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The Management Development Needs in Manufacturing SMEs: An Empirical Assessment

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Abstract

Among the many reasons for small business failure or slow growth, a lack of management skills within smaller businesses has been highlighted as a contributory factor. In recognition of this training provision and management development have dominated much of the academic and policy debate on small firm development since the late 1980s. However, to date, little empirical work has sought to look further than simple frequency accounts. No research has given theoretical explanations for what and how management skills are developed in organisations and the impact of such efforts. Whereas researchers assume that management development and training can be directly related to performance, the focus has been on management development as a holistic intervention. Few have actually investigated a link between the various component management skills/ techniques and performance to understand if this assumption is founded. This article records the empirical research that investigates the managers' perceptions of the various component management skills/techniques and their added value. According to some authors (see for example, Kitching, 1998; Westhead, 1998), the SME1 sector is not homogeneous and therefore identifying development needs and delivering training support is contextually specific and dependent on a variety of factors. Firm size (Kithching & Blackburn, 2002; O'Dwyer & Ryan, 2000) and age(Morgan et al, 2002) were noted as the main determining factors for the extent and approach to management development in SMEs and therefore will be explored in this paper. In addition, whether the business was owner managed or not and who in the business took responsibility for management development, were assessed against the skill needs.

The research is based on the results of a survey of 198 UK SMEs. It proposes five techniques for management development and provides some initial assessment of the implications of the typology. The results indicate that while firm size influences the utilisation of management development techniques, firm age, business ownership or development responsibility has no such influence. This suggests that the nature of management development has to be tailored to what are seen as the needs of the group in question. The research also highlighted the positive relationship between management skill development and organisational performance. From this, it appears that much of the observed difference between successful and unsuccessful firms lies in their decision to train and develop management skills/ techniques, the contribution of which varies according to the size of the business.

1 How to define an SME has been the subject of academic debate and there is still no (or likely to be) absolute definition available. This paper therefore follows the European Union Definition to SMEs, where SME is defined as an enterprise that employ less than 500 people

Introduction

The economic significance of the small business sector in generating income and sustaining employment has been recognised by successive UK Governments since the 1960's. Concern over the volatility of SMEs in terms of the number of failures and new businesses being established on a yearly basis, has resulted in a vast array of research into various aspects of small businesses. The Bolton Committee of Enquiry on Small Firms (1971) was tasked with investigating, for the first time, every business aspect appertaining to the small firm both in the UK and abroad. One of the Bolton Committee's conclusions, in 1971, was that in the UK '…. there was a generally low level of management in small firms' and that training and 'support services' could be improved to increase their chances of survival (Stanworth and Gary, 1991:178).

However, it was not until the 1980's that management skills came to the forefront of Government initiatives. This was in response to the Handy (1987) and Constable and McCormick (1987) reports which documented, the need for increased and more effective management education across all organisations. In spite of successive Government initiatives in the area of management development and the plethora of courses and training programmes available to the small business sector, there is still a clear reluctance by SME managers to provide or engage in management development activities (Small Business Skill Assessment, 2002; Kitching and Blackburn, 2002). This is cause for concern as the lack of management skills is still being highlighted as one of the contributory factors in either failure to grow or indeed the cessation of small businesses.

Whilst much research had been conducted on various aspects of small businesses, it was not until the late 1980's that a significant interest was shown in management development within small business. However, the theory of management development remains immature in the sense that there has been little attempt to empirically investigate what skill components are critical for management development within small firms and what factors are most influential in assessing the achievements of management development objectives. There has been a profusion of research that put forward a number of reasons, some of which are conflicting, as to why management development does not take place, or is not accorded a high priority within small businesses (see for example, Morgan et al, 2002; Kitching and Blackburn, 2002). However, there is a lack of quantifiable evidence that demonstrates the causal link between management development and SME performance (Storey and Westhead, 1994), a link that most managers would expect to see before making further investments. Those that have investigated this subject have looked into the determinants of management development (see for example, Thomson and Gray, 1999; Patton and Marlow, 2002) where training is the main focus point for discussion. Whilst training is an important component of management development and can give an indication of influence on company performance, management

development is much more holistic in approach and therefore difficult to measure. In addition, there is very little research in the field which has utilised statistical analysis to improve our understanding of the processes of management development across a range of companies based on the number of employees.

The analysis presented in this paper covers part of a wider investigation into management development in UK small firms. An investigation into the component management skills and techniques that shape the amount and nature of management development in small firms is the specific subject covered in this paper. In particular, it looks at the management development needs in terms of the management skills that are important to the running of the business and, perhaps more importantly, the management skills and techniques that the SMEs would like to be more proficient in. Moreover, it aims to find the relationship between management development and SME performance in general and investigates how the company context could determine the skill needs and training and development provision within SMEs.

The focus of the research was SMEs within the UK manufacturing sector, a sector that has declined significantly in the last thirty years, both in output and its proportion of employment. The percentage contribution of manufacturing to the UK's GDP has dropped dramatically during the last two decades (Delbridge and Lowe, 1998) as Britain has moved towards a service dominated economy. As most small businesses within manufacturing will be part of a supply chain, changes instigated by large businesses at the top of the supply chain have significantly affected the competitiveness of smaller companies lower down. Changes include: the rationalisation of the number of suppliers; the introduction of 'lean' production methods; 'Just in Time' delivery and higher quality standards. Increased managerial effectiveness is central to the introduction of new working methods, multi-skilling and managing change, and is crucial to stemming further decline in the manufacturing sector.

