

## Knowledge Management Adjustment and its Implications for Business Performance

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**Abstract:** Knowledge management (KM) has been regarded as an important issue for the professionals and academicians in these years. Human resource management (HRM) plays an important role in performing knowledge management activities. At the same time, the importance of information technology management (ITM) in promoting effective KM practices has also been recognized. Therefore, in the case of KM strategy must align with HRM strategy, ITM must be merged into this relationship to obtain organizational results. Top managers from 346 organizations completed the research questionnaire. Performance indirect suggestions of adjustment are examined using profile abnormality analysis. Findings showed that the holistic viewpoint of adjustment among KM strategy, ITM strategy and HRM strategy presents a significant impact on business performance.

**Key words:** Adjustment • Adjustment as profile abnormality • Knowledge management (KM) strategy • Information technology management (ITM) • Human resource management (HRM) strategy

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### INTRODUCTION

At present, knowledge has become an important asset and possible strategic resource for current firms. Facing the appearance of knowledge-based economy, it is important to know how to efficiently manage and integrate different kinds of knowledge resources in order to endure and keep competitive advantages. In this mood, knowledge management (KM) is considered to be a stressed and important issue, as corporations must manage their knowledge bases and warehouses efficiently to gain long-term competitive advantage [1]. Particularly, the performing of KM projects obliging with different KM strategies can provide organizations with dynamic abilities for improving knowledge quality and quantity, as well as for unifying the value and feasibility of knowledge [2]. At the same time, information technology or information systems (IT/IS) can be considered as effective means to promote codifying knowledge and creating networks [3]. It included management activities of IT resources for an organization [4]. For example, “system” KM strategy requires IT tools that allow for explicit knowledge to be formalized and intelligible in documents, and shared electronically through IT foundation such as intranets [5].

Therefore, firms should invest in an extensive IT system to codify knowledge. In contrast, “human” KM strategy draws upon interpersonal relationships to exchange and share tacit knowledge beyond organizations. Thus, a simplify investment in IT to join experts in organizations is needed. The technologies may include an e-mail system, online discussion networks, videoconferencing and other collaborative tools [6]. In addition, the strategic role of human resource management (HRM) focuses on designing and performing of a set of internally consistent policies and practices that ensure a firm’s human capital to acquire business goals [7]. In KM activities development and deployment of human resources into different HRM strategies to adjustment with KM practices are important affects for managers [8, 9]. For example, according to Hansen, Nohria, Tierney, (1999) [3], different KM strategies should reflect different drivers of their human resources. In “system” KM strategy, sufficient HR policies comprise of employing persons who are well suited to reuse of knowledge and performing of solutions, training people in groups and through computer-based distance learning and satisfying people for using and promoting to document databases. Moreover, with the “human” KM strategy, suitable HR

policies are employing persons who like problem solving and can bear ambiguity, training people via one-on-one mentoring, and satisfying people for directly sharing knowledge with others. Therefore, both system and human KM strategies emphasize the importance of recruitment and selection of employees (HR flow), training and development employment security, teams and job redesign control (work systems) and reward systems. The importance of IT/IS-business adjustment is also recognized [10, 11]. According to Lee, *et al.* [12], adjustment theory is one of the top five often used theories out of the 31 listed among the 993 studies in the MIS field. Researchers have come to realize that an absence of strategic arrangement probably can cause organizations was not capable of realizing sufficient value from their IT investments [10, 13]. Adjustment has been found not only to make a great contribution to possible abilities of an organization's IT foundation; it also uses a significant direct positive effect on organizational performance [14, 15]. In a contrary manner disarrangement in organizations results in abundance and incompetency in IT functions and in an increase in costs and delays [16]. Acutely, it can be one of the important reasons that an organization's performance declines [17]. In addition, to analyze and design of the organization as a whole is important to obtain organizational performance [18]. In the practical terms, basic arrangement mechanism is "strategy" and it is thought that an adjustment between strategy and organization is the key driven to effectiveness at realizing intentional strategies [19]. Therefore, drawing on the idea of adjustment, this research aims to examine the adjustment effect among KM strategy, ITM strategy and HRM strategy on business performance. The authors assume that business performance, including growth and profitability, will be affected by adjustment among these strategies.

