AN EXPLORATORY STUDY OF MEASURING HUMAN RESOURCE MANAGEMENT EFFECTIVENESS IN SMALL AND MEDIUM ENTERPRISES

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ABSTRACT

Business functions are both interconnected and indispensably individually -- each important in its own right. If we were to take a more analytical look at them, though, we would find "people" to be the most important business function of all. Although Huselid, Jackson, & Schuler (1997) have provided an inventory by which Human Resource Management Effectiveness (*HRME*) can be evaluated, no clear steps or methods for using this inventory effectively have since been provided, nor has a set of accepted standards been made available by which the effectiveness of the inventory can be measured. Additionally, the emphases found in Human Resource Management activities in industries overseas are different, as is the content of such activities**.** It is for these reasons, then, that the present study will design a questionnaire, suitable for use by industry, to measure the effectiveness of human resource management, employing as its focus high-tech companies in Taiwan.

The main goal of the present research is to develop a localized measurement inventory suitable to the task of making evaluations of HRME in Taiwanese industry. In addition to researching relevant literature on the subject, the steps involved in the construction of our inventory will include a Consultation of organizational behavior in Taiwan and the opinions of Human Resource Management experts, scholars, and practitioners. We will summarize information; select measurement indicators; and construct initial evaluation dimensions and items. Formal inventory reliability tests will use the following to certify the stability and internal consistence of inventory : Cronbach's a Coefficient, the Item-Total Correlation Coefficient, and Test-Retest Reliability. We will also emphasize the level of effectiveness of the inventory and employ the Human Resource Management Effectiveness Inventory constructured by foreign scholars Huselid, Jackson, & Schuler (1997) which was used as a criterion while performing Canonical Correlation Analysis to test and verify the Concurrent Validity. As regards the Construct Validity, we will test and verify the measurement traits using Multitrait Multimethod Analysis. We will also perform Confirmatory Factor Analysis (CFA) using the Linear Structural Relation (LISREL) model, including Multi Factor CFA and Second-Order CFA to test and verify the suitability of using our study's inventory to evaluate structure and topic models. The tests mentioned above will reveal the validity and reliability of the inventory of the present study to be quite high, and that it will prove the effectiveness of inventory which businesses in Taiwan can use to measure HRME.

Keywords: Human Resource Management, Human Resource Management Effectiveness, Measurement, SMEs

I. PURPOSE AND RATIONALE OF THE RESEARCH

Business functions are both interconnected and indispensably individually -- each important in its own right. If we were to take a more analytical look at them, though, we would find "people" to be the most important business function of all. In recent years, academia has conducted numerous studies investigating the relationships between HRM practice and HRME, and competitive advantage and the organizational performance. The results clearly show the strategic importance of HRM in business functions (Arthur, 1994; Wright, McMahan & McWilliams, 1994; Delaney & Huselid, 1996; Delery & Doty, 1996; Hiltrop, 1996; Chen Zheyan, 1997; Qiu Guizhen, 1997; Xu Hengsheng, 1998; Chen Mengqian, 1998; and Wen Quanfeng, 1998).

It is easy to see from the above the influence HRME can have on the organizational performance, and for this reason, the way in which HRME is measured is naturally a point of concern for both academic and industry. Despite this, very little research has been done addressing this important issue.

In 1997, Huselid, Jackson, & Schuler divided HRM into two areas -- technical and strategic -- and provided an inventory by which HRME could be evaluated. Additionally, they discovered that HRME has a highly positive impact on an organization's results. Yet, despite having an inventory by which HRM Effectiveness can be evaluated, no clear process or methodology has been constructed for applying this inventory, nor has a set of accepted standards been made available by which the effectiveness of the inventory can be measured.

The emphases found in Human Resource Management activities in industries overseas differ as well. If researchers were able to consult with scholars and experts on Taiwan, look closely at the dimensions and indicators of the island's high-tech industry HRME, and afterwards construct an inventory suitable for evaluating HRME in Taiwanese high-tech industries, the provided future HRME research could prove significant, especially regarding evaluation accuracy. For this reason the present research will attempt to do just that.