Management development skills and techniques

Management development is recognised as a key process in delivering organisational transformation and renewal (DfEE, 1999). It is defined as 'a conscious and systematic process to control the development of managerial resources in the organisation for the achievement of goals and strategies' (Molander, 1986). According to O'Dwyer & Ryan, (2000), management development includes systematic efforts towards improving managerial effectiveness and it must be seen as 'the sum of a number of activities which, when put together in a systematic way, result in a total process contributing in the long run to the success of the business'. Management development is not another name for management education and training, whilst they are important components, management development is much more holistic in approach. The needs, goals and expectations of both the

organisation and the individual forms an intrinsic part of management development, therefore, account has to be taken of the political, cultural and economic context. In order for management development to be effective, however, it cannot be isolated from the organisational systems and processes, the skills associated with structural changes, staff selection and motivation, performance monitoring and organisational renewal and change all play a significant part in management development (Smith and Whittaker, 1999).

Although there is no single, definitive list of skills required by owner/manager(s) in small businesses in general, associated with differing business objectives and conditions, small business managers require a diverse range of skills (Small businesses skill assessment, 2002). These include skills needed to manage both within and beyond the business boundaries. Functional or task based skills (such as marketing, accounts, administration), strategic, both criteria and scope related skills and people skills receive high priority among the small business community. Gibb (1997) noted that the skills associated with strategic management, business planning, relationship management, team building and marketing are important for small business managers to become proficient in. Perren and Grant (2001) adopt the view that a practical assessment of management development skill needs within SMEs needs to be based on a broad definition of skills that can accommodate all the abilities necessary to manage a business as it grows. A report by the Centre for Enterprise (2001) which looked at the management skills that were essential for SME business success, pointed out that leadership, business development, people development, relationship management and strategic management skills are important skill components that successful businesses prefer to develop within their businesses.

IT related knowledge and skills are one of the key skills gaps identified in owner managers/managers both in terms of management processes and manufacture and process control. It is estimated around one third of SMEs still have manual budgeting and stock control systems, whilst less than half use IT to control manufacturing processes (Curran et al, 1996; Scott et al, 1996). The development of e-commerce also presents new and complex challenges in this area.

Health and safety, product knowledge, marketing and sales and working methods were also identified as priority areas (Curran et al, 1996; Scott et al, 1996). Further areas of identified skill needs are business management/business strategy and the ‘softer’ people skills such as team building, leadership and appraisal and development. Deakins and Freel (1998) and Gibb (1997) highlighted the importance of the skills relating to networking, learning from experience, and the sourcing and ability to work with resources and expertise from outside the firm.

In summary, the literature on management development provides ideas to inform the analysis of skill components important for small business success. What it does not address, other than in broad and general terms, is how these skill needs varies with the organisational conditions and characteristics in order to answer the question why some companies are more advanced in management development than others. Also missing is an empirical assessment of all the possible skill components to identify the most relevant ones for the SME sector.

The Impact of Growth

Among the many organisational context variables that have been mentioned in the small business literature as having some influence on management decisions, only firm size has been consistently verified as being a significant variable where management development is concerned. Thomson and Gray (1999) noted that the size of company measured in terms of the number of employees is always significant to determine the amount and nature of management development in small businesses. A survey conducted by Confederation of British Industry (CBI, 1986) found some interesting differences in perceived management development needs between micro-small firms and medium firms. As companies grow in size, owner managers need additional help from specialist managers and these managers need to develop new skills and therefore require more training. Marshall et al, (1995) concluded that 'management training projects are less effective in the very smallest firms; they work best in firms that have the management capacity to make the necessary commitment and absorb both management and business development" (p. 88) Furthermore according to Stanworth et al, (1992) training and management development investments can help SMEs to expand through the critical 5-50 employment size range. Size factor is a critical determinant for management skill development, as the size of a company increases, there is a requirement for a greater number of more competent managers.

What is clear is that as small businesses grow in size a number of adjustments in processes have to be successfully negotiated. The management development needs obviously vary according to the stage the business is at in terms of growth, and account also has to be taken of the differing time frames in growth. By negotiating the transitional phases successfully and making the appropriate adjustments in the extent and approach to management development, SME managers can guarantee cause effect benefits of development efforts (Smallbone et al, 1993). Wynarczyk et al, (1993) also claimed that for businesses to grow, the skill emphasis should change as both cause and effect of the development of the firm itself.

The significance of management structures have also been highlighted as providing an understanding of the different training and management development needs between micro and medium size

businesses. Previous research has demonstrated that the larger the business the greater the degree of structure and therefore more emphasis is likely to be placed on training and management development, (Wong et al, 1997). Birley and Westhead (1990) highlighted the importance of internal organisational adjustments that occur as organisational structures are developed and employee numbers and managerial levels increase, though no standard combination or sequence of factors has been identified. When the business is very small (under ten employees) the management functions are not usually formalised or differentiated from other operational business activities. Due to a high workload and the resultant pressure, management development is restricted and more informal. Although development takes place it is based on operational needs rather than strategic ones. Due to the lack of an internal labour market there is no pressure to provide an integrated and structured approach with appraisal/promotion linked to training and development of skills. Once the business grows with more levels of management between the shop floor and the owners, training and development becomes strategically critical to organisational development, in terms of retaining key workers and planning for internal movements (Goss and Jones, 1997).

RESEARCH METHODOLOGY

Survey as the research method

A review of philosophical characteristics of alternative research approaches (See for example, Sayer, 1984; Easterby-Smith et al, 1991) indicates that no research strategy is more appropriate for all research purposes. Depending on the research area, the nature of the research problem and the objectives of the research, the selection of the strategy has to be decided (Eisenhardt, 1989). In addition to these epistemological and subject specific features of the research, the technological choices (data collection method and analysis) also have implications over the choice (Bonoma, 1985). As the aim of this study is to discover formal relationships and searching for general patters of a population as a whole, it was found that the most appropriate methodology, and one that has been used extensively by other researchers in the field (see for example, Huang 2001; Westhead and Storey, 1997) was that of a postal questionnaire survey. Although explanation power is poor , the utilisation of a survey as a research methodology has been promoted by several social research literatures' claiming that it provides more 'robust' results using more 'objective' judgments during data collection (Alferd and Settle, 1995). It further provides greater confidence and a high external validity of the findings.

