

A Hybrid Approach for Exploring Training Needs and Methods for Human Resources Development Staffs

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Abstract: - The purpose of this paper is to investigate the training needs and methods for human resources development (HRD) staffs according to the ASTD Competency Model. The findings are expected to provide meaningful implications for the design of training programs. The author employs the Quality Function Deployment and the Borda Count to prioritize training needs and methods. The study results revealed that the competency needs for HRD staffs received most emphasis in the area of "Business/Management" rather than "Personal"; and that training methods for foundational competencies should focus on experience delivery rather than on computer technology.

Key-words: - Training, Human Resources Development, Competency, Competency model, Quality Function Deployment, Borda Count

1 Introduction

For the purpose of becoming an effective learning organization and enriching its core competencies [15] [13], it is important for a firm to expend a great deal of effort in continuous training. Training is the narrower aspect of Training and Development (T&D). Training is a short-term learning intervention which aims to achieve improved performance on the present job. Development, on the other hand, is a long-term learning intervention. It is a strategic procedure which focuses on continuous learning and emphasizes competency for future tasks. Hence, T&D is the broad sense of training, and is an important element of Human Resources Development (HRD), involving, as it does, tasks such as career planning and performance appraisal. In this sense, HRD staffs hold key roles for the enhancement of learning in an organization. Although policies regarding information and communications technologies [20] [3] [18] have significant effects on the performance of HRD, the main determinant is, nonetheless, the competencies of HRD staffs.

In order to upgrade the capabilities of HRD staffs, organizations need to help them to enrich their competencies through so-called competency-based training, which is implemented according to a competency model. However, the problem heretofore has been that the focus has been mainly on training activity, rather than on competency development for

HRD practitioners [8]. In response to this problem, a new HRD Competency Model [5] has been proposed by ASTD (American Society for Training & Development), which aims to enhance the competencies of HRD practitioners in order to make them able to succeed in the next generation.

The purpose of this paper is to investigate the training needs and methods for HRD staffs of high-tech companies, based on the 2004 ASTD Competency Model. Specifically, with a view to obtaining more profound findings, this study employs the Quality Function Deployment (QFD) approach to delineate training needs and the Borda Count method to rank the training methods. QFD is a valuable method that provides a means of translating and deploying strategic needs into the technical requirements for each stage of detailed operations in the problem of decision-making. The Borda Count is a pragmatic voting method; it is a simple summing of expressed voter preferences and its purpose is to achieve a reasonable ranking. Findings derived from this methodology combining the QFD with the Borda Count can lead to meaningful implications applicable to the design of HRD training programs. The body of this paper is organized as follows. In section 2, key concepts of the ASTD competency model are introduced and discussed. In section 3, the basics of the QFD and the Borda Count are described. In section 4, the research methodology is explained and results are illustrated. Finally, based upon the

findings of this study, conclusions and suggestions are presented.

2 The ASTD Competency Model

The 2004 ASTD Competency Model emphasizes the notion of workplace learning and performance (WLP). It is comprised of three layers (see Fig.1). These are: (1) foundational competencies, (2) areas of professional expertise (AOEs), and (3) roles. The so-called foundational competencies are 12

competencies that are linked to successful performance in the WLP field. They are further divided into three clusters: the Interpersonal, the Business/Management, and the Personal. The next layer is the AOEs, which are the specific technical and professional skills and knowledge areas required for success in the WLP field. Finally, "roles" are broad areas of responsibility within the WLP that demand a select group of competencies and AOEs for effective performance.

