"MANAGEMENT SYSTEMS FOR INNOVATION AND PRODUCTIVITY"

by

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ABSTRACT

Innovation and productivity should be balanced differently in multi-business firms depending on their context. The management system appropriate to each context differs in its degree of centralisation in the strategy making process and the degree of standardisation in the strategy implementation process. This study shows that despite the concurrence of senior managers with the need for such tailormaking, the management systems in use are typically not tailored to their context. Implications of such misfitted systems for innovation and productivity are discussed.

(Managing Diversity, Adaptive Processes, Planning)

1. Introduction

A well adapted firm must be both innovative and productive (Lawrence & Dyer, 1983). A firm is innovative if it can create and defend new niches that will ensure its future growth, and is productive if it can efficiently exploit the profit opportunities in its chosen niches. The pursuit of productivity helps the firm meet its immediate obligations to its stakeholders and provides the slack resources which the firm needs to be innovative. Nurturing innovation, on the other hand, ensures that these slack resources are carefully invested in ideas, people, and transactions to yield new business opportunities in the future (Van de Ven, 1986; Van de Ven, Angle, & Scott Poole, 1989).

Based on a field study of how firms address this challenge of balancing innovation and productivity, Chakravarthy and Lorange (1984) propose three basic options:

1. **Central Planning**: Manage the firm's businesses primarily for productivity, and ensure long term growth through suitable acquisitions engineered from corporate headquarters. In this option innovations are not nurtured within the firm.

2. **Portfolio Balancing**: Manage businesses either for innovation or for productivity. Innovation and productivity are balanced by selecting an appropriate portfolio of businesses.

3. **Self-Renewal**: Manage each business for both productivity and innovation through a dual structure administrative arrangement.

Furthermore, the authors propose contextual factors under which each of the above systems is appropriate. This study seeks to explore whether the conceptual framework proposed by Chakravarthy and Lorange is shared by senior managers in a wider sample of multi-business firms, and whether it is actually used to manage diversity in the sample firms.

The paper is organised into four sections. Section 2 provides a brief description of the three management systems that are available for balancing innovation and productivity and

discusses the important contextual factors that determine their choice. Section 3 presents the research design used for the study. Section 4 discusses the research findings, and section 5 examines the implications of the findings for innovation and productivity in multi-business firms.

2. Balancing Innovation and Productivity

2.1 Distinguishing the Management Systems

The three management systems that have been proposed for balancing innovation and productivity differ (See Figure 1) in their degree of centralisation in the strategy making process and in their degree of standardisation in the strategy implementation process (Chakravarthy, 1987).

FIGURE 1

In a management system where strategy making is centralised, the relative latitude for innovation or productivity within a division's businesses is specified by senior management in a top down fashion (Lorange, 1980). Furthermore, top management carefully scrutinises the action plans proposed by individual divisions for adherence to this directive, and ensures that divisional budgets correspond closely to the approved action plans (Shank, et. al., 1973). In such a system, corporate planners have a major role in shaping innovations. They are de facto strategists. By contrast, in a management system where strategy making is decentralised divisional managers have greater autonomy in setting goals for their business units and in

nurturing innovation within them. As long as the financial performance promised by the division is in keeping with corporate expectations, divisional budgets need not be tied tightly to the action plans proposed in earlier periods by the divisional manager. The role of the corporate planner in such a system is more passive, that of a catalyst (Lorange, 1980).

In a management system where the strategy implementation process is standardised, the monitoring, control, and incentive sub-systems used by senior management are identical across all divisions and are primarily based on a division's profitability. Such an implementation process is not very conducive to innovation. However, when the strategy implementation process is tailormade, divisional performance tends to be monitored, controlled, and rewarded to suit the division's mission. The process relies both on a division's profitability as well as its efforts at innovation (regardless of their success) in judging and rewarding divisional performance.

2.2 The Appropriate Context for Each System

The two important contextual factors (See Figure 1) that determine which of the three options is most appropriate to the firm are: (i) the portfolio pressure, and (ii) the financial pressure that its senior managers perceive the firm to experience (Chakravarthy & Lorange, 1989).

Portfolio pressure normally varies with the severity of imbalances in the firm's business portfolio. It is a function of the attractiveness of the industries in which the firm competes

in and the intensity of competition in these industries (Henderson, 1972). Financial pressure, on the other hand, varies inversely with the perceived ability of the firm to satisfy its stockholders. Stockholders are not impressed by diversity, growth, or balance per se in a firm's business portfolio, unless these can also generate a financial return commensurate with stockholder expectations (Salter and Weinhold, 1979).