Questionnaire design

The questionnaire was designed following extensive consultation with members of the academic community as well as personnel who worked with and in the small business sector. As this research was trying to surface owner managers own perceptions on management development, in addition to identifying the skill needs for the successful running of the business, it was important that the questionnaire used accessible language that was subject/participant led. In addition, the questionnaire had to be quickly and easily answered, given the time constraints under which busy owner managers operate. Closed and Likert style questions were utilised in order to be able to produce responses that could be easily analysed and compared. The main focus of the questionnaire was twenty management skills/ techniques which owner managers were asked to rate on a Likert scale (0-7). This was conducted twice, firstly in terms of those skills that were important to the success of their business. Secondly, those skills/techniques that either they or their management team would benefit from developing. The management skills and techniques selected were derived from the NVQ management framework levels three to five and the Owner Manager Management Standards produced by Small Firms Enterprise Development Initiative. Information was also gathered on the number of employees the respondent organisation employed, turnover, responsibility for training and development, and the formal and informal development tools used. Biographical information on the respondent (usually the owner) was also sought in order to contextualise owner manager attitudes.

Data collection

Contacts for the population from which the sample was drawn were obtained through the aegis of the Forum of Private Business and the Engineering Employers Federation who both provided a random sample of their membership within the appropriate sector. In addition, some of the corporate partners to the project provided details of smaller companies operating within their supply chain. 1000 small businesses nationwide were randomly selected from the population to ensure representation by all size categories. The questionnaire was sent to these 1000 companies followed by a reminder questionnaire for those companies who did not respond to the first questionnaire within the first 2 months of delivery. In total 198 (response rate of 19.8%) useable questionnaires were returned for analysis.

Data analysis

The questionnaire data was analysed using SPSS. Factor analysis, linear regression test, ANOVA, Chi-square and simple descriptive statistics formed the major part of the quantitative data analysis.

Firstly, descriptive statistics were used to study the sample profile. This was then followed by factor analysis. The 20 variables used to measure the management skills and techniques was factor analysed, firstly to abstract the managerial techniques contributing to the success of the business and secondly the managerial techniques requiring a greater proficiency. Those factors which had an eigenvalue above 1 were recorded. The items which were included in each factor, are indicative of the percentage of variance explained by each item.

Regression analysis was then performed to see the relationship between the management development skills and firm performance. Five management development skills that are important for business success were regressed on the dependent variable, turnover. Stepwise regression also formed a part of the analysis as it enabled to identify the most suitable individual skill components for SME performance.

Accepting the acknowledgement by various researchers of the heterogeneity of the small business sector (see for example, Johnson, 1999; Hannon, 1999), ANOVA tests were performed to see the inter-group variances of management development skills, when the sample is categorised based on its size, age, ownership and training responsibility.

Research findings and discussion

The sample was classified by the firm size, age and turnover of the organisations. From the data presented in table 01 it can be seen that the research sample is predominantly small firms employing less than 50 employees. This sample distribution is acceptable given the fact that over 99% of the total small businesses operating in UK employ less than 50 people. (Small business skill assessment, 2002) The average number of employees per sample firm was 43. Out of the 80% of businesses that have less than 50 employees, 45% accounted for micro businesses with less than 9 employees. The data also showed that the sample companies were well established with more than 70% of companies trading for 11 or more years and slightly more than 30% trading for 21 or more years. A typical sample firm had been in business for 28 years. It is important to take this into account when reviewing the previous findings as it was noted that less than twenty percent of SMEs last more than six years (Barnett and Storey, 2000). Obviously on the whole the sample was running successful businesses if length of time trading is a criteria on which success is judged. The turnover profiles of the sample companies further support this claim. Data suggests that while the sample companies are successful (average turnover = 2.4 M), more established companies (years of trading) do have significantly higher turnovers ($\chi^2 = 11.7$, $df = 2$, $p = <0.001$) and growing employee numbers again at a

significantly higher rate (χ^2 = 7.4, *df* = 2, p= 0.03). The sample is equally distributed between owner-managed and non-owner managed companies. Of the sample firms, 50 % are owner-managed firms.

Table 01: Sample profile

Company Size (no. emp.)	Frequency (percentage)	**Company Age**	Frequency (percentage)	**Turnover**	Frequency (percentage)
< 9 emp.	90 (45%)	<10	55 (28%)	<1 M	65 (33%)
10-49	71 (36%)	11-20	81 (41%)	1-3 M	59 (30%)
>50	37 (19%)	>21	62 (31%)	> 3 M	74 (37%)

Most important skills and techniques as perceived by the SME owner managers

Questions related to management development skills and techniques consisted of two parts. Respondents were asked to specify their interests in

a) those management skills and techniques that the respondent organisations believed contributed to the success of their business

b) those management skills and techniques they would like either themselves or their management team to be more proficient in

The data therefore generated 20 scores each for the two skill components measured along a 7 point likert scale with 1 being 'little importance' and 7 being 'vital importance'. The following table provides the respondents opinion of the present (contribute to the success of the business) and future (like to be more proficient in) needs of the 20 skills and techniques.

