DOES INDUSTRY MATTER? THE EVIDENCE FROM A NEW ZEALAND STUDY

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ABSTRACT

An important fundamental determinant of a firm's profitability and growth is what Porter describes as 'industry attractiveness or structure'. A review of the empirical studies on inter-industry performance differentials reveals that most of the work in this area has been undertaken in industrially advanced and big countries, notably in the US. This paper empirically examines this issue on which little work has been done in New Zealand. Apart from industry effects, impact of various other firm specific variables on the financial performance has been studied. The results are based on the analysis of 74 listed companies spread over four broad industry groups. Company performance, the dependent variable in the analysis, is represented by two composite measures – derived by factor analysis reflecting the growth and profitability dimensions of performance. Our results indicate that both industry effects and firm characteristics play significant roles in influencing profitability but not on growth. The paper discusses the implications of these results for strategic managers.

Key Words: Industry Type, Financial Performance, Growth, Profitability, Strategy.

INTRODUCTION

This study was inspired by the ongoing debate in the Strategic Management Journal regarding the role of industry membership in explaining the financial performance variations of firms operating in different industries. The debate was started by Bettis and Hall's (1982) criticism of Rumelt's (1974) work in the field of business policy that examined the relationship among diversification strategy, organisational structure and financial performance. Rumelt (1974) developed 9 categories of diversification and found that related diversification strategies outperformed the other diversification strategies. However he could not show the causes of dispersion in performance among various diversification strategies. Later, Bettis and Hall (1982) examined the results of Rumelt (1974) and concluded that much of the difference in performance between related and unrelated diversified firms in Rumelt's (1974) study was due to the presence of

pharmaceutical companies in his sample of related diversified companies and not due to the diversified strategies per se.

In light of the results of Bettis and Hall (1982), Rumelt (1982) extended the analysis by controlling for the industry effects on performance. Interestingly he identified industry type as being primarily responsible for the high performance of related diversified firms. Apart from Rumelt (1982), and Bettis & Hall (1982), many other researchers, both in business policy and industrial economics, had also found industry membership to be an important determinant of firm's performance (Schmalensee, 1985; Carleton and Lakonishok, 1986; Scott and Pascoe, 1986; Amato and Wilder, 1990; Powell, 1996; McGahan and Porter, 1997; Nair and Kotha, 2001). The debate is still going on and there is mixed support for the relationship between industry group membership and performance (Lawless and Tegarden, 1991). Some researchers have found performance differences among various industry groups (e.g. Dess and Davis, 1984: Oster, 1982; McGahan and Porter, 1997; Nair and Kotha, 2001), while others have found no significant difference in performance (Frazier and Howell, 1983; Cool and Schendel, 1987; Cool and Schendel, 1988;).

Business Portfolio Planning techniques suggest that firms should invest in industries with high performance and attractive characteristics. These techniques assume that a firm's performance is affected by both the "strength" of the business as well as the "attractiveness of the industry" in which the firm participates. Although many researchers, both in business policy and industrial economics, had also found industry membership to be an important determinant of performance of firms, review of the empirical studies on inter-industry performance differentials reveals that most of the work in this area has been undertaken in

industrially advanced countries, notably in the US. But surprisingly no study has been done in New Zealand aiming squarely to analyse the impact of industry membership on company performance. New Zealand is a small and industrially advanced country and this work will add to the ongoing debate the results from a small but industrially advanced economy. To be more specific the results from this study will reveal whether the earlier results from big economies hold good for small economies as well or not. This study seeks to fill this gap and to add New Zealand's evidence to the ongoing debate.

OBJECTIVES OF THE STUDY

As noted above, a review of the empirical studies on inter-industry performance differentials reveals that most of the work in this area has been undertaken in industrially advanced countries, notably in the USA. No study has been done in New Zealand to analyse the impact of industry membership on company performance. This study is a pioneering work and seeks to fill this gap. The specific objective of this paper is to investigate the performance differences among companies operating in various industries.

