

**Assessing the Effects Of Executive and Management Development on
Learning Transfer and Business Results: Some Empirical Findings**

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The notion that business expenditures on executive and management development (hereafter, "EMD") represent an investment that "pays off" is apparently widely held, at least judging by the recent successive annual record high levels of EMD expenditures made by companies in the U.S. and abroad (PriceWaterhouseCoopers, 2001). Despite such expenditures and related activity, there is still precious little evidence to assess the effects or outcomes of EMD and, as well, little emergent theory of EMD. It is also notable that the substantial amount of empirical research on relationships between human resource management (HRM) practices and business performance that has appeared in the last decade or so (Lewin, 2002, 2001; Appelbaum et al., 2000; Lee and Johnson, 1998; Ichniowski et al., 1997; Huselid et al., 1997; Berg et al. 1996; Ichniowski et al., 1996; Dunlop and Weil, 1996; MacDuffie, 1995; Huselid, 1995; Ichniowski, 1992; Morishima, 1991; Cutcher-Gershenfeld, 1991; and Mitchell et al., 1990) does not identify EMD as one among several key "high performance" HRM practices.²

The paucity of EMD theory and evidence may perhaps be explained by the insulation of EMD providers (e.g., business school executive education units, internal company EMD sources of supply, and consultants) from basic research, or by the difficulty of conducting rigorous EMD research, or by other factors. Yet it appears that more and more companies are asking the question, "What is the payoff to EMD?" and the related question, "How can we determine this payoff?" The paper briefly described here represents one attempt to address these questions.

It is well known that EMD program participants are virtually always surveyed to determine their opinions of program content, learning, and effectiveness. It is equally

well known that such opinions are (1) subject to a “Hawthorne” effect and (2) do not address the critical issues of learning transfer and effects of EMD on organizational performance. From a classic quasi-experimental perspective (Campbell and Stanley, 1983), the ideal design for assessing the effects of EMD on learning transfer and/or organizational performance is one that conceptualizes EMD as a “treatment” variable and that isolates the performance of individuals and organizations with EMD experience by comparing them with a “control group” of individuals and organizations without EMD experience before, during, and after the EMD experience.³ From a review of the literature, it appears that no such ideal quasi-experimental design has been used to assess the effects of EMD on learning transfer or organizational performance.

The study reported in this paper also does not use a quasi-experimental design to assess the effects of EMD on learning transfer and organizational performance. Rather, the study features an ex-post facto design that aims to measure former EMD program participants’ perceptions of the transfer of program learning to their jobs and organizations; the perceptions of participants’ colleagues of the transfer of EMD program learning to participants’ jobs and organizations; the determinants of former EMD program participants’ perceptions of their learning transfer; the effects of changes in EMD scope, activity, and expenditures on changes in the financial performance of the participants’ business units and a second, larger sample of business units; and the effects of participants’ and colleagues’ perceptions of EMD learning transfer on the financial performance of participants’ business units.

EMD and Learning Transfer

For this study, which began in 1996 and is continuing, annual samples of executives and managers who attended the UCLA Anderson School Executive Program (between 1995 and 2000) were selected. They and the organizations they represent were then invited to participate in this study. To be eligible for inclusion in the sample, a program participant had to work for a clearly defined business unit of a multi-business company and been continuously employed by the same company during the year immediately following completion of the program. Annual listings of former executive program participants (hereafter, "participants") provided the relevant contact information, which were progressively winnowed to obtain a sample that fit these selection criteria. This procedure yielded a sample of 425 individuals, each of whom was subsequently contacted and asked to provide the names of five subordinates, three peers, and two superiors (hereafter, collectively referred to as "colleagues") for inclusion in the study. This procedure yielded 132 former executive program participants (or 31 percent of the original sample) and 1,276 colleagues as the subject samples for this study.

Mail surveys were then administered to the participants and their colleagues to obtain perceptual data about the transfer of the participants' learning from the Executive Program to their jobs and organizations. The key learning transfer dimensions embedded in the survey design are "management," "organization," "leadership," and "results," and each dimension is made up of several components. For the management dimension, the components reflect the main sets of resources that organizations have available and that must be combined, used, and managed to achieve strategic objectives; they are "customers," "financial resources," "technology," "operations," and "people." The

organization dimension includes components that derive from and match the key elements of leading models of internal organizational alignment (or strategy implementation); they are “critical tasks,” “organization structure,” “information for decision-making,” “rewards”, “people,” and “culture.”⁴ The leadership dimension includes components derived from extant models of motivation and leadership; they are “motivating others,” “leadership adjustment,” “delegating responsibility,” and “developing others.”⁵ The results dimension includes components that reflect different levels or units of performance within organizations; they are “individual performance,” “colleague performance,” “team performance,” and “business unit performance.”

A series of questions relevant to each of these dimensions and components was included in the surveys, with some of the questions containing a Likert-scale type response format, others containing a dichotomous yes-no format, and still others containing a fill-in format. Principal-components factor analysis of responses to the questions containing the first of these three formats confirmed that the four dimensions of learning transfer constitute independent constructs. Examples of the specific questions asked in these surveys include the following: (1) of participants, “Overall, to what extent did you apply the learning from your executive education program to your work?” and “To what extent did you apply the learning from your executive education program to managing technology in your organization?;” (2) of colleagues, to what extent did Mr./Ms. (name of participant) apply his/her executive program learning to changing your organization’s culture?” and “To what extent did Mr./Ms. (name of participant) apply his/her executive program learning to improving business unit performance?”⁶ A summary of participants’ responses to the scaled questions is presented in Table 1.

