Development the Measurement of Human Resource Competency in SMEs in Upper Northeastern Region of Thailand

Phana Dullayaphut\textsuperscript{a},* , Subchat Untachai\textsuperscript{a}

\textsuperscript{a}Faculty of Management Science, Udonthani Rajabhat University, Udonthani, 41000, Thailand

Abstract

The paper is designed to provide a quantitative measure of the human resource competency of the small and medium enterprises in the upper Northeastern Region of Thailand. The objective of this study is to examine the validity and reliability of the measure of the four-factor model of the human resource competency in the upper Northeastern part of Thailand. The research mainly involves a survey design. It includes a pilot test using undergraduate business students at Udonthani Rajabhat University for pretesting questionnaire items. In addition, this investigation into skills, expertise, problem-solving, and adaptability competency attributes necessitates uncovering variables of interest and this involves a large-scale field study. The data are collected via personal questionnaires from 329 samples. They include the managers of SMEs in 3 provinces including UdonThani, Nongkhai, and Beungkarn. Respondents are asked to rate, on a five-point Likert scale, their agreement or disagreement on the human resource competency attributes. LISREL program is used for data analysis since the proposed model is a simultaneous system of equations having latent constructs and multiple indicators. Quantitative data are analyzed by the statistical techniques, namely exploratory factor analysis and confirmatory factor analysis. It is found from the study that the four-factor human resource competency, which consists of skills, expertise, problem-solving, and adaptability competencies of the SMEs in the upper Northeast of Thailand, is empirically fit the data. The managerial implications are discussed.

© 2013 The Authors. Published by Elsevier Ltd. Selection and/or peer-review under responsibility of Faculty of Science and Technology, Kasem Bundit University, Bangkok

Keywords: Human Resource Competency; Human Resource Management; SMEs; Confirmatory Factor Analysis,

1. Introduction

In most developing countries, Small and Medium Enterprises (SMEs) are the most important source of new employment opportunities. SMEs make substantial contributions to employment and comprise the majority of businesses in the nation [1]. SMEs provide the strong foundation for Thailand's industrial development. They utilize their products in bigger industries as raw materials or semi-products [2]. Moreover, SMEs establish the
important element in supporting crucial units of industry together. In addition, the largest number of businesses is comprised of SMEs. Their distribution is covered in all sectors including manufacturing, trade and service. Strengthening SMEs is a main issue to consider when it comes to growth and income distribution in the country. The Institute for Small and Medium Enterprises Development (ISMED) reported that SMEs in Thailand represent over 90 percent of the total number of entrepreneurs in nearly all business sectors, and employ over 60 percent of the labor force. In 2019, the value of industrial exports from Thai SMEs was over 45% of all industrial products exported from Thailand. All these statistics underscore the huge contribution of SMEs to the Thai economy. SMEs use a large proportion of the human capital; provide a productive outlet for expressing the entrepreneurial spirit of individuals, and assist in strengthening economic activity all through the country. SMEs promote a sufficiency economy by enhancing wealth to the grassroots level, which stimulates the economic and social development of Thailand [3].

Unfortunately, many SMEs fail each year. According to the Thai Ministry of Commerce, the failure rate was more than 50% in 2010. This indicates that business failure is a huge problem among SMEs. Many studies have suggested that business failure is due largely to skill, knowledge and competency of entrepreneurs [4].

Entrepreneurs around the world can be divided into two types: opportunity-based and necessity-based. Opportunity-based entrepreneurs are entrepreneurs with high levels of human capital and entrepreneurial competencies. Necessity-based entrepreneurs, on the other hand, are entrepreneurs with low levels of human capital and entrepreneurial competencies. They generally lack other viable options for earning a living. As in other developing countries, a majority of SME entrepreneurs in Thailand have been identified as necessity-based entrepreneurs.

As human capital and entrepreneurial competency can be improved through education and training [5], SMEs in Thailand still require an improvement in SME entrepreneurs' quantity and quality of life [6], for instance consultants, educational-training program developers, academic researchers, and policy makers to improve their understanding of the effects of human capital and entrepreneurial competency on the career success of SME entrepreneurs in Thailand. In other words, there is a need to attain a better understanding of the effects of human capital and entrepreneurial competency on the career success of SME entrepreneurs in Thailand.