2.3 The Three Options

2.31 Central Planning

When senior management senses that both the portfolio and financial pressures faced by the firm are high, it is essentially faced with a turnaround situation. Strategy making is centralised in order to prune the firm's business portfolio and to ensure efficient allocation of the firm's scarce resources. Strategy implementation is also standardised and all businesses are managed for productivity in order to alleviate the firm's high financial pressure.

The central planning system is thus predominantly focused on improving productivity (See Table 1) and is not very conducive to innovation. However, senior management may have no choice but to forego internal development opportunities and to rely

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TABLE 1

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primarily on acquisitions for correcting imbalances in the firm's business portfolio. Acquisitions can provide the needed balance more readily, whereas internal development can be time consuming

and risky. The corporate staff, noteably the corporate planner, is responsible for the firm's acquisitions and for the few innovations that may be developed within the firm.

2.32 Portfolio Balancing

There are two variants to this option depending on whether the business portfolio is balanced at the corporate or divisional level.

Corporate Portfolio Management: Should the context of a firm be such that despite high portfolio pressure, its financial pressure is low to moderate, senior management will have the slack resources to sponsor innovation atleast in some divisions. Other divisions may continue to be managed for productivity. Consequently, the strategy implementation process has to be tailormade to suit the different missions assigned to each division.

However, given the high portfolio pressure associated with this context, the strategy making process must remain centralised. Portfolio balancing decisions are preferrably made at the corporate level, and acquisitions should continue to be an important alternative for correcting portfolio imbalances (See Table 1).

Divisional Portfolio Management: On the other hand, if the context of the firm is such that financial pressure continues to be high but portfolio pressure is not, senior management can decentralise the strategy making process. Low to moderate portfolio pressure means that the business portfolio of the firm

is healthy, with opportunities for growth in every division. Portfolio balancing can, therefore, be done at the divisional level (See Table 1). This will encourage divisions to be innovative. Senior management can supplement the divisions' efforts through select acquisitions aimed at improving the firm's portfolio balance.

However, given the firm's high financial pressure, meeting agreed upon profit targets should be an important measure of the divisional manager's performance. Therefore, the strategy implementation process is standardised across all divisions and is based primarily on the division's profitability.

2.33 Self-Renewal

When the context of a firm is one of low to moderate financial and portfolio pressures, the firm can rely primarily on internal development for generating growth options in all of its businesses (Lawrence & Dyer, 1983). Firms that use the self-renewal system are often linked in a matrix like fashion both by a strategic and an operating structure (Lorange, 1985). However, the strategic structure is not a permanent structure - it has no assets or manpower of its own. The strategic structure is primarily used as a think tank for engineering new strategic initiatives, whereas the operating structure is used for finetuning the firm's existing strategies and for implementing all of its strategies (See Table 1).

Link between the strategic and operating structures is through the assignment of roles in the strategic structure to

various operating managers. Consequently, many business unit managers wear two hats under this system, one representing their responsibilities in the strategic structure for exploring new growth options, and the other representing their responsibilities in the operating structure for existing strategies and for the implementation of strategies formulated in the strategic structure.

In a self-renewal system the strategy making process is centralised in the operating structure and decentralised in the strategic structure. This means that businesses for which no growth proposals are offered will be managed solely for productivity. The strategy implementation process is tailormade to accomodate both output and effort for strategies shaped in the strategic structure, but standardised and based solely on output for those made in the operating structure. This is accomplished through the use of two budgets, a strategic budget for the former and an operating budget for the latter.

3. Research Design

3.1 The Research Agenda

The overall scope of this study is presented in Figure 2. It basically seeks to test three related propositions:

FIGURE 2

Proposition 1: The framework presented in the previous section highlights the need to balance innovation and productivity differently in a multi-business firm depending on

its context. In the difficult context of high portfolio and financial pressures, the framework suggests that senior management cannot afford to manage any of the firm's businesses for innovation but must manage them all for productivity. On the other hand, when both of these pressures are moderate to low, the framework suggests that innovation can be nurtured in each of the firm's businesses. And finally when atleast one of the pressures is high, senior management can support innovation only selectively. This leads to the first proposition:

> **P 1.** The management system **actually used** by a multi-business firm will place different emphasis on innovation depending on its context, as **required** by the framework proposed in Figure 1.

Proposition 2: But then, previous studies (Gage, 1982) have documented the long lead times that are needed to operationalise a management system. It is possible that a system may not have reached its steady state when it is observed. Therefore, even if proposition 1 does not hold but the management system preferred by senior managers corresponds to that which is required by Figure 1, the framework is supported. Hence, the proposition:

> **P 2.** The **preferred** management system of senior managers in multi-business firms will correspond with that **required** by Figure 1.

