International Journal of Business and Management
www.ccsenet.org/journal.html
Vol. 4, No. 10
October 2009

Testing the Dimensionality of Integrated HRM Strategy among Malaysian Manufacturing Organizations

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Abstract

This paper aims to examine the dimensionality of the integrated HRM strategy in the Malaysian context. The effectiveness of the dimensional scale of HRM strategy was investigated with a sample of 113 manufacturing organizations. Results of exploratory and confirmatory factor analyses demonstrated that the 6-subscale structure of HRM strategy was valid. Furthermore, the results verified that the integrated HRM strategy scale has high internal reliability. These results indicated that the integrated HRM strategy scale can be used in research related to manufacturing organizations in Malaysia.

Keywords: Business strategy, Construct validity, Convergent validity, Discriminant validity, Reliability

Introduction

HRM strategy has been studied increasingly by many scholars in recent years (Huang, 2001; Wang and Shyu, 2007). HRM strategy is conceptualized as an outcome that is the pattern of decisions regarding the policies and practices associated with HR system. The focus of HRM strategy needs to be on the HR system, and not the HR function. The HR system is one of numerous organizational systems (e.g. finance system, marketing system, production system), each of which plays a role in the formulation of organization wide strategies (Bamberger and Fiegenbaum, 1996). In this respect, HR systems are focused on various HR functions such as staffing and development, appraisal, rewards, compensations and work system. Each of HR system that possesses similar characteristics is convened to a similar HRM strategy. HR system which comprises of different types of HR functions has the primary responsibility for the implementation of HRM strategy.

It is apparent that HR functions appear to emerge in bundles or clusters and these clusters of functions often tend to vary systematically across organizations as a relatively stable configuration. As such HRM strategy is designed to support the different departmental activities and the overall business strategy. This indicates that the analysis of HRM strategy in terms of typologies is appealing since individual HR functions should tend over time to support and reinforce one another. That is, there should be a tendency, over time to abandon internally inconsistency HR functions in order to favor the HR functions that are more aligned with the other functions (Bamberger and Meshoulam, 2000).

Many studies have provided typologies of HRM strategy (e.g. Arthur, 1992, 1994; Miles and Snow, 1984; Wright and Snell, 1991) and numerous attempts have been made to define and operationalize its concept, in addition to identifying its determinants (Dyer, 1984; Tichy et al., 1982; Dyer and Reeves, 1995) and predicting the outcomes of effective strategy formulation processes (Buller, 1988). However, the concept of HRM strategy is relatively new in Asia country particularly in Malaysia. The effectiveness of scale to measure the HRM strategy is very much popular and has been used in numerous studies in Western countries. Therefore, it is pertinent to have instruments to measure aspects of the HRM strategy dimensions. In fact, this study aims to combine the HRM strategy typologies from previous researchers

into an integrated HRM strategy. As a result, the purpose of this study is to test on the scale of integrated HRM strategy among manufacturing organizations in Malaysia.

HRM Strategy Typologies

HRM strategy concerned with devising ways of managing people which will assist in the achievement of the organizational objectives (Fombrun et al. 1982). It is not an activity but a collection of HRM decisions which organizational members make over a time period as they emerge from actions (Bamberger and Phillips, 1991). In fact, HRM strategy is expressed through philosophies, policies and practices in order to manage its employees (Tyson, 1995).

The concept of HRM strategy concludes that individual HR functions, if viewed in isolation tend to lack congruency in most organizations (Grundy, 1998). Hence, the application of HRM strategy typologies provides more meaningful insights. Many researchers attempt to develop typologies of HRM strategy. Some of these typologies are generated intuitively on the basis of theory, while others derived the typologies empirically. Though it may not be possible to reconcile all typologies differences, a number of common underlying elements across these typologies are identified (Bamberger & Meshoulam, 2000).

There are various HRM typologies discussed in literature. From business strategy typology, Miles and Snow (1984) extend their work to the development of a HRM strategy typology. In close approximation with the business strategy typology, three types of HRM strategy namely utilizer, accumulator and facilitator are identified. Utilizer HRM strategy is based on minimal commitment and high skill utilization. It seeks to deploy the HR of an organization as efficiently as possible through acquiring and dismissing personnel based on short term needs and matching employee skills to specific task requirements. In contrast, accumulator is based on maximum involvement and skilled execution. It seeks to build the employees of the organization through the acquisition of personnel with large latent potential and the development of that latent potential over time in a manner consistent with the needs of the organization. Finally, facilitator is based on new knowledge creation. It attempts to develop the employees as effectively as possible through the acquisition of self motivated personnel and the encouragement and support of personnel to develop, on their own, the skills and knowledge in which the employees believe are important.