SAMPLE AND DATA COLLECTION

Period

The period chosen for the study is 1995-96 through 1999-2000. This five year period was the most recent period for which the data were easily available. The span of this study is large enough to capture the overall business cycle effects and is sufficient to produce meaningful results in the light of ever changing economic conditions and political set up both in and outside the country. Moreover, this period has given enough time for the

companies to absorb the shocks of liberalisation and privatisation started in the country in 1984 which brought about a big change in the economic scenario of the nation.

Sample

The sample for the study comprised all the public companies that were listed on the New Zealand Stock Exchange from year 1995-96 through to 1999-2000. There were 74 such companies listed throughout this period. The whole sample was divided into four broad industry groups eg. Utility Group, Manufacturing Group, Trading Group, and Service Group. We used the New Zealand Standard Industrial Classification system to group all the 74 companies into these four broad classification of industries. All the companies are classified according to Divisions. There are 17 Divisions in all in the NZSIC System. Given the small number of sample companies in each Division we have to put them into four broad but similar and meaningful groups. Industry-wise break up of the sample is contained in Table 1 below.

TABLE 1 Make up of sample by industry groups.

INDUSTRY GROUP	NUMBER OF COMPANIES
1. Utility group	19
2. Manufacturing group	16
3. Trading group	7
4. Service group	32
Total	74

To make up the sample for this study, an exhaustive list of companies pertaining to different industries was compiled from DATEX (2000). DATEX and New Zealand Business Who's Who (2000 edition) was used to obtain the financial and other relevant information for the sample companies.

The Utility group comprised agriculture, forestry and fishing (Division A), mining (Division B), electricity, gas and water supply (Division D) and construction (Division D). The Manufacturing group comprised only manufacturing (Division C). The Trading group included wholesale (Division F) and retail trade industry (Division F). The Service group was the largest and comprised accommodation, cafes and restaurants (Division H), transport and storage (Division I), communication services (Division J), finance and insurance (Division K) and property and business services (Division L). Under the NZSIC system all the companies are classified in their appropriate industry groups on the basis of the value of principal product manufactured by them. In this way a unit gets classified in only one industry group even though it might be manufacturing products belonging to different industries.

MEASURING PERFORMANCE: Profitability vs. Growth

There are several perspectives from which company performance could be measured, each representing different stakeholder interests in the firm. Berle and Means (1932) noted that in large companies, ownership and management had to a large extent become separated and they suggested that, as a consequence, such a company may operate with a variety of objectives, some of which may be in conflict at any point of time. The classical economic theory of the firm holds profitability as the sole criterion function but Penrose (1959) and Baumol (1967) put forward growth as an important objective of managerially-controlled firms. Hence there is a potential for conflict between profitability (for owners) and growth (for the managers). This study has measured performance on the basis of both profitability and growth.

The following five indicators which are mostly used in business strategy research have been employed to measure financial performance (Rumelt, 1974; Kudla, 1980; Bourgeois, 1980; Hambrick,1983; Hamilton and Shergill, 1993):

Return on Equity (ROE)
Return on Assets (ROA)
Growth in Sales (GSALES)
Growth in Dividend (GDIV)
Growth in Total Net Assets (GTNA)

ROE and ROA are the indicators of profitability, while GSALES, GDIV and GTNA are representatives of growth. ROE reflects the firm's success from the common shareholders' point of view in terms of returns provided to them. ROA serves as the measure of management's efficiency and effectiveness in utilising all the assets under its control and it is not effected by the difference in the capital structure of the firm. GSALES represents the firm's success in its markets. GDIV reflects the short-term return on investment by the equity holders. GTNA is a general growth indicator. See Appendix for details for the method employed to calculate these variable.