Proposition 3: However, proposition 2 assumes that senior managers' preferences will translate into reality over time. This is valid only if the degree of fit between the system actually used and the one that is required by the firm's context is an important determinant of how the system is rated by senior

managers. Otherwise, there is little chance that ill fitted systems will ever be transformed to fit their contexts better. Hence, the proposition:

> P 3. The degree of fit between the management system **actually used** by a firm and that which is **required** (given its context) will be a significant determinant of how the system in use is rated by the firm's senior managers.

Summary: In order for the framework to be supported atleast propositions 2 and 3 must hold, even if proposition 1 is rejected. As noted in the above discussion the danger in any cross-sectional study, such as this, is it ignores the change trajectory of a management system. Propositions 2 and 3 try to remedy this deficiency by assuming that if the architects of a firm's management system, its senior managers, concurr with the framework proposed here and apply it to rate the management systems that they use, over time the system in use will be transformed to fit the system required by Figure 1.

3.2 Gathering the Data

The data required to test the above propositions was collected through a questionnaire survey. The questionnaire was adapted from an earlier study (Chakravarthy, 1987). A copy of the questionnaire used can be obtained from the author. The respondents were senior managers attending a week long general management programme. The survey sought to gather three sets of data: (i) characteristics of the management system used in the respondent's firm as defined by elements in its strategy making and implementation processes, (ii) the respondent's perception of

the context of the firm, as defined by elements that constitute its portfolio and financial pressures, and (iii) the respondent's rating of the system used by the firm. The survey instrument was administered before the commencement of the programme and was carefully explained in person to the respondents. Based on the data that was gathered, the management system actually used by the firm and the one required by its context were both discerned. The procedure that was used is explained later in this section.

Then during the programme (after the questionnaires had all been collected) the respondents were introduced to the three options (Table 1) for balancing innovation and productivity, but without a discussion of the contingency framework presented in Figure 1. At that time the respondents were asked to specify a management system that they believed was best suited to the context of their firms. This system is called the preferred system in this study.

A total of 80 managers were surveyed yielding 54 useable responses. All of the respondents came from publicly held, diversified firms, mostly based in the United States. But 17 of the companies surveyed were headquartered in a dozen other countries, mostly in Europe and in Latin America. All of the companies in the sample were long time (at least five years) users of formal planning, control, and incentive systems. The sample also represented 20 different industries (4 digit SIC code). While the sample was not scientifically selected, its rich diversity makes it useful for this study.

3.2 Factor Analysis

The study included four distinct classes of variables: portfolio pressure (Variable 1 - Variable 4), financial pressure (Variable 5 - Variable 8), characteristics of the management system in the strategy making process (Variable 9 - Variable 11), and characteristics of the management system in the strategy implementation process (Variable 12 - Variable 14). Each class of variables was factor analyzed to explore whether they could be represented parsimoniously. An eigen value of 1 was used as a cutoff for selecting factors and a variable had to have a factor loading >0.5 to be assigned to that factor. The results of the factor analyses are presented in Table 2.

Table 2

Based on the factor analyses, four new indices were defined:

Portfolio Pressure is an index formed by averaging the scores for a firm's degree of diversification, pressure to diversify, opportunities for related diversification, and pressure to acquire new businesses.

Financial Pressure is an index formed by averaging the scores for pressure to improve profitability, pressure to improve earnings growth, pressure to improve liquidity, and pressure to improve stock performance.

Degree of Centralisation in the Strategy Making Process is an index formed by averaging the scores for direction of goal setting, and linkage between plans and budgets. The role of planners was excluded from the index because it lowered its reliability.

Degree of Standardisation in the Strategy Implementation Process is an index formed by averaging the scores for frequency f monitoring strategic plans and budgets, basis of control, and criterion for bonus computation.

The composition of the four factors showed no surprises, with the exception of Portfolio Pressure. Here, degree of diversification and opportunities for related diversification were expected to load negatively on this factor. A possible explanation for the positive loading observed is the perception among the respondents that the quality of their business portfolio was poor. Opportunities for related diversification around such a portfolio do not minimise a firm's Portfolio Pressure.

The internal consistency of each index was evaluated using Cronbach's coefficient alpha (See Table 2). All of the indices were of acceptable consistency for an exploratory study. Furthermore, validity of the Index for Financial Pressure was tested by comparing the scores for variables in that factor with the actual financial performance of the sample companies. The pressure to improve stock performance was significantly and negatively correlated with the Market/Book ratio of a firm, as expected. The lack of significant correlation between the actual return on sales and any of the profitability variables in the Financial Pressure factor may be explained by the fact that there were 20 different industries (4 digit SIC codes) represented in the sample. The norms for profitability vary substantially across these industries. Comparing Return on Sales across the sample is, therefore, quite meaningless.