Participants' Perceived Learning Transfer. When asked about the overall extent to which they applied learning from their EMD program to their jobs and organizations, the mean response of participants was 3.75 on a 1 = low, 5 = high rating scale (with a standard deviation of 1.15). Regarding specific dimensions of learning transfer, these respondents rated management and leadership relatively high, but rated organization and especially results relatively low. There was also significant variation in respondents' ratings of specific components within each of these learning transfer dimensions. Taking the dimensions in order from highest to lowest rated, within the management dimension participants rated the management of people and customers highest and the management of technology lowest in terms of learning transfer from their EMD program. Within the leadership dimension participants rated their learning transfer highest with respect to motivating others and adjusting their leadership style to the decision situation, while giving their lowest learning transfer rating to developing others. Within the organization dimension participants rated learning transfer relatively high for four components, namely, determining critical tasks, changing organizational structure, using information for decision-making, and changing rewards, while giving significantly lower learning transfer ratings to changing people and especially to changing organization culture. Within the results dimension participants gave their highest learning transfer ratings to influencing individual and team performance, a substantially lower learning transfer rating to influencing colleague performance, and a significantly lower learning transfer rating to influencing business unit performance.

Content analysis of participants' qualitative explanations of their learning transfer ratings indicate that they perceived the content of the their EMD program to be least

applicable to managing technology; that there was insufficient time and rewards for developing others; that culture is the most difficult organizational component to change; and that business unit performance is affected by various factors, only one of which is the learning transfer from an EMD program. The participants also indicated that they had considerable difficulty in prioritizing the transfer of their EMD program learning to specific dimensions and components of their jobs and organizations, in part because the program they experienced did not address this matter directly.

Colleagues' Perceived Learning Transfer. The participants' ratings of EMD program learning transfer to their jobs and organizations (column 1) can be compared to the ratings of their colleagues, which are also presented in Table 1 (in columns 2-5). The data indicate that participants' colleagues rate the participants' overall EMD learning transfer significantly lower than do the participants themselves. These colleague learning transfer ratings also vary systematically by position in the organizational hierarchy, with subordinates rating participant learning transfer lowest and superiors highest among the three colleague groups. The colleagues and the participants closely agree on the rank order of learning transfer dimensions, however, with all four groups giving significantly higher average EMD program learning transfer ratings to management and leadership than to organization and results.⁷

Regarding specific components of the four learning transfer dimensions, the data in Table 1 show that subordinates, peers, and superiors give participants the highest ratings for managing customers and financial resources, and the lowest ratings for changing organization culture and influencing business unit performance. Notably, the participants agree with their colleagues about the lowest rated components of EMD program learning

transfer (that is, changing organization culture and influencing business unit performance), but not the highest rated components. The participants rate adjusting their leadership style to the decision situation as well as managing people and motivating others (rather than managing customers and financial resources) highest among all 19 components with respect to learning transfer from their EMD program.

Participant-Colleague Learning Transfer Rating Differences. Differences between participants and colleagues in perceived (participant) EMD learning transfer as a whole and along all the dimensions and components included in this study are presented in Table 2. Regarding overall EMD learning transfer, the differences between participants and subordinates, participants and peers, and participants and all colleagues are statistically significant, and the difference between participants and superiors borders on statistical significance. This same pattern of significant participant-colleague differences in perceived EMD learning transfer was found for the management, organization, and leadership dimensions, but not for the results dimension in which only one of the four differences (specifically, between participants and subordinates) bordered on statistical significance. Among the 19 components of the four dimensions included in Table 2, 14 show that subordinates, peers, superiors, and all colleagues' perceive lower participant EMD learning transfer than do participants themselves, with several of these differences being statistically significant. For four other components, some colleagues perceived higher participant EMD learning transfer and other colleagues perceived lower participant EMD learning transfer, with two of the "positive" differences (each between superiors and participants) being statistically significant. For the remaining learning transfer component, namely, business unit performance, subordinates, peers, superiors,

and all colleagues perceived participants' EMD learning transfer to be higher than did the participants themselves, but these differences were not statistically significant.

Content analysis of colleagues' qualitative explanations of their ratings of participants' EMD learning transfer indicated that superiors believed that such transfer would increase in future and thus yield stronger long-term than short-term (that is, one year) "results;" peers believed that participants had become a stronger "presence" in their organizations as a result of their EMD experience; and subordinates believed that participants tended to apply their EMD learning more in a downward than an upward direction, that is, more to activities affecting subordinates than peers and superiors. All three colleague groups, however, perceived participants to have undergone notable personal and professional changes as a result of their EMD program experience, as examples, being "more balanced," "more focused," "more decisive," and "less concerned with extraneous details." Apparently based on these perceived changes, peers who had not themselves participated in an EMD program often expressed a desire for such participation.

Correlates of Participants' Perceived Learning Transfer. What factors, if any, "explain" participants' perceived EMD learning transfer to their jobs and organizations? To answer this question, an EMD program learning transfer equation was specified and tested using ordered Probit regression analysis. The independent variables in this equation represent participant and organizational demography, respectively; the former includes participant age, years of work experience, number of companies (organizations) worked for, educational level, functional specialty, and gender; the latter includes

organization age, size, growth, number of management levels, and industry category. The results from estimating this regression equation are shown in Table 3.⁸

Among participant demographic characteristics, years of work experience and number of companies (organizations) worked for are significantly positively associated with EMD program learning transfer rating. Participants with specialties in marketing and operations rate their EMD program learning transfer significantly higher than participants with other functional specialties, while participants with specialties in engineering and finance rate their EMD program learning transfer significantly lower than participants with other functional specialties. Female participants rate their EMD program learning transfer significantly higher than male participants. Among organizational demographic characteristics, size and number of management levels are significantly negatively associated with participants' EMD program learning transfer rating, while (revenue) growth is significantly positively associated with participants' EMD program learning transfer rating. By industry, participants with companies in consumer products and computing rate their EMD program learning transfer significantly higher than participants with companies in other industries. By contrast, participants with companies in transportation and finance, insurance, and real estate rate their EMD program learning transfer significantly lower than participants with companies in other industries.