This study has as its main purpose the development of a localized inventory suitable for precise and efficient evaluation of HRME in Taiwanese high-tech industries. Specifically, it will attempt the following:

1. to analyze and examine foreign and domestic theories and literature dealing with both HRM and HRME

2. to consider which types of dimensions and indicators are best suited for an evaluation of HRME

3. to collect and organize the opinions of scholars, experts, and practitioners as regards HRME dimensions, indicators, and items.

4. to construct an inventory by which evaluations of Taiwanese high-tech industry HRME can be conducted

II. LITERATURE REVIEW

The purpose of the present research is to construct an inventory for the evaluation of HRME in Taiwanese high-tech industries. This section, the literature relevant to this study, has been divided into the following three parts:

1. Definitions and characteristics of high-tech industry

The development characteristics of high-tech industries are different from those of ordinary industries. Since the so-called "high-tech" industry of today may become a "traditional" industry tomorrow, we have yet to come up with a single definition for what precisely constitutes a high-tech industry. Using industry attributes, a definition of a high-tech-industry could include the following: 1) high precision products, 2) highly sophisticated systems, 3) products with high added value, 4) technology that improves quickly, 5) fast growing markets, and 6) high risk investment. An explanation for the definition of a high-tech industry follows:

(1) The Republic of China Council for Economic Planning and Development (1991) definition of and indicators for high-tech industry include the six following characteristics : the degree of market potential, the amount of industry relevance, the degree of added value in products, the level of technology, the amount of pollutants produced, and the level of reliance on energy resources. The CEPD's "big ten booming high-tech industries" are: communications, information, consumer electronics, semi-conductors, precision instruments, automation, top-grade aerospace materials, specialized chemistry, pharmaceuticals, healthcare, and pollution prevention.

(2)Huang Dilun (1996) organized the views of scholars and summarized definitions relating to "high-technology", "high-tech industries", "high-tech products", and "high-tech companies", finally categorizing them into conceptual and operative types. These two types are explained below:

A. Operative -- Usually considers ratios dealing with technological intensity, research and development (hereafter referred to as *R & D*), and staff size. Here, technological intensity refers to the proportion of R&D expenditures figured into the sales value of a product.

B. Conceptual -- Here, invention and innovation are the keys to survival for high-tech industries. Technology is sophisticated and improves quickly, products are sophisticated and have short life cycles, market competition is fierce, changes occur rapidly, and levels of uncertainty and risk are high. There are two main forces that bring about the development and promotion of high-tech products -- the evolutionary push of the technology itself and the pull of demand. The overall proportion of scientists (in the natural sciences), engineers, and technical experts is high as well.

(3)Using measurement indicators, Chen Wen xian and Gao Feng jie (1997) believe an industry is "high-tech" if:

1) both the proportion of technicians to overall staff members and the proportion of R & D expenses to overall operating expenses exceed industry averages.

2) both the proportion of technicians to overall staff members and the proportion of R & D expenses to overall operating expenses exceed 10%.

3) all of the following surpass industry averages -- the ratio of R & D expenses to overall capital expenditures, the ratio of management personnel to R & D personnel, and frequency of new technological innovations.

4) based on investment criteria estimates**,** one of the following conditions is met -- the industry is a) in the spotlight and has potential to develop further, b) has a unique competitive advantage, c) is a key industry, d) has strategic alliances with industries which are have vested interests.

5) it is a key industry being strategically promoted by the government (one of the "Big Ten Burgeoning Industries").

(4)Based on research done on the experiences of high-tech industries around the globe, Liu Chang yong (1997) defined 10 criteria that must be met by developing high -tech industries:

1) If the development of the lower, middle, and upper segments of an industry's systems ,or the degree that they cooperate with each other, does not occur completely in the same region, the region will become a key for the global division of industrial labor and cooperation if it can find discover a competitive niche, or provide superior added value of some sort.

2) The number of businesses, the scale, density, and level of relatedness in an industry have already reached a certain level of symbiotic impetus that is both intimately related and beneficial -- that is to say that internally there is intercompetition, while externally there is mutual benefit. Scale and density are usually able to bring about increased effectiveness, which increases each business's ability to compete externally.

