

Career management in information technology: a case study

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Abstract

Examines career management, development and performance as proposed in the career management research by Noe, which was defined for studying individual career management. Reviews the organizational career management program and the outcomes of organizational development and performance. Applies the Noe model to measure outcomes and determine if there is a direct relationship between career management programs, performance and development. The study involved three different organizations in the IT sector and HRPs as the respondents. A questionnaire was developed using Burack's career management audit, and selected measures from various sources for development and performance. The results do not prove that the relationships exist. However, recommendations for future study involve performance as a precursor to career management and development. Recommendations for organizations include a review of career paths, development moves, retirement planning, and a research oriented human resources database.

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Introduction: corporate growth strategies as catalysts of change

Most of the corporate growth strategies of the 1980s and 1990s have involved mergers or acquisitions. On paper, these plans define product, market and manufacturing synergies that will facilitate long-term growth for the organization. Unfortunately, these strategies have failed to recognize the human element. This oversight may be one of the main reasons why newly merged companies have failed to achieve growth objectives as planned. The merger represents a major change in the organization and it needs to be planned, managed, executed and communicated.

Traditionally, employees have participated in career management programs only after restructuring or out-placement. The concept of career management is not new, but a change in the timing and application should be considered. The anticipated outcomes of this change are to:

- focus the individual on career planning from the start and to update the plan throughout individual and company changes;
- develop flexibility for the employee and for the company thereby facilitating change;
- encourage and support employee development; and
- enhance organizational performance.

This case study defines career planning and management within the literature (Hall *et al.*, 1986) and compares it to the type of career management programs currently in use in today's marketplace. This study also illustrates the Noe (1996) career management model and employs a modified version of this model to explore the relationships between career management, organizational

development and performance. It is anticipated that the results will highlight how and if career management programs are implemented, and if there is a measurable impact on performance and development.

Review of the literature

Organizational change is one of the key reasons for supporting a career management program. While there are a limited number of empirical studies, the media reports certainly indicate that career management is fast becoming a critical factor. The Noe (1996) career management model is introduced to define the relationships surrounding career management; and career planning and management is defined by Hall *et al.* (1986). While career management is primarily the responsibility of each individual employee, it is the human resource professional that will define and implement career management programs at the organizational level.

Organizational change

The nature of the change in relationship between the employer and employee attributed to downsizing, restructuring, mergers and acquisitions, is that there is no longer a "job for life" situation available. As an alternative to the "job for life" commitment, the employer prefers to provide training, flexible pay scales and to re-deploy skilled employees when restructuring takes place (Bernstein, 1998). The positive side to this scenario is that the employer is realizing the value and the skills of the employee and wants to retain them; however, the authors believe that the missing link is the input of the employee. Cisco Systems Inc. believes in retaining the people in a newly acquired

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organization (Byrne, 1998). The CEO of Cisco, John T. Chambers, states that:

... most people forget that in a high-tech acquisition, you really are acquiring the people.

In the past six years, Cisco has acquired 51 companies. According to company reports, Cisco measures the success of the acquisition by the retention of the employees. The current turnover among acquired employees is below that of the company's overall turnover rate.

According to Koonce (1995), in today's workplace environment the employee can no longer depend on his employer to plan and develop his career. He reasons that:

... the organization of today is often decentralized, in a continuous state of change, and is a learning environment, therefore the individual must be responsible to maintain and upgrade an inventory of marketable skills. The first step is to develop the career plan based on interests, abilities, and passions (Koonce, 1995).

The next step is to streamline the career plan with the career management program of the corporation. The strength of this plan can be measured for the individual and the organization by looking at the outcomes.

Career development, planning and management

According to Robbins (1993):

... career development is a means by which an organization can sustain or increase its employees' current productivity, while at the same time preparing them for a changing world.

This definition implies that career development is the responsibility of the organization; however, Leibowitz *et al.* (1986) insist that a:

... career development system is an organized, formalized, planned effort to achieve a balance between the individual's career needs and the organization's workforce requirements.

Tables I and II provide a simplified overview of requisite activities for career planning and career management programs (adapted from Hall *et al.*, 1986). The tables clearly illustrate the roles and relationships between the employee and the employer. The career planning table (i.e. Table I) is focused on activities for the employee; this is because career planning must begin at the individual level, conversely the career management table (i.e. Table II) has more organizational activities and this indicates the greater role of the organization in the overall management of the program.

Career management relative to employee development and performance

According to Noe (1996) at the time of his study:

... no empirical research has investigated the relationship between the career management process, developmental behavior, and job performance.

In Noe's study of 72 employees from a state agency, the employees completed two surveys at six-month intervals. The surveys contained questions that defined personal characteristics, use of career strategies, career exploration, career goal focus, distance from career goal, willingness to participate in development activities, and perceptions regarding management support for development. The results of this study indicated a voluntary increase in development activities and exploratory behavior, with age, position, and manager's support for development as significant with respect to career management process (Noe, 1996).

The Noe (1996) model of the relationships between career management, employee development, and employee performance is given in Figure 1.

While the results of this study did not provide conclusive evidence for the model, Noe (1996) recommended that:

... to facilitate development behavior organizations might best use their resources to train managers in skills needed to support employee development (advising, referral, and feedback skills) rather than purchasing or developing career management programs that focus on career exploration and career strategies (Noe, 1996).

Noe also noted that while his study did not prove the link between exploratory behavior and development, future studies should evaluate development outcomes such as course attendance and compare it to exploratory behavior and career strategies.

Gratton *et al.* (1989) studied seven companies in the UK for five years. One of the initiatives of their research was to understand and model how business strategies are translated through human resource strategies and people processes into individual and organizational performance. From the resulting data, Gratton *et al.* (1989) noted that:

... in no case did human resource consideration take precedence over business strategy.

They recommended:

... a key role of the HR practitioner is to focus the organization on the longer-term and to challenge the predominant short-term thinking.