EMD and Business Results

Beyond (perceived) EMD learning transfer by program participants to their jobs and organizations are the effects, if any, of EMD on business results. As noted earlier, questions about such results have often been asked but answers to the questions have

proved elusive. With this in mind, the next step in the present study is to estimate the effects of EMD scope, activity, and expenditure on business unit financial performance. For this purpose, the business units represented by former participants in the UCLA Anderson School Executive Program constitute the level or unit of analysis. For each such unit, the chief financial or accounting officer provided the relevant financial performance data, and the chief human resource or organizational development officer provided the relevant EMD scope, activity, and expenditure data.⁹

The main dependent variables for this portion of the analysis were changes during the 1995-2000 period in return on capital employed (ROCE), revenue growth (REVGROW), and revenue per employee (REVEMP). The main independent variables were changes during the 1995-2000 period in business unit EMD scope, activity, and expenditure. The EMD scope variable was operationalized as changes in the cumulative proportion of the business unit's executives and managers who participated in internal and external EMD programs (EMDPART). The EMD activity variable was operationalized as changes in the cumulative proportion of the business unit's executives and managers participating in EMD programs who attended externally supplied open-enrollment EMD programs (EMDEXT). The EMD expenditure variable was operationalized as changes in the business unit's per capita expenditure on EMD for its executives and managers (EMDEXP). Industry (of the business unit) was included as a control variable in this analysis as were changes during the 1995-2000 period in business unit size, capital/labor ratio, total full-time equivalent employment, ratio of management to non-management employees, research and development expenditure, concentration ratio, and parent company risk.¹⁰

The business unit financial performance variables were then separately regressed onto the EMD and control variables, with a stepwise procedure used for the EMD variables. In essence, these regression estimates are intended to “explain” the variance in (changes in) business unit financial performance attributable to (changes in) EMD scope, activity and expenditures, controlling for (changes in) other factors influencing financial performance. Stated in hypothesis form:

H1: Changes in EMD scope, activity, and expenditure will be positively associated with changes in business unit financial performance.

The main findings from these regression analyses are shown in Table 4.¹¹ When considered separately, each of the EMD variables, that is, EMDPART, EMDEXT, and EMDEXP, are significantly positively associated with the change between 1995 and 2000 in business unit ROCE (columns 1-3 of Table 4). When all of these variables are included in the regression estimate (column 4), EMDPART and EMDEXP but not EMDEXT continue to be significantly positively associated with the change in business unit ROCE. The same pattern of results occurs in estimating the REVGROW and REVEMP equations. That is, when entered into separate regression equations, each of the three EMD variables are significantly positively associated with changes in business unit REVGROW (columns 5-7) and REVEMP (columns 9-11); when taken together, EMDPART and EMDEXP but not EMDEXT continue to be significantly positively associated with changes in business unit REVGROW (column 8) and REVEMP (column 12), respectively. Hence, these findings provide partial support for hypothesis #1.

Among the control variables, the significant positive coefficients on the R & D variable in the ROCE, REVGROW, and REVEMP equations are notable because of their

potential implications for the effects of EMD on business unit financial performance. That is, EMD expenditures can be considered a type of R & D, but organizationally focused rather than product (or service) focused. EMD expenditures are intended to develop a business's high-level human capital, while conventional R & D expenditures are intended to originate and develop a business's new products and/or services. Both types of expenditures are significantly associated with improved business unit financial performance, as shown here, thereby implying that there is synergy between these two types of expenditures and that, from an accounting standpoint, such expenditures should perhaps be re-classified as investments.¹²

Perceived Learning Transfer and Business Results. As operationalized and measured in this study, EMDPART, EMDEXT, and EMDEXP are behavioral type variables. How, if at all, might perceptual type variables, specifically, the EMD learning transfer measures presented earlier, be associated with variation in business unit financial performance? To answer this question, a variable representing participants' overall EMD learning transfer rating (PLEARNTR) was entered into a modified version of the basic regression equation previously estimated. This modification, which is required because the PLEARNTR data are cross-sectional, involved limiting the business unit financial performance data (and the data for other variables) to the single point in time corresponding to one year following each participant's completion of the UCLA Anderson School Executive Program — which is also the point in time that each participant completed the survey for this study.¹³ Stated in hypothesis form:

H2: Participant perceived EMD learning transfer will be positively associated with business unit financial performance.

The main findings from estimating these (cross-sectional) regression equations are presented in Table 5.¹⁴ The coefficients on the PLEARNTR variable are positive but insignificantly associated with each of the business unit financial performance measures, both when the original EMD variables (that is, EMDPART, EMDEXT, and EMDEXP) are included in and excluded from the regression estimates. This suggests that, contrary to hypothesis #2, the extent to which participants' perceive their overall EMD learning to transfer to their jobs and organizations does not carry through to affect actual business results. To probe further in this regard, a variable representing the difference between participant and participants' colleagues' overall perceived EMD learning transfer, or LEARNTRD, was also entered into the modified regression equations. Stated in hypothesis form:

H3: Participant-colleague differences in perceived EMD learning transfer will be negatively associated with business unit financial performance.

The findings (also) reported in Table 5 indicate that, as hypothesized, this variable is negatively associated with all three business performance measures, significantly so in the cases of ROCE and REVGROW. Thus, the larger (smaller) the difference between participant and colleague ratings of participant transfer of EMD learning to his/her job and organization, the more negative (positive) the association with business results. This suggests, in turn, that participant-colleague consensus about perceived participant EMD learning transfer does carry through to positively influence business results.