3) The technology, products, and markets in an industry all continue to develop, and market competition is extremely fierce. Surviving industries are all strong and resilient, and a few leading businesses become strong enough to compete with large-scale companies.

4) Must have abundant experience, be able to make products based on their technology**,** and have the ability to accumulate something is rising here quickly. If a business has these traits, it will always be able to remain a leader in a rapidly changing market.

5) Must have ample funding, quality personnel, fine strategic support, a long-term R & D investment strategy, and abundant amounts of all the resources required for a growing business.

6) Must have a benchmark business that is able to break through all level related bottlenecks, and deal with all the early dangers an industry will encounter while developing.

7) Must be able to create an external environment that facilitates industry growth (including Taiwan and the rest of the world), and must be able to continue its development in a highly competitive global market.

8) The industry exudes a strong entrepreneurial and competitive spirit. There is the free flow of personnel and capital. There are significant amounts of new business starting up, which gives the industry a" new face".

9) Must have a capitalistic market that is able to support technology-based high-risk startup ventures and new product innovations. For these reasons, laws and institutions must also be able to spur on the formation of a free market.

10) The government must give strong strategic support, provide resources, and take action when necessary. Additionally, the government must coordinate and integrate the direction of industry development and help it become more competitive abroad.

From the above discussion, we can see that high-tech industries have the following characteristics: a high R&D ratio, new technological innovations that occur quickly, environmental change that occurs quite frequently, be highly sophisticated, have product cycles that are short, are low polluters, and offer high added value. In the future, high-tech industries will be among the most important industries, influencing the work and quality of life of every citizen in Taiwan. High-tech industry management topics will become increasingly important for this reason. High-tech industries were chosen as the focus of the present study for this reason as well.

2. High-tech Industry Human Resource Management

Having technology and being innovative are two characteristics of high-tech industries. Development and technological change are closely related in such industries, requiring that they invest heavily in both R & D personnel and capital. The key to success for high-tech companies lies in how they manage the highly qualified, highly skilled human resources they have available to them. In recent years, the flourishing state of high-tech industrial development has, in general, led to a shortage of professional and technical talent. The intense competition between high-tech opponents has given rise to a flurry of cross-company recruitment activity that has left personnel turnover levels at record highs. Human resource capital expenditures (including hiring and training) are relatively high and have become a burden for high-tech industries. Chen Meiru (1991) found that successful high-tech industries focus heavily on personnel management. Personnel "management" for these companies is not simply administration of personnel matters, but rather personnel administration raised to the level of human resource management and organizational development.

Maidique and Hayes (1984) interviewed 250 American high-tech industry executives (of which at least 30 were CEOs) in the fields of biochemistry, semi-conductors, computers, medicine, and aerospace. They concluded that high-tech companies are successful for six basic reasons: They

1) have business focus -- They focus on one product or a group of highly related products, putting a lot of resources into R & D.

2) have adaptability -- When faced with a crisis, they are able to change or adjust their business strategies accordingly, including making organizational changes if necessary.

3) have organizational cohesion -- They are able to construct good channels of communication throughout all levels of the company, implement job rotation systems to prevent organizational rigidity, encourage long-term employment through various means, and attach importance to training.

4) enjoy an entrepreneurial culture -- They have good communication and cooperation, are able to tolerate errors, and are risk takers.

5) have a sense of integrity -- They make long-term commitments to related interest groups (personnel, stock holders, suppliers, the local area).

6) have a "hands-on" top management -- The management of a successful high-tech business does not only want to understand how its organization operates, it wants to clearly understand the principles behind its technology, and it wants to interact with the relevant personnel.

To summarize Maidique and Hayes, an organization's cohesion, its entrepreneurial culture, and its sense of identity are all related to HRM. Maidique and Hayes also emphasized the importance of communication and interaction. The results of their study show that in addition to needing to have a handle on the technology and needing to be innovative, high-tech companies must also have good cohesion. Such cohesion, they point out, can be achieved by opening up channels of communication, implementing a job rotation system, and offering long-term employment and intensive training opportunities.

