Does Employee-based Human Capital Breathe New Life into Business? Empirical Evidence from Pakistani Marble Manufacturing Sector

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Abstract

Human capital is a widely discussed phenomenon in the area of human resource management. However, employee-based human capital, which is strongly associated with firm performance, is still not empirically measured in most studies. The present study investigates the role of employee-based human capital on firm performance within the framework of the resource-based view (RBV). Employing a sample of 209 marble manufacturing units, the study confirms the validity of measurement models via CB-SEM. The findings show a strong coefficient of determination for the overall structural model. The regression weight for employee-based human capital in the prediction of firm performance is significant at the 0.001 level (one-tailed). The findings of the study have a number of key implications for academicians and HR practitioners. Limitations and future research directions research are also discussed.

Keywords: Regression, Strategic human resources, Human capital, HR practitioners, Creative and innovative.

JEL Classification: J240

1.   Introduction

The resource-based view (RBV) contributes to literature on strategic management; especially Strategic Human Resource management (SHRM) owes a lot to it (Wright, Dunford, & Snell, 2001). RBV postulates that an organisation's success is a source of strategic assets (Barney, 1991); and that human capital is a strategic asset due to its inimitability (Nguyen, 2020; Anifowose et al., 2018; Dang et al., 2018; Bually, 2017; Al-Musali & Ismail, 2016; Ployhart & Moliterno, 2011; Huselid, 1995). Research literature identifies two kinds of human capital; one deals with firm-specific human capital and the other general human capital. While the general part of human capital has been extensively researched, firm-specific

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or employee-based human capital, remains relatively less surveyed and poorly understood (Chowdhury et al., 2014). The present study thus attempts to address this. This is likely to fill research gaps such as the one identified in a study by (Chowdhury et al., 2014). They propose that future research needs to study the combined effect of education and experience-based employees on small firm performance such as profitability. Therefore, education, experience, expertise, productivity, and core skills among employees of a marble manufacturing unit are conceptualised as task-specific human capital. It increases small firm productivity, since employees turn out to be more professional (Nguyen, 2020; Chowdhury et al., 2014; Gibbons & Waldman, 2004). Creative and innovative employees engaged in core operations of a firm are a source of processes, products as well as service innovation. According to Tran and VO (2020), Oppong et al. (2019) and Bontis (1999), human capital is a significant source of innovation: they generate novelty whether of new products and services, or making improvements in business processes (Bontis, 1999). Therefore, this study also considers the intellectual dimension of employee-based human capital and conceptualise this aspect, as employees are creative and innovative to develop new ideas and realise them.

In order to examine the proposed suggestions for future research as identified in a study by (Chowdhury et al., 2014) and Nguyen (2020) call for examining the business performance from the perspective of educated and experienced human resource. The present study thus attempts to address this by conceptualizing that: Does employee-based human capital breathe new life into business?

Furthermore, the current study focusses on the KPK marble manufacturing industry as a case because KPK province is known to be rich in marble. However, regrettably, this industry is characterized by low productivity resulting in a competitive disadvantage (Abdullah, Hadi, & Dana, 2018; Hadi & Abdullah, 2018). Therefore, this study is expected to address these issues.

The present study has importance due to the following facts. This study empirically examines the role of employee-based human capital on marble manufacturing business success, since a study of this nature has never been conducted before. The study also contributes to the gap identified in literature, such as the ones discussed in preceding section. Moreover, the findings of the study will also contribute to the advancement of theory and understanding on strategic HRM in general, particularly in the context of Pakistan and more specifically in the setting of marble manufacturing industry of KPK province.

2.   Review of Literature

2.1   *Theoretical Background and Research Hypotheses*

Competitive advantage gained through the execution of resource-based strategy can help accomplish company objectives as well as improve its performance (Anifowose et al., 2018; Seidu, 2011). This is supported by recent empirical studies such as Newbert (2008). The resource-based view is the main theoretical backdrop against which most strategic management research is undertaken. Shafeey and Trott (2014) argue that RBV is a paradigm closely intertwined to various schools of thought. Among these are the RBV of the firm (Barney, 1991, 1995; Barney & Clark, 2007; Wernerfelt, 1984) competence-based view (Hamel & Heene, 1994; Parahalad & Hamel, 1994; Sanchez & Heene, 2004), and the dynamic view of the firm (Winter, 2003, Teece et al., 1997). Despite criticism, however, the effect of RBV on strategic management research is significant. A concerted effort to focus on internal characteristics of organisational resources to explain competitive advantage is a useful tool (Priem & Butler, 2001). This emergent acceptance of internal resources as the basis of an organisation's success has led to increased use of RBV as underpinning the association between human capital and organisational performance.