DETERMINANTS OF FIRM PERFORMANCE

There are, however, a number of other factors which have been shown to have an impact on performance like size, leverage, risk, age, skill and capital intensity of the firm. We have examined the role of industry membership along with various other variables in explaining the performance variations of firms operating in different industries. OLS regression models have been used to decompose performance variations. A composite index of performance constructed with the help of factor analysis is used as the dependent variable whereas six firm characteristic variables have been employed as the determinants of performance in multiple regression models. Industry effects have been isolated by employing dummy variables in the models.

COMPOSITE INDEX OF PERFORMANCE

In this study we constructed a composite performance index to crystallise the results to interpret them more meaningfully in terms of rankings in performance of various industries.

The average group performance scores in Table 2 should be taken as suggestive rather than definitive at this stage. Across the five variables the ranking of industries is unstable. Trading industry firms are ranked first on ROE, ROA, GTNA while Service industry firms are first ranked on GSALES and GDIV. No industry has the same ranking on all the five variables and we cannot conclude which particular industry is superior over all the performance measures. In other words, given the main purpose of this study, which industry is best still depends on how one chooses to define "best". To help resolve this problem, a composite index of performance is constructed using Factor Analysis (see Bourgeois, 1985, and Hamilton and Shergill, 1993 for a similar approach). This means that performance can be re-defined as a composite of all the five variables in Table 2 averaged over the period 1996-2000. In fact, this approach extracted two performance factors. The empirical results are set out in Table 3 to Table 5 below and discussed subsequently.

Table 2 One-way analysis of variance on industry type and financial performance

Performance		Utility Industry	Manufacturing Industry	Trading Industry	Service Industry	Overall	F-Ratio
ROE	Mean	1.002	10.33	21.55	13.18	10.23	2.079
	SD	24.83	10.48	10.77	24.04	21.63	
	No.	16	19	7	32	74	
ROA	Mean	-3.99	7.83	21.96	5.47	5.11	3.48*
	SD	22.63	7.43	9.94	21.47	19.80	
	No.	16	19	7	32	74	
GSALES	Mean	206.42	23.37	53.03	59.27	88.70	2.27***
	SD	402.81	115.81	81.75	139.98	238.07	
	No.	16	19	7	32	74	
GTNA	Mean	10.15	-15.92	137.57	34.27	26.99	2.68**
	SD	122.35	120.40	256.59	76.00	127.31	
	No.	16	19	7	32	74	
GDIV	Mean	-22.55	-12.95	2.12	21.82	1.04	1.39
	SD	39.09	94.94	40.56	96.37	81.76	
	No.	16	19	7	32	74	

Note: Significance levels: *=1%; **=5%; ***=10%

TABLE 3 Rotated factor matrix of performance variables.

VARIABLE	FACTOR I	FACTOR II
ROE	0.901	-0.035
ROA	0.906	-0.006
GSALES	-0.340	.721
GTNA	0.469	0.482
GDIV	0.119	0.625

TABLE 4 Factor score coefficient matrix of performance variables.

VARIABLE	FACTOR	
	PRTF	GRTH
ROE	.455	-0.040
ROA	.457	-0.010
GSALES	-0.179	.634
GTNA	.232	.417
GDIV	.054	.545

TABLE 5 Grand means and standard deviations of performance variables

VARIABLE	MEAN	STANDARD DEVIATION
ROE	10.23	21.63
ROA	5.11	19.80
GSALES	88.70	238.07
GTNA	26.99	127.31
GDIV	1.05	81.76

Table 3 contains the composition of two factors extracted through factor analysing the five indicators. The first factor is based on measures of profitability (and is henceforth PRTF) and the second factor is based around growth (GRTH). The criterion for accepting this two factor solution is that it explains 62.52 percent of the total variance among all five performance measures being factor analysed which is well above the acceptable limit i.e. 60 percent (Bourgeois, 1985).