**Theoretical Background and Hypothesis:** The idea of adjustment is a key issue in structural possibility theory [20] and discussed in managerial behavior and organizational analysis [21, 22]. Its basic meaning is that organizational performance is an outcome of adjustment between two or more factors; such as, adjustment among organization environment, strategy, structure, system and culture [23]. According to [24], adjustment has three accesses: selection, interaction and systems accesses; whereas six different viewpoints are suggested by Venkatraman [25]. matching, temperance, interference, gestalt, co-variation and profile abnormality. These six viewpoints can be classified into two categories

according to the number of variables being concurrently examined. Therefore, adjustment as matching, temperance and interference can be categorized into the reductionism viewpoint, while adjustment as gestalt, co-variation and profile abnormality can be regarded as holistic viewpoint [26]. Adjustment as temperance is similar to Van de Ven and Drazin's, [23] theory of adjustment as interaction. From this standard-specific viewpoint, adjustment is the interaction between two predictor variables. This relationship is the impact of a predictor variable (e.g. strategy) on a dependent variable (e.g. performance), which is dependent upon a third variable (e.g. environments) which can be called as a mediator [25]. Within this plan, an interfering variable (e.g. structure) exists that has an indirect effect on a previous variable (e.g. strategy) and a direct effect on a resulting variable (e.g. performance) in the model. Adjustment as interference and adjustment as temperance are referred to the situation of a single independent variable; a single mediator or mediator; and a single dependent variable [27]. Adjustment as matching is conceptually related to Van de Ven and Drazin's [24] idea of adjustment as a selection access, which views adjustment as a result of natural choice. In the viewpoint of adjustment as matching, adjustment is a theoretically defined match between two related variables without necessarily considering a standard variable. Adjustment as gestalt, this standard-free viewpoint corresponds to Van de Ven and Drazin's [24] system access, derived from the conceptual framework of system theory, which understands of organizations as holistic models of interdependencies. Miller [28] claims that this idea is a "new possibility access" that "seeks to look concurrently at a large number of variables that communally define a meaningful and consistent portion of (organizational) reality". Adjustment as co-variation is a standard-free viewpoint which is defined as a model of co-variation or internal consistency among a set of basic theoretically related variables and it can be best described through a clarification [25]. Its verbalization follows a strategy plan that the degree of internal consistency among related variables or constituencies has a significant effect on performance. This idea of adjustment is similar to adjustment as gestalt, but these two ideas differ in the degree of specification of the functional form. Gestalt considers adjustment to be products of cluster analysis, in which observations can be grouped, based upon a set of characteristics; whereas covariation is the process of factor analysis, the grouping of characteristics based upon a set of observations [25]. This is the reason that

Venkatraman, [25] stated: “This viewpoint requires much greater accuracy in the model of logical consistency among the factors and the explanation of the basic logical link among the characteristics”. Adjustment viewed as a profile abnormality is a standard viewpoint which represents the degree of support to a specified perfect strategic profile; in order, the level of adjustment has a significant effect on performance. Its basic premise is that configurations, rather than bivariate examinations are important to completely describe a synergistic profile or system. Profile abnormality viewpoint is related to Van de Ven and Drazin’s [24] model analysis. In this background, a perfect profile is supposed to exist and abnormality from this perfect profile indirectly suggests a weakness in co-alignment, resulting in lower performance. According to Venkatraman [24], “this viewpoint allows a researcher to indicate a perfect profile and to display that support to such a profile has systematic implications for effectiveness.” For instance, Barki *et al.* [29] adapted this viewpoint of adjustment in the background of a software development project. A perfect model for risk management profile was specified for a particular level of risk disclosure; a software project’s degree of support to such a multidimensional profile was found to be positively related to performance if it had a high level of risk management-risk disclosure alignment. The calculation of abnormality as a Euclidean distance in an  $n$ -dimensional space is the proper analytical method for testing this viewpoint of adjustment.

