

THE ROLE OF TRAINING AND FIRM'S COMPETITIVENESS IN THE KNOWLEDGE-BASED ECONOMY

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ABSTRACT

Framed theoretically on the resource-based view of the firm (RBV), this study examines the perceptions of human resource professionals employed in small, medium, and large firms operating and competing in the knowledge-based economy across three different industries – service, retailing, and manufacturing – regarding the impact of training on various measures of the firm's competitiveness. Based on the analysis of data obtained from the online survey of 111 responses, the majority of human resource professionals rated the impact of training on various measures of their firms' competitiveness moderate, high, or very high. In addition, the human resource professionals were most frequently based on their communication with colleagues and management team regarding their perceptual judgment of the impact of training on all measures of their firms' competitiveness.

Keywords: *Training, Firm's Competitiveness, Resource-based View of the Firm*

INTRODUCTION

Theoretical establishment in business strategy has elevated the role of human resources, both as a business function and as a labor, in creating sustained competitive advantage. The resource-based view of the firm (Barney, 1986, 1991, 1995) proposed that firms could create and obtain sustained competitive advantage by creating value in a fashion that is rare and impossible for rivals to imitate. The resource-based view of the firm argues that conventional sources such as natural resources, technology, economies of scale, operational and manufacturing designs etc., can be utilized to generate sustained competitive advantage, yet these sources can be easily copied by competitors. In this case, any sources of sustained competitive advantage that cannot be easily imitated are especially important. The resource-based view of the firm established that people (human resources), a repository of knowledge and skills, can be leveraged to create value in a way that is difficult for competitors to imitate (Barney, 1991). People are the strategic assets meaning "the set of difficult to trade and imitate, scarce, appropriable, and specialized resources and capabilities that bestow the firm's competitive advantage" (Amit & Shoemaker, 1993, p. 36).

Ultimately people, a repository of knowledge and skills, are the most valuable and necessary asset for any firm to compete and generate competitive advantage (Barney & Wright, 1998; Gorman, Nelson, & Glassman, 2004; Lopez-Cabrales, Valle, & Herrero, 2006; Shee & Pathak, 2005; Wright, McMahan, & McWilliams, 1994). Strategically speaking, a firm may have a great strategic plan in place, yet it means nothing if its people lack access to appropriate and relevant knowledge, skills, and attitudes to successfully support or carry out the strategic plan. Since people are the core driver of successful strategy implementation, it is vital for those, especially top management and executive teams, who plan and formulate strategy to realize that having their employees armed with appropriate knowledge and skills is a key element for successful strategy implementation. Porter (2000) stressed that firms operating in the knowledge-based economy become more and more dependent on the skills and knowledge of their workers. In particular, training has traditionally been a conventional method utilized by virtually every firm, big and small, to prepare and arm both current and new employees with necessary and relevant knowledge and skills needed to perform day-to-day operational activities that ultimately determine organizational performance, success and competitiveness. Research in strategic human resource management, organizational performance, performance improvement, and organizational competitive

advantage has conceptually and empirically linked training to organizational performance and sustained competitive advantage (Akhtar, Ding, & Ge, 2008; Arthur, 1994; Bartel, 1994; Cutcher-Gershenfeld, 1991; Gerhart & Milkovich, 1990; Huselid, 1995; Huselid & Becker, 1996; Ichiniowski, Shaw, & Prennushi, 1997; MacDuffie, 1995; Whitney, 2005; Wright, Gardner & Moynihan, 2003).

The problem of this study was to investigate perceptions of human resource professionals employed in the firms operating in knowledge-based economy regarding the impact of training on the firm's competitiveness. Training, as one of the human resource practices, has been qualitatively and quantitatively established in literature to have a positive impact on organizational performance and competitiveness; nonetheless, the extent to which training is genuinely perceived and valued to be strategically important by the firm's top management is still questionable. The current study sought to contribute to a greater understanding of the impact of training on the competitiveness of firms operating in the globally linked knowledge-based economy. The following research questions were proposed to address the problem of this study.

Question 1: What is the perceived (a) impact of training on the competitiveness of human resource professionals' firms, and (b) on what is the perception based?

Question 2: Is There a Relationship between the Perceived Impact of Training on the Competitiveness of Human Resource Professionals' Firms and Their (a) Gender, (b) Age, (c) Number of Years in Current Firm, (d) Highest Educational Level, (e) Type of Firm, (f) Size of Firm, (g) Firm's Engagement in Global Operations?