Table 02: Management Development skills and techniques: a comparison

Management Development Skills and Techniques	Contribute to the success of the business		Like to be more proficient in	
	Mean	S.D	Mean	S.D
Sales techniques	4.95	1.87	4.17	2.1
Market knowledge/research	4.82	1.64	3.98	2.23
Customer care techniques	5.84	1.2	4.52	1.85
Quality management techniques	5.12	1.79	4.38	1.56
Cash flow/credit management	5.72	1.39	3.93	2.39
Raising capital	3.02	1.8	2.23	2.13
Financial planning/budgeting	4.75	1.83	3.27	1.82
Employment law	3.12	1.29	3.1	2.18
Health and safety at work	5.06	1.69	4.19	2.3
Recruitment and selection	3.88	1.96	2.98	2.25
Disciplinary handling	3.59	1.96	3.00	2.24
Team development	4.25	1.89	3.65	1.96
Coaching/training/skills appraisal	4.01	1.88	3.51	2.01
Negotiation techniques	4.05	2.00	3.34	2.29
Using the internet/e-mail	3.41	2.03	3.38	2.13
Using computerised systems	4.72	1.95	4.04	2.1
Stock control/purchasing	4.52	1.92	3.45	2.3
Environmental regulations: compliance/risk	3.2	1.97	3.18	2.18
Management change	4.45	1.84	3.61	2.2
Business planning and performance	4.85	1.5	3.88	2.24

It is immediately noticeable from the above table that the mean values for all the skill components that contributing to the success of the business is higher than for those requiring development. Taken the sample as a whole, customer care techniques, quality management techniques, cash flow credit management and health and safety related skills received high relevance. Except the skills on cash flow credit management, other three skills were considered significant for the success of the business as well as having a requirement for greater proficiency. The finding that marketing and sales techniques are important for business success is consistent with similar studies (Curren et al, 1996; Scott et al, 1996) Skills on raising capital, environmental law, environmental regulations were rated as the least popular. This trend is apparent in both sets of ratings.

Management Development Skills and Techniques – Data Reduction

The composite reliability for the 20 measures for the two skill components (1. skills and techniques that the respondent organisations believed contributed to the success of the business 2. skills and techniques they would like to be more proficient in) accounted for 0.692 and 0.641 respectively. Further cutting of the variables was found to have a tendency to improve the overall reliability of the measures. Multivariate analysis in the form of factor analysis (principal components) was therefore conducted on all management skills and technique variables. This had three aims. Firstly, it helped to

identify interdependencies among these variables; secondly, to derive a limited number of manageable and meaningful constructs with a minimum loss of information (Akaiser-Meyer-Olkin measure used to test the suitability of factor reduction gave values of 0.832 and 0.862 respectively), and thirdly, it enabled reliable indicators of those interdependent constructs that formed the key skills.

Orthogonal factors were obtained using varimax rotation, this eliminated problems of multicollinearity. Only those factors with an Eigenvalue greater than 1 and with a high Cronbach alpha coefficient are considered. A factor loading of 0.450 has been used to screen out variables that are weak indicators of management skills and techniques. The composite reliabilities of the factors were checked against the Nunnally's recommended standards (Cronbach Alpha ≥ 0.70) mainly to ensure that they are reliable indicators of those constructs (Nunnally, 1967).

A factor analysis of the skill components suggests that firstly, there are 5 broad skill categories which the small business managers perceive as important for the survival of the business and secondly, there are 6 skill categories (5 of which coincide with the previous 5) that managers believe they might personally benefit from developing. These categories were named according to the nature of the loading items.

Management Skills and techniques that contribute to the success of the business

In the varimax rotation factor solution for the original 20 items, 68.3 % of the total variance was explained by the first 5 factors with eigenvalue greater than 1 (see table, 03). The variance between factors is more skewed towards the first 2 factors, with the first factor accounting for 22.81%; the second, 16.78%; the third, 11.32%; the fourth, 9.57% and the fifth, 7.81%. Fairly strong Cronbach alphas(ranged from .84 to .72) supports the existence of these 5 factors and confirm the interpretations given to the factors.

The first factor that was comprised of five items is the most significant (accounting for 23% of the variance of the original items). This is largely loaded with measures of regulation/risk related items and compliance related skills and is labelled the 'regulation/compliance' factor. The four items in the second factor deals with the staff selection, training and development related skills and therefore labelled 'people development skills'. The third factor relates to planning and business management skills, namely budgeting, performance monitoring, credit control and stock control, has been given the name 'strategic development/business growth skills'. Marketing related skills, including customer care, sales and market research formed the fourth factor. The fifth factor deals with the proficiency in using IT facilities, including internet, e-mail and was named as 'communication

skills'. Variables – managing change and raising capital were removed from the analysis because it did not lead cleanly on any factor but rather loaded on several factors with low factor loadings. The 5 management component skills and techniques derived are consistent with dimensions that have previously been identified as important for the competitiveness of the manufacturing SMEs (Centre for Enterprise 2001; Gibb, 1997).

Table 03: Results of factor analysis using varimax factor rotation (n = 198) : management skills and techniques that are important for the successful running of the business.