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Table I
Summary of career planning activities

Employee's responsibilities	Self-assess abilities, interests and values Analyze career options Decide on development objectives and needs Communicate development preferences to manager Map out acceptable action plans with manager Pursue agreed-upon action plan
Manager's responsibilities	Act as a catalyst; sensitize the employee to the development planning process Assess realism of employee's expressed objectives and perceived development needs Counsel employee and develop plan mutually Follow-up and update employee's plans as appropriate
Organization's responsibilities	Provide career planning model, resources, counseling, and information Provide training in career development to managers and employees and career counseling to managers Provide skills training programs and on-the-job development experience opportunities

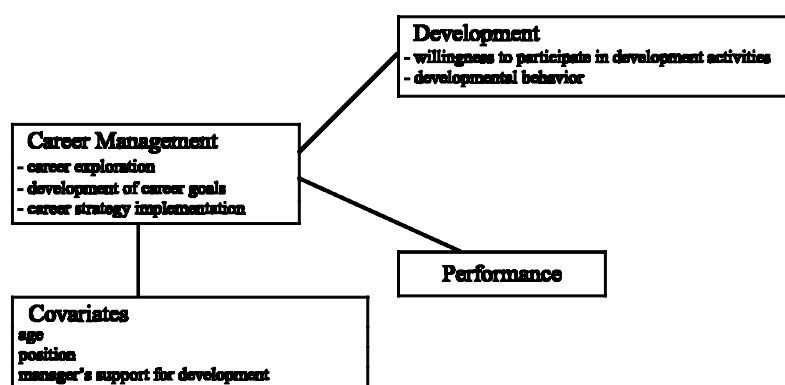
Source: Adapted from Hall *et al.*, 1986

Table II
Career management activities

Employee's responsibilities	Provide accurate information to management regarding: skills, work experience, interests and career aspirations
Manager's responsibilities	Validate information provided by employees Provide information about vacant job positions Use all information provided by the process to identify all viable candidates, and make a selection and identify career development opportunities for employees
Organization's responsibilities	Provide information system and process to accommodate management's decision-making needs Organize and update all information Ensure effective use of information

Source: adapted from Hall *et al.*, 1986

Figure 1
The Noe model



Source: Noe (1996)

Age/life-stage relative to career management

Herriot *et al.* (1993) evaluated the responses of 753 managers to determine if the variables: the number of jobs held, the number of functions, years of service in the current

organization, the number of organizations worked for, and age were predictors for the outcome variables: managerial level, salary and timetable in career path. One of the most notable findings was that age was a significant predictor for the outcome variables: managerial level, salary and timetable in career path. And Herriot *et al.* (1993) point out that the structure of the organization is also important for determining career outcomes because it relates to the amount of opportunity for mobility within the organization both in job title and function.

Ornstein *et al.* (1989) compared Levinson's *et al.* (1978) classic life stage model versus Super's (1957) classic career stage model, primarily because, as they point out, the Levinson model focused on chronological age delimiters while Super's model considered the career stage of the individual. One of the findings consistent with other studies was that the first or early career-stage category was significantly different from all other categories.

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This study suggested that managers and human resource professionals might want to target their career programs toward those employees in their early career stages. Because there is greater similarity in responses of these people (Ornstein *et al.*, 1989).

Career stage relative to career management

Organizational success can also be measured by turnover, absenteeism and performance. Cohen's (1991) meta-analysis of 41 samples proposed that there is a relationship between organizational commitment and career stage that in turn indicates: performance, absenteeism and turnover.

Career stage was defined in two ways: age and tenure.

The findings of this study demonstrate that the relationships between commitment and outcomes vary not only across career stages but also that different outcomes are affected in different ways across career stages. It appears that turnover and turnover-intentions are affected by organizational commitment more strongly in the early career stage than in the mid and late-career stages, and that performance and absenteeism are affected most in the late career stage. From the point of view of career planning, it seems that the organization may benefit from increasing commitment across all career stages (Cohen, 1991).

Development as an outcome of career management

Birdi *et al.* (1997) studied participation in development activity in a sample of manufacturing employees. Their work focused on two key questions:

- 1 What variables facilitate or discourage participation in different kinds of development activities?
- 2 How effective are different development activities in both organizational and individual terms?

The results indicated that education level was a significant predictor for: work-based development activities; voluntary job-related learning on the employee's own time; and career planning activities. Furthermore, learning motivation and management support were significant predictors for career planning activities.

Graddick (1988) describes critical transition points in a career cycle that become opportunities for both the employee and the organization to revisit the company philosophy of employee development.

Performance as an outcome of career management

Performance has been measured in many different ways in an organization. For example, it has been reviewed at the individual level in the form of productivity or output, and at the shareholder and management level in the forms of revenues and earnings. But what is significant about performance is the presence or absence of monitoring and the effect this has on performance. Larson and Callahan (1990) evaluated the performance of the individual's quality and quantity of output, the hypotheses held that performance of a task would improve significantly when monitored and would improve even more significantly when the monitoring included feedback on the task. The results of this study supported these hypotheses. Given the findings of Larson and Callahan (1990), it is possible to extend their hypotheses to the benefits of a career management program (a form of monitoring and feedback) for both the employee and the company. The presence of monitoring for the employee reinforces the belief that the task or function is important.

Downsizing has been blamed for having tremendous negative effects on the employee population, but the lack of organizational planning is the real source for all the problems (Nelson, 1997). Research on the process of downsizing has been conducted dealing with successes and failures (Appelbaum *et al.*, 1999a), impact of self-managed teams (Appelbaum *et al.*, 1999b), convergence-processes-outcomes (Appelbaum *et al.*, 1999c), measuring the cost of failures (Appelbaum *et al.*, 1999d), strategic downsizing (Appelbaum *et al.*, 1999e), and the realistic downsizing preview that is a strategy in the prevention of survivor syndrome (Appelbaum and Donia, 2000).

Bassi and Van Buren (1997) provide some insight into the negative results of downsizing and the opportunities for high performance work systems to reduce the need for downsizing. First they point out that downsizing can take two different forms, namely eliminating jobs or reducing the workforce. A comparison of the un-downsized companies versus the downsized companies indicates that the latter reported lower company performance, quality of products and services, quality of work-life and employee satisfaction. The conclusion is that downsizing does not achieve the fiscal goals that were originally intended. However, the authors propose that the fiscal goals can be achieved through the implementation of high performance work systems (HPWS). The basic outline of a

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HPWS includes strategic alignment, goal alignment, and internal alignment. The focus of the HPWS is to optimize individual performance and therefore the corporate performance. While Bassi and Van Buren (1997) do not specifically mention career management, only performance management practices, it seems logical to conclude that the practices support the concept that career management is positively related to increased employee development and overall performance.

The role of human resource professionals

One need only open any newspaper, journal, or company Web page to realize that the bulk of career management issues and solutions rest with the department of human resources (HR).