Osterman (1987) is also one of the first authors to develop the concept of HRM strategy typology. Based on theoretical speculation, Osterman (1987) identifies four different HRM strategies: craft, secondary, industrial and salaried. The author posits that each strategy has its own exchange-based internal logic that requires an alignment with employment rules. On the other hand, Dowling and Schuler's (1990) produce three types of HRM strategies which are almost similar to Miles and Snow's HRM typology, namely utilization, facilitation and accumulation. Dyer and Holder's (1988) investment strategy is somewhat similar to Dowling and Schuler's (1990) facilitation strategy and Miles and Snow's (1984) facilitator strategy. Their inducement strategy reflects Dowling and Schuler's (1990) utilization, Arthur's (1992) cost reduction, MacDuffie's (1995) mass production and Miles and Snow's (1984) utilizer strategies. The involvement strategy is a combination of cost reduction and innovative strategies.

Although the market strategy of Delery and Doty (1996) has some semblance with the utilizer (Miles and Snow, 1984), cost reduction (Arthur, 1992), utilization (Dowling and Schuler, 1990) and inducement (Dyer and Holder, 1988) strategies, the concept is more geared towards traditional HRM strategy in which organizations do not really value or appreciate the employees. Internal strategy is a strategy that actually emphasizes an employee's strengths and competencies. As such, training and development of employees are greatly looked into. On the other hand, middle of the road strategy is very similar to the involvement strategy of Dyer and Holder (1988) and the transition strategy of MacDuffie (1995).

Besides developing the cost reduction strategy, Arthur (1992) focuses on the commitment strategy to underlie the importance of developing committed employees who can be trusted to use their discretion to implement job tasks in ways that are consistent with the organizations' goals. In yet another way of perceiving HRM strategies, MacDuffie (1995) asserts that HRM strategies are manifested in bundles of interrelated and internally consistent HR functions. The author's mass production strategy is similar to Dyer and Holder's (1988) inducement, Dowling and Schuler's (1990) utilization, Arthur's (1992) cost reduction and Miles and Snow's (1984) utilizer strategies, while the flexibility strategy is comparable to Dowling and Schuler's (1990) accumulation and Miles and Snow's (1984) accumulator strategies. MacDuffie's (1995) third strategy, the transition strategy, is related to Dyer and Holder's (1988) involvement and Delery and Doty's (1996) middle of the road strategies.

Integrated HRM strategy

Although some of the HRM typologies mentioned above are almost similar to one another, they are described in different ways. Moreover, some strategies proposed by one typology may not be reflected in another typology. Therefore, this study attempts to reconcile the typologies into an integrated HRM strategy. The purpose of integrating the HRM strategies from various sources is to reconcile the differences of the various views on HRM typology.

Bamberger and Meshoulam (2000) posit that one way to resolve these differences is by viewing them as an integrated model. This approach is able to include the key variants of HRM strategies in a comprehensive yet parsimonious manner. In other words, integrated HRM strategies in this context provide comprehensive views of the most discussed HRM typologies.

Though it may be impossible to reconcile all model differences, a number of common underlying elements across these models can be identified. Each type of integrated HRM strategies has similar characteristics with the original typologies but the integrated strategies embrace different approaches to conceptualization and measurement of the HRM strategy. Therefore, in trying to capture the dynamic difference of the term, HRM strategy in this study integrates typologies of Miles and Snow (1984), Dyer and Holder (1988), Dowling and Schuler (1990), Arthur (1992), MacDuffie (1995) and Delery and Doty (1996). In fact, many researchers have used these HRM typologies in their studies and have empirically tested them with persuasive results (e.g. Huang, 2001; Bird and Beechler, 1995; Sanz-Valle et al., 1999).

As such the integrated HRM strategies are renamed into six distinct HRM strategies namely 1) Expansion 2) Quality conscious 3) Cost minimization 4) Commitment 5) Employee development and 6) Conventional.

An organization that uses expansion HRM strategy focuses constantly on bringing out new products and exploring new markets. To perform well in these areas, it does not hesitate to source from outside the necessary talent and expertise. It is a penchant for risk taking means that has no uncertainties of moving on quickly if it appears that there is little opportunity for profit in any given area. This type of organization needs employees who possess the creativity and willingness to work in a team based environment that stresses on cooperation and interdependent behavior. The employees should also be moderately concerned with both the quality and quantity of their work, bold at taking risks, highly tolerant of ambiguities and unpredictability and having a longer focus (George and MacMillan, 1984; Albrecht and Albrecht, 1987).

In contrast, cost minimization HRM strategy is predicated on minimal commitment and high skill utilization. This organization has narrow and stable product-market domain and seldom makes major adjustments in its technology or structure. It seeks to deploy the employees as efficient as possible and they are expected to have a relatively repetitive and predictable behavior, and a modest concern for quality and quantity (Bird and Beechler, 1995).