In recent years, therefore, human resource and marketing scholars have paid a great deal of attention to the subject of competency and competency [7-8-9]. It has been the strategic use of firm competencies and distinctive competencies for competitive advantage. Firm competencies are those things that a company does especially well that allow it to compete successfully and prosper in the marketplace. The competencies refer to attributes, abilities, organizational processes, knowledge, and skills that allow a firm to achieve superior performance and sustained competitive advantage over competitors.

Competitive advantage may be gained from two main sources: assets and the competencies that enable assets to be deployed advantageously [10]. Day [11] defined competencies as “complex bundles of skills and accumulated knowledge, exercised through organizational processes, which enable firms to coordinate activities and make use of their assets.” Management’s task is to exploit and leverage firm specific assets and competencies. Therefore, the paper aims to investigate the entrepreneurial competencies structure in Thailand SMEs section.

Following this introduction, the literature regarding the competency and firm performance is reviewed. Next, the objective and hypothesis are presented and the research methodology is described. Then, results of the data analysis are presented, followed by a discussion of implications and future research avenues.

2. Literature Review

Human capital theory has strong influence to human competency[12-13] posits that individuals with more or higher-quality human capital perform better at executing relevant tasks, so human capital pertains to individual knowledge and abilities that allow for changes in action and economic growth. Human capital may be developed
through formal training and education aimed at updating and renewing an individual's competencies in order to do well in society. Applying this theory to SME entrepreneurs, one expects a positive association between SME entrepreneurs' human capital and their performance and, subsequently, between their performance and their career success [14]. Cardon[15] argued that greater entrepreneurial human capital enhances the productivity of SME entrepreneurs, which results in higher firm performance. Higher productivity levels of SME entrepreneurs means that business owners are more efficient in organizing and managing operations or are able to attract more customers, negotiate better contracts with suppliers, and raise more capital from investors. From this, it can be argued that human capital increases entrepreneurial performance and plays an important role in the market selection process [16].

Kesler and Law [17] proposed the 3 steps for change organization namely the added-value proposition (i.e. critical HR processes, and value-adding performance behaviors), four design tracks (such as contract a new mission with line management, redesign processes, redesign jobs and organization structure, and develop new competencies), and a road map for change.

Yeung et al. [18] specified core competencies for HR executives as three areas that were business knowledge, customer orientation, effective communication, credibility and integrity, and systemic perspective.

Raelin and Cooledge [19] identified the 14 competency factors which effect on organizational performance. These were managing work, managing people, technological leadership, innovation/change, client relations, ethics, communications, team orientation, system integration, financial management, extra effort, practical orientation, and quality commitment.

Buckley and Monks [20] have classified manager competencies into three factors. They include basic knowledge and information (i.e. command of basic facts, and relevant professional knowledge qualities), skills and attributes (namely continuing sensitivity to events, analytical problem-solving skills, social skills and abilities, emotional resilience, and proactive qualities), and meta-qualities (such as creativity, mental ability, balanced learning habits and skills, and self-knowledge qualities). Haber and Reichel[21] suggested that human capital of entrepreneur, particularly managerial skills, were the greatest contributing factor to performance. There were the influences of skilled work force, efficient production, and new business development competencies on the human resource efficiencies [22]. The competencies of adaptive, resourceful innovation, proactive change, and risk anticipation were the core component of strategic human resource management [23].

Based on this review of the literature relating to entrepreneurial competency, four factors with twelve items of entrepreneurial competency were selected for inclusion in the survey questionnaire that was used to gather information for this article. Also, the authors proposed the following research model illustrated in Figure 1 which offers a visual presentation of the four – factor entrepreneurial competency model.
This four entrepreneurial competency model can be expressed as:

\[
\mathbf{x} = \Lambda \mathbf{\xi} + \mathbf{\delta}
\]

Where \(\mathbf{x}\) is a vector of 12 indicators, \(\mathbf{\xi}\) is a vector of 4 entrepreneurial competency constructs, \(\Lambda\) is a \(12\times4\) matrix of pattern coefficients relating each indicator to its posited underlying construct, and \(\mathbf{\delta}\) is a vector of 12 indicator errors. The variance-covariance matrix for the indicators denoted as \(\Omega\), can be given as:

\[
\Omega = \Lambda \Phi \Lambda' + \Theta_{\delta}
\]

Where \(\Phi\) is the \(4\times4\) covariance matrix of entrepreneurial competency constructs and \(\Theta_{\delta}\) is the \(12\times12\) diagonal matrix of entrepreneurial competency error variances.