For each company a vector of factor scores for GRTH and PRTF was calculated as follows:

GRTH = F.Z
PRTF = F.Z

Where F is the factor score coefficient matrix (Table 4) and Z is the vector of standardised values of the five variables which have been factor analysed (Rummel, 1970). For example, in the case of our sample, from the factor score coefficient matrix in Table 4, we constructed GRTH and PRTF of company "1" as follows:

$$GRTH\ 1 = (-0.040)Z_1+(-0.010)Z_2+ (0.634)Z_3+(0.417)Z_4 +(0.545)Z_5$$
$$PRTF\ 1 = (0.455)Z_1+(0.457)Z_2+(-0.179)Z_3+(0.232)Z_4+(0.054)Z_5$$

Where Zn represents the standardised values of variables ROE, ROA, GSALES, GTNA and GDIV respectively. Thus Z_1 = (ROE of company "1" minus the average ROE of all the companies) divided by the standard deviations of the average ROE for all companies. Similarly for Z_2 to Z_5. By applying this methodology, we calculated GRTH and PRTF as performance variables from all the five indicators for our sample.

ANALYSIS OF DATA

Table 6 One way ANOVA on industry type and composite performance variables

Industry Type	Composite performance variable			
	GRTH		PRTF	
	Mean	SD	Mean	SD
Utility	.122	1.24	-.539	1.22
Manufacturing	-.409	.947	.026	.481
Trading	.240	.892	.855	.702
Service	.078	.864	.119	.960
Overall	0.00	1.00	0.00	1.00
F-Ratio	1.2.5		4.192*	

Note: *significant at 1%

Table 6 presents the results of one way ANOVA on GRTH and PRTF by the industry groups. In contrast to Table 2, we are now more comfortable to interpret the results across all the four industry groups. It is now clear that on both these variables the trading industry firms are the better performers while the utility group companies are the poorest performer on PRTF variable and manufacturing group companies are poorest performer on GRTH variable. The F-Value on PRTF variable is highly significant ie., we can reject the null hypothesis of equal means while on GRTH it is not significant and we have to accept the null hypothesis of equal means. From this analysis we can conclude that trading firms do better than others in terms of profitability while there is no difference in terms of the growth variable.

INDUSTRY, FIRM CHARACTERISTICS AND PERFORMANCE

Although industry membership appears to be one determinant of company performance, there are many other factors that are likely to have some role in determining performance, eg., firm size, risk, leverage, capital intensity, age of business, and skill. In order to isolate the net effect of industry type, it is necessary to control for the effects that such other factors have on performance. The basic hypothesis here is that, in addition to industry type these six factors also have a predictable influence on company performance. The following model has been employed to isolate the impact of industry membership and firm specific variables on performance.

$$P = B_0 + B_1(\text{Leverage}) + B_2(\text{Capital Intensity}) + B_3(\text{Risk}) + B_4(\text{Age}) + B_5(\text{Size}) + B_6(\text{Skill}) + B_7(\text{Manufacturing Industry}) + B_8(\text{Trading Industry}) + B_9(\text{Service Industry}) + e.$$

Such model has also been used by Amato and Wilder (1990) and Hamilton and Shergill (1993). Where P is performance (PRTF or GRTH) and B_0 is the constant term. B_1, B_2,.....Bn are the coefficients of independent variables while e indicates the error term. In this model, all variables except industry membership are continuous variables while dummy variables have been used as independent variables to account for industry effects on performance. One industry dummy (Utility group) is omitted from the above model to serve as the reference group. Using binary (0,1) coding, dummy variables are always dichotomous variables. Firms who belong to a particular industry are assigned code 1; firms not in that particular industry received code 0. A categorical variable with j categories needs a set of j-1 dummy variables. The category not named as a dummy variable serves as the reference group. The rationale for including j-1 dummy variables in the regression models is that if all the binary variables were included, the normal regression equation will not be independent and so will not have a unique solution. Bo in the model includes, inter alia, the effect of 'excluded' industry

category. The coefficients of the other industry variables represent the differential performance as compared to the excluded category (for a detailed discussion on regression models with dummy variables see Fox (1984, pp. 73-85) and Hardy (1993, pp.75-97).