Paired Comparison of EMD and Business Results. To explore further relationships between EMD and business results, a "paired-comparison" analysis of business units was

undertaken. For this purpose, an officer of the parent company of each of the 111 business units that participated in this study was contacted, asked to identify the company's other business units, and asked to identify other company and business unit officials who could provide EMD and financial performance data for each of the business units. Contacts were then made with those officials to solicit their participation in the study and to obtain the relevant data for analysis. Completion of this procedure resulted in a total of 292 business units representing 72 parent companies for this portion of the study.¹⁵

A database was then constructed consisting of financial performance and EMD change measures for each business unit, with the change period being 1997-2000.¹⁶ Both the financial performance and EMD change measures are the same as used heretofore, namely, ROCE, REVGROW, and REVEMP, and EMDPART, EMDEXT, and EMDEXP, respectively. Within each company, business units were ranked from high to low on the basis of the rate of change (between 1997 and 2000) in EMDPART, then EMDEXT, and then EMDEXP. Next, and also within each company, business units were split into two groups, "high EMD" and "low EMD," respectively, by using the median rate of change in EMDPART (and separately, EMDEXT and EMDEXP) as the decision criterion. A set of regression analyses was then performed in which each of the (change in) business unit financial performance measures was regressed onto (changes in) EMDPART, EMDEXT, and EMDEXP as well as (changes in) the control variables for the "high EMD" business units and, separately, for the "low EMD" business units. The expected different relationships between EMD and financial performance in these two sets of business units is hypothesized as follows:

H4: Changes in EMD scope, activity, and expenditure will be significantly positively associated with changes in financial performance in “high EMD” but not in “low EMD” business units.

Because the distribution of “high EMD” and “low EMD” business units varies depending on whether the sample is split in two on the basis of EMDPART, EMDEXT, or EMDEXP, separate (change in) financial performance regressions were estimated for each set (or pair) of business unit distributions. In addition, each of the three EMD variables was initially entered into separate regression equations and then into combined or “all inclusive” equations. The main findings from estimating one of these “all inclusive” regression equations for each of the financial performance variables, that is, ROCE, REVGROW, and REVEMP, in the “high EMD” and the “low EMD” business units are summarized in Table 6.¹⁷

The upper portion of the table shows that the coefficients on EMDPART and EMDEXP are significantly positively associated with changes in business unit ROCE; the coefficients on EMDPART and EMDEXT are significantly positively associated with changes in business unit REVGROW; and the coefficients on the three EMD variables are positively associated with changes in business unit REVEMP, significantly so in the case of EMDPART and of borderline significance in the case of EMDEXP. By contrast, the lower portion of the table shows that while the coefficients on EMDPART, EMDEXT, and EMDEXP all have the predicted (positive) sign, none is statistically significant. Therefore, these findings provide empirical support for hypothesis #4.

To extend this analysis, the sample of business units was winnowed further to include only the “top EMD” and “bottom EMD” business units in each company. Once

again, the distribution of business units into these two categories varies depending upon which (change in) EMD measure is used. Also as before, separate (change in) financial performance regression equations were estimated for each set (or pair) of business units, and each of the three EMD variables was initially entered into separate regression equations and then into combined "all inclusive" equations. The expected different relationships between EMD and financial performance in these pairs of business units is hypothesized as follows:

H5: Changes in EMD scope, activity, and expenditure will be significantly positively associated with changes in financial performance in "top EMD" but not in "bottom EMD" business units.

The main findings from estimating one of the "all inclusive" regression equations for each of the financial performance variables in the "top EMD" and "bottom EMD" business units are summarized in Table 7. The upper portion of the table shows that the coefficients on EMDPART, EMDEXT, and EMDEXP are all significantly positively associated with changes in ROCE; the coefficients on EMDPART and EMDEXT are significantly positively associated with changes in REVGROW; and the coefficients on EMDPART and EMDEXP are significantly positively associated with changes in REVEMP. The lower portion of the table shows that all but one of the coefficients on EMDPART, EMDEXT, and EMDEXP has the expected (positive) sign, however, none are significant. Consequently, these findings provide empirical support for hypothesis #5. More broadly and when added to the findings reported earlier in this study, the evidence from these "paired comparison" analyses supports the conclusion that EMD pays off in terms of enhancing business results.

Summary and Conclusions

Executive and management development (EMD) is a growth industry, implying that businesses (and other organizations) believe that such development pays off. One very popular way of assessing EMD is to ask participants' their opinions about the content, delivery, and other characteristics of the programs to which they have been exposed. Another very unpopular way of assessing EMD is to administer paper and pencil "tests" of program content to participants upon their completion of a program. Neither of these evaluation methods, however, is suitable for determining participants' transfer of EMD learning to their jobs and organizations or the effects of such learning transfer as well as EMD scope, activity and expenditure on business results.

The study reported in this paper is concerned with and focuses directly on the latter two EMD assessment criteria. To assess EMD learning transfer, a sample of former participants in the UCLA Anderson School Executive Program was assembled and surveyed about their perceived transfer of program learning to their jobs and organizations. While these participants perceived their overall EMD learning transfer to be relatively high, they rated their learning transfer on the dimensions of organization and business results substantially lower than on the dimensions of management and leadership. A sample of these participants' colleagues consisting of subordinates, peers, and superiors was also surveyed, however, and all three sets of colleague rated participants' overall EMD learning transfer significantly lower than did the participants themselves. Certain characteristics of the participants, such as work experience and specializations in marketing and operations, were significantly positively associated with

their overall EMD learning transfer ratings, while certain characteristics of the organizations the participants work for, such as size and number of management levels, were significantly negatively associated with participants' overall EMD learning transfer ratings.

To assess the effects of EMD on business results, a sample of the participants' business units was constructed and changes in these units' financial performance over a five-year period were regressed onto changes in EMD scope, activity, and expenditure variables as well as a vector of control variables. The results showed that changes in EMD scope (the proportion of a business unit's executives and managers who participated in EMD programs) and EMD expenditure (a business unit's per capita expenditure on EMD for its executives and managers) were significantly positively associated with changes in a business unit's return on capital employed, revenue growth, and revenue per employee. Change in EMD activity, that is, the proportion of a business unit's executives and managers participating in EMD programs that attended externally supplied open-enrollment programs, was positively but insignificantly associated with changes in a business unit's financial performance during the mid-to-late 1990s.