METHODS

Research Design

The design of the present study followed a non-experimental descriptive study using online survey method for data collection. The online survey method was utilized to collect necessary data to answer the questions posed in the present study because the online survey provided great convenience and efficiency in respect to data collection; it provided economies of scale to the investigator and saved time (Taylor, 2000; Yun & Trumbo, 2000). Furthermore, the variables in the current study were treated as characteristics instead of dependent or independent variables because it was not the objective of this study to make any predictions or identify any causal effects between the variables.

Population and Sample Size

The target population identified in the present study was human resource professionals who interacted on the American Society for Training and Development (ASTD) discussion board located at <http://community.astd.org> and networked on Twitter, Facebook, and LinkedIn. The human resource professionals were identified as those whose jobs were related to human resource development and management. The present study utilized a convenience sample due to the fact that human resource professionals who interacted on the American Society for Training and Development (ASTD) discussion board located at <http://community.astd.org> and networked on Twitter, Facebook, and LinkedIn were conveniently accessible and technologically savvy. As of September 15, 2009, the population parameter of human resource professionals who interacted on the ASTD discussion board located at <http://community.astd.org> and networked on Twitter, Facebook, and LinkedIn was estimated at 6,450 (ASTD discussion board = 6,010; Twitter = 24; Facebook = 147; LinkedIn = 269). To estimate a minimum sample size (n) of the population (N) of 6450 human resource professionals, $n = N / [1 + N*(e)^2]$ was adopted from Isreal (1992) using a 95% confidence level and $\pm 5\%$ confidence interval (e). Thus, the minimum sample size was calculated to be 376 ($n = 6450 / [1 + 6450*(0.05)^2] = 376$). To generate a higher response rate, a total number of 450 invitations soliciting participation in the survey were initiated on the ASTD discussion board located at <http://community.astd.org>, Twitter, Facebook, and LinkedIn.

There were 111 responses in total. However, several responses contained some missing data. For instance, several responses contained missing data on some questionnaire items and had complete data on other

items. Therefore, although several responses contained missing data, they were still included in the statistical analysis. The response rate was estimated at 24.66% -- total number of valid responses (111) divided by total number of invitations (450) multiplied by 100 -- [(111/450)*100 = 24.66%]. While the response rate of 24.66% was considered acceptable since the average estimate of response rate for online surveys is between 20% and 30% (Hamilton, 2003), the results were subject to non-response bias (due to lower response rate). As a result, the comparison of the mean rating of each item of the first 20 responses and the latest 20 responses was performed using the independent samples *t*-test;

$$t = \frac{\bar{X}_1 - \bar{X}_2}{S_{X_1X_2} \cdot \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

where \bar{X}_1 is mean rating of each item of the first 20 responses, and \bar{X}_2 is the mean rating of each item of the latest 20 responses. $S_{X_1X_2}$ is an estimator of the common standard deviation of the first and latest samples. In addition, n_1 is the number of valid responses of the first 20 responses, and n_2 is the number of valid responses of the latest 20 responses. The mean ratings of each item of the first 20 responses and latest 20 responses were not statistically different at .05 level. This implied that the first 20 responses and latest 20 responses were similar and did not show any systematic differences that might cause any major concerns or red flags.

Research Instrument

The online questionnaire was developed by the researcher. The questionnaire consisted of six sections. The first section asked respondents to provide demographic data. The second section asked respondents to indicate types of training provided in their firms. The third section asked respondents to indicate training delivery formats adopted by their firms. The items found in the second and third sections were adopted from the 2008 industry report and exclusive analysis of the U.S. training industry (Bersin & Associates, 2008). The fourth section asked respondents to provide general information related to their firms. The fifth section asked respondents to rate (5=Very High, 4=High, 3=Moderate, 2=Low, and 1=Very Low) their level of agreement of the impact of training on measures of the firm's competitiveness; the N/A option was also provided. In addition, respondents were asked how (on what basis) they determined the extent they perceived training to impact their firm's competitiveness. Finally, the sixth section provided respondents an optional comment text area should they have any comments or opinions to add to the questionnaire.