### 3. Objective and Hypothesis

The purpose of this study was to investigate the entrepreneurial competency construct. Specifically, the objective of this study was to examine the validity and reliability of the measure of the four entrepreneurial competencies in the upper northeast of Thailand. They were skills, expertise, problem-solving, and adaptability competencies in the upper northeast of Thailand.

H1) the entrepreneurial competency consists of skills, expertise, problem-solving, and adaptability competencies

\[\left(\phi_{12}, \phi_{13}, \phi_{14}, \phi_{23}, \phi_{24}, \phi_{34} \neq 0\right)\]
4. Methodology

4.1 The Sample and Data Collection

The research is based on a survey design. It includes a pilot test using undergraduate students at Udon Thani Rajabhat University for pretesting questionnaire items. In addition, this investigation into skills, expertise, problem-solving, and adaptability competencies necessitates identifying variables of interest and this requires a large-scale field study.

The sample was drawn from a list of all hospitality enterprises located at Udon Thani province (12,969 firms) and at Nongkhai province (24,201 firms), and Beungkarn province (1000 firms)[24]. From the initial list of 37,170 enterprises, a sample of 350 managers of the enterprises was quota selected. The data were collected via self-administered questionnaires. Respondents were asked to rate, on a five-point Likert scale their agreement or disagreement on the respondents’ perceptions on competency dimensions.

In June 2011-December 2011, 250 questionnaires were distributed to the sample in upper northeast, Thailand.

4.2 Developing a better measure

The authors developed measurement items following the process that recommended by Churchill[25] and Gerbing and Anderson[26]. The first task was to generate items, sample items and dimensions from researchers who have previously developed the scale[27-28-29].

Second, the questionnaire items were submitted to three academic experts in the fields of HR management for review. They were asked to review the survey for domain representativeness, item specificity, clarity of construct, and readability (i.e. content and face validity). Drawing on their inputs, some measurement items were eliminated or reworded, and others were added. Third, the resultant survey instrument was pretested with 30 undergraduate students in Thailand. They were asked to complete a survey and indicate any ambiguity or other difficulties they experienced in responding to the items. Their feedback and suggestions were used to modify the questionnaire. These completed pilot test responses were analyzed with SPSS. An exploratory factor analysis using Principal Component Extraction indicated that all items load on expected factors (loadings range from 0.761 to 0.898). Construct reliability tests with Cronbach’s Alpha also yielded satisfactory results (range from 0.74 to 0.85). Finally, 12 items were verified with confirmatory factor analysis using LISREL 8.30. After the iterative process of item refinement and purification, a battery of 73 items was reduced to the final set of 12 items to measure the four constructs such as skills, expertise, problem-solving, and adaptability competencies. Additionally, the twelve structured items (measured on a five-point scale) were rooted in agreement or disagreement on the perceptions in entrepreneurial competency dimensions. This study has utilised the instruments (see Table 1) to develop the entrepreneurial competency model in upper Northeast, Thailand.
Table 1: entrepreneurial competency measures

| Scale                  | Scale Items                                |
|------------------------|--------------------------------------------|
| skills,                | X1. (Change Agent/Change leader)           |
|                        | X2. (Team Motivation)                     |
|                        | X3. (Resource Allocation)                  |
| expertise,             | X4. (Human Resource Management)            |
|                        | X5. (Personal Motivation)                  |
|                        | X6. (General knowledge)                    |
| problem-solving,       | X7. (Context Clarification)                |
|                        | X8. (Problem analysis)                     |
|                        | X9. (Conflict Management)                  |
|                        | X10. (Information sharing)                 |
| Adaptability           | X11. (Flexibility)                         |
|                        | X12. (Intelligence)                        |

4.3 Validity

This study adopted the Gerbing and Anderson [30] methodology to determine the construct, and discriminant validity of the entrepreneurial competency measures. To determine the convergent and discriminant validity of the entrepreneurial competency, measures were also included in the questionnaire. These cover skills, expertise, problem-solving, and adaptability competencies. Discriminant validity is required when evaluating measures [31], especially when the measures are interrelated, as in the case of the entrepreneurial competency in the hospitality sector.