For this same sample of business units, participants' overall EMD learning transfer ratings were then added to the regression analyses, using cross-sectional rather than longitudinal specifications of the financial performance equations. The results showed that these ratings were positively but insignificantly associated with each of the business unit financial performance measures. When the difference between participants' and colleagues' overall EMD learning transfer ratings was added to the regressions, however, the results showed a significant negative coefficient on this variable in each of the

business unit financial performance equations. Therefore, the smaller the difference between participant and colleague ratings (perceptions) of EMD learning transfer by the participant to his/her job and organization, the more positive the effect on business results.

A second, larger sample of business units was constructed in order to perform paired-comparison analyses of the effects of changes in EMD scope, activity, and expenditure on changes in financial performance, this time over a three-year period. This sample of business units was initially split into high EMD and low EMD groupings based on the rank ordering of changes in business unit EMD scope, activity, and expenditure. Changes in business unit financial performance during 1997-2000 were then regressed onto the EMD and control variables using separate estimates for the high EMD and low EMD business units, respectively. The results showed that each of the EMD variables (including the proportion of a business unit's executives and managers participating in EMD programs that attended externally supplied open-enrollment programs) was significantly positively associated with one or more financial performance measures in the high EMD business units, but not in the low EMD business units. A similar if somewhat stronger pattern of results was found when this sample of business units was constrained to include only the top EMD and bottom EMD unit in each parent company (again, based on the rank ordering of changes in business unit EMD scope, activity, and expenditure). In this instance, the regression results showed that each of the EMD variables was significantly positively associated with two or more financial performance measures in the top EMD business units, but not in the bottom EMD business units.

Taken as a whole, these empirical findings appear to support the hypothesis that EMD pays off by leveraging business results.

Implications

It is well known that businesses vary greatly in the extent to which they invest in EMD (PriceWaterhouseCoopers, 2001). In light of this study's findings and conclusions, one might expect all businesses to embrace EMD and thereby substantially increase EMD scope, activity, and expenditure. However, companion longer-standing research showing that high involvement human resource management (HRM) practices significantly enhance business performance has not led to the wholesale adoption of such practices by business entities (Lewin, 2002). In explaining such non-adoption, HRM specialists contend that some businesses don't believe the evidence about high involvement HRM and business performance, other businesses adopt only one rather than several high involvement HRM practices, and still other businesses adopt a full set of high involvement HRM practices only to abandon them when business results are not forthcoming in the short-run (Pfeffer, 1998; Pfeffer and Viega, 1999). Thus, perhaps only one of every eight businesses uses and sustains the use of high involvement HRM.

Even if this explanation is valid with regard to HRM, it is less and perhaps not at all applicable to EMD. Because this is one of the first studies to provide empirical evidence of EMD learning transfer and effects on business results, the business community has had little in the way of a knowledge base to justify more robust EMD. As this empirical evidence becomes better known and if other studies also find significant EMD learning transfer and positive effects on business performance, this knowledge should become

more widely diffused and thus EMD more widely and deeply practiced by business enterprises.

Also of relevance in this regard is the notion that EMD can be analogized to, indeed, basically conceived of, as a type of R & D. Fundamentally, EMD R & D aims to improve external and internal organizational alignment, or fit, which should in turn lead to more effective formulation and implementation of business strategy and a greater likelihood of achieving strategic business objectives. Traditional R & D focuses on product and service innovations and improvements, yet ultimately is also intended to enhance business performance. Therefore, this study and others to follow may help to shift the conceptualization, meaning, and even the accounting treatment of R & D in business enterprises.

Finally, there are important differences between a large-scale, multi-organization assessment of EMD of the type presented in this paper, and the assessment of EMD in a single organization. Much of this study has analyzed the variance in financial performance among relatively large samples of business units in order to determine how much of that variance can be attributed to EMD scope, activity, and expenditure. In a single business, the assessment challenge is to determine how changes and innovations in EMD affect changes in business performance — an assessment that requires a more experimental, “before and after,” control group type research design. The fact that no such design has been successfully applied to measuring the effects of EMD within a single organization underscores the difficulty of this assessment challenge. Nevertheless, the present study also analyzed learning transfer among a sample of EMD participants and their colleagues, and found that the participant-colleague differences in perceived

(participant) overall EMD learning transfer were significantly negatively associated with business unit financial performance. The research design and methodology used for this purpose appear readily transferable to and internally replicable by individual organizations interested in strengthening their assessments of EMD.

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Table 1

Perceived Learning Transfer Among Former Executive
Program Participants and Participants'
Subordinates, Peers and Superiors
(Standard deviations in parentheses)