Validity and Reliability of the Data Collection Instrument

The extensive review of literature, input from the panel of experts, and feedback from participants in the pilot study were sufficient in establishing the data collection instrument validity. The experts were faculty members in the Department of Workforce Education and Development, Southern Illinois University Carbondale. Using data obtained from the pilot survey, the Cronbach's α (alpha) was calculated to determine the reliability of the data collection instrument. The formula below was used to estimate the Cronbach's α (alpha);

$$\alpha = \frac{N}{N-1} \left(1 - \frac{\sum_{i=1}^N \sigma_{Y_i}^2}{\sigma_X^2} \right)$$

where N is the number of the items, $\sigma_{Y_i}^2$ is the variance of the observed total rating scores, and σ_X^2 is the variance of item i . The Cronbach's α (alpha) was only calculated for the fifth and sixth sections of the survey. Based on data obtained from the pilot survey, the Cronbach's α (alpha) was estimated at .909. Based on data obtained from the official survey, the calculation of the Cronbach's α (alpha) was .920; this value was much higher than the acceptable value of .700.

Data Collection Process

A total number of 450 invitations soliciting participation in the survey were initiated at about 3:45 PM CST on September 15, 2009, on the ASTD discussion board located at <http://community.astd.org>, Twitter, Facebook, and LinkedIn. Specifically, eight invitations were posted on the ASTD discussion board. Twenty-six invitations were posted on ASTD Chapters' Twitter pages, and 269 invitations were sent to

human resource professionals on LinkedIn. Finally, 147 invitations were sent to human resource professionals on Facebook. A reminder was initiated at around 6:30 AM CST on September 22, 2009. The invitation was a short message electronically posted in the ASTD's online forum and ASTD chapters' and members' Twitter pages and sent to ASTD chapters and members on Facebook and LinkedIn soliciting participation in the study.

Data Analysis

Data analysis took place immediately following the pre-specified date for data collection cut off point which was on September 25, 2009, at 5:30 PM CST. Any and all responses that had not been entered into the analysis system were entered, and the data were reviewed for accuracy and completeness. Random samples were pulled from the file of data collection instruments, and the corresponding entries were audited to insure proper data input. The complete computer tabulation of the data collection responses was performed using the Statistical Package for the Social Sciences (SPSS) 16.0. The data were analyzed using central tendency and Chi-square (χ^2). The following is the formula used for Chi-square (χ^2) calculation,

$$\chi^2 = \sum_{i=1}^R \sum_{j=1}^C \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

where O_{ij} is the observed frequencies in a cell, and E_{ij} is the expected frequencies in a cell. The Spearman's correlation coefficient (r_s) was calculated using the classic Pearson's correlation coefficient between ranks of the ratings.

RESULTS

Participants' Characteristics

Table 1 provides a description of participant characteristics expressed statistically in frequency and percentage. Among the 111 participants, 48 (43.2%) and 63 (56.8%) were male and female, respectively. The largest categories of participant age were 41-50 (34 or 30.6%) and 51-60 (30 or 27%). As for the American Society for Training and Development (ASTD) membership, 49 (44.1%) of the participants identified themselves as national members, and 48 of the participants were members of the ASTD's local chapters in 20 different U.S. states; Idaho and Illinois had the highest numbers (9 and 7, respectively) of participants who were members of ASTD's local chapters. Regarding the job title, 28 (25.2%) of the participants were training managers. In respect to working experience, 45 (40.5%) of the participants indicated that they had worked for their current firms for more than 5 years. For education, 56 (50.5%) of the participants held Master's degrees; 13 (11.79%) held doctoral degrees; and 36 (32.4%) of the participants had a major in education.

Types of Training and Training Delivery Formats in Participants' Firms

Types of training and training delivery formats offered in participants' respective firms are shown in Table 2. The professional/industry-specific training was the most frequently identified (k = 89; 15.1%) as the type of training offered in participants' firms. The virtual classroom was the least frequently (k = 60; 24.2%) used format.

Characteristics of Participants' Firms

The characteristics of participants' firms are exhibited in Table 3. The participants' firms were grouped into three industries – service, retailing, and manufacturing; 74 (66.7%) of the firms were service-based. In addition, a large number of participants were employed in large firms (61 or 55%). The firms were categorized into three groups: small (100 or less employees), medium (101-1000 employees), and large (1001 or more employees). There were 26 (23.4%) small firms. In addition, 58 (52.3%) of the participants' firms were engaged in global operations.