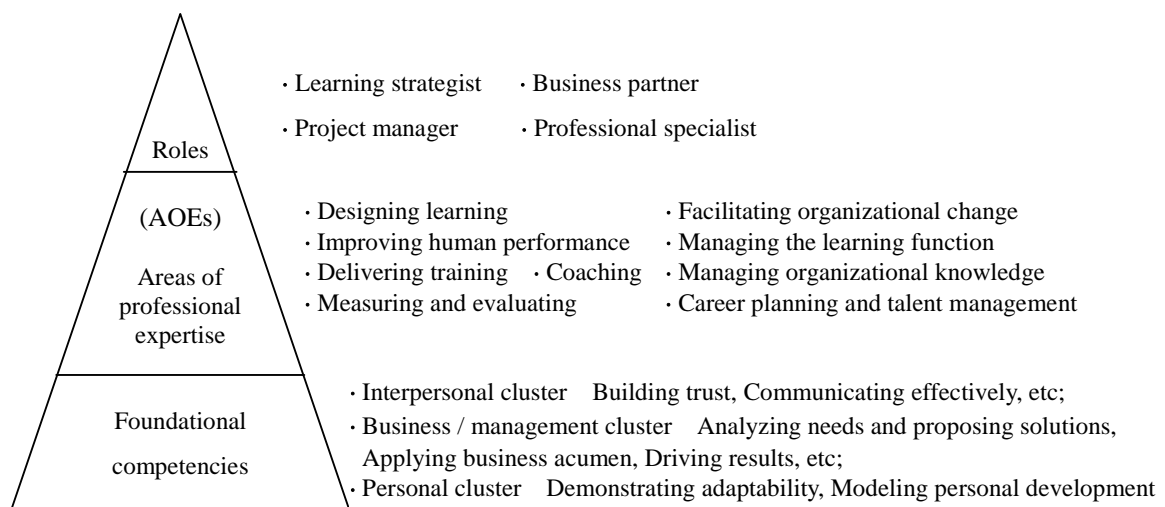


Fig. 1. The three-layer ASTD competency model

3 QFD and Borda Count

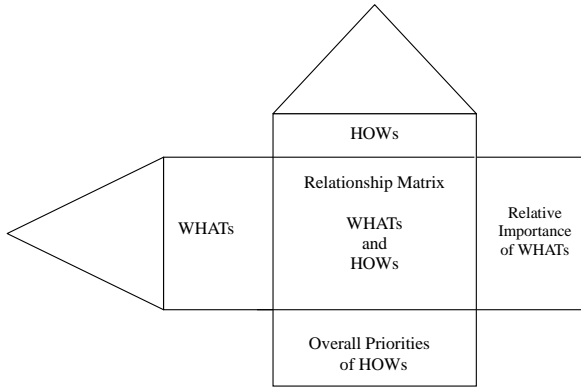
Originally, the QFD was designed to collect and analyze the views of customers, with the purpose of improving products or developing new products with improved capacity to meet or surpass customer's needs [7]. The Borda Count is a practical voting method. It can be applied as a rank aggregation method to group decision-making for purposes of ranking and selecting options and alternatives. This paper employs QFD to delineate training needs and the Borda Count to rank the training methods for HRD staffs. The basics of the QFD and the Borda Count are described below.

3.1 The QFD

The initial concept of QFD was developed mainly by Akao in Japan in the late 1960s [1] [2]. The Japanese Standards Association (JSA) provides various exercise manuals for QFD, such as those for Quality Deployment in The Most General Model, for New Product Development, and so on [10]. It can thus be

seen that QFD can be used not only for product or service development, but also for a variety of other functions, such as customer satisfaction, project selection, process management, strategic planning, and general decision-making. The key tool of QFD is the so-called "House of Quality" (HOQ) [9] [19]. There are five basic elements of the HOQ (see Fig. 2), described as follows: (1) WHATs are the initial inputs for the HOQ, which are obtained from the information derived from business research and analysis; (2) HOWs denotes the means for WHATs; (3) Relationship Matrix implies relationships between WHATs and HOWs, which expresses how much each HOW affects each WHAT, where the relations can either be presented by numbers or symbols; (4) Relative Importance of WHATs denotes relative weights of the WHATs, where each WHAT is usually assessed using 5, 7 or 9 point scales; and (5) Overall Priorities of HOWs denotes the synthesized importance of the HOWs. We may consider that QFD is a comprehensive strategic planning method. It passes through several translations with serial

interactive matrices of HOQ; these identify and translate the WHATs into the HOWs. In practice, QFD consists hierarchically of several HOQ [17] allowing us the flexibility of using more or less than four matrices, depending on the case.