Grissom and Lombardo (1985) conducted telephone interviews with managers at 18 high-tech company personnel offices in the Philadelphia area to discover what types of HRM problems they encounter. Their talks revealed that for high-tech companies which are in the process of developing, the key HRM challenge faced is finding ways to recruit and keep suitable professional talent.

Cascio (1988) researched the HRM activities at Whirlpool Technologies in Singapore and found the following: When recruiting and keeping skilled labor proves difficult, high-tech companies have to resort to offering highly attractive remuneration and benefit packages to bring in and keep their staff. Examples of items in such packages would be stock options and profit sharing. Cascio suggests that high-tech companies remain positive, innovative, focused on the future so appropriate training activities can be planned today, and that they merge career planning activities for company personnel with staff development and training activities.

Bright (1988), who used questionnaires to investigate employees at the management level of high-tech companies, came up with eight characteristics of successful high-tech companies. Of these, Bright emphasized a company's need to use financial and human resources efficiently, especially where creativity is concerned.

With 30 high-tech companies as a sample, Huiling Wu's research (1990) found five different types of HRM: "internal cultivation", "group reward", "group participation", "utility evaluation", and "independent fighters". There are obvious differences between the HRM activities of these five strategic types. Since the research was exploratory in nature, Wu only

revealed the existence of the five types and did not go into which type might be most suitable for high-tech companies, or which type achieved the best results.

Among the key characteristics of successful high-tech businesses summarized and organized by Chen Meiru (1991), personnel management (organization, leadership) is of primary importance**.** Key activities and elements include:assignment rotations, long-term hiring, leaders who are both seasoned and responsible, efficient personnel, and specialized training. Chen found that "operationally successful" and "middle type" businesses in the Hsin Chu Science Park all listed sales as the most important management function, with R & D in second place. A large discrepancy between current industry conditions and theory was found as well. Wu felt the reasons for this might be that these companies were all in their initial periods of development at the time, were small in scale, and had steady growth as a goal. As such, Personnel Administration is still in the realm of routine administrative affairs and has not as yet been put on the level HRM.

With companies in the Hsin Chu Science Park as a sample group, Ma Weiyang (1997) looked into the managerial environment and current strategies of Taiwanese high-tech companies. Ma found the lack of qualified personnel to be a common problem among high-tech firms engaged in R & D activities -- a personnel shortage of nearly 70%, in fact. A high rate of employee turnover is a problem also faced by Taiwanese high-tech firms.

3. Human Resource Management Effectiveness

Originally, the word "effectiveness" referred to the level of a predetermined goal that was meant to be reached once resources had been systematically allocated for the endeavor. "Effectiveness" was an indicator that could be measured and provide comparisons. In the present study we will use the HRME concepts put forth by Huselid, Jackson, and Schuler (1997) to explore how effective Taiwanese high-tech companies are when engaged in HRM activities.

Huselid, Jackson, and Schuler used Institutional Theory as their theoretical basis for including the technical and strategic effectiveness categories in their research of HRME. Institutional Theory holds that in a competitive environment, businesses will attempt to satisfy their stakeholders to gain legitimacy and acceptance, in order to increase the organization's growth and its ability to survive. Huselid et al feel that traditional HRM is technical HRM, and that it was formed mainly to satisfy both internal and external stakeholders . External stakeholder expectations usually have the greatest influence on the decisions companies make regarding their technical HRM activities -- for example, when observing laws and regulations set down by the government regarding jobs and hiring. Conversely, internal stakeholders, like managers and employees, wish their organizations had a perfect personnel system. Huselid et al came up with 14 different technical HRM activities in their research, which include a system for recruiting, a candidate selection process, an evaluation process, and a plan for remuneration and benefits, to name a few.

Compared to technical HRM, strategic HRM is much more innovative, allowing for independent workers, flexible work hours, and **authorized** personnel. No clear steps or methods for how strategic HRM activities can be implemented exist, however, nor is there a

set of accepted standards by which to measure such implementation. Despite the absence of other material pertaining to strategic HRM, Huselid et al felt certain technical HRM to be more effective than strategic HRM and even supported this conclusion in their empirical research of American industry. Huselid et al, however, did suggest that American companies should improve the effectiveness of their strategic HRM, lest they run into the ceiling effect -- a condition brought about by the desire to gain competitive superiority by continuing to improve technical HRM -- a condition which would hamper industry progress. Table 1 below shows technical and strategic HRM indicators as developed by Huselid, Jackson, and Schuler.