Quality-conscious strategy is based on maximum involvement and skilled execution. In brief, it represents policies and practices of attracting many good candidates very carefully and very consistently, often more on the basis of personal fit rather than technical fit. In-house training equips for the lack of technical skills (Dowling and Schuler, 1990). Training investment is high since its benefits are likely to be obtained only after several years. This practice matches with the world that is constantly changing and where new skills are needed all the time. A person with initial technical skills would soon become outdated and would thereby require change and re-training (MacDuffie, 1995; Dowling and Schuler, 1990).

On the other hand, commitment strategy encourages employees to freely exercise their discretion in dispensing their duties when confronted with situations of uncertainties that impinge on the goals of the organizations (Schuler, et al. 1987). Stressing the need for skilled employees to be involved in the decision making process, organizations that use this strategy provide a high level of autonomy to the employees, extensive general skills training and attractive compensation packages that include wide benefits, high wages and stock ownership. In short, organizations go all out to attract, motivate and retain qualified and committed employees who internalize the goals of the organization.

The conventional HRM strategy is known as the traditional way of managing the employees. This strategy is characterized by external hiring, little or no formal training, evaluative based performance measurement, very little use of career ladders, little or no career path planning provided to employees, little socialization, lack of employment security, loose or vague job definitions and very little employee say in the decisions of the organization (Delery and Doty, 1996).

Finally, employee development HRM strategy is characterized by the existence of an internal labor market. According to Delery and Doty (1996), extensive socialization and training are very common. The performance of the employees is assessed through their behavior, and the appraisal feedback is given for developmental purposes rather than for evaluation. Hiring mainly from within the organization means that there is a tremendous amount of training and development being provided, in addition to well-defined career ladders. Employment security is ensured for those who make it through the initial trial period. However, those who fail to make it will be subjected to formal and tight dismissal policies. In this strategy, organizations practice an open door policy which enables employees to participate in decision making and to voice their grievances freely.

Methodology

This study used mail survey questionnaire. The questionnaires were targeted to the head of HR department of Malaysian manufacturing organizations. The mailing list was obtained from Federation of Malaysian Manufacturers Directory (FMM). The survey yielded 12 percent response rate resulting in 113 respondents useable responses from an eligible

sample of 900 organizations. The data collected was restricted to large and established manufacturing organizations only. Large organizations with 150 employees (SMIDEC 2005) and above and organizations that have been in operation for at least five years were selected because these organizations are presumed to have well developed and established HRM strategy (Youndt and Snell 1996). Organization size and years of establishment are often good indicators of an organization's likelihood to design and adopt different types of HRM strategy. Small and medium organizations are quite different from large and established organizations since they are inherently flexible and nimble and they seldom have a well defined HRM strategy (Corbet 2001).

T-tests were performed to examine possible non-response bias. Respondents were divided into two groups based on whether they responded to the first mailing and the follow-up. The results found that there was no significant difference between the two groups on integrated HRM strategy, organizations establishment period and size. Therefore, there was no evident of systematic non-response bias. In addition, all variables were tested for normality and linearity in order to be used for subsequent analysis.

Measurements

The determination of HRM strategy adopted by Malaysian manufacturing organizations entails the scoping of generic dimensions of HRM strategy from extensive literature. HRM strategies comprise of expansion, quality conscious, cost minimization, commitment, employee development and conventional. The operationalization of these six HRM strategies was accomplished by using dimensions/functions of human resource suggested by previous researchers (e.g. Miles and Snow, 1984; Dowling and Schuler 1990; MacDuffie, 1995; Dyer and Holder, 1988; Delery and Doty, 1996; Arthur, 1992).

From the list of HRM functions, six dimensions were identified: work system, appraisal, training, staffing, compensation and planning. Each of these HRM functions measures the HRM strategy whereby other HRM functions that possess similar characteristics will converge into each type of HRM strategy. Based on the measurements of the various researchers mentioned above, only the relevant ones were chosen for the present study to measure the HRM strategy.

However, following the feedback gained from the pre-testing, minor modifications were made to the items to suit the language, cultures and business environment of the respondents. These minor modifications however did not alter the content of the constructs. 44 questions on integrated HRM strategies were measured on a six-point semantic differential-likert scale. For the purpose of data interpretation, the descriptive phrases for the main side of the six-point scale are (1) "strongly agree", (2) "moderately agree", (3) "slightly agree", (4) "slightly disagree", (5) "moderately disagree", and (6) "strongly disagree". The scale contains a series of bipolar items for the various properties of the construct. An even-numbered six-point scale was used in order to avoid the clustering of responses at the neutral point, which will make the result unreliable (Ling, 1998). This is because, most respondents use a neutral response as a dumping ground when they prefer not to choose, do not care or have no opinion. Therefore, the validity of the question will be improved by using a six-point scale.

Results

The profile of the manufacturing organizations is discussed and all the items are recapitulated in Table 1.