**Hypothesis Development:** According to previous research, adjustment between businesses related strategy and ITM strategy is an important issue within organization that has been stated often [30]. However, there are few studies that empirically address the issue of strategic arrangement in KM field. This is what Asoh *et al.* [31], called “the missing link in knowledge management research.” It is because possibility researchers were discovering, in the background of strategic arrangement, that predicting KM or business performance included some thing more complex than separating specific strategy factors that a more “holistic” configuration viewpoint needed to be affected. As mentioned above, the important role of ITM to catalyze the movement of KM [32, 1]. Studies argue that proper IT management can increase the speed of knowledge examination and utilization from individual to organizational members [33]. However, due to the complexity of KM enterprises and different kinds of IT techniques developed, business must

pay more attentions to select these right IT solutions to deploy in supporting their KM enterprise [34]. It means that the match of ITM and KM is an important affect for managers. Some researchers clear that KM related or ITM-related variables alone are not sufficient for explaining organizational performance [35], since explanations based only on KM or IT ignored the interactions of possibility variables as well as the synergy they produce [36]. As [37] shown “On the strength of using knowledge management practices in organizational, that integration of technologies, techniques and theories of knowledge management, as well as internal environment and organizational and IT strategy is clearly necessary.” Despres and Chauvel [38] also showed there are lots of possibility factors (e.g. organizational background, culture, knowledge transformation and dynamic, etc.) Simplify the relationship between KM strategy and its performance in the performing of a KM project. That is, one must adopt the “Demand pull” strategy in the consideration of different organizational background for identifying proper KM strategy in a holistic viewpoint instead of the strategy of “Supply push” which is just as a whole view. On the other hand, if different related possible factors are not “strategic arrangement” with strategy, firms can’t manage and organize available resources. Hence, business performance would be decreased. It is reasonable to assume that, knowledge-related strategy is part of business strategy leading to obtain organizational goals [8, 39]. Since KM is regarded as an important function in shaping business strategy, their relationship can be seen as a balancing act between external field and internal field of a firm [40]. Shih and Chiang, [41] showed that adjustment among KM strategy and HRM strategy are significantly related to KM effectiveness in terms of process outcome, learning capability, and organizational results. In the viewpoint of resource based view, Powell and Dent-Micallef [42] also asserted that IT alone would not produce maintainable performance, combining certain human and business resources with IT is the right way to explain significant performance variance. Therefore, it is reasonable to assert that a positive business performance would be obtained if the relationships between KM strategy and HRM strategy [9, 41, 43], ITM strategy and HRM strategy [43, 44], KM strategy and ITM strategy [43, 36, 37] are well conducted and organized. That is, KM strategy, ITM strategy and HRM strategy must be organized for achieving organizational outcome.

**Hypothesis 1:** The adjustment among KM strategy, ITM strategy and HRM strategy has a positive direct effect on business performance.