We have computed this multiple regression model using SPSS version 10. We used 'Enter' method of ordinary least square regression by entering all the independent variables to build the model. In this paper the assumption of linearity has also been tested, and to meet the assumption, all the variables, independent and dependent except dummy variables, have been transformed into logarithm form (Neter and Wasserman, 1974; Fox, 1984). Transformation of the control variable has been done on the basis of its correlation with the dependent variable and this transformation has improved the explanatory power of the model substantially.

DETERMINANTS OF PERFORMANCE

In order to decompose the variation in performance, the following explanatory variables have been included in the regression models as the determinants of performance.

Industry Effects

Industry characteristics are vital in the analysis of firm performance (Leonard, 1990; Lewellen et al, 1992)). For example, firms in new and expanding industries are expected to outperform those operating in old and declining industries. Firms in a particular industry may be earning comparatively above normal profits due to certain attributes of the economy of the country (Shergill and Sarkaria, 1997) or by virtue of some favourable structural variables (Amato and Wilder, 1990), or some structural variables may allow firms in some particular industries to be in a better position to implement their strategies successfully and profitably (Pant, 1991). Hence, we have reasons to believe that industry membership affects

the performance of the firms. We have employed dummy variables in the models to capture industry effects (see model).

Size

The big firms have been considered to be endowed with certain advantages such as lower costs and higher returns on account of access to the capital market (Hall and Weiss, 1967) and economies of scale (Montgomery, 1979;). However, mixed evidence has been found on the relationship between firm size and profitability. Schmalensee (1989) provides a long list of references of studies examining the relationship between firm size and profitability. Size of the organisation is an important explanatory variable determining organisation performance (Weiner and Mahoney, 1981; Wernerfelt and Montgomery, 1988). Hence, generally a positive hypothesis is set for the size-performance relationship. In line with various researchers, we have employed in this study the log of total assets as the measure of size (e.g. Siddharthan and Dasgupta, 1983; Amato and Wilder, 1990; Abowd, 1990; Hamilton and Shergill, 1993; Mehran, 1995; McKnight and Tomkins, 1999). On the basis of economic theory, we expect a positive relationship between size and performance.

Leverage

Leverage has been employed widely in the studies of performance (Hall and Weiss, 1967; Harris, 1986; Scott and Pascoe, 1986; Pant, 1991; Hamilton and Shergill, 1993). The decision as to the capital structure or leverage of a company is a significant managerial decision which reflects management's choice between shareholders' return and risk. The effect of leverage may be favourable or unfavourable. It will magnify the shareholders' earnings when the cost of debt is lower than the company's rate of return. However, the leverage happens to be unfavourable when the rate of return on the company's assets is

lower than the cost of debt capital. We assume that most firms will venture to borrow capital when they expect that they will be able to earn more than the cost of debt capital and hence there will be a positive relationship between leverage and performance.

Skill

The importance of human capital is now being realised in the field of economic development and growth. Salary, status, power and security of personnel employed in the company have been considered to have a linkage with corporate growth (Penrose, 1959; Barna, 1962). Various researchers in their studies of performance analysis, have postulated a positive association between the skill of the employees and financial performance of the organisation (Siddharthan and Dasgupta, 1983; Kumar, 1985). Caves (1974) considered the high skill levels of firms' employees in the industry to be an important source of monopolistic advantage.

It is expected that the expenditure on employees would increase their satisfaction and efficiency as well. Hence, a positive relationship is expected between the expenditure on employees and financial performance of the firm. The qualification and different categories of workers (viz. Skilled, unskilled and semi-skilled) should have been taken into consideration, but the data were not available in the desired form. Hence this rather crude proxy has been used for skill variable.