(Insert Table 1)

Most of the respondents (15%) are from the machinery and equipment industry. Almost 41 percent of the organizations employ 301 to 1000 employees. Next, 36.3 percent of these organizations have been in business for at least 20 years. In terms of the position of the respondents, almost 56 percent of them are the HR managers and about 61 percent of respondents have less than five years of working experience.

Testing Validity and Reliability of Integrated HRM Strategy

Validity and reliability are the tools used to evaluate the characteristics of a good measurement and these tools involved a measurement of accuracy and applicability (Malhotra, 2004; Cooper and Schindler, 2001). The main concern for performing validity and reliability is the reduction of measurement errors which make the most of the model testing in the hypotheses. In other words, the idea is to develop a measurement that reflects a true score of the variables being measured (Churchill and Iacobucci, 2002).

Content Validity

Content validity is the extent to which there is a need for the adequate coverage of all the domains of the constructs being examined (Cooper and Schindler, 2001). Content validity cannot be examined using statistical analysis and thus, a thorough exploration of the literature and an extensive search of measures used in the literature must be applied. Moreover, pre-testing is used to check on the validity of the constructs. In this case, the measures used will be reviewed by experts, academicians or professionals on the relevancy and adequacy of the constructs (Zikmund, 2003). For this

study, content validity was also applied for the constructs in which the items were reviewed by several academicians in the management field and HR managers in the manufacturing organizations.

Construct Validity

Construct validity is "the extent to which the constructs or a set of measured items actually reflects the theoretical latent construct those items are designed to measure" (Hair et al, 2006:776). Therefore, construct validity deals with the accuracy of the measurement in which that item measures selected from a sample represent the actual true score that exists in the population (Hair et al., 2006).

Each measurement scale for this study was evaluated by analyzing its convergent and discriminant validity, using factor analysis (Nunnally, 1978). Two types of factor analyses, i.e., the exploratory factor analysis and followed by the confirmatory analysis were used in this study to measure construct validity of the scales. Below are the discussions on the results of constructs validity checking based on factor analysis.

a) Exploratory Factor Analysis

Exploratory factor analysis (EFA) is a technique for data exploration and to determine the structure of factors to be analyzed. It is used to establish dimensionality and convergent validity of the relationship between items and constructs. Therefore, in order to ascertain whether all the scales used in this study have construct validity, EFA was performed on HRM strategies construct. Besides determining the validity of measurements, the objective of doing factor analysis in this study was to identify representative variables and to create new variables, if any to be used in the subsequent analysis. The idea was to obtain the most parsimonious set of variables to be included in the analysis.

To justify the application of factor analysis in this study, the measure of sampling adequacy, a statistical test to quantify the degree of inter-correlations among the variables (Hair et al., 1998) was used. The measure of sampling adequacy uses the Bartlett's Test of Sphericity (Bartlett's Test) and Kaiser-Mayer-Olkin (KMO). The Bartlett's Test should be significant ($p<0.05$) for the factor analysis to be considered appropriate and the measure of sampling adequacy produces the KMO index that ranges from 0 to 1, and indicates that KMO more than 0.60 are considered appropriate for factor analysis (Pallant, 2001). Factor analysis under the extraction method of principal component analysis with the rotation method of varimax with Kaiser Normalization was used to analyze the scales of HRM strategy. Varimax rotation was favored since it minimized the correlation across factors and maximized within the factors. This helped to yield 'clear' factors (Nunnally, 1978). In fact this method is robust and able to simplify the factor loadings and supports the interpretation. Factor loading indicates the strength of the relationship between the item and the latent construct and thus, is used to ascertain the convergent and discriminant validity of the scales (Hair et al., 2006). Nunnally (1978) posits that items with loadings higher than 0.50 on one factor are retained for further analysis, however, this study retained items with a coefficient of 0.4 and above as it indicates a reasonable and sufficient loading (Lee and Crompton, 1992; Gorsuch, 1983).

Since the measurements of HRM strategy were developed based on various authors, the HRM strategy type will be determined from the exploratory factor analysis. Table 2 shows the results factor analysis of the constructs.

(Insert Table 2)

Eight factors of HRM strategy were derived from the output (Table 3.15) with eigen values greater than one. Nevertheless, two factors with only two items were dropped since two items were not sufficient to represent one factor (Hair et. al., 2006). The six factors contributed 52.33% to item variance and the values of factor loadings were ranged between 0.42 and 0.82. The six factors were labeled as expansion, quality conscious, cost minimization, commitment, employee development and conventional.

b) Confirmatory Factor Analysis: Structural Equation Modeling

Confirmatory factor analysis (CFA) is comparable to EFA in some respects, but philosophically it is rather different. CFA involves analyzing the relationship between latent (unmeasured or theoretical construct) and observed (measured or indicators) variables (Tabachnick and Fidel, 1996). In this respect, CFA does not use statistical results to determine the number of factors and loadings as in EFA. This is because, the researcher must specify both the number of factors that exist within a set of variables and which factor each variable load highly on before the results can be computed (Hair et al., 2006). In other words, CFA does not assign variables to factors. Rather, the researcher makes this assignment before any results can be achieved. SEM using AMOS was also used as the primary construct validation tool. That is, the CFA is used to analyze convergent and discriminant validity, by assessing the measurement model developed for testing the HRM strategy construct in this study.