4.4 Analytical techniques

Before the data were analyzed, the questionnaires returned were reviewed to ensure that appropriate information was being collected and defective questionnaires were discarded. There were 209 completed questionnaires. The response rate of 84% was high. The completed questionnaires were coded and the data keyed into the computer. This paper mainly employed two statistical techniques to analyze the data. They were exploratory factor analysis and confirmatory factor analysis [32-33]. At this time, the LISREL was applied to the analysis process and a data analyst was employed to supervise.
Table 2: Means, standard deviations, covariance matrices

|   | x1 | x2 | x3 | x4 | x5 | x6 | x7 | x8 | x9 | x10 | x11 | x12 |
|---|----|----|----|----|----|----|----|----|----|-----|-----|-----|
| x1| 0.55 |    |    |    |    |    |    |    |    |      |      |      |
| x2| 0.40 | 0.63 |    |    |    |    |    |    |    |      |      |      |
| x3| 0.37 | 0.40 | 0.60 |    |    |    |    |    |    |      |      |      |
| x4| 0.34 | 0.34 | 0.36 | .55 |    |    |    |    |    |      |      |      |
| x5| 0.29 | 0.29 | 0.28 | .36 | .55 |    |    |    |    |      |      |      |
| x6| 0.27 | 0.27 | 0.30 | .25 | .27 | .55 |    |    |    |      |      |      |
| x7| 0.35 | 0.33 | 0.30 | .30 | .24 | .36 | .60 |    |    |      |      |      |
| x8| 0.32 | 0.34 | 0.27 | .31 | .27 | .28 | .39 | .65 |    |      |      |      |
| x9| 0.26 | 0.28 | .27 | .26 | .24 | .26 | .29 | .41 | .61 |      |      |      |
| x10| 0.23 | 0.25 | .23 | .22 | .21 | .23 | .26 | .29 | .30 | .51 |      |      |
| x11| 0.30 | 0.34 | .32 | .34 | .30 | .32 | .37 | .32 | .28 | .60 |      |      |
| x12| 0.31 | 0.33 | .33 | .31 | .33 | .29 | .34 | .37 | .31 | .34 | .43 | .73 |
| Mean| 4.05 | 4.07 | 4.10 | 4.06 | 4.08 | 4.15 | 4.17 | 4.09 | 4.12 | 4.14 | 4.14 | 4.10 |
| SD. | 0.74 | 0.79 | 0.77 | 0.74 | 0.74 | 0.78 | 0.80 | 0.48 | 0.72 | 0.77 | 0.85 |      |

5. Results

5.1 Hypothesis Testing

5.1.1 Assessing fit between model and data

The analysis began with calculation of the mean and standard deviation for each unweighted, interval scale. Covariance between each scale is reported in Table 2. The overall adequacy of the proposed theoretical framework was examined using LISREL 8.30 causal modelling procedures [34], and the maximum likelihood method of estimation and the two-stage testing process were adopted. A substantial portion of the variance in the respondents’ perception on entrepreneurial competency has been explained by the model. The results are shown in Table 3. The model is a close fit to the data at \( \chi^2 \) (48) value of 112.05 (P<0.00). However, the ratio of Chi-square and degree of freedom is 2.33 (112.05 /48), GFI of 0.92, AGFI of 0.87, CFI of 0.98 and RMSEA of 0.08. Therefore, the respondents’ perception on entrepreneurial competency model can be acceptable [35-36] (see Figure 2).
Table 3 Properties of the CFA for entrepreneurial competency

| Construct            | Items | Standardized loadings | t-value | CR   | AVE   | Cronbach’s Alpha |
|----------------------|-------|-----------------------|---------|------|-------|------------------|
| skills, X1           | .84   | -                     | .70     | .66  | .85   |
|                      | X2    | .82                   | 13.50*  |      |       |
|                      | X3    | .79                   | 12.96*  |      |       |
| expertise, X4        | .80   | -                     | .60     | .53  | .74   |
|                      | X5    | .73                   | 11.08*  |      |       |
|                      | X6    | .62                   | 9.13*   |      |       |
| problem-solving, X7  | .70   | -                     | .62     | .55  | .83   |
|                      | X8    | .79                   | 10.31*  |      |       |
|                      | X9    | .79                   | 10.41*  |      |       |
|                      | X10   | .70                   | 9.25*   |      |       |
| Adaptability competencies, X11 | .84 | - | .69 | .64 | .78 |
|                      | X12   | .77                   | 11.91   |      |       |

*Indicates significance at p<.01 level

5.1.2 Assessing reliability and validity of constructs

Before testing the hypotheses, evaluated the psychometric properties of the measurement scales through confirmatory factor analysis using LISREL [37]. The composite reliability (CR), variance extracted estimates (AVE), convergent validity, and discriminant were examined.