Dimension	Participants (1)	Subordinates (2)	Peers (3)	Superiors (4)	All Colleagues (5)
Overall	3.75 (1.15)	3.09 (0.87)	3.27 (0.73)	3.45 (0.64)	3.22 (0.79)
Management	3.98 (0.82)	3.27 (0.75)	3.45 (0.66)	3.67 (0.56)	3.43 (0.68)
Customers	4.01 (0.69)	3.64 (0.64)	3.82 (0.62)	3.98 (0.43)	3.80 (0.58)
Financial Resources	3.94 (0.74)	3.45 (0.59)	3.69 (0.54)	3.89 (0.41)	3.69 (0.53)
Technology	2.87 (1.21)	2.82 (1.04)	3.14 (0.84)	3.43 (0.67)	3.08 (0.85)
Operations	3.58 (0.90)	3.34 (0.81)	3.43 (0.64)	3.66 (0.60)	3.41 (0.71)
People	4.15 (0.64)	3.10 (0.55)	3.17 (0.51)	3.39 (0.52)	3.16 (0.53)
Organization	3.53 (1.02)	2.88 (0.80)	3.11 (0.72)	3.23 (0.61)	3.09 (0.74)
Critical Tasks	3.73 (0.81)	2.94 (0.65)	3.37 (0.58)	3.36 (0.49)	3.31 (0.60)
Org. Structure	3.78 (0.96)	3.08 (0.77)	3.45 (0.68)	3.49 (0.55)	3.43 (0.70)
Info. For DM	3.85 (1.09)	2.68 (0.96)	2.86 (0.85)	3.18 (0.76)	2.85 (0.89)
Rewards	3.91 (0.91)	3.03 (0.75)	3.21 (0.66)	3.11 (0.58)	3.13 (0.69)
People	3.28 (0.98)	3.08 (0.80)	3.14 (0.71)	3.14 (0.60)	3.10 (0.73)
Culture	2.59 (1.21)	2.47 (1.01)	2.73 (0.91)	3.10 (0.80)	2.72 (0.92)
Leadership	3.89 (1.04)	3.25 (0.91)	3.36 (0.83)	3.73 (0.72)	3.40 (0.84)
Motivating Others	4.13 (0.99)	3.43 (0.85)	3.53 (0.73)	3.95 (0.62)	3.61 (0.76)
Leadership Adjust.	4.24 (1.07)	3.52 (0.96)	3.68 (0.87)	4.01 (0.74)	3.71 (0.85)
Delegating Res.	3.97 (0.96)	3.04 (0.82)	3.16 (0.69)	3.56 (0.56)	3.18 (0.73)
Developing Others	3.24 (1.11)	3.01 (1.03)	3.07 (0.90)	3.39 (0.78)	3.10 (0.92)
Results	3.20 (0.87)	2.95 (0.69)	3.08 (0.58)	3.17 (0.42)	3.05 (0.61)
Individual Performance	3.66 (0.86)	3.25 (0.75)	3.50 (0.66)	3.63 (0.57)	3.48 (0.68)
Colleague Performance	3.12 (0.81)	2.86 (0.66)	2.86 (0.54)	3.10 (0.44)	2.92 (0.57)
Team Performance	3.41 (0.94)	2.80 (0.83)	3.19 (0.73)	3.31 (0.58)	3.04 (0.74)
Bus. Unit Performance	2.61 (0.88)	2.79 (0.71)	2.77 (0.62)	2.64 (0.51)	2.75 (0.64)

Table 2

Differences Between Former Executive Education Program Participants and Subordinates-Peers-Superiors in Perceived Learning Transfer

Dimension	Subordinates	Peers	Superiors	All Colleagues
Overall	-0.66***	-0.48**	-0.30*	-0.43*
Management	-0.71***	-0.53**	-0.31*	-0.55**
Customers	-0.37**	-0.19	-0.03	-0.21
Financial Resources	-0.49**	-0.25	-0.15	-0.25*
Technology	-0.05	+0.27*	+0.56**	+0.21
Operations	-0.24*	-0.15	+0.08	-0.17
People	-1.05***	-0.98***	-0.76***	-0.99***
Organization	-0.64**	-0.41**	-0.29*	-0.43**
Critical Tasks	-0.79***	-0.36**	-0.37**	-0.42**
Org. Structure	-0.70***	-0.33*	-0.29*	-0.35*
Info. For DM	-1.19***	-0.99***	-0.67**	-1.00***
Rewards	-0.88***	-0.70**	-0.80**	-0.78**
People	-0.20	-0.14	-0.14	-0.18
Culture	-0.08	+0.14	+0.51**	+0.13
Leadership	-0.64**	-0.53**	-0.14	-0.49**
Motivating Others	-0.70**	-0.60**	-0.18	-0.52**
Leadership Adjust.	-0.82***	-0.56**	-0.23	-0.53**
Delegating Res.	-0.93***	-0.81***	-0.41*	-0.82***
Developing Others	-0.23	-0.17	+0.15	-0.14
Results	-0.25*	-0.12	-0.03	-0.15
Individual Performance	-0.41**	-0.16	-0.03	-0.18
Colleague Performance	-0.26*	-0.26*	-0.02	-0.20
Team Performance	-0.61**	-0.22	-0.10	-0.37*
Bus. Unit Performance	+0.18	+0.16	+0.03	+0.14

* Significant at $p < .10$; ** Significant at $p < .05$; *** Significant at $p < .01$.

Table 3

Determinants of Participants' Rating
of EMD Program Learning Transfer
(Ordered Probit Regression Coefficients)

Independent Variable	Parameter Estimate
Constant	2.10**
Participant:	
Age (in years)	0.18
Work Experience (in years)	0.34*
Companies Worked For (number)	0.38**
Education (schooling level)	-0.11
Functional Specialty (7 categories) ¹	
Marketing	0.32*
Engineering	-0.30*
Operations	0.29*
Finance	-0.31*
Gender (male =0, female = 1)	0.27*
Organization:	
Age (in years since founding)	0.07
Size (in assets)	-0.42**
Growth (3-year sales revenue)	0.35*
Management Levels (number)	-0.31*
Industry (9 categories) ²	
Finance, Insurance & Real Estate	-0.37*
Consumer Products	0.33*
Computing and Related	0.31*
Transportation	-0.30*
N =	132
R ²	.31
F-Test	28.4*

* Significant at $p < .05$; ** Significant at $p < .01$.

¹ Significant coefficients only; reference category is accounting.

² Significant coefficients only; reference category is health care.