Convergent validity would be assessed through the inspection of the statistical significance of factor loadings (the estimated parameter between latent variables and their indicators). In terms of the value of standardized loading, the commonly considered threshold value is 0.4 (Ford, MacCallum and Tait, 1986). Moreover to assess convergent validity,

the proposed model has to present a holistic fit. There are multiple indices that are used to determine the fit of the model and operationalize different aspects of model fit (Kelloway, 1995; Hair et al., 2006: Bentler, 1990).

According to Hair et al. (2006) and Bentler (1990), the proposed model has to illustrate a satisfactory fit in terms of absolute fit, incremental fit and model parsimony. Absolute fit indices are a direct measure of how well the model specified by the researcher reproduces the observed data. These indices include chi-square statistics (χ^2), normed chi-square or relative chi-square (χ^2 /df), goodness-of-fit (GFI), adjusted goodness-of-fit (AGFI) and root mean-square error of approximation (RMSEA). Incremental fit indices differ from absolute fit indices in that they assess how well a specified model fits relative to some alternative baseline model. The score for the incremental fit model ranges from 0 to 1. A score close to 1 suggests a perfect fit whereas 0 refers to there being no difference between hypothesized and independent model. The indices of the incremental fit comprising of the Normed Fit Index (NFI), the Comparative Fit Index (CFI), Tucker Lewis Index (TLI) or Non-Normed Fit Index (NNFI) and Relative Noncentrality Index (RNI).

Finally, parsimony fit indices refer to the application of parameters or the coefficient of hypothesized model. The fewer the estimated parameters used in the model, the more parsimonious the model (Hair et al., 2006; Bentler, 1995). The indices include the Parsimony Goodness-of Fit Index (PGFI), The Parsimony Normed Fit Index (PNFI) and Aikaike Information Criterion (AIC).

Garver and Mentzer (1999) state that many fit indices do not meet the above criteria simply because they are adversely affected by sample size. For instance, the chi-square is the most common method of evaluating overall model fit, but it is frequently criticized due to its high sensitivity to sample size, and the fact that the significance level can be misleading (Hair et al., 2006). Therefore, based on these criteria, they propose the use of the TLI, the CFI and the RMSEA. Moreover, TLI and CFI are preferred when dealing with samples with fewer than 200 respondents because they are likely to produce biased estimates (Bentler, 1989; Kline, 1998). Based on the important criteria suggested in the above discussion, this study used the fit indices namely, 1) the TLI or NNFI; 2) the CFI; and 3) the RMSEA. Nevertheless, this study still report on the chi-square, degree of freedom, its significance level GFI and NFI as these figures are also important in examining the validity. Table 3 exhibits all the selected indices mentioned above to estimate the measurement model of the study.

(Insert Table 3)

CFA provides a number of advantages in examining the instruments in terms of their convergent and discriminant validity. Firstly, CFA measures the overall degree of fit in any particular application such as chi-square and goodness-of-fit test. Secondly, with the used of chi-square difference test, together with the size of factor loadings for traits and the estimates for trait correlations, CFA provides useful information on how well convergent and discriminant validity are achieved. Finally, through squared factor loadings and error variance, explicit results are available for partitioning variance into trait, method, and error component (Bagozzi et al., 1991: 429). Table 4 shows the results of convergent validity for business strategy of the study.

(Insert Table 4)

The results from these models show that based on modification indices and standardized error, a few items were deleted to get the data to fit the model. Here, expand1, quacon5, cost4, commit5 and commit6 were eliminated to ensure the data fits the model.

From the results, most χ^2 are not significant with p value mostly greater than 0.05. NNFI, GFI, TLI and CFI yield results of above 0.90 indicating a good fit model. The majority of the values of χ^2/df are between 1 and 3, with RMSEA on an average of 0.06. This indicates that χ2/df and RMSEA are good indicators of absolute fit of the model. Additionally, the factor loading for each indicator was above the reasonable benchmark of 0.40 (Hatcher, 1994). Therefore, the convergent validity exists for the study variables of the measurement models.