### MATERIALS AND METHODS

The Process for research methodology is shown in Fig. 1. Such as measurement development, data collection procedures, estimation of construct validity and reliability and hypothesis testing. In this study four constructs: HRM strategy, KM strategy, ITM strategy and business performance were measured. And strategic arrangement is regarded as a hidden variable for these four above mentioned strategies. A multiple-item method was used to develop the questionnaire. Each item was based on a 5-point Likert scale ranging from “1 = strongly disagree” to “5 = strongly agree”. But for measurement validity, this study adopted well-founded research instruments, with only minor changes in formulation. For the representation of each construct, this study used mean value by calculating the average number for the total items’ scores of each construct. KM strategy in our study is defined as “the set of tactical and/or operational activities performed by an organization in response to its knowledge strategy.” It includes two ingredients: system strategy and human strategy. This research operationalizes it using 6 items adapted from Choi and Lee [45] and Hansen et al. [3] classification system. ITM strategy is defined as the part of an organization’s overall management strategy that relates to the IT group [46]. It includes two dimensions: IT environment performing a scan, representing the extent a firm’s capability to discover and react to technological changes relative to its competitors; and strategic use of IT, representing the extent to which firms use IT to improve their productivity, profitability, quality and performance [46]. Entirely, this present research used 9 items to measure this construct. This study used three broad HRM policy areas to define a continuum of bundles of HRM strategy: HR flow (recruitment, selection, training and development); work systems (control, teamwork, job specificity); and reward systems (wages and performance estimations) [41]. Since conceptual interpretation; and operationalization of business performance is a difficult issue in strategy research Venkatraman, Ramanujam, [47], strategic management and IS/IT researchers have suggested a diversity of measures of organizational performance. Dess and Robinson [48] claim that, while measuring organizational performance, the subjective access and the

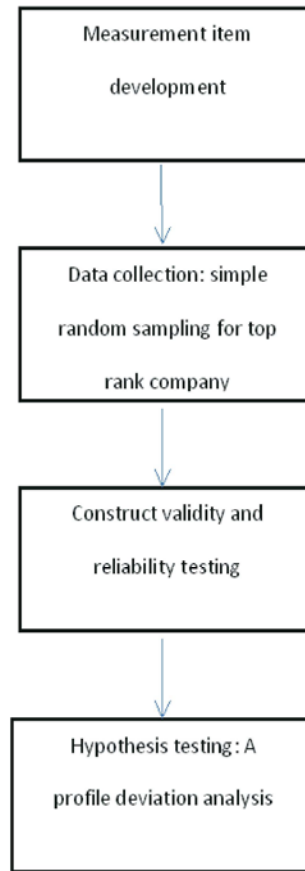


Fig. 1: Process for research methodology.

objective access produce similar results. According to Khandwalla [49], subjective measures are used instead of objective measures, because subjective measures have been shown to capture a broad idea like business performance. In IS/IT research, several studies [50,25] have used subjective access successfully to investigate the relationship between strategy and business performance. As a result, this study employs subjective measures of business performance. This research defined business performance as ‘the measures of growth and profitability of a firm through its business attempts and deployment of organizational and technology resources’. It is operationalized using Venkatraman’s [51] instrument and measured from a multi-dimensional viewpoint. Of five items involving 5-point Likert scales, respondents were asked to indicate their feelings of how their firm performs relative to the main competitor in market on two dimensions (i.e. growth and profitability) in term of sales growth rate, market share gains, ROI, net profit adjustment, return on sales and financial liquidity.

**Data Collection Procedure:** This research used review research and cross-sectional research method and 550 questionnaires were distributed to the manufacturing industry, companies of service industry and companies of finance/banking industry in Iran. Overall, a total of 362 responses were returned, yielding 346 valid samples. As a result, the gross response rate is 31.75%. In this research we used Structural Equation Model with an EQS technique to estimate the measurement model. Construct validity was estimated from an estimation of the measurement model by confirmation factor analysis (CFA). The validation is estimated the strength of measurement between items and related constructs. Therefore four measurement models are estimated respectively. In each estimated model, items that demonstrate cross load, poor loadings and reliability are dropped and the model is re-estimated. This is done to ensure that data is adjustment to the measurement. The value of 0.5 is used as threshold value for factor loading estimation [52]. Again the CFA model are been reexamined. As a result, the parameter estimates, adjustment indices indirectly suggest that each of the dimensions presents an adjustment for the observed covariance's among their item measures. In addition, construct reliability (q value) and Cronbach's a coefficient are also greater than the recommended value of 0.6 [53] and 0.7 [54], respectively.