The growing awareness that people can give a firm its leading edge in the marketplace has led firms to reposition corporate human resource departments as strategic arms of the business, rather than being reactive, administrative, paper-intensive functions.

The new challenge to the HR professional is to identify developmental strategies which inspire commitment to the firm's mission and values, are adaptive to change, and result in employees who are motivated to help the firm gain and maintain a competitive advantage (Graddick, 1988).

London (1988) in his view of the future of HR professionals demonstrates the need for an HR that evolves as the business evolves, such that the HR professional acts as an educator, facilitator, innovator, evaluator, and business leader and strategist. This is a complete change from the past role as passive administrator. London (1988) defines the skills of HR professionals as such that they should be able to:

... analyze the corporation's needs, anticipate and communicate these needs, and raise them for discussion in the corporation. In the process, HR professionals generate a consensus on solutions to issues and strategies (London, 1988).

Problem statement, hypotheses and theoretical framework

Problem statement

The career management plan published by Hall *et al.* (1986) and Noe's career management model (1996) provide a basis for evaluating the level of support for career management in organizations in the information technology sector. In the technology sector are career management programs supported by HR? Do these programs facilitate organizational development and performance? There is

rapid growth in this industry sector with many start-up companies looking to hire and retain top talent. Rapid growth, hiring and retention are three critical areas that can be monitored and benefit from a career management plan that provides the basic infrastructure for the HR department in the organization. These questions have been transformed into three hypotheses with respect to the information technology sector. The hypotheses are:

- H1.* Career management plans/programs are positively supported by human resource professionals in information-technology firms.
- H2.* Career management is positively related to organizational development in information technology firms.
- H3.* Career management is positively related to organizational performance in information-technology firms.

Theoretical framework

Career management is the primary independent variable to be studied. Development and performance at the organizational level are the dependent variables that have been identified as being positively affected by the implementation of a career management program (see Figure 2). The authors contend that organizational development and performance can be sustained throughout the changing internal and external conditions that are typical of the information-technology environment. Moderating variables to be discussed and evaluated for this study are:

- development activities;
- age/life stage;
- career stage (i.e. age and tenure); and
- performance monitoring.

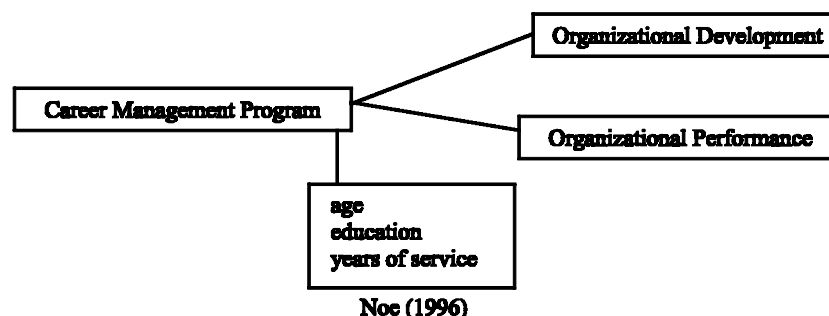
The theoretical framework has been adapted from Noe's career management model (1996).

Career management

Noe (1996) in his study defined career management as: "career exploration, development of career goals, and career strategy implementation". Noe (1996) operationalized these three steps in the career management process with five hypotheses. The hypotheses tested are listed in Table III. The sample chosen for Noe's (1996) study were employees from a state agency where the agency did not have a formal career management program, whereas for this case study the first step was to establish the level of support for career management within each organization. Burack and Mathys's (1980) career planning

Figure 2

Theoretical framework



**Independent
variable**

**Moderating
variables**

**Dependent
variables**

Table III

Career management process	Noe's (1996) hypotheses
Career exploration	<i>H1.</i> Self and environment exploration and intended systematic exploration are positively related to employee's willingness to participate in development activities and frequency of development behavior
Development of career goals	<i>H2.</i> Goal focus is positively related to frequency of developmental behavior, willingness to participate in development activities, and job performance <i>H3.</i> Distance from career goal is negatively related to willingness to participate in development activities and frequency of developmental behavior
Career strategy implementation	<i>H4.</i> Frequency of use of career strategies (networking, expertise development, and self-nomination) will be positively related to managers' ratings of employees' performance <i>H5.</i> Frequency of use of career strategies (networking, expertise development, and self-nomination) will be positively related to the frequency of developmental behavior exhibited by employees

audit was used as the benchmark for all organizations in this research. *H1* was developed with this information in hand.

According to the Noe (1996) model, one of the intended outcomes of career management is employee development. Of the five hypotheses in his study (listed in Table III), *H1*, *H2*, *H3* and *H5* related to development as an outcome. And the results of the study only partially supported *H1*.

Providing training and career counseling at the outset of one's career, facilitates and initializes an awareness of self and serves to promote development at some level. This is borne out in the career planning responsibilities developed by Hall *et al.* (1986). Once the self-assessment has been completed the employee can then develop and focus on career goals. For the organization this implies an increase in the levels of organizational development, and this can be tracked or measured by evaluating management support, participation in training, time-allowance for training and training budgets. Therefore *H2* is given.

Ordinary accounting procedures are used to analyze income from products or services provided and the costs of furnishing them; and, of course it is commonly understood that the efficiency with which a service or product is produced has a direct bearing on income and/or costs. Less obvious but of equal relevance is the recognition that a wide variety of personnel practices and the quality of relations within an organization also influence costs. Thus, turnover, absenteeism, tardiness, willingness to extend oneself, cooperation, and even creativity are tied to various aspects of the individual's job satisfaction. Career planning activity in an organization can materially influence the outlook, expectations, and realizations of its members (Burack and Mathys, 1980).

The above statements illustrate that an organization can and will easily follow the revenue stream from products or services sold, but the less obvious accounting process is linking the revenue streams to the costs of turnover and absenteeism. Noe (1996) proposed in his model, linking career management to performance.

Two key points were used to develop and test *H3* of this research. The questionnaire was first drafted with a data table that requested information such as: training budgets, training hours, turnover, and absenteeism. This hard data was to be a non-subjective source to test the career management-performance relationship. Unfortunately the respondents were not able to answer these questions, because the organizations do not store this data in a format that is readily accessible. The second point relates to the sample respondents, Noe (1996) in his research relied on managers to rate each employee in the study, whereas in this study HR professionals were asked to participate and respond to questions about the organization as a whole based on their knowledge and experience. The authors contend that HR professionals would provide a non-subjective source of data and furthermore it was anticipated that HR professionals would be more cognizant of career management practices within their respective organizations. This leads to *H3*.