3.3 Discerning the Actual and Required Systems

The actual system in use was discerned based on the scores

for the Degree of Centralisation and the Degree of Standardisation associated with a firm. The distribution of each of these factor scores was partitioned into three approximately equal fractiles to represent low, moderate, and high degree of centralisation and standardisation respectively. If the score for the Degree of Centralisation was greater than 4.01 or the score for the Degree of Standardisation was greater than 3.71 on a 5 point scale, the actual system in use was classified as having a centralised strategy making process and a standardised strategy implementation process respectively. With the help of Figure 1 the actual system in use was then readily identified. Thus, for example, a firm associated with a centralised strategy making process and a standardised strategy implementation process was classified as actually using Option 1: Central Planning.

The system required by the context of a firm was determined by a similar simple procedure. The distributions of the factor scores for the perceived Portfolio and Financial Pressures experienced by the firm were again partitioned into three approximately equal fractiles to represent low, moderate, and high pressure. If the score for the Portfolio Pressure index was greater than 3.31 and the score for the Financial Pressure index was greater than 3.73 on a 5 point scale, the corresponding pressures were recognised as high. Given the intensity of these twin pressures it was possible to identify the required management system from Figure 1. Thus, for example, if the pressures were both high the required system was identified as Option 1: Central Planning.

3.4 Limitations of the Study

Before presenting the findings from the study and their implications, there are two limitations that must be mentioned. The first limitation has to do with the survey instrument. A comprehensive questionnaire could have possibly included many more variables than the parsimonious collection used in this study. Since this study was exploratory, a tradeoff was made in favor of a short survey instrument that captured the essence of all variable of interest, over a longer more tedious survey. It is, however, possible that the richness of a management system or its context may not have been adequately captured by the survey instrument. In particular, the reliability of the two indices used to measure the characteristics of a management system could have been better.

A related problem is that of sample size. Whereas a larger sample size would have been desirable, this study chose to tradeoff quantity for quality of responses. The questionnaire used in this study was administered face-to-face, with the respondents having ample opportunities to clarify each question before responding to it.

4. Findings

4.1 Testing the Propositions:

Proposition 1: Table 3 compares the actual system used by the sample firms with that required by Figure 1. What is interesting in Table 3 is that 48 percent of the firms surveyed

had characteristics of a management system that was predominantly innovation centered, even though it was appropriate in only half of these cases. The Chi Square statistic did not reject the null hypothesis that the actual system in use was independent of that required by Figure 1. Thus it would appear that proposition 1 is not supported.

TABLE 3

Proposition 2: However, senior managers in the survey seemed to prefer management systems that were more in conformity with that required by Figure 1. The Chi-Square statistic was very significant, thus rejecting the null hypothesis that the preferred system was independent of that required by the firm's context (Table 4).

TABLE 4

Proposition 3: Before this proposition can be tested it is important to operationalize what is meant by a well fitted management system. The notion of fit used in this study is what Drazin and Van de Ven (1985) call the Systems View of Fit. In this view, fit is seen as the internal consistency of multiple contingencies and multiple structural characteristics. It affects performance characteristics. In this study fit is defined as the internal consistency between the contingencies of Portfolio and Financial Pressures and the structural characteristics of a firm's management system. The better fitted a management system is to its context the better its rating

should be (Chakravarthy, 1987).

Proposition 3 can be tested in a number of ways depending on how the Systems View of fit is operationalised (Venkatraman, 1989). For example, fit can be specified as a perfect match between contextual factors and a firm's management system. In other words, if a firm's management system (as measured by its Degree of Centralisation and its Degree of Standardisation) is perfectly consistent with the Portfolio and Financial pressures that it experiences, its Fit = 1, else Fit is 0. A simple cross-tabulation of System Fit and its rating showed no significant relation between the two.

However, managers may not be looking for a perfect fit between a firm's system and its context, but may rather base their evaluation on the extent to which a system is misfitted. A useful approach would, therefore, be to use the desired characteristics of a management system (consistent with the contextual pressures that it experiences) as a profile from which deviations in actual characteristics can be measured. The observed deviation can be quantified in terms of a weighted average distance measure. The larger the distance score, the poorer the fit. Therefore, a management system's rating must vary inversely with its distance from the desired profile.

Model 1 in Table 5 tries to measure the extent of a system's misfit from the profile described in Figure 1. It shows that PERF, the rating given to a management system, was not related to the system's distance from the desired profile. The coefficient for profile deviation was not significantly different from 0.