2.2   *Human Capital*

Tran and Vo (2020), Oppong et al. (2019), Crook et al. (2011), Gathmann and Schoenberg (2010), and Bontis (1999), human capital is the sum total of individual knowledge possessed by all employees of an organization. This knowledge is a primary determinant of performance (Huselid, 1995). Employees generate intellectual capital (IC) through their competence (Roos, Edvinsson, & Dragonetti,1997), which involves skills, education, and attitude among employees at work. Organization is dependent upon the human capital and that is why it has so much value for an organization (Bontis, 1999). If human capital is linked with task-related knowledge and skills, management ought to put the spotlight on task-specific human capital. According to Nguyen (2020), Dang et al. (2018), and Unger et al. (2011), human capital criterion seems to be particularly useful in predicting the success of organisations. Human capital theory suggests that people contributing in this capital try to get a reward for their investment (Becker, 1964). After the entrepreneurial spirit, those who additionally invest are more likely to pursue greater growth and increased profits in their business compared to those who do not invest much (Anifowose et al., 2018; Dang et al., 2018; Ruiz et al., 2017; Cassar, 2006; Soriano & Castrogiovanni, 2012). According to Becker (1964), theoretical knowledge and skills are also the outcome of investment in education and task-specific experience. With this notion, a majority of studies use education or work experience to measure it (Reuber & Fischer, 1994).

Human capital traits including education, knowledge, experience, and skills are long-time companions of successful entrepreneurial firms (Florin, Lubatkin, & Schulze, 2003; Pfeffer, 1994; Sexton & Bowman, 1985). Social scientists argue that it can be more fruitful in future because of a rise in knowledge-intensive activities at workplaces (Galabova & McKie, 2013; Honig, 2001). Therefore, this study assumes that task-specific employee-based human capital and creative and innovative behaviour increases small firm productivity; since employees tend to be more professional as well as specialists in their job by recurrence.

2.2.1 *Human Capital as a Strategic Intangible Asset*

Firms own tangible and intangible assets that are necessary for the conduct of operations. Tangible assets, such as plant equipment, physical technology, and property, etc., are easy to imitate and substitute, and can be purchased and sold in open market. Intangible assets are valuable, rare, mostly inimitable, and non-substitutable. They are the fundamental drivers of a firm competitiveness and performance (Nguyen, 2020; Dang et al., 2018; Strobel & Kratzer, 2017; Wright & McMahan, 2011; Barney, 1991).

2.2.2 *Employee-based Human Capital and Organisation Performance*

Since development and retention of employee-based human capital significantly influences organisational performance (Anifowose et al., 2018; Hadi & Ahmed, 2018; Dang et al., 2018; Hadi, 2017; Ruiz et al., 2017; Chowdhury et al., 2014) this raises the question how many employees working for an organisation ought to be considered for rare and unique resource that leads to a competitive advantage over the rivals?

However, several studies found that this type of capital is strongly related with competitiveness and productivity. In order to survive and compete with organisations large in size; it is most significant factor for small businesses. Whereas, according to Schneider and Lenzelbauer (1993) in comparison with large organisations small scale businesses have limited resources to gain sustainable competitive advantage. However, efficient and effective management of existing resources is requiring to gain sustainable competitive advantage. Large organizations are better than small organizations in terms of easy access to capital and technology. That is why small organizations have to struggle (Tran & VO, 2020; Oppong, Pattanayak, & Irfan, 2019; Dang et al., 2018; Hadi et al., 2016) with limited set of resources and to sustain competitive advantage, they need to be apt in management. Thus, employees skilful and experienced in their fields should be regarded as a resource inimitable in its nature for small businesses.

Thus, it is hypothesised that:

$H1_a$ Task-specific employee is established sub-construct of employee-based human capital.

$H1_b$ Creative and innovative employees is established sub-construct of employee-based human capital.

$H2$ Employee-based human capital positively affects the success of KP marble manufacturing businesses success.

3.   Methodology

3.1   Measures and Questionnaire Design

As suggested by Christmann (2000), this study employed a three-stage approach to questionnaire development. First, in order to find out valid measures for constructs, questionnaires were developed based on a comprehensive review of literature. The study also made modifications based on observations made during the exploratory phase. In doing so, we considered Pakistani culture and linguistic characteristics, since our questionnaires were administered in Pakistan. According to Sekaran (2000), data-collection instruments must be translated to the local language[1] . Major misunderstanding was noticed, through reverse translation, which ensured the validity (Ferle & Lee, 2003; Hanslin & Rindell, 2014; Wang, Kumar, & Change, 2010; Hadi, Abdullah, & Sentosa, 2016). The opinion of experts was also considered in order to ensure content validity. Finally, a pilot test was conducted, and further revisions and refinements were made. All variables were measured on a five-point Likert scale from "strongly disagree" (1) to "strongly agree" (5).