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Variance accounted for Reliability of factors (Cronback Alpha, ∝)	22.81% 0.843	16.78% 0.810	11.32% 0.742	9.57% 0.765	7.81% 0.721
Health & safety at work Employment law Environmental regulations: Quality systems Disciplinary handling	.800 .749 .684 .560 .527				
Recruitment and Selection Coaching/training/skills/appraisal Team development Negotiation techniques		.533 .776 .735 .672			
Financial planning/budgeting Business planning and performance mgt. Cash flow/credit management Stock control/purchasing			.752 .639 .607 .602		
Sales techniques Market knowledge/research Customer care techniques				.727 .698 .681	
Using computerised systems Using the internet/e-mail					.814 .765
Factor description	Regulations /compliance (MDsuc1)	People development skills (MDsuc2)	Strategic development/ business growth skills (MDsuc3)	Marketing skills (MDsuc4)	Communication skills (MDsuc5)
variables screened out Managing change Raising capital					

Management skills and techniques that require development

The same procedure was followed for the original 20 elements used to identify those management skills and techniques SME managers would like either themselves or their management team to be more proficient in. 6 factors were derived from the factor analysis (see table 04). After a varimax rotation the first 6 components exhausted 70.39% of the total variance, with the variance being more evenly distributed across the first 5 factors (variance accounting to 15.4%, 13.6%, 13.2%, 11.8% and 9.9% respectively) and the final factor giving a variance reading of 6.5%. The first five factors satisfied the Nunnally's (Nunnally, 1967) recommended reliability criterion, while the 6th factor showed a slightly low but acceptable cronback ∝ (∝ = 0.692). This factor was abstracted as a separate factor for two reasons. Firstly, it gave an eigenvalue greater than 1 and secondly the two variables

that formed this factor does not show significant loadings on any other factor. On the basis of the factor loadings, it was found that the first 5 factors can be given the same descriptive labels as used in table 03. The sixth factor, which deals with quality systems and managing change were given the name quality management skills. This interpretation is possible as it supports previous research findings where it made clear that quality system implementation in small firms could act as a managing change agent important for long term business survival (Ahire and Golhar, 1996).

Table 04: Results of the factor analysis using varimax factor rotation (n = 198): management development skills and techniques that require development

Items	Factor 1	Factor2	Factor 3	Factor 4	Factor 5	Factor 6
Variance accounted for Reliability of factors (Cronback Alpha, ∝)	15.4% 0.878	13.6% 0.822	13.2% 0.792	11.8% 0.764	9.9% 0.742	6.5% 0.692
Raising capital Financial planning/budgeting Business planning and performance mgt. Cash flow/credit management Stock control/purchasing	.743 .669 .638 .607 .537					
Team development Coaching/training/skills/appraisal Disciplinary handling Recruitment and selection		.825 .794 .687 .606				
Health and safety at work Employment law Environmental regulations:			.837 .718 .667			
Sales techniques Customer care techniques Market knowledge/research				.740 .701 .698		
Using computerised systems Using the internet/e-mail					.683 .618	
Quality systems Managing change						.576 .521
	Strategic development/ business growth skills (MDpro1)	People development skills (MDpro2)	Regulations /compliance (MDpro3)	Marketing skills (MDpro4)	Commun-ication skills (MDpro5)	Quality Mgt. Skills (MDpro6)
Variables screened out Negotiation techniques						

Analysis

Relationship between management development skills and organisational performance.

Five management development skills that the respondent companies perceived as important for firm success were used to check the relevance of the claim that management development could improve company performance. Factor scores were calculated from the relevant variables to provide the estimates for each of the 5 constructs. These scores were used as independent variables in a multiple regression analysis. The performance variable, turnover of the business in this case, was used as the

dependent variable in the regression analysis. When the skill factors were tested for their collective impact on the organisational performance, the results revealed a strongly significant association between the understanding of these skills on organisational success and organisational performance (high R-square and p <0.000 indicate a substantial contribution by the factors to explain the variance in performance across the sample firms). Pearson Correlation coefficient between factor average and turnover, which accounted to 0.327* (significance 0.000), further supports this association and suggests that taken as a whole, the following 5 management development skill components are important for SME managers to improve their firm performance2. In terms of individual factors, regulation/compliance and strategic development/business growth skills show the highest association (with the former being negative and later positive), while sales/marketing skills are just significant and people development and communication skills show no significance. Table 04 provides the results of the regression analysis.

Table 05: management development skills and organisational performance: a regression analysis.

Dependent variable ⇨	organisational performance: variable – annual turnover
Multiple R	0.428
R-square	0.183
Adjusted R-Square	0.162
F change	8.574
df	5
Significant F	0.000***

	Variables	Beta	T	Significant T
MDsuc1	Regulation/compliance	-0.457	-4.677	0.000***
MDsuc2	People development skills	0.092	1.031	0.304
MDsuc3	Strategic development/business growth skills	0.305	3.677	0.000***
MDsuc4	Marketing skills	0.283	2.504	0.013*
MDsuc5	Communication skills	-0.086	-0.973	0.332

MDsuc – Management development skills and techniques important for the success of the business

To further clarify the perceptions of the respondents on the most influential individual management development skills and techniques, a stepwise multiple regression analysis was performed taking company turnover as the dependent variable and 20 individual skill components as independent variables. Each skill variable was tested separately using an automatic stepping procedure to iteratively develop a rational subset of independent variables from the list of potential component skills that could explain the performance of the company. A stepwise regression allowed eliminating

2 A regression analysis of 5 management skill areas regressed against firm expansion (measured by the number of employees) and firm survival (number of years of existence) revealed some interesting findings that are important to describe the management development skill-performance relationship. It was found that whilst there is a very strong association between the number of staff employed in a company and the importance of developing management skills (R^2 = 0.248 and p<0.000) there is no significant association when firm age is taken as the dependent variable (R^2 = 0.096 and p= 0.174)

one non-significant variable during each regression run until the regression equation had a level of significance less than 10%. Starting with all the variables in the equation and sequentially removing insignificant ones, this method allows the most relevant subset of variables to be included in the equation. 8 variables remained in the regression equation. The R2 of 0.38 (F = 6.52, sig. F= 0.0024) indicates that the resulting regression equation with 8 remaining skill components explains 38% of the variance in firm turnover. Table 06 shows the results of this analysis.