Moderating variables

There are numerous possible moderating variables that can impact the effectiveness of a career management program on the outcome variables (e.g. organizational development and performance). From the employee development perspective the age, grade or level of the employee does have an impact on the outcome, as seen by Ornstein *et al.* (1989) and Noe (1996). Herriot *et al.* (1993) documented in their study that age, and years-of-service was a predictor for managerial level. Education is also a factor that affects an employee's development activity; the higher the education level the more actively the employee pursued: work-based development, voluntary job-related learning and career planning (Birdi *et al.*, 1997).

The work environment also has an impact on both development and performance. For example, management support to encourage development activity was reported in the Noe and Wilk (1993) study.

The productivity of individuals and groups at work is generally assumed to be due in part to the quality of the supervision and leadership they receive (Larson and Callahan, 1990).

In Noe's study (1996) he chose to evaluate the effects of age, clerical position, managerial position, and manager's support for employee development. Only two of the proposed moderating variables provided valid results; manager's position ($\beta = 0.31$ and $p \leq 0.05$) and manager's support for

development ($\beta = 0.37$ and $p \leq 0.05$) had a significant effect on development behavior.

Given that some of these moderating variables may be difficult to measure, employee age (as a range), years of service (as a range), level and education were selected for the first draft of the questionnaire. Due to issues with mining the HR database the second draft of the questionnaire included: employee age, years of service, and education.

Research methodology

The method for this article follows Yin's statement on case studies, such that it will employ multiple sources of evidence in order to test a previously developed theory, i.e. the career management model of Noe (1996) for three organizations within the information technology industry. According to Yin (1994, p. 31):

... individual case studies are to be selected as a laboratory investigator selects the topic of a new experiment. Multiple cases, in this sense, should be considered like multiple experiments (or multiple surveys). Under these circumstances, the method of generalization is "analytic generalization", in which a previously developed theory is used as a template with which to compare the empirical results of the case study.

Sample

Three companies committed to participate in this study, the results of which provide a cross-section of size, product technology, and experience.

- 1 "*D*" Technological Corporation (*D. Org.*).
This firm is a provider of interaction-based e-business solutions that has grown by recruitment and acquisition from 15 to 600 people worldwide.
- 2 "*M*" Technological Organization (*M. Org.*).
"*M*" Org. is a designer, manufacturer and marketer of telecommunications and employs more than 6,300 people.
- 3 "*N*" Technological Organization (*N. Org.*).
"*N*" Org. is a global leader in telephony, data, e-business, and wireless solutions for the Internet with 1999 US GAAP revenues of US\$21.3 billion, and employed 75,000 people worldwide until this past year. These numbers have dropped significantly during 2001.

For this study, the sample of intended respondents consisted of HR professionals from six different organizations in the technology sector. For the purposes of this research, information technology includes computers, software, electronic and

telecommunications equipment and professional services. Six companies were initially contacted by e-mail or phone. Each potential respondent was given a brief overview of the purpose of the research, and were asked if they would be able to answer questions concerning their organization by completing a questionnaire. Only three companies completed the questionnaire within the necessary timeframe and a fourth faxed the survey results after the deadline.

Measures

Initially a 152-item questionnaire was developed from various sources, but due to difficulties with data extraction and feedback it was necessary to reduce the number of items to 141. Part One is an audit form to assess the current level of HR planning (Burack and Mathys, 1980). Part Two is a sequence of statements (Noe and Wilk, 1993; Birdi *et al.*, 1997; Tsui *et al.*, 1997) requiring a response according to a five-point scale. Part Three provides a profile of each organization (adapted from Cascio, 1982). Part Four employs a career planning assessment tool (Burack and Mathys, 1980) and requires the respondent to check the items that represent current needs. Part Five was drafted by the author in order to document the level of training and experience of each respondent.

Measures: career management

The career planning audit by Burack and Mathys (1980) was chosen to test for the presence or absence of career management in each of the organizations in the sample. This was the first step prior to examining organizational development and performance. The audit by Burack and Mathys (1980) has been published for almost two decades and therefore should not propose any human resource planning items that would prevent an organization from implementing them today. It was also felt that Burack and Mathys (1980), a published authority on career management in organizations, would be an appropriate choice for establishing a correct operational measure.

Measures: development

Items from the research by Noe and Wilk (1993), on factors that influence employee participation in development activities, were modified and used to tap the dependent variable of development. The language of the items was modified for the intended respondents, i.e. HR professionals.

The items in Part Three were revised due to the inability of the respondents to mine the data from various internal databases; while

the initial items employed calculations by Cascio (1982), the revised draft converted the calculations into statements. While it is true that the face validity and reliability of each of these measures has not been applied, in the absence of alternative items previously tested and published, the researcher intended to derive at a minimum a profile of each organization.

Measures: performance

Performance was measured with nine items. Three items were adapted from Tsui *et al.* (1997), where the respondent agreed or disagreed with the statements that: evaluations, rewards, and performance goals are all based on organizational performance. The reliability coefficient for these items was 0.76. Turnover and absenteeism were measures for performance.

Measures: moderating variables

Employee age (defined as the majority less than 35 years old), years of service (defined as the majority less than three years of service), and education (defined as the majority with technical, professional or undergraduate certificates), are the moderating variables tapped in the questionnaire.

Measures: demographics

In Part Three the author developed items tapping total employee population; distribution of men versus women in the employee population; industry sector; and key product or service.

Measures: validity and reliability

Technically the ideal situation would have been to use an instrument that was developed and tested by one expert source; this would then provide answers to any concerns of validity and reliability. However, as noted by Noe (1996) empirical research on the relationships described in his model is limited, and for the most part the research has focused on exploration behavior and career goal setting. Also “most other studies of career management have used student samples” (Noe, 1996). In view of these limitations, the questionnaire employed measures that would meet the requirements of face validity, that is, “experts” have validated these items and therefore would resolve the issues of content and construct validity. The combination of items from several sources raises the question of reliability. At this point in this research what can be addressed is that certain items have been tested for consistency by their respective authors and the reliabilities have been noted.