Composite reliability reflects the internal consistency of the indicators in measuring a given factor [38]. The composite reliability values for each of the entrepreneurial competency dimensions is shown in Table 3 which reveals that the composite reliability score for each dimension is satisfying (0.70, 0.60, 0.62, 0.69). In addition, the Cronbach’s alpha values for each of the entrepreneurial competency dimensions are shown in Table 2, which in each case is greater than 0.60 [39]. In addition, the result was that the variance extracted estimates construct are all a greater than .50 (.66, .53, .55, .64).

Besides the reliability test, convergent validity was demonstrated when different instruments were used to measure the same construct, and scores from these different instruments are strongly correlated. The convergent validity can be assessed by reviewing the t-test for the factor loadings (greater than twice their standard error) [40]. The t-test for each indicator loading is shown in Table 3. In the result of this analysis the construct demonstrates a high convergent validity because all t-values are significant at the .01 level.

In addition, the confidence interval test to assess the discriminant validity between the four factors involves calculating a confidence interval of plus or minus two standard errors around the correlation between these factors, and determines whether this interval includes 1.0. If it does not include 1.0, discriminant validity is demonstrated [41]. Table 4 shows the values of interval between 2 factors. They were 0.81, 0.97; 0.77, 0.93; 0.77, 0.93; 0.74, 0.90; 0.79, 0.99; and 0.70, 0.86. That is to say that discriminant validity for the entrepreneurial competency scale is significantly supported because all range excludes the value 1.0.
Table 4: Test of discriminant validity for AVE and confidence interval

| Skills   | expertise | problem-solving | adaptability |
|----------|-----------|-----------------|--------------|
| Skills   | .70       | .79             | .67          | .60          |
| expertise| (.81, .97)| .60             | .72          | .79          |
| problem-solving | (.74, .90) | (.77, .93) | .62 | .73 |
| adaptability | (.70, .86) | (.79, .99) | (.77, .93) | .69 |

Notes: On the diagonal the AVE of each factor is shown. In the upper part, the square of the correlation between each pair of factors is detailed and the confidence interval for every pair of factors is collected in the lower part.

The correlation coefficients between each pair of factors for the entrepreneurial competency scale; e.g. skills, expertise, problem-solving, and adaptability competencies, are significant. They are $\phi_{12} = 0.89$ ($t=7.68, p<0.05$), $\phi_{13} = 0.82$ ($t=6.90, p<0.05$), $\phi_{14} = 0.78$ ($t=7.25, p<0.05$), $\phi_{23} = 0.83$ ($t=6.87, p<0.05$), $\phi_{24} = 0.89$ ($t=7.63, p<0.05$), $\phi_{34} = 0.86$ ($t=7.02, p<0.05$). Therefore, the hypothesis testing is supported.
6. Conclusion and Discussion

Our aim is to examine the entrepreneurial competency in SMEs, Thailand. The result was that hypothesis is more likely supported. It is shown that the entrepreneurial competency consists of four components including skills, expertise, problem-solving, and adaptability competencies. Due to, for testing discriminant validity, not only D-square and confidence interval are acceptable. This findings could confirm the Haber, and Reichel[42], Kesler, and Law’s research [43]. This finding would be consistent with the research by Kesler, and Law [43]; Yeung, et al. [44]. In addition, for testing converge validity, the t-test for the factor loadings (greater than twice their standard error) is acceptable. These findings could confirm the researches of Raelin, and Cooledge [45]; Buckley and Monks [46]. One explanation for the findings may be that, competitive advantage may be gained from two main sources: assets and the competencies that enable assets to be deployed advantageously [47]. Specifically, change agent is the highest importance for entrepreneurial skill dimension. This finding would be consistent with the research by Martin et al. [48]. The human resource management and problems analysis and conflict management attributes are high importance for entrepreneurial expertise and problem-solving dimensions. This finding would be consistent with the research by Wright et al. [49]. Finally, the flexibility is the highest importance for adaptability dimension. This finding would be consistent with the research by Wang and Wang, and Wu[50-51].