TABLE 4

OLS Regression Coefficients On Changes in
Business Unit Financial Performance, 1995-20000
(Standard Errors in Parentheses)

Independent Variable	Dependent Variable:							
	ROCE (1)	ROCE (2)	ROCE (3)	ROCE (4)	REV- GROW (5)	REV- GROW (6)	REV- GROW (7)	REV- GROW (8)
Constant	3.31* (1.48)	3.27* (1.41)	3.22* (1.40)	3.05* (1.36)	2.82* (1.37)	2.76* (1.33)	2.64* (1.28)	2.57* (1.23)
EMDPART	1.79* (0.86)			1.23* (0.59)	1.63* (0.78)			1.47* (0.70)
EMDEXT		1.54* (0.71)		1.02 (0.61)		1.39* (0.66)		0.96 (0.55)
EMDEXP			1.68* (0.79)	1.34* (0.63)			1.48* (0.69)	1.19* (0.57)
Size	-1.29* (-0.57)	-1.31* (-0.60)	-1.35* (-0.63)	-1.47* (-0.68)	0.68 (0.37)	0.70 (0.39)	0.73 (0.40)	0.78 (0.43)
C/L Ratio	1.33* (0.63)	1.37* (0.61)	1.40* (0.64)	1.44* (0.67)	1.36* (0.58)	1.38* (0.59)	1.41* (0.63)	1.46* (0.67)
Total FTE	-0.84 (0.59)	-0.87 (0.61)	-0.89 (0.62)	-0.92 (0.65)	1.43* (0.67)	1.45* (0.68)	1.47* (0.69)	1.51* (0.71)
Mgt./Emp.	1.26* (0.58)	1.28* (0.59)	1.30* (0.60)	1.33* (0.61)	-0.56 (-0.36)	-0.58 (-0.37)	-0.60 (-0.39)	-0.64 (-0.41)
R & D Ex.	1.34* (0.62)	1.37* (0.64)	1.39* (0.66)	1.42* (0.68)	1.33* (0.61)	1.35* (0.63)	1.38* (0.67)	1.41* (0.69)
Concen.	1.67* (0.65)	1.69* (0.66)	1.71* (0.67)	1.75* (0.75)	2.03** (0.78)	2.05** (0.79)	2.08** (0.81)	2.14** (0.83)
Risk	-1.85** (-0.55)	-1.87** (-0.57)	-1.90** (-0.59)	-1.93** (-0.61)	-2.11** (-0.62)	-2.15** (-0.64)	-2.17** (-0.65)	-2.22** (-0.67)
Industry ¹	2.33** (0.74)	2.37** (0.76)	2.41** (0.79)	2.45** (0.82)	2.47** (0.84)	2.49** (0.86)	2.53** (0.88)	2.59** (0.90)
N =	111	111	111	111	111	111	111	111
R ²	0.32	0.33	0.33	0.35	0.27	0.28	0.28	0.29

Table 4 (Continued)

Independent Variable	Dependent Variable:			
	REV-EMP (9)	REV-EMP (10)	REV-EMP (11)	REV-EMP (12)
Constant	2.79* (1.33)	2.76* (1.31)	2.73* (1.30)	2.64* (1.26)
EMDPART	1.42* (0.66)			1.26* (0.56)
EMDEXT		1.27* (0.61)		0.97 (0.53)
EMDEXP			1.48* (0.69)	1.14* (0.51)
Size	-0.65 (-0.44)	-0.67 (-0.45)	-0.70 (-0.47)	-0.74 (-0.49)
C/L Ratio	0.72 (0.43)	0.75 (0.44)	0.78 (0.46)	0.81 (0.47)
Total FTE	0.58 (0.38)	0.60 (0.39)	0.62 (0.40)	0.64 (0.42)
Mgt./Emp.	-0.45 (0.32)	-0.47 (0.34)	-0.50 (0.36)	-0.53 (0.39)
R & D Ex.	1.46* (0.67)	1.48* (0.68)	1.50* (0.69)	1.53* (0.71)
Concen.	1.71* (0.77)	1.74* (0.79)	1.77* (0.80)	1.79* (0.82)
Risk	-1.32* (-0.62)	-1.34* (-0.63)	-1.37* (-0.64)	-1.39* (-0.66)
Industry ¹	1.51* (0.68)	1.53* (0.70)	1.56* (0.72)	1.59* (0.74)
N =	111	111	111	111
R ²	0.24	0.25	0.26	0.27

* Significant at $p < .05$; ** Significant at $p < .01$.

¹ Coefficients are for "service" with "manufacturing" constituting the reference industry category.

TABLE 5

OLS Regression Coefficients On
Business Unit Financial Performance
(Standard Errors in Parentheses)

Independent Variable	Dependent Variable:								
	ROCE (1)	ROCE (2)	ROCE (3)	REV- GROW (4)	REV- GROW (5)	REV- GROW (6)	REV- EMP (7)	REV- EMP (8)	REV- EMP (9)
Constant	3.34* (1.46)	3.21*	3.01* (1.40)	2.86* (1.38)	2.73* (1.32)	2.58* (1.25)	2.84* (1.31)	2.75* (1.28)	2.60* (1.27)
EMDPART			1.21* (0.55)			1.45* (0.67)			1.23* (0.54)
EMDEXT			0.99 (0.62)			0.95 (0.61)			0.94 (0.59)
EMDEXP			1.32* (0.59)			1.16* (0.52)			1.11* (0.49)
PLEARNTR	0.46 (0.29)		0.39 (0.25)	0.42 (0.27)		0.34 (0.23)	0.44 (0.28)		0.40 (0.26)
LEARNTRD		-1.14* (-0.54)	-1.11* (-0.52)		-1.23* (-0.58)	-1.15* (-0.54)		-0.93 (-0.51)	-0.90 (-0.49)
N =	111	111	111	111	111	111	111	111	111
R ²	0.32	0.33	0.35	0.27	0.28	0.29	0.24	0.26	0.27

* Significant at $p < .05$.