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Testing the relationships and hypotheses: correlations

The sums of squares table for all the data points for career management, development and performance was computed and subsequently the Pearson product moment coefficient of correlation. This is a measure of the strength of linear relationship between two random variables. The Noe (1996) model assumed that performance and development were un-correlated variables; however, in his discussion of the results he proposes, “that performance is an antecedent of development”. With this information in hand, the Pearson product moment will test this relationship for this case study.

H1

This hypothesis postulates that career management plans are positively supported by HR professionals in information technology firms. In order to test for implementation of a plan or program, the values computed from Burack’s audit were compared as an initial test of H1, i.e. does case 1 = case 2 = case 3. Then analysis of variance (ANOVA) was used to determine if there was a significant mean difference for the independent variable career management. This test was performed to compare the means of each case study organization for overall career management planning and therefore:

H0. Case 1 = case 2 = case 3.

Ha. At least two cases are different.

Analysis of variance (ANOVA) was used again to determine if there was a significant mean difference between the organizations for the 13 career management categories (as defined by Burack and Mathys (1980)). Confidence intervals were also reported at 95 per cent for each organization’s career management categories. The purpose was to compare the means of each case study organization in each of the 13 categories, and test:

H0. Category 1 case 1 = category 1 case 2 = category 1 case 3.

Ha. At least two cases are different.

H2

H2 tested for a positive relationship between career management programs and organizational development in the information technology sector. Simple linear regression was performed for each organization in the study, and was also performed on the combined results to see if there was a positive linear relationship for the information technology industry as a group. The purpose was to determine if

simple linear regression analysis of this data would define and test:

H0. Development varies positively and directly with career management.

Ha. There is no linear relationship.

H3

H3 tested for a positive relationship between career management programs and organizational performance in the information technology sector. Simple linear regression was computed for each organization in the study, and was also computed on the combined results to see if there was a positive linear relationship for the information technology industry as a group. The purpose was to determine if simple linear regression analysis of this data would define and test:

H0. Performance varies positively and directly with career management.

Ha. There is no linear relationship.

Results: descriptive statistics, relationship and hypothesis testing

Descriptive statistics

The means and standard deviations for each category within the audit (Burack and Mathys, 1980) were calculated for each organization and are presented in Tables IV and V respectively. The scale for the audit was a ten-point scale, where “0 = little or no work done” and “10 = advanced state of the art” (Burack and Mathys, 1980). The highest mean score recorded for M Corp. was work analysis = 9.25 (SD = 0.96); and the lowest score for M Corp. was retirement planning = 0.67 (SD = 1.15). The highest mean score recorded for N Corp. was communication = 9.67 (SD = 0.58); and the lowest score for N Corp. was succession planning = 3.00 (SD = 1.41). The highest mean

Table IV

Means calculated by category by organization

Category	M Corp.	N Corp.	D Corp.
Work	9.25	5.50	3.25
Transfer/promotion	8.25	9.00	3.50
Succession plan	6.60	3.00	0.40
Policy	8.75	7.00	3.25
Employee files	7.20	4.20	3.40
Career paths	5.33	3.33	1.67
Communication	5.67	9.67	2.67
Counseling	5.75	5.25	4.50
Personal development	7.00	7.83	2.50
Career information	6.33	6.33	3.33
Retirement	0.67	8.00	0.00
Performance appraisal	4.75	8.00	1.50
Assessment of potential	6.00	5.00	1.00

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Table V

Standard deviations calculated by category by organization

Category	M Corp.	N Corp.	D Corp.
Work	0.96	1.00	0.96
Transfer/promotion	1.26	0.00	0.58
Succession plan	0.89	1.41	0.89
Policy	0.96	0.00	1.26
Employee files	1.10	3.56	0.89
Career paths	1.53	2.31	1.15
Communication	0.58	0.58	1.15
Counseling	1.50	1.50	2.52
Personal development	2.00	1.17	2.43
Career information	2.31	2.08	0.58
Retirement	1.15	0.00	0.00
Performance appraisal	3.30	0.00	1.00
Assessment of potential	0.00	1.41	0.00

score recorded for D Corp. was counseling = 4.50 (SD = 2.52), and the lowest mean score recorded was retirement planning = 0.00 (SD = 0.00). Therefore the overall highest score recorded for the audit was N Corp. = 9.67 and the lowest score was D Corp. = 0.00.

Career path, communication, personal development and career information are four important areas for individual career development. According to Hall *et al.* (1986) it is the responsibility of the employee to analyze career options, decide development objectives, communicate preferences, and it is the responsibility of the organization to provide a career planning model, training and resources. In this study the mean scores for career path, communication, personal development and career information ranged from 2.50 to 9.67 or, from interpreted from the scale, or from "little or no work done" to "major progress and improvements". It is interesting to note that the highest mean score was 9.67 for communication at N Corp. and the lowest mean score was 2.50 for personal development at D Corp. Upon closer inspection of the data in Table V, M Corp. mean scores ranged from career path = 5.33 (SD = 1.53) and personal development = 7.00 (SD = 2.00) or as the scores are interpreted "an organized activity". For N Corp., communication = 9.67 (SD = 0.58) and career path = 3.33 (SD = 2.31); this indicates a status of "advanced state of the art" for communication while career path indicates only "some work done". It is also important to note that D Corp. scored in all categories except for retirement planning, with career information = 3.33 (SD = 0.58) the highest and career path = 1.67 (SD = 1.15) the lowest.

Similarly upon closer inspection of the data in Table VI, M Corp. standard deviations

ranged from performance appraisal = 3.30 and assessment of potential = 0.00. For N Corp. standard deviations ranged from employee files = 3.56 and four categories where the standard deviation = 0.00, namely transfer/promotion, policy, retirement, and performance appraisal. For D Corp. the standard deviations ranged from counseling = 2.52 to retirement and assessment of potential = 0.00.

The scores for each audit were summed and while the maximum possible score was 520 (e.g. 52-item total $\times$ 10-point maximum score) M Corp. and N Corp. were close with 329 and 324 respectively and D Corp. scored 125 (see Table VI). Expressed as a percentage this is 63 percent, 62 percent and 24 percent. This is also illustrated by the mean score for each organization, which shows M Corp. and N Corp. very close with 6.45 and 6.23 respectively and D Corp. at 2.40. A mean score of six indicates that the level of HR planning is between: an organized activity and major progress, D Corp. is at the stage where only "some work under way" as defined by Burack and Mathys (1980). The median, mode and standard deviations were computed and they too provide support for the HR planning levels indicated above.