Discriminant Validity

To perform discriminant validity is to compare the average variance extracted for any two constructs or more with the squared of the correlations estimate. As such, the average variance extracted has to be bigger than the variance of the correlation (Hair et al., 2006). This is because a latent construct should explain its item measures better than it explains other constructs. The average variance of expansion, quality conscious, cost minimization, commitment, employee development and conventional were 0.70, 0.65, 0.57, 0.70, 0.66 and 0.68 respectively. The covariance between expansion and quality conscious was 0.92, while the covariance between quality conscious and cost minimization was at -0.06. The covariance between cost minimization and commitment was -0.07. Moreover, the covariance between commitment and employee development was 0.07, in contrast with employee development and conventional that indicated a correlation of 0.23. Then, the correlations between expansion and cost minimization was 0.00, while -0.06 was the covariance between quality conscious and commitment. As for cost minimization and employee development, the covariance was 0.76, and the covariance between commitment and conventional exhibited a covariance of 0.68.

To analyse further, the covariance between expansion and commitment was 0.49 and -0.09 between quality conscious and employee development. In contrast the correlation between cost minimisation and conventional was 0.09. Likewise, the covariance between expansion and employee development was -0.13, while the covariance between quality conscious and conventional was 0.33. Finally, the covariance between expansion and conventional was 0.25. The results indicate that a majority of the average variance extracted for each construct was larger than the covariance between each of the constructs. This suggests that each of the constructs uniquely represent the dimensions of HRM strategy.

Alternatively, discriminant validity was also assessed by using a correlation analysis. Six factors generated from the factor analysis were correlated each other and the result is presented in Table 5. The results show that all the six factors are not perfectly correlated where their correlation coefficients range between 0 and 1. Hence, we can conclude that discriminant validity has been established.

(Insert Table 5)

In the context of CFA, it is possible to compute a composite reliability index for each latent variable. Both of these methods were applied to test the reliability of the scales in this study. The following sections discuss them in detail.

a) Reliability Tests – Cronbach's Coefficient Alpha

The results of the internal consistency reliability test for the variables examining the six factors are produced from the EFA analysis. The reliability test for expansion and employee development recorded excellent reliability with coefficient alphas of above 0.7 as recommended by Nunnally (1978). However, the coefficient alpha for quality-conscious, cost minimization and commitment was below 0.6. Coefficient alpha in the range from 0.5 to 0.6 is still at the minimum acceptable level of reliability for preliminary research (Nunnally, 1967). Table 6 exhibits the results of Cronbach Coefficient Alpha for HRM strategy.

(Insert Table 6)

b) Reliability Test –Using Structural Equation Modeling

Alternatively, the composite reliability and variance extracted measures for each construct via SEM will also be examined. In SEM, the value associated with each latent variable-to-item equation measures the reliability of that individual item (Garver and Mentzer, 1999). The stronger the correlation of the systematic component, the higher the reliability associated with the indicator to its latent variable. Furthermore, SEM construct reliability values do not assume that the individual items have equal reliabilities (Bollen, 1989).

The AMOS programme does not provide the construct's scale reliability and variance extracted value automatically, so manual calculation is required by using the formula given in Figure 1 (Garver and Mentzer, 1999).

(Insert Figure 1)

From Figure 1, the λ represents the standardized factor loadings and j is the indicator/item. For the construct reliability, the formula specifies that the numerator equals the standardized parameter estimates (in AMOS, standardized regression weights) between a latent variable and its indicators summed, and then the summation is squared. The denominator equals the numerator plus the summed measurement error for each indicator (Garver and Mentzer, 1999). For the variance extracted, the formula is similar to that of construct reliability, except that the numerator equals the standardized regression weight (λ) between the latent variable and its indicators squared, then summed (Garver and Mentzer, 1999).

The construct reliability value is also an indicator of convergent validity. The rule of thumb for the reliability estimate is that 0.7 or higher suggests good reliability and between 0.6 – 0.7 may be acceptable. High construct reliability value indicates that internal consistency exists, meaning that the measures are all consistently representing the same latent construct (Hair et al., 2006; Garver and Mentzer, 1999). Kline (1998), meanwhile, suggests that alpha values below 0.5 show that at least half of the observed variance may be due to random error and the measures are considered unreliable.

Table 7 shows the construct reliability and variance extracted values for all the latent constructs in this study. From the Table, the construct reliability value for all the latent variables or factors in this study are above 0.6 as suggested by previous researchers (Hatcher, 1994). This shows a good reliability and that the measures are all consistently representing the same latent construct. As for the variance extracted, some of the value estimates of the constructs are below 0.5. However, Hatcher (1994) posits that this situation does not cause concern since it is quite frequent from the previous studies to find an estimate below 0.50, even when the construct reliability is acceptable. Thus, it can be concluded that the measures for integrated HRM strategy produce sufficient reliability.

(Insert Table 7)

Discussion and conclusion

The primary focus of this paper was to test the dimensionality of integrated HRM strategy scale that has been predominantly used in the Western culture to the Malaysian context. To a certain extent the study has shown that by getting a 35 items of HRM strategy which is capable of explaining sufficient variation in the construct being measured. It has also been proven that the instrument is valid (content, construct, convergent, and discriminant) as well as reliable.