? .RESEARCH DESIGN

1.Constructing Process of the Inventory

The draft of the inventory will be drawn up in the constructing process. We invited twenty experts in the field to assess the content validity . After finishing the assessment of the measuring construction and fitness of the topic, we accomplish the pretest inventory. The following step is to take samples for pretesting. After the pretest, we take those effective samples to do construct validity by factor analysis, and take the common factor as the dimension, and delete the item with the weaker explanation. According to the retaining dimension and item, we construct its reliability, and design the exact inventory. By the exact inventory, we get the effective samples to test their reliability and validity. This is the constructing process (See figure 1). So far, we have accomplished the pretest inventory, and are doing the pretest. Right after finishing the pretest, we can proceed to exploratory factor analysis, and test the exact inventory on the reliability and the validity.

Table1 factor structure of the human resource management effectiveness

Technical HRM effectiveness	**Strategic HRM effectiveness**
1.Benefits and services	1.Teamwork
2.Compensation	2.Employee participation and empowerment
3.Recruiting and training	3.Workforce planning-flexibility and deployment
4.Safety and health	4.Workforce productivity and quality of output
5.Employee education and training	5.Management and executive development
6.Retirement strategies	6.Succession and development planning for management
7.Employee/industrial relations	7.Advance issue identification/strategic studies
8.Social responsibility programs	8.Employee and management communications
9.EEO for females, minorities, etc.	9.Work/family programs
10.Management of labor costs	
11.Selection testing	
12.Performance appraisal	
13.Human resource information systems	
14.Assessing employee attitudes	

Data Source: Huselid, Jackson & Schuler (1997), p. 176.