Table 06: Results of stepwise multiple regression analysis with firm turnover as the dependent variable and Pout<0.10 as the removal criteria

Factor skill	Skill components Independent variable	B	Beta	T	Sig. T
Regulation / compliance	Employment law	-0.521	-0.312	-2.33	0.02*
	Environmental regulations	-0.856	-0.53	-4.091	0.000***
	Quality systems	0.085	0.211	1.17	0.064[a]
People development skills	Team development	0.75	0.526	3.056	0.003**
Strategic development/business growth skills	Financial planning/budgeting	0.102	0.223	1.56	0.043*
	Business planning and performance mgt.	0.110	0.246	1.78	0.038*
Marketing and sales skills	Customer care techniques	0.768	0.513	3.15	0.002**
Communication skills	Using the internet/e-mail	0.094	0.235	1.32	0.053[a]

Model F = 6.52 (sig. F= 0.001); Model R^2 = 0.38 ; *** p <0.001, ** p <0.01, * p <0.05, [a] p <0.10
Variables EXCLUDED – health & safety at work, disciplinary handling, negotiation techniques, recruitment and selection, Coaching/training/skills/appraisal, cash flow credit management, stock control/purchasing, sales techniques, market knowledge/research, using computerised systems, managing change, raising capital

Skills related to employment law and environmental regulations have a significant but negative association to firm performance. This negative association does not necessarily mean that developing skills in these areas could result in poorer performance. A possible explanation could be that SME managers perceive paying attention to these might be adding unnecessary bureaucracy (Clayton and Carroll, 1995) and investments in skill development in these areas is a waste rather than an opportunity to enhance competitiveness and firm performance (Humphreys and Garvon, 1995). This further reflects SME managers high risk approach to management (Gupta and Cawthon, 1996). A weak but significant association found between management knowledge on quality systems and firm performance (significant at p<0.10 level) supports previous research findings (see for example, Murray and O'Gorman, 1994). As expected within the small firm context, team development and customer care skills were strongly associated with firm performance. As these two skills show a similar contribution to the performance formula (with both significant at p<0.001) it could be suggested that skills needed to develop a participative internal infrastructure are as equally as important to skills required to improve external customer relationships for small business performance. Linked to this is the communication skill, in particular, using the internet/e-mail, which showed a weak but significant relationship to firm performance (p = 0.053). The SME managers in

the sample saw this skill, as key in both maintaining their position with customers and sharing information with employees. Other skills that showed positive significant associations were financial planning and performance management. This result contradicts the finding by Berry et al, (2001) whom claimed that although, in theory, budgeting and business performance management are key to small business performance, very few small business managers perceive these as important financial management techniques for business performance improvements.

Relationship between organisational context and the SME managers' perception of management development skills and techniques

In order to see how management development skills and techniques (both in terms of what managers perceive as important for business success, and those skills/techniques they would like to develop) varied with different organisational contexts. Variables including firm size (number of employees), age (number of years of trading), business ownership and management development responsibility of the business, an analysis of variance, (ANOVA) test were performed. The F statistics from ANOVA test is useful to measure the degree of diversity across groups.

a) Firm size influences on management development skill needs

Table 07. Diversity in perception of management skills and techniques and company size (N= 198)

	emp. ≤ 9	10 ≤ emp ≤ 25	26 ≤ emp ≤ 49	50 ≤ emp ≤ 99	emp. ≥100	All groups	Test for inter group variance (ANOVA)
MDsuc1	3.78	3.26	4.03	5.17	5.46	3.72	F=2.546 : P = 0.026*
MDsuc2	3.44	3.86	5.13	5.56	4.63	4.12	F=2.919 : P = 0.015*
MDsuc3	4.76	4.32	5.12	5.76	5.9	4.74	F=2.253 : P = 0.051
MDsuc4	4.96	5.15	5.08	5.58	5.76	4.93	F=1.172 : P = 0.325
MDsuc5	4.76	3.37	3.46	4.17	5.43	4.14	F=3.747: P = 0.006**
MDpro1	2.98	3.16	3.75	5.12	5.82	3.69	F=3.573 : P = 0.004**
MDpro2	3.65	3.24	5.46	5.26	5.78	4.58	F=3.226 : P = 0.008**
MDpro3	3.3	3.58	4.15	6.15	5.8	4.23	F=2.796 : P = 0.018*
MDpro4	3.78	4.13	3.98	4.46	5.15	3.85	F=0.625 : P = 0.681
MDpro5	3.96	4.52	4.32	4.0	4.65	3.89	F=0.937 : P = 0.458
MDpro6	4.56	4.68	4.51	4.66	5.32	4.86	F=0.775 : P = 0.569

*significant at the 5% level; ** significant at 1% level; *** significant at 0.1% level
MDsuc – Management development skills and techniques important for the success of the business
MDpro – Management development skills and techniques that companies would like to be more proficient in

The above table covering 5 firm size groups according to the number of employees, give the mean values for each group (mean scores on a scale of 1 = little importance to 7= vital importance) along with the ANOVA results to test for inter group variance. The first 5 variables relate to the management development skills that are critical for successful performance of the business and the second to those skills that require greater proficiency.

From the above results it is noticeable that, when the sample is taken as a whole, the mean scores for management skills contributing to the success of the business are higher than for those that requiring development. For both sets of ratings, the number of skills that are considered to be important increase as the company moves from micro to small to medium. It is also apparent that once a small business reaches 50 employees those skills and techniques that contribute to business success and have a development need increase significantly. This confirms previous research by Loan-Clarke et al (1999) who indicated that some form of management development has to take place within an organisation once it reaches 50 employees, because the owner manager is not able to deal with all the managerial issues personally.