## RESULTS

To test the proof that strategic arrangement relationships bring into existence among these three strategies, a holistic viewpoint, namely the profile abnormality access is used. This access views strategic arrangement as the degree of support to a specific profile or model of some basic dimensions or variables [20] and is suitable to theory testing [55]. Therefore, the present research adopted this viewpoint to test strategic arrangement effect. Previous studies have adopted this method to test the adjustment effects successfully on performance [55, 20]. Likelihood model hypothesizes that, if the distance between an organizational profile and the 'perfect profile' increases, organizational performance will decrease. The perfect type can be formed either theoretically or empirically. To operationalize these abnormalities from an perfect profile, the Euclidean distance score is calculated [20], which, in effect, represents the degree of adjustment. Its basic concept is that the extent to which the distance scores in the model from a perfect profile are negatively and

significantly correlated to performance measures determines the strength of support for the presence of a strategic arrangement relationship.

The Euclidean Distance or disarrangement

$$\sqrt{\sum_{j=1}^6 (X_{ij} - \bar{X}_{ij})^2} \quad (1)$$

Where  $X_{ij}$  = the score for the unit in the study sample along the  $j$ th variable;  $\bar{X}_{ij}$  = the mean for the calibration sample along the  $j$ th variable and  $j = 1, 2, 3, 4, 5, 6$ , (the six variables in this study). In this research, the perfect type is defined empirically using two standard variables, business performance related to growth and business performance related to profitability. In coordination with the research of [26] and Bergeron *et al.* [55], top 10% of the sampled firms (a more severe standard than the 30% or 35% they sampled) in terms of growth and profitability were used as the perfect or calibration sample ( $n = 42$  for growth and  $n = 36$  for profitability performance estimation). Therefore, mean scores for each of the six variables (i.e. system, human, IT environment scanning, strategic use of IT, HR flow and reward systems) of each calibration sample were calculated to indicate the 'perfect' profile empirically. As in Drazin and Van de Ven (1985) [20], strategic adjustment (or more adjustment 'maladjustment') was measured for remaining subgroup ( $n = 304$  for growth and  $n = 360$  for profitability performance) as the Euclidean distance metric from individual model of scores of each company to the perfect model, for the six variables. Table 1 showed the example of calculation of maladjustment for the Company X. The results of correlation analysis between the degrees of maladjustment and performance measures are shown in Table 2. The correlation coefficients are  $r = -0.36$  ( $p < 0.001$ ) and  $r = -0.40$  ( $p < 0.001$ ) between maladjustment and growth and profitability, respectively. The results indirectly suggest that, as abnormality from the perfect profile increase, the performance decreases. Therefore, the profile abnormality access supports the research hypothesis. In addition, looking at the mean scores presented in Tables 3 and 4 for profile abnormality referring to business growth and profitability, one must note that it is in the HRM strategy dimension, as opposed to either the KM or IT strategy dimensions, where the top performers tend to differ most from the remaining firms, on average. This indirectly suggests that firms seeking to obtain greater growth and profitability should

Table 1: The calculation of disarrangement value for company X to perfect sample

Variable	Mean score		Maladjustment value for company X to perfect sample
	Perfect sample <sup>a</sup> (n = 42) <sup>b</sup>	Company X	
System	5.26	5.19	0.2328 <sup>c</sup>
Human	5.40	4.97	
IT environment scanning	5.48	5.19	
Strategic use of IT	5.71	5.62	
HR flow	5.18	5.40	
Reward systems	5.18	5.10	

a. Each mean score of variables for perfect sample is calculated by the mean value of measurement items for each variable.

b. The cut value for top 10% of mean growth performance is 5.42 for the sampled firms. Thus the company number of mean growth performance that above 5.42 which we defined as calibration sample is n = 42.