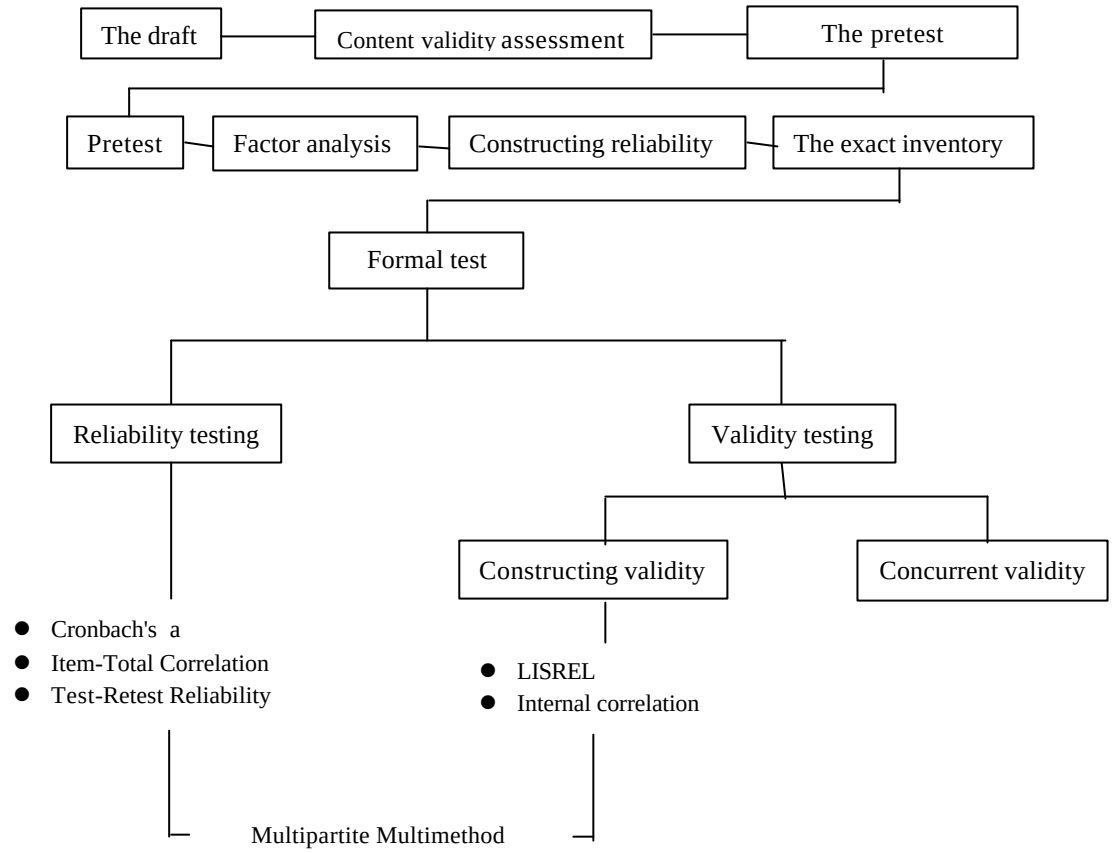

Figure1 Research Flow

2.The development designing and practice of the inventory

(1)Drafting the pretest inventory

According to the measuring construction and the indicator, we initially draw up to 2 constructions and 29 topics, and then invite experts to assess them. Based on the comments and advice the experts make, we will fix them and complete 2 constructions and 39 topics of the pretest inventory. The list of the scholars and experts as follows:

Table 2 Consultation of Scholars and Experts

Name
Tong-chuan Huang
Huo-tsan Chuang
Zai-cheang Lee
Tin-yang Liu
Chiang Hsu
Ing-chuang Huang
Shyh-jer Chen
Guo-long Huang
Jian-chong Jian
Bih-Shiaw Jaw
Liang-zhi Huang
Chong-jui Pan
De-chi Lee
Ching-dong Lin
Chung-ren Jin
Huan-tao Chiu
Ci-rui Guo
Pei-guang Chen
Bo-min Liu
Po-yao Chang
Yuan-ta Ko
Guan-chun Wang

(2)Pretest and factor analysis

Of the 400 copies of questionnaires distributed by the human resource departments of each manufacturing company, 289 employees responded, producing a gross return rate of 72.25 percent (289/400). Of these responses, a total of 9 were discarded because the respondents failed to answer a majority of the questions, making the effective return rate 70 percent . In the present study, Inventory Validity Construction by Factor Analysis and the statistical analysis software SPSS for Windows 8.0. were used on a predetermined and categorized set of multi-subject samples. Principal Components Analysis was then used to identify and select common factors with Eigenvalue greater than 1.0. These factors were then processed by the orthogonal rotation of factor axes, using the Varimax Solution. Once axes rotation was complete, the size differential between the factor loadings of each common factor's subject variables were at maximum, which was of benefit when attempting to recognize and name the factors. The steps involved in this process were as follows:

A.Expunging Subjects with Little Explanatory Value Using Principal Components Analysis

Once raw data had undergone factor analysis, all communalities with a degree of effectiveness greater than 0.6, as well as all factor loadings rated at greater than 0.5 were saved. These, then, underwent a second round of factor analysis. In all, five subjects were deleted.

B.Determining the Number of Factors to Keep Using Scree Plotting

The results of the scree plotting, which took place during the first round of factor analysis, revealed that scree factor numbers increased sharply for factors four and five. When the subject data we wished to keep from the first factor analysis was put through factor analysis once again, the scree test results for factor four were easy to see. The extracted Eigenvalues for common factors, the explanatory variation percentages, the factor loading of the subjects contained in these percentages, and the communalities are detailed in the table below. Respectively, these four common factors have 11, 6, 7, and 5 subjects each, amounting to a cumulative explanatory variation percentage of 70.663%. The factor load for each subject is 0.5 or higher, and the degree of effectiveness for communalities is 0.6 or higher.

C.Formal Inventory Evaluation Structure and Subjects

Based on the results of our second round of factor analysis, we were able to readjust our evaluation structures, as well as name them. In total there were four evaluation structures and twenty-nine subjects.

