also the approach advocated by systems thinkers in the 1920s. According to systems thinking, the properties of a system are properties of the whole which none of the parts have. The properties of the parts can only be understood within the context of the larger whole (Capra 1996). Systems

thinking is a holistic approach, taking the view that the whole is more than the sum of its parts.

Interpreting the financial position of a business has always been preceded by an analysis of the financial statements. Much emphasis has been placed on the analysis, with a lesser emphasis on the interpretation of the analysis. The reason is probably the absence of a scientific method to interpret an analysis. Many textbooks (Bernstein 1999; Helfert 1998) on the subject elaborate on analysis but basically ignores the interpretation. The approach of first analyzing and then interpreting has its roots with the philosopher René Descartes who developed analytical thinking (Descartes 1960). According to analytical thinking, a better understanding can be obtained by breaking a system down into its parts and analyzing each part. This is contrary to the systems thinking.

In agreement with the systems approach, a sensible interpretation of the financial statements of a business cannot be made by using an analysis of the financial statements as a base. A ratio analysis reflects the relationships between figures (usually only two) at a specific time, while the spirit of the organization is in the continuous movement and relationships of all its components (parts). The analytical approach to interpretation will not reveal the “more” that is present in the organization. An analysis can be useful for control purposes to determine whether you are on track, but not as part of the knowledge gathering process needed for interpretation. An analysis will not reflect all information and will cloud your thoughts during interpretation.

An interpretation should reveal the ability of the organization to self-organize. Interpretation should not assess past performance, but be forward looking. If the self-renewing ability is good, the organization will be able to survive in the future and create value for its stakeholders. The interpretation of the financial statements of a business should be made without an analysis. The financial statements could be interpreted as a whole to capture the dynamics and strategy of all the components. The objective is to interpret an entirely new way of understanding fluctuations, disorder and change.

This, different approach to analysis – the sensing of the movement and shape of the system-creates the desire to be in harmony with it. When we give up myopic attention to detail, and stand far enough away to observe the **movement** of the **total** system, we develop a new appreciation for what is required to manage a complex system.

4.5 Dynamic balance model for interpretation

An organization is an example of a complex adaptive system. All systems share certain properties or dimensions. From the previous discussions, three

To determine flexibility – assets/liability
 – profit/expenses

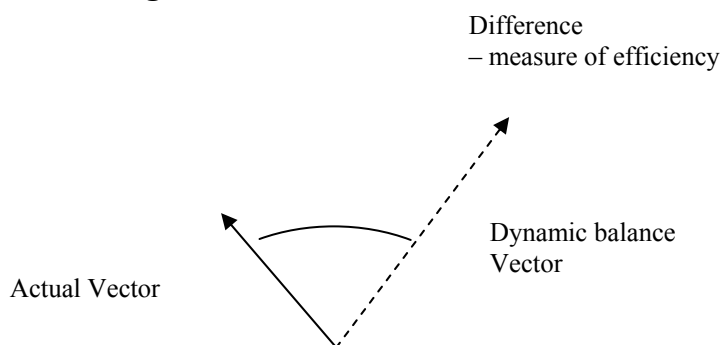
Direction is measured by calculating the difference in the direction of the two vectors.

The efficiency of an entity is measured by comparing the actual financial statements to the adjusted financial statements of the entity. The financial statements are adjusted to reflect a dynamic balance position through the proportional model (Gouws & Lucouw 1999:113). Using the ratios, both financial positions (actual as well as dynamic balance) are expressed as vectors.

Efficiency is reflected by the differences between the two vectors. The difference in direction as well as the difference in vector length are measures of efficiency. The smaller the difference between the vectors, the higher the efficiency. For example, Stocks and Stocks Limited, which was liquidated recently, had a calculated efficiency of zero percent, while other blue chip companies have a calculated efficiency exceeding 70%.

Diagram 4

Determining direction



5 Empirical research

5.1 Objective

The objective of the empirical research was to test the practicality of the dynamic balance model for decision making by comparing the calculated efficiency to the financial position of a company.

5.2 Data

A random selection of 45 industrial companies listed on the Johannesburg Stock Exchange for a period of at least five years was made. The research data was extracted from the 1998 audited annual financial statements of the selected companies.

5.3 Methodology

For each company, a balance sheet and an income statement, that reflected a dynamic position, were prepared. The dynamic balance model of financial statements is a slightly modified version of the proportional model (Gouws & Lucouw 1999).

A ratio analysis was performed on the actual financial statements of the selected companies and the ratios that were considered to reflect a good (or bad) performance were selected as independent variables for the research. The following ratios were selected:

- Earnings per share
- Annual increase in earnings per share
- Number of consecutive years that profits increased
- Return on equity

- Number of consecutive years that return on equity increased
- Gearing ratio
- Turnover ratio (gross revenue/assets)
- Annual increase in productivity (productivity is measured as value added/salaries)

The efficiency of each company was calculated by comparing the actual vector (refer above) of each company to the vector of the dynamic balance financial statements for that company. The efficiency percentages were used as the dependent variables in the research.

The data was analysed by means of multiple regression analysis to determine whether a linear relationship between the computed efficiency and financial performance exists. Forward stepwise regression was applied to select only those variables that are significant at the 0.05 level.

5.4 Results

The regression results are reflected in diagram 4. All the variables that appear in diagram 4 were selected as being important. The t-statistic indicates the importance of each variable.

Diagram 4

Results of regression analysis

Correlation coefficient	0.88	
R²	0.77	
Variables selected	Beta coefficient	t-statistic
Productivity	0.50	3.72
Number of years profits increased	0.27	2.16
Gearing ratio	0.16	1.50
Earnings per share	0.13	1.49

5.5 Summary

The results are indicative of a strong linear relationship between efficiency (determined by the dynamic balance position) and the selected independent variables.

A pendulum is in constant search of the balancing point, but never reaches it as long as it is moving. It stays close to the balancing point, crossing it frequently in its search for balance. Bearing in mind that no dynamic

business should ever be in perfect balance, the empirical results are significant. It therefore appears as if the dynamic balance model can be a valuable tool in the holistic interpretation of financial statements.

6 Conclusions

The study aimed to develop a dynamic balance model that is based on the proportional model of Gouws & Lucouw (1999). The test results clearly differentiate between successful and unsuccessful organizations. Based on the test results, the usefulness of the model to establish organizations' health appears to be promising.

There are various other applications of the model that could be considered in future research: The model could enable analysts and managers to:

- interpret financial data and information
- solve issues of going concerns
- manage towards efficiency
- identify early warning signals of weaknesses
- provide a compass and radar system to navigate through turbulence.

The combined effect of all these applications could form the basis and/or could be used as complementary to any performance or scorecard indicator.

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