Table 1: Participant Characteristics

Characteristics	n	%
Gender:		
Male	48	43.2
Female	63	56.8
Total	111	100.0
Age:	9	8.2
21-30	25	22.5
31-40	34	30.6
41-50	30	27.0
51-60	9	8.1
61-70	4	3.6
No Response	111	100.0
Total		
ASTD Membership:		
National Member	49	44.1
Local Member:		
California	5	4.5
Florida	4	3.6
Georgia	1	0.9
Idaho	9	8.1
Illinois	7	6.3
Indiana	2	1.8
Louisiana	1	0.9
Massachusetts	1	0.9
Michigan	1	0.9
Minnesota	1	0.9
Missouri	2	0.8
Nebraska	1	0.9
New Jersey	2	1.8
New York	1	0.9
North Carolina	2	1.8
Ohio	1	0.9
Oklahoma	1	0.9
South Dakota	1	0.9
Texas	3	2.7
Washington	2	1.8
Total	48	43.2
Non-ASTD Member	14	12.6
Total	111	100.0
Position/Job Title:		
Human Resource Managers	8	7.2
Instructional Design Managers	5	4.5
Trainer	12	10.8
Training Consultant	19	17.1
Training Director	17	15.3
Training Manager	28	25.2
Training Specialist	16	14.4

Others	6	5.4
Total	111	100.0
Tenure:		
1 – 5 Years	62	55.9
More than 5 Years	45	40.5
No Response	4	3.6
Total	111	100.0
Highest Level of Education:		
High School Diploma	4	3.6
Associate Degree	1	0.9
Bachelorette	37	33.3
Master's	56	50.5
Doctorate	13	11.8
Total	111	100.0
Major:		
Education	36	32.4
Business	17	15.3
HRD/ODS (Organizational Development Studies)	25	22.5
Majors Related to Liberal Arts	20	18.0
High School Diploma	4	3.6
Others	7	6.3
No Response	2	1.8
Total	111	100.0

Table 2: *Types of Training and Training Delivery Formats Offered in Participants' Firm*

Types of Training and Training Delivery Formats	k	%
Types of Training:		
Profession/Industry-Specific Training	89	15.1
Mandatory/Compliance Training	73	12.4
Sales Training	50	8.5
Management/Supervisory Training	79	13.4
Interpersonal/Soft Skills Training	80	13.6
IT/Systems Training	64	10.9
Customer Service Training	58	9.9
Executive Development Training	45	7.7
Desktop Application Training	46	7.8
Others	04	0.7
Total	588	100.0
Training Delivery Formats		
Instructor-Led Classroom	106	42.7
Online Self-Study	73	29.4
Virtual Classroom	60	24.2
Others	09	3.6
Total	248	100.0

Table 3: Characteristics of Participants' Firms

Characteristics of Participants' Firms	n	%
Industry:		
Service	74	66.7
Retailing	10	9.0
Manufacturing	25	22.5
No Response	02	1.8
Total	111	100.0
Size:		
Small (100 or Less Employees)	26	23.4
Medium (101-1000 Employees)	20	18.0
Large (1001 or More Employees)	61	55.0
No Response	04	3.6
Total	111	100.0
Engagement in Global Operations:		
Yes	58	52.3
No	51	45.9
No Response	2	1.8
Total	111	100.0

Research Question 1: What Is the Perceived (a) Impact of Training on the Competitiveness of Human Resource Professionals' Firms, and (b) on What is the Perception Based?

This question consists of two parts. The first part of this question asked participants to perceptually rate the impact of training on each measure of their firms' competitiveness, and the second part asked participants to provide the bases, on which they perceived the impact of training. Table 4 shows the participants' rating of the impact of training on each measure of their firms' competitiveness. Forty-three (38.7%) of the participants indicated that training contributed very highly to the improvement of their firms' readiness for current and future business opportunities and threats, and 42 (37.8%) participants reported that training contributed very highly to their firms' productivity. Thirty-four (34.3%) of the participants perceived that training contributed very highly to their firms' efficiency. Only 6 (5.4%) of the participants perceived that training had a very low contribution to their firms' differentiation in the marketplace. Likewise, 11 (9.9%) of the participants perceptually judged that training had a low contribution to the improvement of the design and development of their firms' new products/services. Nine (8.1%) of the participants identified that training had a very low contribution to the effective introduction of their firm's new products/services to the market. Moreover, 7 (6.3%) of the participants determined that training had a very low contribution to the effective introduction of new business processes in their firms; 32 (28.8%) participants indicated that training highly contributed to the improvement of their firms' current products/services. Based on their rating, 35 (31.5%) participants expressed that training contributed very highly to the improvement of current business processes in their firms. The participants' mean ratings of the impact of training on measures of their firms' were 3.68 (readiness for new opportunities and threats), 3.85 (productivity), 3.71 (efficiency), 3.18 (differentiation), 2.66 (new product/service design), 2.87 (introduction of new product/service to the market), 3.30 (introduction of new business processes), 3.45 (current product/service improvement), and 3.34 (current business process improvement).