Risk

Although economists and researchers in strategic management have great interest in the relationship between risk and profits, not many studies have sought to quantify this relationship. Mixed results have been produced on this variable by cross-section studies of

profitability. For instance, Bothwell et. al. (1984) and Hirschey (1985) found a weak relationship between risk and profitability. On the contrary, Neumann et al (1985), Harris (1986), and Hamilton and Shergill (1993) found differences in risk to be very strong. Because of both importance of risk and the mixed nature of the evidence in respect of the relationship between risk and returns, a risk variable was included in this study. As investors usually require a higher rate of return for undertaking riskier projects, we expect a positive association between risk and performance.

Age of the Firm

The age of a firm is an important determinant of performance. We expect that the older firms will outperform the younger ones in the long run. An old firm may grow faster and earn a higher rate of return because it has established itself in the market and have certain core skills and experiences which its younger counterparts may not have. However, the converse can also be true if the older firms are not dynamic or flexible enough to keep pace with changing technology (Chhibber and Majumdar, 1998).

Capital Intensity

Firms are expected to shift from labour intensive methodology to capital intensive technology (by mechanising or modernising a process) with the anticipation that it would speed up the production process as well as improve the quality of product. It may also result in minimisation of wastage and reduction of cost of production and hence improved performance. As such, we set a positive hypothesis with regard to capital intensity and performance on these lines.

However, capital intensity can also act as a barrier to exit. If a firm has invested a huge amount in fixed assets or for building plants, it may be compelled to remain in the same

business even if it is declining because shut down of the business may result in huge losses (Porter, 1976). Moreover, if the cost of labour is lesser than the cost of capital, the firms with labour intensive technology may be more profitable than those which employ capital intensive technology (Sidhu and Bhatia, 1993).

(Please see the Appendix for the details of methods employed to calculate these six independent variables).

STATISTICAL RESULTS

Results of regression equations are shown in Table 7 separately for growth (GRTH) and profitability (PRTF) as the dependent variables. F-statistics are significant at 1% level for the PRTF variable only which suggests that our model for that variable is adequate and appropriate. The R^2 are 0.146 and .70 for GRTH and PRTF respectively. All the variables, except dummy variables, have been transformed into log form to meet the assumption of linearity and normal distribution of data. The F-statistics as well as the R^2 have improved for both the models with transformed data.

On the whole the regression results on profitability are more significant than on growth. Out of all the 6 control variables, only one is significant on growth and three are significantly related to profitability. On GRTH variable only leverage has significant and positive impact whereas on PRTF variable capital intensity and risk showed up positive and significant. The skill variable turned out to be negatively and significantly related to profitability. As regarding the importance of industry membership, manufacturing industries have influenced

growth of firms negatively while the trading and service industries have shown a highly significant positive impact on the profitability of firms.

TABLE 7 Regression coefficients (Standardised) for industry and firm effects.

VARIABLE	GRTH	VIF	PRTF	VIF
CONSTANT TERM	.921 (1.376)		-.668 (-1.926)**	
LEVERAGE	.339 (1.77)***	2.753	.05 (.441)	2.753
CAPITAL INTENSITY	-.132 (-.644)	3.168	.229 (1.881)***	3.168
RISK	.072 (.518)	1.464	.632 (7.648)*	1.464
AGE	.099 (.759)	1.274	.067 (.864)	1.274
SKILL	-.148 (-.861)	2.226	-.207 (-2.032)**	2.226
SIZE	.006 (.041)	1.360	.104 (1.306)	1.360
MANUFACTURING INDUSTRY	-.293 (-1.925)**	1.738	.143 (1.585)	1.738
TRADING INDUSTRY	.035 (.234)	1.638	.227 (2.604)*	1.638
SERVICE INDUSTRY	-.044 (-.272)	1.985	.169 (1.756)**	1.985
R^2	0.146		.702	
NO. OF OBSERVATIONS	74		74	
F-STATISTICS	1.217		16.736*	