3.2 The Borda Count

During the decision-making process, voting methods can be applied to facilitate decision-making [11] by ranking and selecting alternatives [12]. As a voting method, the Borda Count method was proposed in 1770 by Jean-Charles de Borda [6], and represents an important step in the development of modern electoral systems [16]. The Borda Count method is a simple summing of expressed voter preferences to achieve a social ranking. The method assigns zero points to a voter’s least preferred option, 1 point for the next option, and $(n - 1)$ points for the most preferred (where n is the number of alternatives). The Borda ranking is then determined by ordering the Borda scores [4]. Specifically, let the Borda Count matrix $B = [b_{ij}]_{n \times n}$ (Fig. 3) represent the election with a set of alternatives $A = \{A_i | i = 1, 2, \dots, n\}$, in which the the rows and columns of the matrix are labelled with the alternatives' names; and the entry b_{ij} in the row labeled i and the column labeled j is the number of a result that is derived from “number of voters” times “the point value”, and is acquired through comparing alternative A_i with alternative A_j by the voters. The row sum then represents the Borda scores $S = \{S_i | i = 1, 2, \dots, n\}$ of alternatives, and the Borda ranking is performed by ordering the Borda scores.

$$\begin{matrix}
 & A_1 & A_2 & \cdots & A_n & \text{Row sum} \\
 A_1 & \left[\begin{array}{cccc}
 0 & b_{12} & \cdots & b_{1n} \\
 b_{21} & 0 & \cdots & b_{2n} \\
 \vdots & \vdots & \ddots & \vdots \\
 b_{n1} & b_{n2} & \cdots & 0
 \end{array} \right] & S_1 \\
 A_2 & & & & & S_2 \\
 \vdots & & & & & \vdots \\
 A_n & & & & & S_n
 \end{matrix}$$

Fig. 3. The Borda Count matrix

4 Research Design and Results

Our study attempted to investigate training needs and methods for HRD staffs of high-tech companies, based on the 2004 ASTD Competency Model. Fig. 4 shows the primary steps of this research.

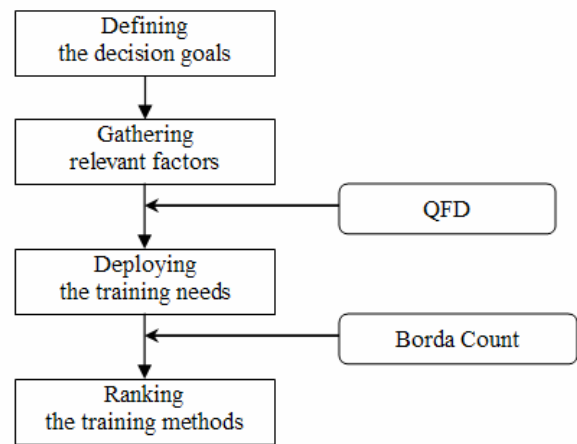


Fig. 4. The primary steps of this research

We begin by defining the decision goals in terms of prioritizing the competency needs and training methods for HRD staffs of high-tech companies. Step 2, “gathering relevant factors”, involves the content of the 2004 ASTD Competency Model and a list of 18 training methods: Coaching and mentoring, Business games, Case study, Videotapes, In-basket training, Internships, Role playing, Job rotation, Computer-based training, Web-based training, Just-in time training, Distance learning and videoconferencing, Classroom programs, On-the-job training, Apprenticeship training, Simulators, Vestibule training, Corporate universities, and Community colleges training [14]. Step 3 is to use the QFD to delineate training needs. Finally, step 4 is to utilize the Borda Count for ranking the training methods. Further aspects of the survey design, sampling, and data analysis, and discussions of their implications, are presented below.

4.1. Survey design

For this study, a questionnaire was developed to collect data consisting of expert judgments with regard to prioritizing competency needs and training methods for HRD staffs. The study was conducted in two stages. In the first stage, through an intensive literature review and significant discussions with seven HR experts, the content of the questionnaire was fixed. This process involved adoption of the 2004 ASTD Competency Model and the 18 training methods, and design of the measurement scale.

The questionnaire consists of three sections. Section one is devoted to basic information about the respondents. The second portion asks these expert respondents to perform serial assessments of relative importance, using the QFD approach with a 5 point scale, involving (1) the degree of importance for each role; (2) the degree of importance for each AOE with respect to each role; and (3) the degree of importance for each foundational competency with respect to each AOE. After completion of this stage, the normalized score can be obtained for each factor of the 2004 ASTD Competency Model. The third portion asks these same experts to rank all of the 18 training methods from best to worst with respect to each foundational competency, using the Borda Count method.