HR managers from manufacturing organizations can benefit from the use of this scale in numerous ways. Integrated HRM strategies were developed and operationalized based on the established HRM strategy typologies (e.g. Miles and Snow, 1984; Dowling and Schuler, 1990; Delery and Doty, 1996). From the integration, six types of HRM strategic dimensions were proposed namely: expansion, quality conscious, cost minimization, commitment, employee development and conventional. Exploratory factor analysis suggested that the six-factor model was used within this sample of manufacturing organizations, providing support for the construct validity of this scale. The range of factor loadings was observed changing from 0.42 to 0.82 and six factors explained 52.33 percent of total variance. In addition, the results of the confirmatory factor analysis indicated that the fit indices for the four factors of integrated business strategies provided a good fit to the data.

Therefore, these validated strategic dimensions can be utilized as an alternative to establish HRM strategic typologies for the manufacturing organisations. Importantly, this result could be used as reference and as a basis for HR managers for a further in-depth understanding of the concept of HRM strategies in manufacturing organisations in Malaysia.

However, there are some HRM strategies that can be considered in order to identify weak areas in the manufacturing organizations. Upon discovering the problematic situation (e.g. HR managers scored very low in the dimension of cost minimization and quality conscious HRM strategy), it is worthwhile for the organizations to further investigate the causes of the problems and ultimately lead to decision-makings to remedy the situation. Apart from that, evaluations using the scale can be carried out from time-to-time to keep a close tab on the adoption of different types of HRM strategy among the manufacturing organizations in Malaysia.

Finally, in the wake of rising global competition, this empirical finding of integrated HRM strategy scale provides manufacturing organizations with a better understanding on the desirable to have a strategy that promotes competencies inside the HR department and ultimately to the organisations as a whole. Moreover, the organizations are also aware on the various types of HRM strategies to adopt particularly in the hyper competitive environment,

In conclusion the integrated HRM strategy has been presented as a reliable, valid and extremely versatile instrument for the measurement of HRM strategies espoused by the manufacturing organizations in Malaysia. The instrument can assist with the development of theory and research on human resource management. It may provide a valuable tool for research on HRM strategy particularly for researchers who are interested in the application of HRM strategy typologies, organization-based perspectives on strategy, strategic HRM and strategy-performance relationship. A final insight, the integrated HRM strategy scale is predicted to perform as a useful role in synthesizing theory, practice, and research on HRM.

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Table 1. Profile of the Respondents

Descriptions	Number	Percentage
Type of industry		
• Food and beverages	8	7.1
• Textiles	10	8.8
• Wood products	6	5.3
• Chemical products	12	10.6
• Rubber and plastic products	11	9.7
• Metal products	9	8.0
• Machinery and equipment	17	15
• Electronics	16	14.2
• Radio, TV and communication	16	14.2
• Motor vehicles, trailers and semi-trailers	8	7.1
Years in operation		
• 20 years above	41	36.3
• 11-20 years	40	35.4
• 10 years and below	32	28.3
Total employees		
• 150 to 300 employees	30	26.5
• 301 to 1000 employees	46	40.7
• Above 1000 employees	37	32.7
Positions		
• Top Management	9	8
• Senior Management	23	20.4
• Management Level	63	55.8
• Senior Executive	18	15.9
7. Years of working experience		
• Below 5 years	69	61.1
• 5 to 10 years	34	30.1
• Above 10 years	10	8.8

Table 2. Exploratory Factor Analysis of the Integrated HRM Strategies

Factors/Items	**Factor loading**
HRM Strategy - KMO = 0.908 Barlett's: Sig. = 0.000	
Factor 1: Expansion	
• All HR activities are fully integrated with one another.	0.817
• Human resource activities are in line with overall corporate strategy.	0.693
• The human resource department has as much say in corporate matters.	0.721
• The human resource department has explicit statement of its goal.	0.552
• Promotion is closely tied to performance appraisal.	0.575
• Training is viewed as an investment.	0.549
• Supervisors keep open communication with employees.	0.545
• Training is a valued function.	0.481
• Employees may suggest improvement in the way things are done.	0.471
Factor 2: Quality Conscious	
• Employees are actively involved in formal participation process.	0.676
• The job descriptions are explicit.	0.685
• Employees' performance appraisal is according to standard set of procedures.	0.645
• Employees' complaint through proper channel is encouraged.	0.609
• My company conducts standardized/structured interviews.	0.589
• The job has an updated job description.	0.496
• There are multiple promotion ladders.	0.439
Factor 3: Cost minimization	
• The human resource department function is accorded a trivial role.	0.700
• Qualified employees have narrow opportunities to be promoted.	0.696
• Job duties are ambiguously defined.	0.632
• Employees have little participation in goal setting.	0.602
• The head of human resource is excluded from the executive meeting.	0.552
• Promotion is based on seniority.	0.544
• The career path is broad.	0.512
• The basic salary offered is low compared to others.	0.419
Factor 4: Commitment	
• Employees' performance is emphasized on their personal development.	0.650
• Performance is based on objective results.	0.608
• Employee will go through the training programs frequently.	0.482
• The discussion between supervisor and subordinate focuses on future performance.	0.481
• My company constantly updates the range of benefits for the employees.	0.472
• Performance appraisal is discussed frequently with the employees.	0.451