Figures in parenthesis are t-ratios
**Significant at 1 per cent level.*
***Significant at 5 per cent level.*
****Significant at 10 per cent level.*

We checked multicollinearity in the models by examining the Variance Inflation Factor (VIF) for each independent variable. The Variance Inflation Factor (VIF), which is defined as $1/\ 1\text{-}r^2$, shows how variance of an estimator is inflated by the presence of multicollinearity. As a rule of thumb, if the VIF of a variable exceeds 10 that variable is said to be highly collinear (Gujrati, 1995). Although Size, Market Share and Concentration were expected to be highly correlated with one another, they did not create any problem of

multicollinearity. The VIF for each of these variables in the models ranged from 1.274 to 3.168 which is much below the upper limit of 10, suggesting that multicollinearity is not a problem.

Various assumptions of OLS regression models have also been checked. Graphs of outliers and residuals were examined, which showed that the regression assumptions as regarding the linearity and normal distribution of variables were met. Case-wise plot of residuals revealed no outliers in the sample.

DISCUSSION OF RESULTS

The regression and one way ANOVA results have shown a consistency in the performance trends among all the four industry groups. In both regression models, the trading industry got the top performance as compared to other groups although the coefficient on GRTH is not significant. The manufacturing industry has shown up to have significant negative impact on the growth variable. The utility industry, the excluded category, got second placing on GRTH whereas it is at the bottom on PRTF. The highly significant negative impact on growth of the manufacturing industry might be due to the impact of international competition which the smaller New Zealand companies could not face from giant international businesses that have economies of scale advantages. As compared to the trading industry, the manufacturing industry needs more capital outlay and skilled personnel to compete with international competition. In trading it is easy to enter and exit as the cost of sunk capital is much smaller than for manufacturing and utility industries.

Our regression results have reported a positive relationship between profitability and capital intensity but negative on growth, though it is not significant. The positive relationship between profitability and capital intensity is in line with our hypothesis but not on growth. If a firm has built up plant of excess capacity right from the beginning, the idle capacity may also cause lower growth resulting in a negative relationship between capital intensity and growth (Scott and Pascoe, 1986). Porter (1976) has stated that capital intensity can also act as a barrier to exit. If a firm has invested huge amount in fixed assets or for building plant, it may be compelled to remain in the same business even if it is declining because close down of the business may result in huge losses. Sidhu and Bhatia, (1993) argue that if in a country the cost of labour is less than the cost of capital, the labour intensive technology is expected to be more profitable as compared to the capital intensive technology. As regards the negative association of this variable with the GRTH factor of performance, a highly capital-intensive firm, which has installed a large sized plant and has a strong infrastructure, may be in a position to tune up its activity at a larger level.

There is a strong positive relationship between risk and profitability which fits into the business theory that 'higher the risk, more profits'. This is possibly due to "good management". Good managers seek to achieve both higher profitability as well as low variation in earnings. (Bowman, 1980; p.25). Risk is also positively related with growth, though insignificant, which shows that these firms were extra cautious in managing their risky projects which led to the favourable performance in terms of growth of these firms.

Leverage has shown a positive impact on growth and profitability but only significant on growth. Higher leverage in our study denotes high proportion of debt capital employed in business in comparison to equity capital. The explanation of the relationship between

leverage and profitability and growth was as expected. This relationship explains that sample companies could lower the cost of capital by borrowing loan capital on cheaper interest rates than to raise equity on higher cost of capital, which led to better growth and profitability. If a firm is moderately leveraged and its rate of return on the company's assets is higher than the cost of debt capital, it will naturally lead to higher profitability and growth.

Age has turned up to have a positive relationship with performance though it is not significant on both dependent variables. This relationship was expected as more experience and exposure in the market leads to better management and marketing practices. They can also cash in on the goodwill that they have built on in the past.

The inverse relationship between skill and growth and profitability might be due to inefficiency of personnel and lack of co-operation to respond to changes in organisational structure. Further, use of ineffective or no personnel management policy might be the root cause of all these shortcomings.