The skills associated with product sales and marketing, including market knowledge/research, sales techniques and customer care techniques were found to contribute to business success irrespective of the business size. Another skill factor that showed an equal distribution across the groups is strategic development/business growth skills (ANOVA F=2.453: P = 0.051). Cash flow, credit management and stock control/purchasing are skill components that could influence business success for any SME, whilst those skills associated with business planning/performance and financial planning/budgeting are more skewed towards medium size businesses (more than 50 employees) than micro and small businesses.

The results confirm that as the company grows in size, the interface with the external environment increases and so does the need for work compliance and standardisation. Although the overall mean score for this skill factor is low, a sharp increase in mean was found when the number of employees reached 50. Quality systems and health and safety at work are the individual skill components that showed a significant rise in mean when the firm size increased to 50. Environmental regulations and disciplinary handling received limited interest by companies with less than 20 employees and this interest increased significantly as the firm size increased. Employment law is a key skill that micro business managers (less than 9 employees) saw as useful to run their business successfully and is the main reason for the significant mean variation across the groups (ANOVA F=2.546 : P = 0.026) with employment law being the least important skill among the four skill components for companies with more than 50 employees.

The people development skills show a similar picture with a significant mean variation across the groups (ANOVA F=2.919: P = 0.015). By the time an organisation reaches 26 employees, people management skills emerge as a distinct leverage point, with recruitment and selection, coaching/training/skills/appraisal and team working becoming very significant for business success. The understanding of negotiation techniques however reaches its peak when the staff number reaches 50. However, the people development skills becoming less important when companies move towards

the ‘large’ firm category (more than 100 employees) and this contradicts the previous findings by Delaney and Huselid (1996).

The highest significant variation across the groups was found in relation to the communication skill (F=3.747: P = 0.006). The mean score for the whole group highlighted this skill as being in need of development within SMEs in general. The higher mean score received by the micro businesses for internet/e-mail use and the use of computerised systems for communication is a spurious result. One explanation for the decrease in significance as employee numbers increase could be that when a company has less than 9 employees managers are much more involved in the day to day activities and therefore have to be able to use IT facilities. As the business grows and managers take a more strategic role, operatives are employed to undertake these tasks and therefore these skills are not regarded as management skills that contribute to business success. A further increase of the mean value as the company reaches 100 employees could be a result of more sophisticated technology that managers have to be competent in using to cope with the increasing customer base.

The research evidence also points to some differences in the need for skill proficiency within the business across the 5 size groups. Marketing, communication and quality management skills showed a need for development for all businesses regardless of size. This result is corroborated by a statistically insignificant variation across the groups. However, in terms of the management skills requiring development, these three skill components are identified as becoming important for the first time for companies employing between ten and 20 employees. The need for developing skills on strategic management, people development, regulation/compliance emerge as varying in significance across the groups. As with the skills that contribute to business success, organisations employing more than 50 employees show greater consistency in these three skills that required development. The results also suggest that managers in small businesses (less than 50 employees) did not place as much importance on developing these skills even though they considered them to be important for business success.

b) Firm age influences on management development skill needs

Table 08. Diversity in perception of management skills and techniques and company age (N= 198)

	Group 1 (0-5 years)	Group 2 (6-10 years)	Group3 (more than 10 years)	Test for inter group variance
MDsuc1	3.97	4.34	4.74	F=0.657: P = 0.511
MDsuc2	3.4	5.21	5.63	F=1.517 : P = 0.222
MDsuc3	4.91	4.74	5.41	F=0.593 : P = 0.554
MDsuc4	5.67	5.83	5.81	F=0.316 : P = 0.729
MDsuc5	2.18	4.36	6.13	F=4.133 : P = 0.017*
MDpro1	4.13	4.54	4.61	F=0.234 : P = 0.791
MDpro2	3.9	4.7	4.98	F=1.073 : P = 0.344
MDpro3	3.6	4.8	5.31	F=2.398 : P = 0.094
MDpro4	4.76	5.13	5.47	F=0.815 : P = 0.444
MDpro5	3.14	4.91	6.41	F=4.206 : P = 0.016*
MDpro6	4.7	5.8	5.63	F=0.507 : P = 0.603

*significant at the 5% level; ** significant at 1% level; *** significant at 0.1% level
MDsuc – Management development skills and techniques important for the success of the business
MDpro – Management development skills and techniques that companies would like to be more proficient in

The ANOVA test results do not show a significant variance of management development skills and techniques across the three business groups divided based on the company age (years of trading). Although there is no significant variation across the three groups, businesses trading for more than 10 years had a better understanding and paid more attention to becoming proficient in management development. The only skill that varied significantly across the sub groups is the communication skill. This indicates that irrespective of the age of the business, company managers both understand and feel the need for development of a range of management development skills. The scores for the communication skill between the three groups show a similar trend in terms of contribution to business success and a need for proficiency. The more mature the company in terms of trading, the greater the need for development in the communication competence.

c) Business ownership and management development responsibility influences on management development skill needs

Table 09. How skills that SME owner/managers prefer to develop in house (N= 198) varies in relation to company ownership and training and development responsibility.