$$Maladjustment = \sqrt{(5.19 - 5.26)^2 + (4.97 - 5.40)^2 + (5.19 - 5.48)^2 + (5.62 - 5.71)^2 + (5.18 - 5.40)^2 + (4.97 - 5.40)^2 + (5.13 - 5.12)^2} = 0.2328$$

Table 2: Relationship between disarrangement and performance

	Performance measures	
	Growth	Profitability
Maladjustment	<u>0.32***</u> (n = 608)	<u>0.30***</u> (n = 620)

\*\*\* p< 0.001

Table 3: A schematic representation of adjustment as profile deviation for business performance in terms of growth.

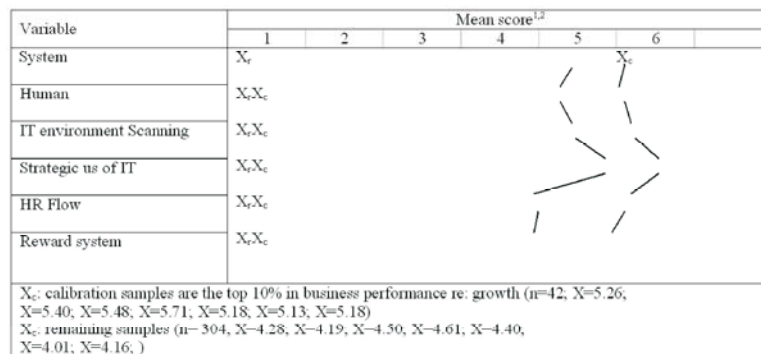
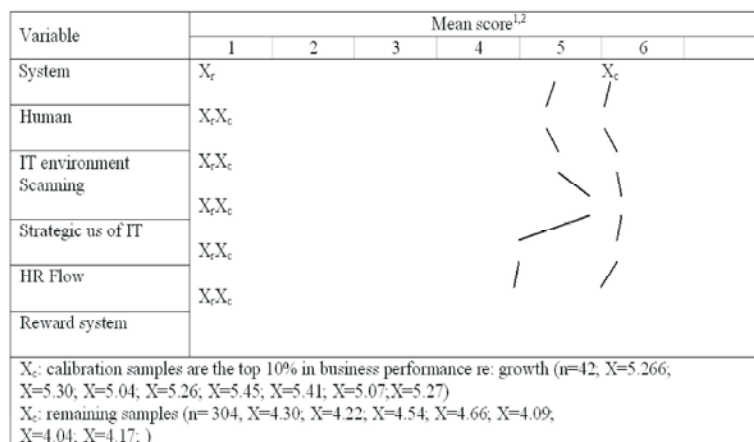


Table 4: A schematic representation of adjustment as profile deviation in business performance in terms of profitability.



struggle to reduce the gap between themselves and the top performers, in terms of human resource management practices.

## DISCUSSION

The results of this study reinforce the utility of ‘perfect profile’ methodology in KM. Development of a perfect profile showed what strategy research calls the ‘holistic’ access to test adjustment. In summary, the holistic viewpoint, using the access of adjustment as a profile abnormality, clearly recognized the model of strategic arrangement has a positive impact on business performance. Particularly, the result showed that the firms which are good at adjustment ITM strategy and HRM strategy with KM strategy presenting a high performance level. Hence, firms must activate right IT management and HRM practices with KM strategies. In addition, firms that use system-oriented (codification) KM strategies focus their ITM strategies on strategic use of IT, meaning that they are not collect operational knowledge to link people with reusable codified knowledge; they also focus on producing large revenues. On the other hand, firms that use human oriented KM strategies must have reward systems that encourage workers to share knowledge directly with others; instead of furnishing intensive training, employees are encouraged to develop social networks, so that tacit knowledge can be shared. Such companies focus on ‘supporting’ not ‘creating’ high profitable margins, and on external IT environment scanning, supporting the latest technologies, so as to promote person-to-person conversations and knowledge exchange.