The bases on which the participants perceived the impact of training on each measure of their firms' competitiveness are presented in Table 5. The participants were most frequently based on their communication with colleagues and management team (k = 82; 26.6%) regarding their perception of the

Table 4: Participants' Rating of the Impact of Training on Measures of Their Firms' Competitiveness

Measures of Competitiveness	5 (Very High)		4 (High)		3 (Moderate)		2 (Low)		1 (Very Low)		N/A		No Response		Total		Mean (n)
	N	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	
	FC1	43	38.7	21	18.9	26	23.4	08	07.2	4	03.6	06	05.4	03	02.7	111	
FC2	42	37.8	33	29.7	18	16.2	06	05.4	4	03.6	04	03.6	04	03.6	111	100	3.85 (107)
FC3	37	33.3	33	29.7	22	19.8	07	06.3	4	03.6	05	04.5	03	02.7	111	100	3.71 (108)
FC4	34	30.6	22	19.8	17	15.3	14	12.6	6	05.4	15	13.5	03	02.7	111	100	3.18 (107)
FC5a	25	22.5	16	14.4	19	17.1	11	09.9	17	15.3	19	17.1	04	03.6	111	100	2.66 (107)
FC5b	31	27.9	19	17.1	16	14.4	09	08.1	10	09.0	22	19.8	04	03.6	111	100	2.87 (107)
FC5c	34	30.6	22	19.8	24	21.6	08	07.2	7	06.3	12	10.8	04	03.6	111	100	3.30 (107)
FC5d	31	27.9	32	28.8	24	21.6	03	02.7	8	07.2	09	08.1	04	03.6	111	100	3.45 (107)
FC5e	35	31.5	20	18.0	26	23.4	09	08.1	6	05.4	11	09.9	04	03.6	111	100	3.34 (107)
Crombach's α (alpha)					.922												

Note:

- FC1 = Readiness for New Opportunities and Threats
- FC2 = Productivity
- FC3 = Efficiency
- FC4 = Differentiation
- FC5a = New Product/Service Design
- FC5b = Introduction of New Product/Service to the Market
- FC5c = Introduction of New Business Processes
- FC5d = Current Product/Service Improvement
- FC5e = Current Business Process Improvement
- N/A = No Answer (No Impact)

Table 5: *The Bases on Which the Participants Perceived the Impact of Training on Each Measure of Their Firms' Competitiveness*

Bases of the Impact	FC1 (n = 108)		FC2 (n = 107)		FC3 (n = 108)		FC4 (n = 108)		FC5 (n = 107)		FC6 (n = 107)		FC7 (n = 107)		FC8 (n = 107)		FC9 (n = 107)	
	k	%	k	%	k	%	k	%	k	%	k	%	k	%	k	%	k	%
Training Evaluation	66	21.4	65	22.9	53	18.1	38	15.8	31	15	36	16.7	49	19.4	51	19.2	49	18.8
Executive Report	36	11.7	36	12.7	42	14.3	39	16.2	25	12.1	31	14.4	31	12.3	32	12.1	37	14.2
Communication*	82	26.6	77	27.1	83	28.3	68	28.3	61	29.6	61	28.4	76	30.2	79	29.8	73	28.1
Observation	77	25.0	72	25.4	80	27.3	63	26.2	60	29.1	56	26	62	24.6	70	26.4	63	24.2
Meeting	37	12.0	29	10.2	30	10.2	25	10.4	22	10.7	22	10.2	27	10.7	26	09.8	31	11.9
Other	10	03.2	5.0	1.80	5.0	01.7	07	02.9	07	03.4	09	04.2	07	02.8	07	02.6	07	02.7
Total	308	100	284	100	293	100	240	100	206	100	215	100	252	100	265	100	260	100