CONCLUSIONS

This paper has sought to decompose the performance differentials in terms of industry effects and firm characteristic variables. For dependent variables, information on five financial performance variables have been condensed through factor analysis into two factors viz. GRTH and FRTF. Industry membership, leverage, capital intensity, risk, age, size and skill have been included in the models as explanatory variables.

Out of the four groups of industries analysed, the trading industry has shown to be the top performer on both the variables of growth and profitability, whereas the utility industry is the poorest performer on profitability, and the manufacturing industry is the poorest performer on growth. The service industry is number two and the manufacturing industry is number three in terms of profitability. On the growth variable, the utility industry is number two and the service industry is number three. Industry membership has shown up to have significant impact on firm performance. Capital intensity is related positively with profitability but negatively with growth. High capital intensity may provide infrastructure for growth but idle capacity may depress profitability as it adds to costs also. As expected, leverage has a positive association with growth and profitability. Firms can find it handy to depend on borrowed capital for the expansion of business in order to cash in on some opportunity. Risk and growth and profitability are positively related which shows that the firms were extra cautious to manage their risky projects which led to the favourable performance in terms of growth and profitability of these firms. As expected, age of the businesses has positive association with profitability and growth but surprisingly not significant. Skill, measured as the ratio of wages and salaries to sales is negatively related to growth and profitability. The higher expenditure on workers and employees might not be fruitful due to the use of faulty or ineffective personnel policy by the management.

IMPLICATIONS

Studies such as this could help us find the factors responsible for poor performance of certain industries and guide the formulation of strategies to remove the disparities among industries.

From the investors' and entrepreneurs' viewpoints, the investment may be stated to be the most beneficial in those industries which have shown a positive impact on performance. Companies may reduce their risk by expanding or diversifying their operations in those industries. Creditors and lenders can also visualise such industries as the most potential area to invest in as they always want to get regular interest payments and return of their principal at maturity. Also, higher profitability and growth can certainly contribute to making the solvency position of the firm stronger. Finally, the management of the firms operating in these industry groups may feel at ease as they have to protect the interests of shareholders (who concentrate on profitability), and at the same time ensure that companies grow profitably.

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APPENDIX

Collection of financial information and calculation methods employed for variables.

DATEX was used to obtain the following information for the 74 publicly listed companies for the years 1996 – 2000. Calculation of variables used in the research are shown below:

1. Return on Equity = Net Profit / Shareholder Equity * 100

2. Return on Assets = Gross profit (before tax and interest) / Total Assets * 100

3. Growth in dividend = Dividend percentage was calculated by dividing Dividend paid in NZ$ by total shareholder equity. These figures (1996, 97,98,99,00) were then analysed by linear regression to obtain DIVIDEND GROWTH over this five year period.

4. Growth in net assets = Net Assets were calculated using the following formula:–

Total Assets less current liabilities, non-current liabilities and intangibles. These figures were analysed using linear regression to obtain a NET ASSET GROWTH over this five-year period.

5. Size was measured by Total Assets.

6. Leverage = Non-Current Liabilities / Shareholder Equity (*100).

7. Skill = Wages / Total Sales (*100).

8. Capital Intensity = Fixed Assets / Total Sales (*100)

9. Sales were computed using linear regression to obtain SALES GROWTH.

10. Age of the business: the New Zealand Business Who's Who (2000 edition) was used to obtain the number of years these organisations had been in business, as well as a broad description of the business these companies are involved in (Type of Industry). The figure quoted in the Who's Who stated what year the company started business and this figure was subtracted from the present year (2001) to obtain a YEARS IN BUSINESS FIGURE.

11. Kompass 2000 was used to obtain a Standard Industry Classification (SIC) for each of the 74 organisations. The main source of the organisations business was used to obtain the SIC code which has been presented as a three digit code.