7. Research and Managerial Implications

The study has implications on the examination of the validity of entrepreneurial competency. This article has provided a comprehensive evaluation for understanding the measurement of entrepreneurial competencies in Thai SMEs. However, several limitations are acknowledged, leading to suggested directions for future research. First, this research was limited to validating the entrepreneurial competency based on confirmatory factor analysis. Whereas, many researchers have used the resource-based and strategy-structure-performance views to examine the associations between entrepreneurial competencies and firm performance, future research could apply these views to ascertain antecedent and consequent relationships among resources, competency, competitive advantage, and firm performance. Also, the analysis used in this study was static, which evaluation of respondents’ perceptions was conducted at one point in time. Longitudinal research has to investigate how perceptions of key entrepreneurial competencies might change over time.

For a managerial perspective, an entrepreneur who implements strategies in different environment settings cannot have an ethnocentric view about management imperatives. This study provides some guidelines for entrepreneurs handling their competency structure across the country. For example, the result of the study demonstrates that expertise and adaptability have important attributes for the entrepreneurial competency. The entrepreneurs in a Thai SMEs should have a human resource manager for continuously improving managers and organizational competencies. Subsequently, this study found that expertise competency is strongly correlated to adaptability competency. The SMEs should place emphasis on flexibility and intelligence qualities.

It might be collaborated among Thailand officials, such as Department of Industrial Promotion, The Thai Chamber of Commerce, and Commission on Higher Education.

8. Limitations and Future Research

Although this paper has provided relevant and interesting insights into the understanding of the components of entrepreneurial competency structure in Thai SMEs, it should be clearly recognized the limitations associated with this study. First, cross-sectional data were used in the paper. Subsequently, the time sequence of the
entrepreneurial competency structure cannot be determined unambiguously. Therefore, the results might not be interpreted as proof of a causal relationship, but rather as lending support for a prior causal scheme. The development of a time-series database and testing of the entrepreneurial competency structure relationship with performance in a longitudinal framework would provide more insight into probable causation.

Second, the conceptualization of entrepreneurial competency structure may be somewhat limited and it is arguable that entrepreneurial competency structure may consist of more than organizational information gathering, and the development and implementation of a competency-oriented strategy.

Third, the LISREL methodology may be construed as a limitation because the results presented here are based on the analysis of a causal non-experiment design.

Acknowledgement

The authors sincerely thank anonymous reviewers for their very helpful comments and input; Banchob Chiemwichit for his very thorough readings of the paper and his welcomes suggestions for explanations regarding particular topics. Financial support from Udonthani Rajabhat University, Thailand is gratefully acknowledged.