Table 3 Factor Analysis Summary

Dimension	Eigenvalue	Pct of Var	Cum Pct	Rank Of Item	Communalities	Factor loading
HR Planning And Strategy	16.631	57.347	57.347	12	0.677	0.763
				24	0.716	0.837
				26	0.723	0.833
				27	0.763	0.839
				28	0.753	0.830
				29	0.719	0.820
				30	0.713	0.807
				31	0.780	0.840
				32	0.787	0.812
				33	0.669	0.703
				34	0.737	0.780
Teamwork Competency	1.619	5.581	62.929	19	0.635	0.738
				20	0.755	0.762
				21	0.742	0.714
				22	0.767	0.777
				23	0.720	0.811
				25	0.643	0.787
People-Job Fit	1.213	4.184	67.112	10	0.662	0.777
				11	0.680	0.721
				13	0.703	0.712
				15	0.707	0.764
				16	0.676	0.756
				17	0.667	0.651
				18	0.628	0.715
Training and Industrial Relations	1.030	3.550	70.663	3	0.661	0.712
				4	0.695	0.672
				5	0.723	0.668
				6	0.688	0.550
				7	0.703	0.725

? .CONCLUSION AND RECOMMENDATIONS

1.Conclusion

Because the research is only an exploratory research, we are unable to reveal you the final stage, the exact inventory and the results of the validity and reliability testing. Also we haven't proceeded to the exploratory factor analysis, so that some of the constructions and topics, listed in the figure 3, will be changed. What we listed in figure 3 are the results that we studied through discussing documents and advice sought from experts. (Each construction and indicator in the draft refers to: (1) The validity inventory of HRM, by Huselid, Jackson & Schuler (1997); (2) Freund & Epstein (1984), Arthur (1992), Pfeffer (1994), Delaney, Lewin & Ichniowski (1989), Huselid (1995), MacDuffie (1995), Youdt, Smell, Dean & Lepak (1996), etc. They addressed optimum HRM Practices; (3) the most important Activities of 17items of HR department, addressed by Tsui (1987); (4) HRM Performance, addressed by Bih-Shiaw Jaw (1994)and Qiu gui-zhen (1996); (5) high-tech HRM Practices, generalized by Wen jin-feng (1998), and other scholars' treatises and opinions.) There are a few differences in the inventory of HRM Validity constructed by Huselid, Jackson and Schuler (1997). We are more concerned that the scholars and experts in our country focus on the measuring construction and the indicator of domestic high-tech HRM Validity. These differences are not caused by the technical problems, but are due to the different national condition, culture, and enterprises' characteristics. According to these factors, we proceed with the construction evaluation and the fitness assessment of topics and make some precise additions and deletions. Therefore, the inventory of HRM Validity we constructed is similar, but not identical to the one constructed by Huselid, Jackson and Schuler. Besides, the topics and the language in use are all Taiwan-oriented in meaning. Compared to other foreign inventories or other edits translated in Chinese, the one we construct in this research is much more suitable for our domestic industry, and lowers the bottom line of influences which result from cultural differences. These are the advantages and characteristics.

2.Recommendations

The inventory is still under construction; therefore, about the conclusions, there remains much we need to improve. When we follow up on the exploratory factor analysis, exact inventory and the reliability testing, we can get much more precise results of the research. According to this research, we have the following suggestions:

(1) The inventory is more like the measurement of effectiveness of HRM practice implementation--strategic and technical HRM effectiveness. The follow-up researcher may add another dimension, for example, the professional ability of HR manager and ability relative to enterprise. In this way, the inventory can be more precisely improved.

(2) In order to let people, who fill up the inventory check the items based on his/her perceive, we adopt Likert 7 points scale to construct the inventory. If they know little about the affairs of enterprises' HRM, they lose subjectivity easily and cause bias in the result. Therefore, the follow-up researcher can add in, except for the

perceived indicator, specific measurable objectivity indicator, such as the percentage of personnel expense in total revenue, the turnover rate of staffs, the training hours of each staff member per year, etc. So, this will make the measuring mode of HRM Validity much more precise.

(3)When the inventory is completed, it can be provided a strict measuring instrument for the follow-up researchers to do research on what is relative to the HRM Validity and such other variables as organizational performance , the business competitiveness, and business competitive advantage. The follow-up researchers can focus on different industries or another object of study and analyze them, in order to test the exact inventory on the reliability and the validity, continuously. In this way, the inventory will gradually become flawless.

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