TABLE 6

OLS Regression Coefficients On Changes in
Business Unit Financial Performance, 1997-2000,
by High EMD and Low EMD
(Standard Errors in Parentheses)

Independent Variable	Dependent Variable:		
	ROCE	REVGROW	REVEMP
	(1)	(2)	(3)
<u>High EMD Business Units</u>			
Constant	3.42*** (1.34)	3.35*** (1.31)	3.17*** (1.24)
EMDPART	1.18** (0.56)	1.15** (0.54)	1.13** (0.52)
EMDEXT	0.92 (0.51)	1.10** (0.54)	0.90 (0.49)
EMDEXP	1.20** (0.56)	0.94 (0.50)	1.08* (0.63)
N =	146	146	146
R ²	0.33	0.32	0.29
<u>Low EMD Business Units</u>			
Constant	3.48*** (1.39)	3.38*** (1.35)	3.26*** (1.27)
EMDPART	0.82 (0.51)	0.79 (0.49)	0.74 (0.46)
EMDEXT	0.69 (0.44)	0.66 (0.42)	0.62 (0.39)
EMDEXP	0.76 (0.46)	0.81 (0.48)	0.74 (0.45)
N =	146	146	146
R ²	0.31	0.30	0.28

* Significant at p = < .10; ** Significant at p = < .05; *** Significant at p = < .01.

TABLE 7

OLS Regression Coefficients On Changes in
Business Unit Financial Performance, 1997-2000,
by Top EMD and Bottom EMD
(Standard Errors in Parentheses)

Independent Variable	Dependent Variable:		
	ROCE	REVGROW	REVEMP
	(1)	(2)	(3)
<u>Top EMD Business Units</u>			
Constant	3.54*** (1.37)	3.47*** (1.34)	3.22*** (1.26)
EMDPART	1.14** (0.53)	1.11** (0.51)	1.10** (0.50)
EMDEXT	1.08** (0.53)	1.07** (0.52)	0.90 (0.49)
EMDEXP	1.18** (0.55)	0.91 (0.48)	1.15** (0.53)
N =	72	72	72
R ²	0.31	0.30	0.29
<u>Bottom EMD Business Units</u>			
Constant	3.59*** (1.41)	3.56*** (1.39)	3.36*** (1.31)
EMDPART	0.77 (0.42)	0.74 (0.40)	0.63 (0.37)
EMDEXT	0.36 (0.22)	0.29 (0.19)	-0.23 (-0.14)
EMDEXP	0.65 (0.38)	0.59 (0.35)	0.53 (0.32)
N =	72	72	72
R ²	0.29	0.28	0.27

** Significant at $p < .05$; *** Significant at $p < .01$.

Notes

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² This literature does identify employee training as one among several "high performance" or "high involvement" HR practices. However, the discussion of this practice is almost exclusively framed in terms of skill training for employees rather than developmental programs for managers and executives. Note, too, that Lewin (2002, 2001) has shown that certain "low involvement" HR practices are significantly associated with improved business performance.

³ It is also interesting, and perhaps notable, that EMD program providers do not conduct conventional "paper and pencil" tests to determine participants' learning from EMD programs.

⁴ See, as examples, Tushman and O'Reilly (1997), Nadler and Tushman (1988), and Hambrick and Cannella (1989).

⁵ See, as examples, Vroom (1964), Vroom & Jago (1988), and Goleman (2000).

⁶ Copies of the full surveys used for this research, which are not included here to conserve space, are available from the author, upon request.

⁷ Contrary to participants, subordinates, and peers, superiors rated the learning transfer dimension leadership highest and management next highest. However, there were no statistically significant differences in ratings of these two learning transfer dimensions among any of the four groups compared here.

⁸ Two forms of this equation were specified and tested, one in which participants' rating of their overall EMD learning transfer served as the dependent variable, the other in which the overall learning transfer rating and ratings of the four main learning transfer dimensions were summed to form the dependent variable. Because the findings from testing these two versions of the dependent variable did not differ significantly, only the first set of findings is reported in Table 3.

⁹ The sample size for this analysis is 111 business units, compared to 132 individuals who constituted the sample for the earlier "participant" analysis. The difference is due to (1) 9 business units that chose not participate in this portion of the study, and (2) 12 business units that each had two individuals in the participant sample.

¹⁰ The risk variable represents the systematic component in the variability of a business unit's parent company's stock price and was calculated using the CRSP database and a 365-day period. This type of variable is commonly used when analyzing the variation in company financial performance, though typically for companies as a whole rather than their component business units (for which separate stock prices rarely exist). See for example, Huselid (1995).

¹¹ Additional regression analyses were conducted to test for "fixed effects," that is, whether other factors correlated with EMDPART, EMDEXT, and EMDEXP influenced the regression estimates. Those tests did not yield significantly different findings and are therefore not reported here.

¹² Interaction analysis can be used to "test" for potential synergy between EMD expenditure and R & expenditure in terms of their combined effects on business unit financial performance. Such analysis is also suitable for identifying the combined effects of EMDPART, EMDEXT, and/or EMDEXP on business unit financial performance. A comprehensive set of interaction analyses is being conducted as part of the next phase of the ongoing study reported in this paper.

¹³ For the 12 business units that each had two individuals in the "participant" sample, both the business unit financial performance data (for the year following each participant's completion of the EMD program) and the participants' overall EMD learning transfer ratings (based on survey responses provided by the participants one year after their completion of the EMD program) were averaged over the two years in question.

¹⁴ These regression analyses also included the control variables used previously and listed in Table 4. For ease of presentation and to conserve space, however, the coefficients on the control variables are not included in Table 5. The complete set of regression findings is available from the author, on request.

¹⁵ To be included in this portion of the study, a company had to have a minimum of two business units. Among these 72 companies, the mean number of business units was 4.0 (with a standard deviation of 0.6), with a range from two to twelve business units.

¹⁶ Ideally, the financial performance and EMD data for this sample of business units would have covered the same period, namely, 1995-2000, as for the earlier sample of business units. Because the pre-1997 EMD data were much poorer and episodic for the second than the first sample of business units, however, the analysis presented in this section is limited to 1997-2000.

¹⁷ The coefficients on the control variables in these regression estimates as well as those shown in Table 7 below are not included here but are available from the author, on request.