Factors/Items **Table 2 (Continued)**	**Factor loading**
Factor 5: Employee Development	
• There are formal training programs to teach new skills.	0.714
• Extensive training programs are provided for a group of employees.	0.545
• Salary raise for employees is based on job performance.	0.509
• My company has comprehensive flexible benefits scheme.	0.443
Factor 6 : Conventional	
• The job security is almost guaranteed.	
• It is difficult to dismiss an employee.	0.760
• My company emphasizes on individual criteria is assessing performance.	0.728
	0.537

Table 3. Summary of Fit Indices

Indices	**Abbrev.**	**Acceptable Level**	**Comments**
Chi-Square	$(\chi^2)(df, p)$	$p > 0.05$ at $\alpha = 0.05$	P > 0.05 reflects acceptable fit; 0.1 reflects a good fit.
Normed Chi-Square	$(\chi^2)/df$	$1.0 < (\chi^2)/df < 3.0$	Values close to 1 indicate good fit but values less than 1 may indicate overfit.
Goodness of fit	GFI	GFI > 0.90	Values between 0.90 – 0.95 indicate satisfactory fit and values higher than 0.95 indicate good fit.
Root Mean Square of Approximation	RMSEA	RMSEA < 0.05	Values between 0.05 – 0.08 indicates satisfactory fit. Value 0 indicates a perfect fit.
Normed Fit Index	NFI	NFI > 0.90	Values between 0.90 – 0.95 indicate satisfactory fit and values higher than 0.95 indicate good fit. Values greater than 1 indicate overfit
Tucker-Lewis Index	TLI	TLI >0.90	Values between 0.90 – 0.95 indicate satisfactory fit and values higher than 0.95 indicate good fit. Values greater than 1 indicate overfit
Comparative Fit Index	CFI	CFI > 0.90	Values between 0.90 – 0.95 indicate satisfactory fit and values higher than 0.95 indicate good fit. Values close to 0 indicate poor fit, CFI =1 indicates perfect fit.

Source: Adapted from Schumacker and Lomax, 1996; Kline, 1998

Table 4. Results of Confirmatory Factor Analysis

Variable	Chi-square ($\chi 2$)	P value	$\chi 2$/df	NFI	GFI	TLI	CFI	RMSEA
HRM Strategies								
Expansion	29.689	0.075	1.484	0.932	0.934	0.967	0.976	0.066
Quality-Conscious	10.952	0.279	1.217	0.949	0.968	0.984	0.990	0.044
Cost Minimization	16.856	0.264	1.204	0.906	0.960	0.973	0.982	0.043
Commitment	4.830	0.185	1.610	0.966	0.978	0.973	0.987	0.074
Conventional	1.490	0.222	1.490	0.976	0.991	0.975	0.992	0.066
Employee Development	3.219	0.359	1.073	0.967	0.985	0.955	0.998	0.026

Table 5. Correlation results

	Quacon	Cost	Commit	Conv	Expand	Empdev
Quacon	1					
Cost	.492**	1				
Commit	.499**	.424**	1			
Conv	.253**	.296**	.486**	1		
Expand	.562**	.445**	.324**	.221*	1	
Empdev	-.065	-.116	.001	.151	-.125	1

Quacon- quality-conscious, Cost- cost-minimization, Commit- commitment, Conv-conventional, Expand- expansion, Empdev- employee development.

Table 6. Reliability of the HRM Strategies

Variables	**No of items**	**Cronbach's Coefficient Alpha**
HRM Strategies		
Expansion	9	0.904
Cost minimization	7	0.589
Quality conscious	8	0.592
Commitment	6	0.536
Employee development	4	0.743
Conventional	3	0.677

Table 7. Variance Extract and Construct Reliability for HRM Strategies

Construct	**Variance Extracted**	**Construct Reliability**
Expansion	0.52	0.89
Quality conscious	0.44	0.82
Cost minimization	0.34	0.78
Commitment	0.50	0.80
Employee Development	0.44	0.75
Conventional	0.48	0.71

Construct Reliability (CR) = $(\sum\lambda)^2 / [(\sum\lambda)^2 + \sum (1 - \lambda j^2)]$

Variance Extracted (VE) = $\sum\lambda^2 / [\sum\lambda^2 + \sum (1 - \lambda j^2)]$

Where:

λ = Standardized regression weight

$1 - \lambda j^2$ = Measurement error for each indicator/item

Figure 1. Formulas for Variance Extracted and Construct Reliability