4.2. Sampling

The first science-based industrial park established in Taiwan is the Hsin-Chu Science-Based Industry Park (HSIP) introduced in 1980. It is widely recognized to have contributed greatly to the development of Taiwan's high-tech industries. The enterprises in HSIP are representative high-technology industries of Taiwan. Their fields of business operation may be assigned to six broad categories, as follows: Integrated Circuits, Computers and Peripherals, Telecommunications, Optoelectronics, Precision Machinery, and Biotechnology. In recent years, these enterprises in HSIP have been facing competitive price cutting and lower margins, so they have a pressing need to apply competency models in order to optimize utilization of human resources for the purpose of enhancing labor productivity, corporate performance and global competitiveness. Due to this urgent need for utilization of competency models, the Taiwan Style Competency Study Group (TSCSG),

comprising 54 members, was established in 2003. Its purpose is to promote the use of competency for companies in HSIP. The TSCSG belongs to the Hsin-Chu Human Resource Management Association (HC-HRMA) which is mainly composed of HR managers from the HSIP. This research targeted the members of TSCSG. Members were contacted by telephone, the purpose of the investigation was explained to them and they were invited to participate. In all, there were 45 participants willing to join. These participants were all HR managers and all had experience in developing competency models for their companies. In March 2005 the author mailed the questionnaire to the participating TSCSG members, with almost all TSCSG members covered. By April 2005, in total, 32 valid responses were obtained, representing a response rate of 71% which was considered an acceptable level for this research.

4.3 Data analysis

After conducting the data analysis, we could clearly discern the normalized weight of each element within the 2004 ASTD Competency Model, as well as the ranking of training methods with respect to each foundational competency. Specifically, Table 1 shows that normalized weights of roles (from R_1 to R_4) and AOE (from A_1 to A_9), in which the most leading role was "Project manager" (R_3) of 27.18% followed by "Professional specialist" (R_4) of 25.24%, and the most essential AOE was "Measuring and evaluating" (A_4) of 11.56% followed by "Improving human performance" (A_2) of 11.40%. Moreover, as shown in Table 2, the data shows the normalized weights of foundational competencies (from C_1 to C_{12}), in which the most outstanding competency was "Applying business acumen" (C_7) with 8.90%, followed by "Analyzing needs and proposing solutions" (C_6) with 8.87%.

In addition, Table 3 shows the ranking in terms of 18 training methods with respect to each foundational competency. For example, the top 3 training methods for "Building trust" were ranked in the following order: the first was "Vestibule training" (T_{16}), the second was "Coaching and mentoring" (T_1), and the third was "Apprenticeship training" (T_{14}). Further, from the total ranked methods, the top 3 training methods for foundational competencies were ranked in the following order: the first was "Internships" (T_6), the second was "Coaching and mentoring" (T_1), and the third was "Job rotation" (T_8).

Table 1 Normalized weight of roles and AOE

Roles \ AOE		Designing learning	Improving human performance	Delivering training	Measuring and evaluating	Facilitating organizational change	Managing the learning function	Coaching	Managing organizational knowledge	Career planning and talent management	Normalized Weight %
		A ₁	A ₂	A ₃	A ₄	A ₅	A ₆	A ₇	A ₈	A ₉	
Learning strategist	R ₁	12.68%	10.60%	11.64%	10.60%	9.56%	12.27%	10.60%	10.60%	11.43%	24.76%
Business partner	R ₂	9.09%	12.20%	10.42%	12.42%	13.75%	10.20%	10.42%	11.75%	9.76%	22.82%
Project manager	R ₃	10.06%	11.41%	10.44%	11.61%	12.38%	10.64%	10.83%	11.41%	11.22%	27.18%
Professional specialist	R ₄	10.88%	11.51%	11.30%	11.72%	10.04%	10.88%	11.30%	10.88%	11.51%	25.24%
Normalized Weight %		10.70%	11.40%	10.95%	11.56%	11.39%	11.01%	10.80%	11.15%	11.03%	