The above finding would suggest that the quality of fit is not a significant criterion by which management systems are rated. Hence proposition 3 is not supported.

TABLE 5

4.2 Summary

Since only proposition 2 was supported and not proposition 3, this study fails to validate the contingency framework proposed in Figure 1. However, given the support of senior managers for tailormaking a management system to suit its context (proposition 2), the rejection of proposition 3 comes as a surprise.

It can be argued that while senior managers do support tailormaking they use a different framework. In order to induce a better contingency framework from the data, a sub-sample of highly rated (PERF $\geq$ 4) management systems was selected. Given a set of contextual factors, the required set of characteristics that a management system should have was then specified by what firms in the highly rated sub-sample exhibit on the average. Deviation from this profile is a measure of a management system's misfit. However, the profile deviation score showed no significant relationship with the rating of a management system (See Table 5 - Model 2a). A regression model on a hold-out sample of lowly rated management systems (PERF <4) was once again not significant (See Table 5 - Model 2b).

It would appear, therefore, that the major problem with the framework is not one of mis-specification, but of espoused senior

management support and yet lack of commitment to act based on it. Possible reasons for and implications of this puzzling behavior are discussed next.

5. Implications of the Study

5.1 The Role of Fads

It may be noted from Table 3 that the Self-Renewal system was claimed to be widely used by the sample firms despite it being inappropriate in nearly half the cases. A possible explanation for this innovation centered behavior on the part of the sample firms is that it is consistent with the recommendations of popular management consultants like Pascale (1982), Peters and Waterman (1982), Pinchot (1985), or Ohmae (1982), who urge managers to encourage innovation and participative management in all settings. Indeed their argument has some merit. As Hambrick and MacMillan (1982), among others, have shown even businesses with low market shares and poor financial performance ("dog" businesses) can become innovative.

However, it would appear more fruitful to encourage innovation and participation in the strategy making process <u>before</u> a firm's portfolio and financial pressures start mounting and <u>not after</u> they have become severe. Top management then has neither the luxury of time nor the financial cushion required to attempt risky rejuvenations. The fact that firms in the sample show a reluctance to centralise strategic decision making in hard times may either reflect the optimism of their senior managers for a miraculous revival, or the reticence of these managers to

fight current fads.

The consequence of using a Self Renewal system when the Portfolio Pressure and/or Financial Pressure is high is that innovation projects may be either subjected to severe time pressure (when Portfolio Pressure is high) or denied some of the necessary resources (when Financial Pressure is high). Consequently, several of them may die prematurely. Alternatively, they may yield only incremental innovations of low transilience (Abernathy, Clark, & Kantrow, 1983). The transilience of an innovation refers to its ability to yield the sponsoring firm a sustainable competitive advantage, by disrupting both market and productive linkages in the industry. While incremental innovations are not bad in and of themselves, they may not be enough to relieve the high Portfolio and Financial Pressures that the firm misusing a Self Renewal system may face. Its context calls for a more centralised allocation of scarce resources (when Portfolio Pressure is high) and/or a greater productivity orientation (when Financial Pressure is high). It is useful to remember that the role of senior management is not to nurture innovation per se but to balance it with productivity.

5.2 The Inertia of Status Quo

In some of the sample firms there seems to be the opposite tendency, to the one noted above, of staying with a centralised strategy making process and a standardised strategy implementation process even when the firm's Portfolio and Financial Pressures cease to be high. These firms are, therefore,

not exploiting to the fullest the potential for innovation in their organisations. A possible explanation for their reluctance to change their management systems to fit their changing context may lie in the the fact that the responsibility for the design of a management system is shared by many units in an organisation--divisional and senior management, corporate planning, controller, and personnel (Lorange and Murphy, 1983). Orchestrating these disparate interest groups is time consuming. It is not surprising, therefore, that a firm does not make frequent adjustments to its management system, but rather retains the integrity of the system till such time as its fit with the external context degenerates severely (Miller and Friesen, 1984; Mintzberg, 1981).

A quantum leap approach to the design of a firm's management system, as the above approach is called, runs the risk, however, of crossing a degeneration threshold beyond which it may be impossible to restore the balance between innovation and productivity (Abernathy, 1978). It may be more prudent to periodically audit the management system of a firm, examining for elements that are needy of change, even if such a change is not always initiated because of the inertial factors discussed earlier. It is useful to remember in this regard that a well designed management system tends to relieve both portfolio and financial pressures. Consequently, the very success of a system alters the context for which it was tailored. The fit between management system and its context is a dynamic one, needy of regular attention and evolutionary change.