Table VII shows the scoring as computed by Burack's formula (1980, p. 332) to indicate as a points-score and a percentage what were the current levels of Career Planning and the Current possibilities. The current situation is the sum of current scores for all items checked off in Part Four of the questionnaire. The current possibilities are the number of items checked times a possible total score of ten. The current opportunities is then computed by: current opportunities (points) = current possibilities - current situation or by percentage is: percent = current situation/current possibilities. According to Burack and Mathys (1980, p. 336) M Corp. has a good career planning system with some opportunity, while N Corp. has considerable opportunity and D Corp. has major current opportunity. While there is no correct

Table VI

Total score, mean, median, mode, and standard deviation for the career management audit

Statistic	M Corp.	N Corp.	D Corp.
Sum total score	329.00	324.00	125.00
Mean	6.45	6.23	2.40
Median	6.00	7.00	2.00
Mode	6.00	8.00	2.00
Standard deviation	2.38	2.49	1.76

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Table VII

Career planning system audit

Audit results	M Corp.	N Corp.	D Corp.
Current situation	75	21	79
Current possibilities	130	90	240
Current opportunities – points	55	69	161
Current opportunities – percent	57.69	23.33	32.92

Source: Burack and Mathys (1980)

number for any organization, this is a tool for measuring and highlighting areas of current and future needs.

The mean, median, mode and standard deviation was computed for the dependent variables performance and development and recorded in Table VIII. Part two of the questionnaire contained statements that measured the respondent's opinion of development and performance in the organization. Each statement is rated on a five-point scale starting at "1 = strongly disagree" to "5 = strongly agree".

According to the results of the dependent variable – development, the mean of M Corp. reveals an average response of "neutral", the mean of N Corp. reveals an average response of "agree" and the mean of D Corp. reveals an average response of "neutral". An example of these statements is "managers are supportive of employee efforts to acquire knowledge and skills." Only two of the statements have a negative connotation and upon reviewing the median and the mode it is clear that the mean is lower due to one of these "negatively" worded questions.

According to the results of the dependent variable – performance, the means tended towards a response of "agree" or a mean = 4. Part two and three of the questionnaire contained nine statements to measure the opinions of the respondents with respect to performance. And all statements were "positively" worded.

The mean, and standard deviation was computed by combining the results of all three organizations for development, performance and demographic information

and is shown in Table IX. For the technology sector, in this sample both performance and development means indicated a response of "agree with the statements" measuring these two variables. Furthermore, it was clear that all three organizations believed the majority of the employees to be professionals with undergraduate and graduate degrees. This indicates a highly educated employee population. As far as years of service and age, the means indicate that the respondents did not agree (mean = 1.5) that the "majority of employees have less than three years service" and they also did not agree (mean = 2.0) that the "majority of employees were less than 35 years old". With respect to the mix of men and women employees in the total population, it is very clear that all three organizations contain a majority of male employees ("majority of men" mean = 4.5).

Relationship testing

Correlations were computed for each organization and for the case study data as a whole to determine if a linear relationship existed for the following pairs:

- career management and development;
- career management and performance; and
- development and performance.

Only two relationships were found to be statistically significant.

The correlation of development and performance for M Corp. ($r = 0.678$ and $p = 0.011$) is significant. The development-performance relationship was identified by Noe (1996) in the discussion of his results, where initially he assumed for

Table VIII

Mean, median, mode, and standard deviation for the dependent variables

Variable	Statistic	M Corp.	N Corp.	D Corp.
Development	Mean	3.38	3.62	3.15
	Median	4.00	4.00	3.00
	Mode	4.00	4.00	4.00
	Standard deviation	0.87	0.96	0.99
Performance	Mean	3.75	4.00	3.75
	Median	4.00	4.5	4.00
	Mode	4.00	5.00	4.00
	Standard deviation	0.46	1.31	1.28

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Table IX

Mean and standard deviation of technology sector dependent variables and demographic information

Variable	Statistic	Technology sector
Development	Mean	3.50
	Standard deviation	0.91
Performance	Mean	3.88
	Standard deviation	0.96
Education	Mean	4.50
	Standard deviation	0.71
Service	Mean	1.50
	Standard deviation	0.71
Age	Mean	2.00
	Standard deviation	1.15
Majority of men	Mean	4.50
	Standard deviation	0.58
Majority of women	Mean	1.50
	Standard deviation	0.58
Equal nos men and women	Mean	1.50
	Standard deviation	0.58

his model and study that development and performance were un-correlated outcomes. However he later suggested that performance was an antecedent for development. This was only seen to be true for one organization in this study.

The second relationship of interest was career management and development for the D Corp. organization ($r = 0.768$ and $p = 0.002$). For this sample there is a positive linear relationship between career management and development. What is interesting to note is that this is the one organization with a less developed career plan due to the fact that it is a new company.

Hypothesis testing

H1 proposed that career management programs are supported by human resource professionals. The first test of this hypothesis was to examine the total audit scores for each organization and to determine if case 1 = case 2 = case 3. This was not found to be true because M Corp. = 329, N Corp. = 324 and D Corp. = 125. However it should be noted that of a grand total of 520 points these organizations scored 63 percent, 62 percent and 24 percent respectively. The next step in testing *H1* was to look at the mean score for each organization for career management and also the individual categories of the audit to determine if there is a significant mean difference at the category level. ANOVA was used to test the means for M Corp. = N Corp. = D Corp. and category 1 M Corp. = category 1 N Corp. = category 1 D Corp. The results and interpretation of the *F* statistics and the *p*-values, does not provide support for *H1*. In this test *F* is large, meaning that there is variation between the

samples and therefore a significant mean difference between the responses from each organization. Of the 13 categories from the career management audit, only two categories had a small *F* value and a significant *p*-value; this was the category of employee file information ($F = 4.10$, $p = 0.044$) and the category of career path ($F = 3.37$, $p = 0.104$). In these two cases, the small *F* value is interpreted as a lesser amount of “between sample variation” as compared to “within sample variation”.