Note:

* Communication with colleagues and management team

FC1 = Readiness for New Opportunities and Threats

FC2 = Productivity

FC3 = Efficiency

FC4 = Differentiation

FC5a = New Product/Service Design

FC5b = Introduction of New Product/Service to the Market

FC5c = Introduction of New Business Processes

FC5d = Current Product/Service Improvement

FC5e = Current Business Process Improvement

k = Total Number of Bases Identified by n Participants for Each Measure of the Firm's Competitiveness

extent to which training contributed to the improvement of their firms' readiness for current and future business opportunities and threats. In addition, communication with colleagues and management team was also the most frequently identified basis on which the participants based their perceptual judgment of the impact of training on productivity (k = 77; 27.1%), efficiency (k = 83; 28.3%), differentiation (k = 68; 28.3%), new product/service design (k = 61; 29.6%), introduction of new product/service to the market (k = 61; 28.4%), introduction of new business processes (k = 76; 30.2%), current product/service improvement (k = 79; 29.8%), and current business process improvement (k = 73; 28.1%).

Research Question 2: Is There a Relationship between the Perceived Impact of Training on the Competitiveness of Human Resource Professionals' Firms and Their (a) Gender, (b) Age, (c) Number of Years in Current Firm, (d) Highest Educational Level, (e) Type of Firm, (f) Size of Firm, (g) Firm's Engagement in Global Operations?

There was no statistically significant relationship between the perceived impact of training on each measure of the competitiveness of the participants' firms and their gender, age, years of working experience in their current firms, or educational level. All the p-values were larger than .05. However, there was a statistically significant relationship between the participants' firm sizes and the extent to which training contributed to (a) the improvement of the participants' firms' new product/service design, $\chi^2(2, N = 107) = 10.36, p = .005$, (b) effective introduction of the participants' firms' new product/service to the market, $\chi^2(2, N = 107) = 6.75, p = .034$, and (c) improvement of the participants' firms' current product/service, $\chi^2(2, N = 107) = 6.70, p = .035$.

CONCLUSIONS

The findings indicate that the majority of the participants rated the impact of training on measures of their firms' competitiveness moderate, high, or very high. The participants' mean ratings of the impact of training on measures of their firms' were 3.68 (readiness for new opportunities and threats), 3.85 (productivity), 3.71 (efficiency), 3.18 (differentiation), 2.66 (new product/service design), 2.87 (introduction of new product/service to the market), 3.30 (introduction of new business processes), 3.45 (current product/service improvement), and 3.34 (current business process improvement). These results support other findings reported in the literature regarding the impact of training on measures of the firm's competitiveness. The findings uniquely contribute to a better understanding of the impact of training on the firm's innovation because in establishing a relationship between training and the firm's innovation, most of the studies in the literature treated innovation as a standalone variable. However, the current study included five different variables to capture the firm's innovation. Overall, it can be concluded that human resource professionals believe their activities contribute to the firm's competitiveness. In addition, the analysis of the data revealed that *communication with colleagues and management team* was the most frequently identified basis on which the participants based their perceptual judgment of the impact of training across all measures of their firms' competitiveness. The second most frequently identified basis was *observation*. This indicates that the participants may rely more frequently on informal (non-scientific and subjective) evaluations in judging the impact of training on their firms' competitiveness.

In addition, no statistically significant relationship was found between the participants' perception of the impact of training on their firm's competitiveness and their demographic characteristics. Therefore, it is maybe that the participants' perceptual judgment of the impact of training on measures of their firms' competitiveness is independent of their gender, age, years of working experience in their current firms, and educational level. However, a statistically significant relationship was found between the participants' firm sizes and the extent to which training contributed to (a) the improvement of the participants' firms' new product/service design, (b) effective introduction of the participants' firms' new product/service to the market, and (c) improvement of the participants' firms' current product/service. The improvement of the participants' firms' new product/service design, effective introduction of the participants' firms' new product/service to the market, and improvement of the participants' firms' current product/service are three of the five variables capturing the firm's innovation. Other than the three measures of firm's innovation, it seems that the participants' perception of the impact on measures of their firms' competitiveness is independent of their firms' type, size, and engagement in global operations.

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