References

[1] Becker, G.S. Human Capital: A Theoretical and Empirical Analysis, Chicago: University of Chicago Press, 1993.
[2] Tapaneeyangkul, P. Government policies in assisting SMEs for sustainable development, White Paper on SME 2011. Institute of SMEs Development, Thailand, 2011
[3] Unger, J.M., Rauch, A., Frese, M. and Rosenbusch, N. Human capital and entrepreneurial success: a meta-analytical review. J Bus Venture 2011; 26: 341-358.
[4] Wasuntiwongse, M. Need and characteristics of a sample of micro and small enterprises in Thailand, Micro and small enterprise development and poverty alleviation in Thailand Project ILO/UNDP: THA/99/003, Working Paper 5, 1990
[5] Martin, B.C., McNally, J.J., and Kay, M.J. Examining the formation of human capital in entrepreneurship. J Bus Venture 2012: 1-14.
[6] The Department of Industrial Promotion
[7] Wright, P.M., McMahan, G.C., McCormick, B., and Sherman, S.W. Strategic, core competence, and HR involvement as determinants of HR effectiveness and refinery performance. Hum Resour Manage 1998; 37(1): 17-29.
[8] O’Cass, A., and Ngo, L.V. Winning through innovation and marketing: lesson from Australia and Vietnam. ind Mark Manage 2011; 1-11.
[9] Parry, S.B. Just what is a competency?. Training 1998; 35(6): 58-61.
[10] Barney, J. Firm resources and sustained competitive advantage. J Manage 1991; 17(1): 99-120.
[11] Day, G. S. The competencies of market-driven organizations. J Mark 1994; 58(4): 37-52.
[12] Wu, L-Y. Entrepreneurial resources, dynamics competencies and tart-up performance of Taiwan’s high-tech firms. J Bus Venture 2000; 60: 549-555.
[13] Shane, S., and Venkatraman, S. The promise of entrepreneurship as a field of research. Acad Manage J 2000; 25: 217-226.
[14] Markman, G.D., and Baron, R.A. person-entrepreneurship fit: why some people are more successful as entrepreneurs than others. Hum Resour Manage Rev 2003; 13(2): 253-256.
[15] Cardon, M.S. Contingent labor as an enable of entrepreneurial growth. Hum Resour Manage 2003; 42(4): 357-373.
[16] Baron, R.A. Human resource management and entrepreneurial: some reciprocal benefits of closer links. Hum Resour Manage Rev 2003; 13(2): 253-256.
[17] Kesler, G.C., and Law, J.A. Implementing major change in the HR organization: the lessons of five companies. Hum Resour Plan 1997; 20(4): 26-38.
[18] Yeung, A., Woolcock, P., Sullivan, J. Identifying and developing HR competencies for HR function. Hum Resour Plan 1996; 19(4): 48-58.
[19] Raelin, J.A., and Cooledge, A.S. From generic to organic competencies. Hum Resour Plan 1996; 19(4): 24-33.
[20] Buckley, F., and Monks, K. The implications of meta-qualities for HR roles. Hum Resour Manage J 2004; 14(4): 41-56.
[21] Haber, S., and Reichel, A. The cumulative nature of the entrepreneurial process: the contribution of human capital, planning and environment resources to small venture performance. J Bus Venture 2007; 22: 119-145.
Wright et al. ref. 7 above

Wang, Z-M., and Wang, S. Modeling regional HRM strategies in China: an entrepreneurship perspective. Int J Hum Resour Manage 1995; 19(5): 945-963.

National Statistical Office, Ministry of Information and Communication Technology, Thailand

Churchill, G. A. A paradigm for developing better measures of marketing constructs. J Mark 1979; 16(February): 64-73

Gerbing, D.W. and Anderson, J. C. An updated paradigm for scale development incorporating unidimensionality and its assessment. J Mark Res 1988; 25(May): 186-192.

Wright, D. and Brockbank, W. Human resources competencies: an empirical assessment. Hum Resour Manage 1995; 34(4): 473-495.

Mansfield RS. (1996). Building competency models: Approaches for HR professionals. Hum Resour Manage 1996; 35: 7-18.

Hoffman, T. The meanings of competency, J Eur Indus Train 1997; 23(6): 275-285.

Gerbing, D.W. and Anderson, J. C. An updated paradigm for scale development incorporating unidimensionality and its assessment. J Mark Res 1988; 25(May): 186-192.

Churchill, ref., 17 above

Steenkamp, J-B.M., and Baumgartner, H. On the use of structural equation models for marketing modeling. Int J Res Mark 2000; 17: 195-200.

Joreskog, K. G., and Sorbom, D. LISREL: User's reference guide Scientific Software International Inc. Chicago 1996.

Bentler, P. M. Comparative fit indexes in structural models. Psychol Bull 1990; 107(2): 238-246.

Bentler, P. M and Bonett, D. G. Significant tests and goodness-of-fit in the analysis of covariance structures Psychol Bull 1980; 88(3): 588-606

Anderson, J.C., and Gerbing, D.W. Structural equation modeling in practice: A review and recommended two-step approach. Psychol Bull 1983; 103: 411-23.

Bagozzi, R. P., and Yi, Y. On the Evaluation of Structural Equation Models. J Acad Mark Sci 1988; 16: 74-94.

Anderson, J.C., and Gerbing, ref. 29 above

Ibid

Fornell, C., and Larcker, D. F. Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. J Mark Res 1981; 18(February): 39-50.

Haber and Reichel, ref. 21 above.

Kesler, and Law, ref. 12 above

Yeung, et al. ref. 13 above.

Raelin, and Cooledge, ref. 14 above.

Buckley and Monks, ref. 15 above

Barney, ref. 16 above

Wu, L-Y. ref. 12 above.

Martin et al., ref. 5 above

Wright et al. ref. 7 above

Wu, ref. 7 above