6. Conclusion

This paper has tried to address one of the pressing problems in large diversified companies, that of simultaneously managing innovation and productivity. Its findings suggest that this can be done in three distinct ways, each appropriate to a set of contextual pressures. Whereas, there seems to be intellectual support for this perspective among the managers surveyed, the systems they use (and will apparently continue to use) are, however, not well fitted to their firms. Fads and inertia are offered as two plausible explanations for these misfits. Replication and extension of this study promises to provide further useful insights to senior managers on how innovation and productivity should be balanced.

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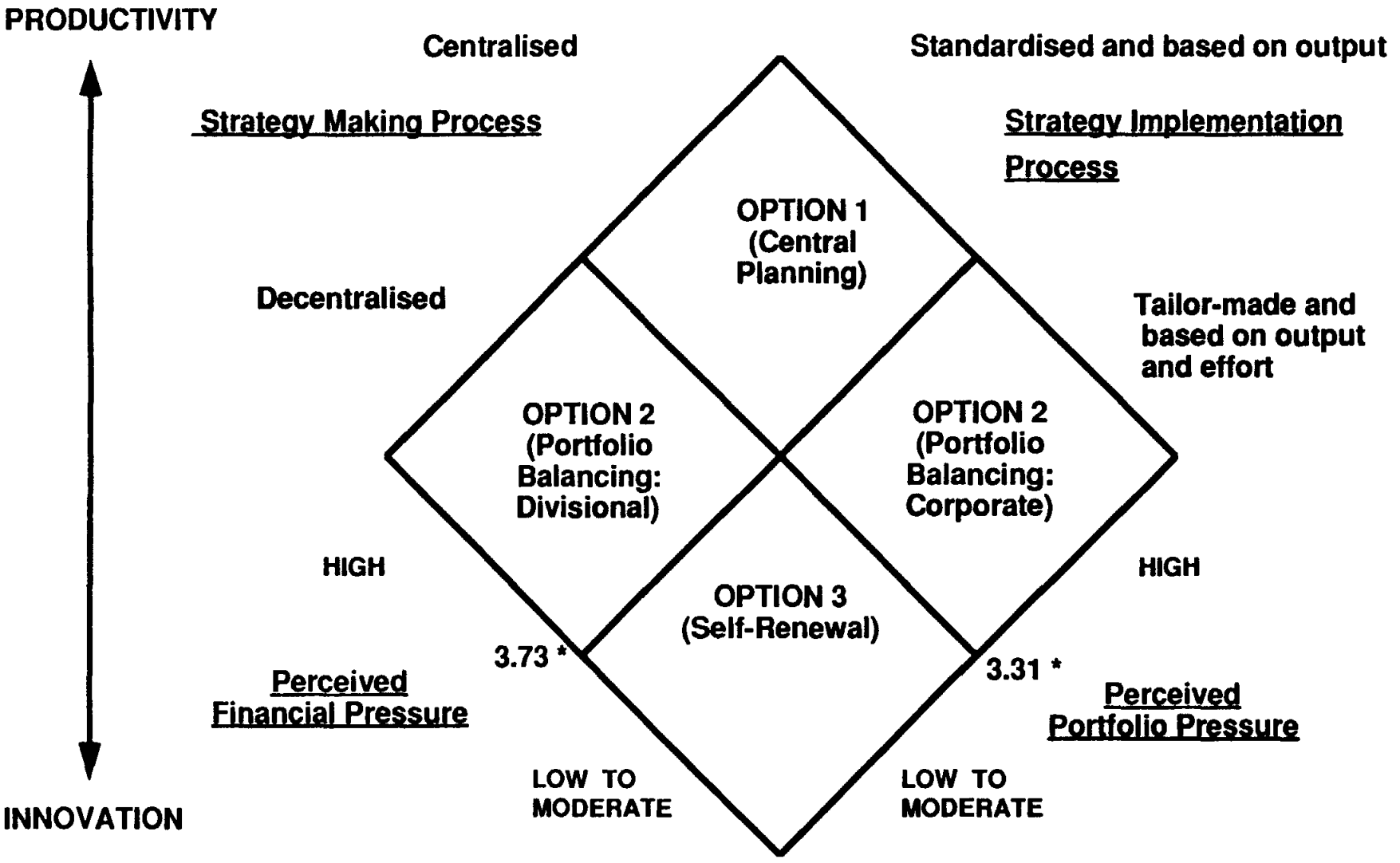
Figure 1
A Contingency Framework