Table 2 Normalized weight of foundational competencies

Foundational competencies \ AOE		Designing learning	Improving human performance	Delivering training	Measuring and evaluating	Facilitating organizational change	Managing the learning function	Coaching	Managing organizational knowledge	Career planning and talent management	Normalized Weight
		A ₁	A ₂	A ₃	A ₄	A ₅	A ₆	A ₇	A ₈	A ₉	
Building trust	C ₁	7.49%	9.06%	8.91%	9.15%	8.81%	7.82%	9.02%	8.25%	8.02%	8.53%
Communicating effectively	C ₂	8.49%	8.76%	9.89%	9.65%	8.66%	8.33%	8.40%	8.10%	8.35%	8.74%
Influencing stakeholders	C ₃	6.82%	7.83%	10.37%	8.15%	8.96%	7.14%	9.80%	7.46%	7.04%	8.20%
Leveraging diversity	C ₄	8.65%	7.83%	7.46%	7.65%	8.22%	9.01%	7.93%	8.73%	7.69%	8.12%
Networking and partnering	C ₅	7.15%	6.45%	7.94%	6.49%	8.66%	7.65%	7.78%	8.57%	7.86%	7.63%
Analyzing needs and proposing solutions	C ₆	9.98%	9.22%	7.62%	9.48%	7.93%	10.03%	8.55%	9.05%	8.18%	8.87%
Applying business acumen	C ₇	9.82%	8.60%	9.72%	8.82%	8.52%	9.01%	8.40%	8.89%	8.51%	8.90%
Driving results	C ₈	7.65%	9.37%	7.29%	9.48%	8.22%	8.67%	8.71%	7.94%	8.51%	8.44%
Planning and implementing assignments	C ₉	8.32%	8.29%	8.10%	7.49%	8.66%	8.84%	8.40%	7.62%	8.51%	8.25%
Thinking strategically	C ₁₀	9.48%	8.29%	7.62%	8.49%	9.54%	8.33%	8.24%	9.37%	8.84%	8.70%
Demonstrating adaptability	C ₁₁	7.15%	7.22%	7.46%	6.66%	7.78%	6.97%	6.53%	8.10%	8.67%	7.40%
Modeling personal development	C ₁₂	8.99%	9.06%	7.62%	8.49%	6.02%	8.16%	8.24%	7.94%	9.82%	8.23%
Normalized Weight %		10.70%	11.40%	10.95%	11.56%	11.39%	11.01%	10.80%	11.15%	11.03%	

Table 3 Ranking of 18 training methods

Foundational competencies \ Training methods		Coaching and mentoring	Business games	Case study	Videotapes	In-basket training	Internships	Role playing	Job rotation	Computer-based training	And just-in time training	Distance learning and	Classroom program	On-the-job training	Apprenticeship training	Simulators	Vestibule training	Corporate universities	Community colleges
		T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄	T ₁₅	T ₁₆	T ₁₇	T ₁₈
Building trust	C ₁	2	9	8	17	11	7	6	4	16	13	14	12	5	3	10	1	15	18
Communicating effectively	C ₂	1	9	6	13	12	7	8	3	18	17	15	11	2	4	10	5	14	16
Influencing stakeholders	C ₃	5	10	9	16	11	1	3	8	18	17	15	12	6	4	2	7	13	14
Leveraging diversity	C ₄	9	12	3	13	16	1	8	4	10	17	14	11	5	6	2	7	15	18
Networking and partnering	C ₅	4	10	9	17	11	2	3	1	18	14	15	16	5	6	7	8	12	13
Analyzing needs and proposing solutions	C ₆	6	3	1	13	11	2	8	4	16	15	18	12	5	7	9	10	14	17
Applying business acumen	C ₇	8	11	1	13	2	7	9	3	17	12	18	14	4	10	5	6	15	16
Driving results	C ₈	4	7	8	15	10	1	2	6	12	14	16	13	5	9	3	11	17	18
Planning and implementing assignments	C ₉	4	12	7	14	9	2	8	3	18	17	15	11	5	6	1	10	13	16
Thinking strategically	C ₁₀	5	7	2	13	10	3	4	11	18	15	17	12	8	6	1	9	14	16
Demonstrating adaptability	C ₁₁	8	13	10	16	14	2	3	4	18	15	17	6	9	1	5	7	11	12
Modeling personal development	C ₁₂	3	14	5	16	9	8	2	7	15	18	17	13	6	1	4	10	12	11
Total Rank		2	10	8	14	11	1	5	3	18	15	17	12	7	4	6	9	13	16

4.4 Discussion

This empirical study successfully dealt with the problem of prioritizing the competency needs and training methods for HRD staffs. After evaluation of the results, it is able to arrive at the following implications with regard to business management.