Using a holistic viewpoint in organization design is important for a business to obtain highest benefit. A successful KM project must take different characteristics into account, to guarantee a positive outcome. In such a background, organization, process, human resources and IT are thought to be the main components and enablers for KM practices [56]. Thus, integrating different factors related to KM are measured by researchers to be most important tasks. Even though a productive body of research has been suggested to develop the linkages between knowledge management and business performance and though there has been much theorizing in this area, few confirmed instruments have been developed for empirical testing of these theories, especially for the viewpoint of adjustment. Because the importance of strategic arrangement of IT/IS recognized and regarded as having a significant positive direct effect upon business

performance [14, 63], one must take into account the realities of strategic arrangement in KM field. Current research views strategic arrangement in a manner that reflects its ‘internal consistency’ or ‘internal accord’ [25] and establishes the fact that such an adjustment has a significant impact upon performance. As a result, the results support the plan.

**Implications for Professionals:** This research presents that the adjustment among KM strategy, ITM strategy and HRM strategy is noticeably linked to business performance, as measured in terms of growth and profitability. This evidence supports prior research findings in large firms and indirectly suggests that adjustment affects business performance. This study shows that just using KM strategy alone cannot lead to successful achievement of higher business performance. Firms also must consider completing resources to synthesize the effects of KM practices. Selecting and managing information technology and human resources efficiently in KM projects is the way to success. In addition, Firms should aim at integrating human resources and IT solutions in KM activities, rather than just focusing on KM strategies. For example, if firms try to develop social networks to promote sharing of knowledge person-to-person, there must be a reward system encouraging this and companies must scan the external IT environment and support the latest IT in order to increase person to person communication. Firms that want to develop high-quality and reliable information systems to codify, disseminate and reuse knowledge, must provide extensive training to employees, must tightly link compensation to work performance and must use IT strategically to connect people with reusable codified knowledge. All of the above benefits require that CEOs or managers take an active role in seeking KM strategic arrangement.

## CONCLUSION

The limitation of this research is that: first, this study measured ITM strategy and HRM strategy with their original variables, since other related research used mean values to break samples into two groups (e.g. ‘buy-bureaucratic’ and ‘make-organic’ HRM strategies and ‘high’ and ‘low’ use of IT) as proxies for investigation. Future research should use these categories to test the relationship between adjustment and business performance. Another limitation of this research affects the relationships among adjustment of KM

strategy, ITM strategy and HRM strategy and business performance. Other factors could influence adjustment and business performance. For example, Asoh [8] used adjustment as interference to examine strategic arrangement between business strategy and knowledge strategy and discovered that adjustment has a positive direct effect on organizational performance. In a case study at Buckman Laboratories, Abou-Zeid [40] suggested a KM strategic arrangement model (KMSAM) to figure out the important roles analyzing and estimating alternatives strategic choices. In addition, Khalifa *et al.* [32] shown that KM effectiveness will be obtained with suitability of KM structure, which is affected by KM strategy, technological adjustment, organizational culture and leadership. Shih and Chiang [41] also shown that adjustment among KM strategy, corporate strategy and HRM strategy is significantly related to improved KM effectiveness in terms of process outcome, learning capability and organizational results. Thus, future research may include business strategy in the KM adjustment model, to verify its integral effect on KM or business performance. In addition, because the data we collected were coming from manufacturing industry, service industry and finance/banking industry, these companies are accumulated as a single data combine to analyze the adjustment effect. Since different industries/companies may have different activities with respect to adjustment practices, future studies may use case study or compare the differences among different industries to examine the adjustment effects. Finally, understanding the requirement of a successful adjustment among strategies is of interest to both professionals and academics. Therefore emerging from this study emphasizes the performance implication of adjustment among KM strategy, ITM strategy and HRM strategy. Future studies, may apply the adjustment idea to another fields.

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