* The cut off score beyond which the index is scored as high

FIGURE 2

A SKELETAL FRAMEWORK USED FOR THIS STUDY

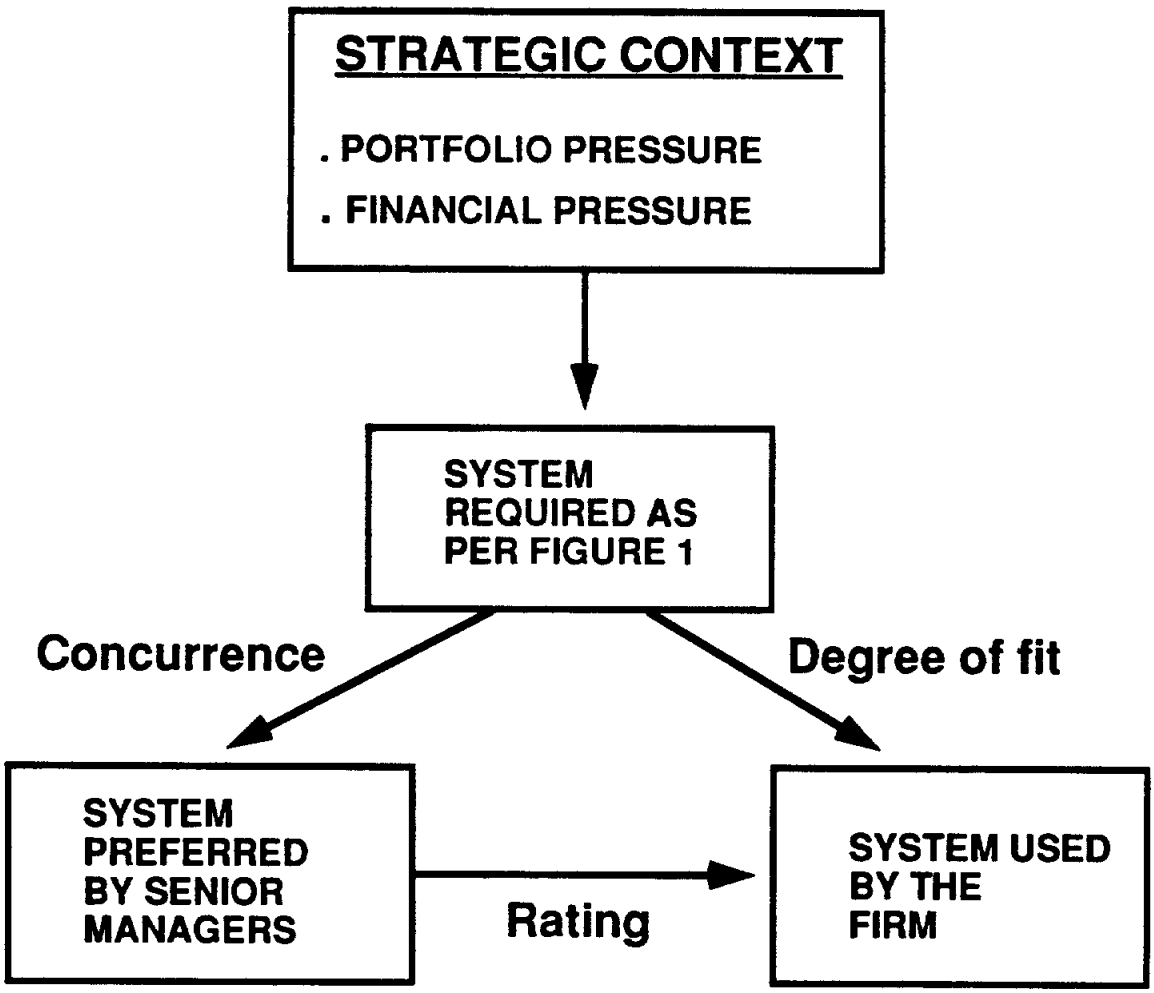


TABLE 1

OPTIONS FOR BALANCING INNOVATION AND PRODUCTIVITY

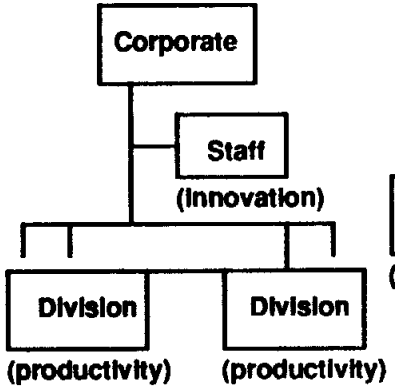
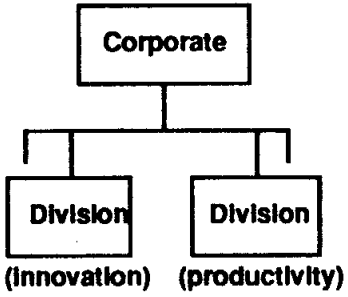
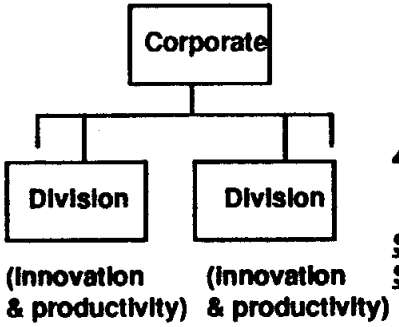
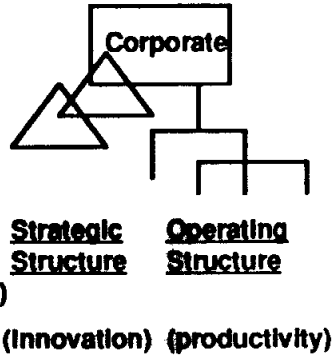
Option / System Characteristics	Option 1	Option 2		Option 3
	Central Planning	Corporate Portfolio Management	Divisional Portfolio Management	Self-Renewal
1. Locus of Responsibilities				
2. Primary Mode thru' which growth options are generated	Acquisitions	Acquisitions and Internal Development	Internal Development and Acquisitions	Internal Development
3. Strategy Making Process	Centralised	Centralised	Decentralised	Decentralised in the strategic structure. Centralised in the operating structure
4. Strategy Implementation Process	Standardized for all divisions	Tailored to suit divisional mission	Standardized for all divisions	Tailored to suit strategies in the strategic structure and standardised for strategies shaped in the operating structure

TABLE 2

LIST OF VARIABLES SURVEYED AND HOW THEY FACTOR

Variable		Range[a]	Contextual Factors[b]		Characteristics of Management Systems[b]	
No.	Description	(1-5)	Portfolio Pressure	Financial Pressure	Degree of Centralisation	Degree of Standardisation
1.	Degree of Diversification	Lo-Hi	0.62			
2.	Pressure to Diversify	Lo-Hi	0.80			
3.	Opportunities for Related Diversification	Lo-Hi	0.72			
4.	Pressure to Acquire New Businesses	Lo-Hi	0.61			
5.	Pressure to Improve Profitability	Lo-Hi		0.82		
6.	Pressure to Improve Earnings Growth	Lo-Hi		0.66		