H2 proposed that career management is positively related to development. Simple linear regression was chosen to test for a positive linear relationship between the two variables. This was performed for each of the organizations and also for the case study as a whole. All three regression equations produced a linear equation ($y = b + mx$) with a positive slope and a positive intercept. The regression equation for the M Corp. data produced an equation with a positive slope ($m = 0.0607$), but when testing the null hypothesis for $H0: m = 0$, we note that the value for *T* is not in the rejection region and therefore we cannot reject *H0*. This is also supported by the fact that $p = 0.624$ and is not less than 0.05 as required. What can be said is that this must be a more complex relationship. For this regression equation the standard error of the coefficient is 0.1203, and it should be noted that the closer this value is to zero the closer the error about the coefficient is approaching zero and therefore this is an equation where “*x*” (e.g. career management) contributes information about “*y*” (e.g. development). *R*-squared for M Corp. equals 0.023 which means that only 2.3 percent of the variation can be explained by

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the model and 87 percent is unexplained. Based on the results of the regression analysis the equation for development versus career management at M Corp. is not a reliable predictor. The regression equation for the N Corp. data produced an equation with a positive slope ($m = 0.1190$) but when testing the null hypothesis where $H_0: m = 0$, we note that the value for T is not in the rejection region ($|t| = 0.91$ is not greater than $t_{\alpha/2} = 2.201$) and therefore we cannot reject H_0 . This is also supported by the fact that $p = 0.382$ and is not less than 0.05 as required. What can be said is that this must be a more complex relationship. For this regression equation the standard error of the coefficient is 0.1307 and it should be noted that the closer this value is to zero, the closer the error about the coefficient is approaching zero and therefore an equation where “ x ” (e.g. career management) contributes information about “ y ” (e.g. development). R -squared for N Corp. equals 0.07 which means that the model can explain 7.0 percent of the variation and 93 percent is unexplained. Based on the results of the regression analysis the equation for development versus career management at N Corp. is not a reliable predictor. However the relationship of career management as a predictor for development for the D Corp. organization was significant. The regression equation for the D Corp. data produced an equation with a positive slope ($m = 0.5589$) and when testing the null hypothesis for $H_0: m = 0$, we note that the value for T is in the rejection region ($|t| = 3.98$ is greater than $t_{\alpha/2} = 2.201$) and therefore we can reject H_0 . This is also supported by the fact that $p = 0.002$ and is less than 0.05 as required. For this regression equation the standard error of the coefficient is 0.1406 and it should be noted that the closer this value is to zero, the closer the error about the coefficient is approaching zero and therefore an equation where “ x ” (e.g. career management) contributes information about “ y ” (e.g. development). R -squared for D Corp. equals 0.59 which means that the model can explain 59 percent of the variation and 41 percent is unexplained. Based on the results of the regression analysis, the equation for development versus career management at D Corp. is a reliable predictor. The regression equation for all the data produced an equation with a positive slope ($m = 0.12833$) and when testing the null hypothesis for $H_0: m = 0$, we note the value for T is in the rejection region ($|t| = 2.37$ is greater than $t_{\alpha/2} = 2.201$) and therefore we can reject H_0 . This is also supported by the fact that $p = 0.023$ and is less than 0.05 as required. For this regression equation the standard error

of the coefficient is 0.05423 and it should be noted that the closer this value is to zero, the closer the error about the coefficient is approaching zero and therefore an equation where “ x ” (e.g. career management) contributes information about “ y ” (e.g. development). R -squared for the total data equals 0.131 where the model can explain 13.1 percent of the variation and 86.9 percent is unexplained. The results of the regression analysis for D Corp. and the total data lend only partial support for H_2 , whereas a positive linear relationship with a regression model where “ x ” is a strong predictor for “ y ” from all three organizations would lend support for the career management-development relationship.

H_3 proposed that career management is positively related to performance. Simple linear regression was used to test for a positive linear relationship for each of the organizations. The regression equation for the M Corp. data produced an equation with a positive slope ($m = 0.04951$) but when testing the null hypothesis where $H_0: m = 0$, we note the value for T is not in the rejection region ($|t| = 0.73$ is not greater than $t_{\alpha/2} = 2.201$) and therefore we cannot reject H_0 . This is also supported by the fact that $p = 0.480$ and is not less than 0.05 as required. What can be said is that this must be a more complex relationship. For this regression equation the standard error of the coefficient is 0.06766, and it should be noted that the closer this value is to zero the closer the error about the coefficient is approaching zero and therefore an equation where “ x ” (e.g. career management) contributes information about “ y ” (e.g. performance). R -squared for M Corp. equals 0.046 and therefore the model can explain only 4.6 percent of the variation and 95.4 percent is unexplained. Based on the results of the regression analysis, the equation for performance versus career management at M Corp. is not a reliable predictor. The regression equation for the N Corp. data produced an equation with a positive slope ($m = 0.0493$) but when testing the null hypothesis where $H_0: m = 0$, we note the value for T is not in the rejection region ($|t| = 0.35$ is not greater than $t_{\alpha/2} = 2.201$) and therefore we cannot reject H_0 . This is also supported by the fact that $p = 0.732$ and is not less than 0.05 as required. What can be said is that this must be a more complex relationship. For this regression equation the standard error of the coefficient is 0.1403 and it should be noted that the closer this value is to zero, the closer the error about the coefficient is approaching zero and therefore an equation where “ x ” (e.g. career management) contributes information about

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"y" (e.g. performance). *R*-squared for N Corp. equals 0.011 where the model can explain only 1.1 percent of the variation and 98.9 percent is unexplained. Based on the results of the regression analysis, the equation for performance versus career management at N Corp. is not a reliable predictor. The regression equation for the D Corp. data produced an equation with a negative slope ($m = -0.2797$) but when testing the null hypothesis where $H_0: m=0$, we note the value for T is not in the rejection region ($|t| = 1.30$ is not greater than $t_{\alpha/2} = 2.201$) and therefore we cannot reject H_0 . This is also supported by the fact that $p = 0.22$ and is not less than 0.05 as required. What can be said is that this must be a more complex relationship. For this regression equation the standard error of the coefficient is 0.2149 and it should be noted that the closer this value is to zero, the closer the error about the coefficient is approaching zero and therefore an equation where "x" (e.g. career management) contributes information about "y" (e.g. performance). *R*-squared for D Corp. equals 0.133 where the model can explain only 13.3 percent of the variation and 86.7 percent is unexplained. Based on the results of the regression analysis the equation for performance versus career management at D Corp. is not a reliable predictor. Two regression equations produced a linear equation ($y = b + mx$) with a positive slope and a positive intercept, N Corp. and M Corp., whereas the D Corp. equation produced a negative slope thus indicating an inverse relationship between career management and performance. This analysis did not provide any support for the career management and performance relationship and as such the fourth regression with all the data points was not determined. What can be said about career management and performance is that the relationship is more complex and "x" alone is not a predictor for "y".