First, Table 1 shows that the most desired role was "Project manager" (R₃) with a rating of 27.18% followed by "Professional specialist" (R₄) with 25.24%, not "Learning strategist" (R₁) or "Business partner" (R₂). This reflected that the roles of HRD staffs were regarded as more functional than strategic.

Secondly, we may obtain significant meanings, if the essential AOE's are divided into two groups (Table 4) according to the average normalized weight of 11.11%: one group is superior with higher normalized weights more than 11.11%, while the other group is inferior. The superior group includes: "Measuring and evaluating" (A₄) with 11.56% followed by "Improving human performance" (A₂) with 11.40%, "Facilitating organizational change" (A₅) with 11.56%, and "Managing organizational knowledge" (A₈) with 11.15%. The inferior group includes: "Career planning and talent management" (A₉), "Managing the learning function" (A₆), "Delivering training" (A₃), "Coaching" (A₇), and "Designing learning" (A₁). This reflected that the AOE's of HRD staffs were less expected in basic HRD tasks, but were more expected in progressive missions.

Table 4 Normalized score of AOE's

Superior group (average > 11.11%)		Inferior group (average < 11.11%)	
Measuring and evaluating (A ₄)	11.56%	Career planning and talent management (A ₉)	11.03%
Improving human performance (A ₂)	11.40%	Managing the learning function (A ₆)	11.01%
Facilitating organizational change (A ₅)	11.39%	Delivering training (A ₃)	10.95%
Managing organizational knowledge (A ₈)	11.15%	Coaching (A ₇)	10.80%
		Designing learning (A ₁)	10.70%

5 Conclusions

For any company hoping to become an effective learning organization, HRD staffs are crucial catalysts for designing and implementing learning in an organization. Hence, upgrading the capabilities of HRD staffs is becoming a pressing issue. To address this issue, the ASTD has provided a new competency model for helping HRD practitioners to succeed in upgrading workplace learning and performance. However, to date, few researchers have investigated this kind of issue. This paper aimed to investigate training needs and methods for HRD staffs of high-tech companies, based on the 2004 ASTD

The ASTD Competency Model divides foundational competencies into three clusters: the "Interpersonal", the "Business/Management", and the "Personal". Hence, normalized weights of those 12 foundational competencies (see Table 2) are distributed into three clusters, and the sum of normalized weights of each cluster can then be obtained: "Business/Management" cluster was highest with 43.16%, followed by "Interpersonal" cluster with 41.21%, and "Personal" cluster with 15.63%. This meant that the competency needs for HRD staffs received greatest emphasis in the area of "Business/Management". Additionally, the ranking of the 18 training methods was varied with regard to each foundational competency. There are several interesting findings which emerge from the total ranking (see Table 3). For example, the top 3 training methods ("Internships" (T₆), "Coaching and mentoring" (T₁), and "Job rotation" (T₈)) all require experience for delivery and involve interpersonal interaction, while the last 2 training methods both involve computer technology (the last one was "Computer-based training" (T₉) and the next-to-last one was "Distance learning and videoconferencing" (T₁₁)). This revealed that the training methods for foundational competencies were focused on human experience delivery rather than on computer technology.

Competency Model.

This Hybrid Approach, combining QFD with Borda Count, constitutes an appropriate and practical decision-making method. We employ the QFD to delineate training needs and the Borda Count to rank training methods. The resulting findings yield meaningful implications with regard to the design of HRD training programs. This study reveals that the competency needs for HRD staffs received most emphasis in the area of "Business/Management", and that the training methods for foundational competencies should be focused on human experience delivery rather than on computer

technology.

This study also provides the groundwork for more advanced studies. Some meaningful information has been obtained; this study is limited, however, in that the sample size is small and therefore lacks extensive statistical significance. However, the above findings do reflect the situation at several important Taiwanese high-tech companies in HSIP in terms of how they considered upgrading the competencies of HRD staffs.

As for continuing research in future, the author suggests there are two projects worthy of consideration: the first would be to investigate whether the differences in corporate performance might result in different competency needs; the second would be to examine whether distinct training methods bring out different effects.

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