7.	Pressure to Improve Liquidity	Lo-Hi		0.76		
8.	Pressure to Improve Stock Performance	Lo-Hi		0.61		
9.	Direction of Goal Setting	Bottom - Top Up Down			0.74	
10.	Linkage Between Plans and Budgets	Flexible-Tight			0.82	
11.	Role of Corporate Planner	Catalyst-Strategist			0.53	
12.	Frequency of Monitoring Plans and Budgets	Tailormade - Standard				0.64
13.	Basis of Control	Output & Effort - Output				0.73
14.	Criterion for Bonus Computation	Tailormade - Profit				0.76
Cronbach α			0.61	0.68	0.54[c]	0.50

a. All variables measured on a 5 point scale
b. Numbers in columns indicate factor loadings.
c. If variable 11 is excluded. Otherwise α = 0.47

TABLE 3

RELATIONSHIP BETWEEN REQUIRED AND ACTUAL CHARACTERISTICS OF MANAGEMENT SYSTEMS

Actually Used / Required	1. Central Planning	2. Portfolio Balancing	3. Self-Renewal	Total
1. Central Planning	-	7	2	9
2. Portfolio Balancing	1	11	10	22
3. Self-Renewal	1	8	14	23
Total	2	26	26	54

Chi-Square = 4.97
(d f = 4)
p = 0.29

TABLE 4

RELATIONSHIP BETWEEN REQUIRED AND PREFERRED CHARACTERISTICS OF MANAGEMENT SYSTEMS

Required \ Preferred	1. Central Planning	2. Portfolio Balancing	3. Self-Renewal	Total
1. Central Planning	8	1	-	9
2. Portfolio Balancing	12	10	-	22
3. Self-Renewal	5	8	10	23
Total	25	19	10	54

Chi-Square = 22.45
(d f = 4)
$p < 0.01$

TABLE 5

RESULTS OF REGRESSION MODELS RELATING
SYSTEM RATINGS TO PROFILE DEVIATIONS

No.	Model Description	Adj R^2	F	Coefficient for Profile Deviation
1.	System Profile Defined by Figure 1	-0.02	0.21 (1,52)	0.06
2.	System Profile Defined by highly rated firms (Rating $\geq$ 4)			
	a) Entire Sample	-0.02	0.01 (1,52)	-0.01
	b) Sub-sample rated below 4	-0.01	0.53 (1,32)	0.07

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