Conclusions and recommendations

Conclusions

At the time of Noe's (1996) research no empirical studies had been published, therefore he was the first researcher to propose and test his career management model that hypothesized the relationships between career management, and the outcomes of development and performance.

For this case study the first step was to use Burack and Mathys's (1980) audit to determine if indeed a system existed, how well it was implemented and list the

current organizational needs. Six information technology organizations were approached and three responded to the questionnaire. The information technology industry was selected because it is known to experience constant change, it has the financial resources and the interest in attracting and retaining highly trained individuals and would therefore be supportive of career management programs, and the employee populations are typically very conscious of development and performance measures.

What can be said about career management in this case study, is that while the organizations did not have the exact same total score or mean score, the scores do indicate the existence and support for career management programs in the information-technology sector. Two of the organizations posted mean scores above the midpoint of the ten-point scale (at 6.45 and 6.23) and according to Burack's interpretative scale this is the equivalent to "an organized activity; part of a regular system; formal relationships". The third organization, a relatively small software company, posted a mean score much lower at 2.40 indicating, "some work underway, and loosely organized" (Burack and Mathys, 1980).

The career management audit results (Burack and Mathys, 1980), indicate that the higher scoring items were for the "hard issues", for example work analysis or policy where the subject matter is concrete. Conversely, development positions in the career paths category did not score as high for all three organizations. Success in this category requires that both the employee and the manager have a vision of the future and the ability to recognize development positions within the current structure. The application of development moves requires some stability in the organization; however, in the information technology sector there is constant change and this clearly prevents this item from becoming a key strategy in the career management program. Similarly, succession planning is another area that did not produce high scores and it too is adversely affected by constant change. It is obvious that in this environment the succession plan would have to be updated very regularly. Retirement planning was another category where mean scores for two out of three organizations were 0.67 and 0.0; these low scores also underline the difficulty in applying a concept that is found in more traditional industries.

In the context of this case study there is support for career management programs;

however for this industry it is difficult to apply all the concepts as envisioned by Burack and Mathys (1980) in their work. The problems of development positions, succession planning and retirement planning will continue to exist and this is where there is a need for organizations to develop a plan that combines solutions within the organization and within the industry; for example, succession plans should include candidates inside and outside the organization, or development positions should include evaluating positions with joint venture partners, alliances and subsidiaries. From the employee perspective, Koonce (1995) maintains that due to decentralization, constant change, and learning environments, the employee is now faced with the responsibility and challenge of developing his own career by upgrading skills, preparing his own career plan, and streamlining his plan with the corporate plan.

Another objective of this research was to evaluate the relationships in the Noe (1996) model. *H2* proposed that career management is positively related to development. Noe (1996) proposed this linkage in his career management model, but was unable to provide support from his study. The data from this case study produced three linear equations using regression analysis, where only one of the equations can be considered a reliable predictor for development and this was the equation for D Corp. This was not enough evidence to support the career management-development relationship as proposed. Within the literature there are examples where career management and development are associated, e.g. Hall *et al.* (1986); Birdi *et al.* (1997). What can be concluded about the literature and the results of this study is that the career management-development relationship is very complex; the moderating variables are complex (i.e. age, education, management support), and future studies need to collect feedback at the employee level, management level and compare it to organizational reporting of programs.

Using Noe's (1996) model, this case study attempted to test the relationship of career management and performance. Performance measures as originally requested were reported to be inaccessible, so the questionnaire was revised. The data that was provided, produced regression models that were not reliable predictors and it was concluded that the career management-performance relationship was more complex and "x" alone could not predict "y". Yet the literature provides examples

where there is a link e.g. Larson and Callahan (1990); Snell and Youndt (1995).

Looking at the moderating variables of education, age, service and gender, there is consistency in the demographics of each organization, i.e. a majority of male employees, a high level of education, the majority of the employees are not under the age of 35 and they do not have less than three years of service. Comparing age and years of service as predictors for managerial and salary level, Herriot *et al.* (1993) determined that age was a predictor for their study. Therefore the design of a career management program must consider the age of the employee population, and the number of employees. Furthermore, as Herriot *et al.* (1993) point out, the structure of the organization is also important for determining career outcomes because it relates to the amount of opportunity for mobility within the organization both in job title and function.

In summary, the overall outcome of this study produced minimal support for the relationships as envisioned by the career management model of Noe (1996), but what has been discovered is that the three organizations have career management programs, they have development programs and performance can be measured in terms of revenues and earnings. Conversely, Noe (1996) studied an organization that did not have a career management program, and development and performance measures in the study were based on employee self-reports and manager evaluations where the population had minimal experience in this area. Thus Noe (1996) studied a population with very limited training and experience and this research studied three organizations with substantial training and experience and still the relationships were not confirmed conclusively. Noe (1996) in his conclusions suggests that performance is a precursor for development; this was based on literature from training studies. Similarly, while the study results did not provide support, the conclusion of this research is that performance is the precursor for career management and development. At the organizational level it can be construed that performance as defined by revenues and earnings will most definitely precede any investment in career management and subsequent development. At the employee level, positive feedback as seen in the study by Larson and Callahan (1990), provides the reinforcement for improved performance. Thus the revised model (Noe, 1996) that is proposed for further study is shown in Figure 3.

Figure 3

Revised model



The implications of this model are that development is dependent on performance and that career management is a moderating variable. On a broader scope this model suggests that organizations continue to invest in career management programs as they can enhance the outcome of development, and in a circular fashion this can improve overall performance.

Recommendations

While this study did not provide conclusive support for the relationships as hypothesized, there are a few recommendations that are worth noting.

For organizations looking to improve the overall workplace environment the career planning audit (Burack and Mathys, 1980) provides feedback on the current situation in the organization and input for future needs. This audit is recommended for the HR department and the employees with the resulting scores compared and placed in order of importance.

For more mature organizations, the task is more complicated by the size and the variety of needs of each employee. Typically these organizations need to evaluate the "softer issues" such as development moves, and career paths. Employees should be encouraged to explore training in departments where they have minimal experience (i.e. financial analysts studying quality control methods) to uncover unknown interests and abilities.

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