	Business Ownership			Training responsibility			
	Owner managed	Not owner managed	Test for inter group variance	Owner manager	Training manager	No one	Test for inter group variance
MDpro1	3.33	3.34	F=0.000: P = 0.985	3.20	3.37	3.33	F=0.038: P = 0.962
MDpro2	2.92	3.54	F=4.538: P = 0.034*	3.27	3.88	3.17	F=0.875 : P = 0.418
MDpro3	3.24	3.67	F=2.302: P = 0.131	3.4	3.7	3.51	F=0.244 : P = 0.784
MDpro4	3.72	4.23	F=3.462: P = 0.064	4.05	4.21	3.96	F=0.147: P = 0.863
MDpro5	3.29	3.48	F=0.472 : P = 0.493	3.29	3.53	3.48	F=0.392 : P = 0.676
MDpro6	3.71	4.17	F=1.872 : P = 0.173	4.12	4.3	3.73	F=1.348: P = 0.262

*significant at the 5% level; ** significant at 1% level; *** significant at 0.1% level
MDpro – Management development skills and techniques that companies would like to be more proficient in

On the matter of developing skills in house, there is no conformation that there is a significant variation between the attitudes of the two groups: owner managed companies and non-owner managed companies. People development skills are the only skills that show a significant difference based on the business ownership (F=4.538: P = 0.034). However, there is some support for the suggestion that owner managed companies are more reluctant to develop skills and techniques in house when the mean values for the two groups are considered. Non-owner managed companies showed more interest in developing all the 6 skills mentioned than owner managed companies.

An analysis of the skill development looked at three groups: Those businesses that had a training and development manager; those where training and development was the owner managers responsibility; those businesses where no-one took responsibility. There was no significant variation across the three groups although those companies that have a training manager in charge of training and development received a higher mean score for all the 6 skill factors than the other two groups. Regulations, strategic development and communication skills received more attention in those companies where there is a no development responsibility than for those where training and development is the owner managers responsibility.

Conclusion

The research has provided an insight into the management development component skills and techniques for manufacturing SMEs. It has further highlighted the complexity of the variables that influence participation in management development and has demonstrated possible key leverage points for specific inputs of management development. Therefore the findings of this study have important implications for academic researchers, SME managers and small business support agencies.

Five skill areas including regulation/compliance, people development, strategic development, marketing and communication were identified both as contributing to small business success and requiring greater proficiency. Quality management skills emerged as a supplementary skill that SME managers prefer to develop within the business especially as an organisational change agent. It was found that these skills are reliable indicators of management development needs in the sector and taken together these skills could have a positive impact on the organisational performance. The research results suggest that strategic development/business growth skills and sales/marketing skills show a greater link to firm performance than the skills required for people development and the communication competence. Regulation and compliance needs, in particular employment law and environmental regulations showed a negative significant influence on the performance of the business.

All five sub-sectors based on the number of employees identified marketing skills including customer care as being significantly important. The 50-employee margin, was found to be an important leverage point to determine other skill needs. Once a small business reaches 50 employees, skills and techniques that could contribute to business success and have a development need increase significantly. The research results revealed that there is greater consistency in terms of the skills required for business success and having a development need for medium size businesses than for micro businesses. At the micro and small stage it would appear that priority is given to those skills associated with the immediate day to day running of the business. Planning, budgeting and credit management and interfacing with the external environment in areas such as customer care are the key skills for company's employing up to 25 employees. When employee numbers increase to 50 the 'soft skills' such as team development, training/coaching and selection are added to the priorities. These recognise the internal environmental transitions that have to be made for the business to develop. Compliance skills, particularly those concerned with operating in a regulated external environment and skills in utilising business systems become a priority for companies with more than 50 employees. Communication skills received the highest significant variation across the groups. There is a sharp increase in interest in sophisticated IT facilities for the purpose of communication when a company reaches 100 employees.

The research further confirmed and provided evidence of size influencing management development needs. Some skills and techniques were found to be important regardless of company size, but others became important at a particular point in the company's growth. It would therefore appear that the successful mastery of specific skills at a time when they can leverage the business development may be a crucial factor in survival or continued growth. It would be useful if some generic development needs based on organisation size can be established, then the providers of management development

will be in a better position to address the needs of the small business sector at the relevant time and furthermore target small business at the appropriate moment.

Limitations and further research

Whilst this study was comprehensive and provided some concluding evidence that other research has not demonstrated previously, there are a number of limitations which impact on the quality of the findings. The main limitation is the relevance of the construct used to define firm performance. Although firm performance is a combined measure of several impact variables (Jarvis et al, 2000), we considered firm turnover as the single firm performance measure to find the performance relationship. Although preliminary analysis of the data suggests that most of the skill components are related to one form of performance improvements or the other (when firm expansion or survival are taken as performance criterions) the other measures the questionnaire used could be deemed to not be reliable measures to provide concluding evidence. Another problematic area is the speculation made about causality was based on the assumption that the manager's completing the questionnaire had the knowledge and experience to know that the skills they selected did contribute to business success or they or their management team would benefit from developing. It is possible that companies are at various stages with respect to management development, and their answers may reflect their personal views rather than the general view of the company.

The paper has also highlighted a number of topics that deserve further investigation. As this study only provided retrospective cross sectional accounts, it was unable to test the time lapse between skill developments over time and the performance changes. Therefore, it would be useful to conduct a longitudinal study building on the constructs used in this study that would measure management development needs and performance variations over time. This would help to provide an understanding of the skills that are useful for organisational survival and expansion.

In addition, based on the acquired quantitative data additional research should be carried out to further advance the knowledge of management development in small firms. To compliment this study it would be useful to carry out in depth case studies to detail specific skill needs and target improvement areas. Structured interviews could help to identify factors relating to performance changes apart from those presently measured, which might lead to an improvement in the definition of key management skills for SME performance. Finally, it should be noted that the present study only investigated the firm size and age influences on management development skills. Consequently, a more comprehensive analysis is required to study what types of other stimuli in the organisational context trigger the use and the need for management development skills. Also there is a lack of systematic investigation concerning the moderators of the management development and

performance relationship. In the present paper, due to size limitations, no such moderators were considered. It is anticipated that the data from the questionnaire used in this analysis, will be published in the future to cover these moderate variables including training provision, organisational structure and owner/manager characteristics.

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