3.2   Sampling and Data-Collection

In the current study, data was collected from marble manufacturing units based in three industrial estates (i.e., Pirbala, Mardan and Bunir) in the Khyber Pakhtunkhwa (KPK) province of Pakistan. A computer generated[2] number was used to select 218 respondents from the population of 475. The sample size was determined by means of the formula supported by Krejcie and Morgan (1970). Data was collected by means of self-administered questionnaires.

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[1] The researcher is bilingual, with Urdu as first language, and English as acquired language. The original survey instruments were written in English, and then translated to Urdu by the researcher.

[2] http://stattrek.com/statistics/random-number-generator.aspx

4.   Analysis of Results

4.1   Uni-dimensionality Tests

4.1.1   EFA for Employee-based Human Capital

The nine items of employee-based human capital were subjected to a Principal Component Analysis (PCA), prior to which, the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value for the sample in our study was 0.739, exceeding the recommended minimum value of 0.5 (Field, 2000).

BTS for employee-based human capital has a statistical significance with a total variance of 56% for two factors. The researcher used parallel analysis and retained only two factors for next level investigation. These two factors emerged as it has been anticipated when oblique rotation method was used (Hadi, Abdullah, & Sentosa, 2016; Kim & Mueller, 1978; Schmitt, 2011). Within oblique rotation principal, oblimin method of rotation has been used.

Construct validity were also used for employee-based human capital. The study found that the measures used in this study are valid and reliable. The pattern of correlation for the 4 items of task-specific employee-based human capital and 3 items of creative and innovative human capital are related to their respective factors (Table 1). Therefore, all items showed convergence on their respective constructs. Relationships among measures from different constructs are very low, thus the tests also establish discriminant validity.

Table 1
Factor loadings for employee based-human capital items

| Items | Pattern Matrix | | Structure Matrix | | |
| | Component | | Component | | |
	Task specific	Creative and innovative	Task specific	Creative and innovative	Communalities
Hc1	**.888**	.023	**.896**	.340	.804
Hc2	**.838**	.263	**.744**	.037	.614
Hc3	**.701**	.007	**.699**	.244	.489
Hc9	**.545**	.264	**.639**	.458	.469
Hc7	.471	.207	.592	.519	.334
Hc8	.466	.353	.545	.375	.459
Hc5	.059	**.872**	.253	**.851**	.727
Hc6	.020	**.813**	.271	**.806**	.649
Hc4	.110	**.666**	.348	**.705**	.508

Source: Author's Survey results

Dimensions of the employee-based human capital label are task-specific employee capital, and creative and innovative capital. Two items excluded from the instruments because of low loading and cross loading as shown in Table 1.

5.1   Covariance Based -Structural Equation Modelling (CB-SEM)

To test the conception of RBV by means of employee-based human capital, this study chose to employ CB-SEM. Since, CB-SEM is a comprehensive statistical technique for testing the relationship between exogenous and endogenous constructs (Hoyle, 1995).

5.1.1   2nd Order CFA for Employee-based Human Capital

The research framework consists of seven observed, endogenous variables, two un-observed endogenous variables, and 10unobserved exogenous variables (employee-based human capital, e1, e2, e3, e4, e5, e6, e7, RO1, and RO2). From the result of confirmatory factor analysis (CFA) in Table 2, it is observed that factor loadings of all observed variables or items are adequate[3], ranging from 0.54 to 0.86. This indicates that the two sub-constructs confirm the convergent validity test (Nejatian et al., 2011). The remaining number of items for each construct of employee-based human capital are as follows: task-specific (4 items), creative and innovative (3 items).

### 5.1.2   Goodness of Fit Indices

CFA was performed on employee-based human capital.2nd order CFA[4] models (hy-pothesised and re-specified) reveal a comparatively good fit as shown by goodness of fit indices such as X2/df (<2); p-value (>0.05); goodness of fit index (GFI) >0.95; and RMSEA of values <0.08. The measurement models fit the data well based on evaluation criteria: X2, X2/df, probability value, GFI, CFI, TLI, RMR, and RMSEA (Bagozzi & Yi, 1988). Table 2 shows that the goodness of fit of the re-specified model is better than the hypothesised model.

The first measurement model reveals the overall model fit of CMIN =23.32 (df =13), X2 probability value=0.038, GFI=0.904, AGFI=0.793, RMSEA=0.125, NFI=0.815, TLI=0.841, and CFI=0.902. The numbers indicate inadequate model fit (see Figure, 1). In the hypothesised model, the chi-square p-value is insignificant, the value of the RMSEA is 0.125, and the values of AGFI, NFI, and TLI are below the threshold. Therefore, the hypothesised model needs to be re-specified.

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[3] The factor loadings or regression estimates of latent to observed variable should be above 0.50 (Hair et al., 2006).

[4] When variables are moderately to highly correlated, higher order factors can be hypothesized as an explanation of the correlations that exist amongst the lower-order factors (Cunningham, 2008).

### 5.1.3   2nd Order Analysis of Employee-based human capital
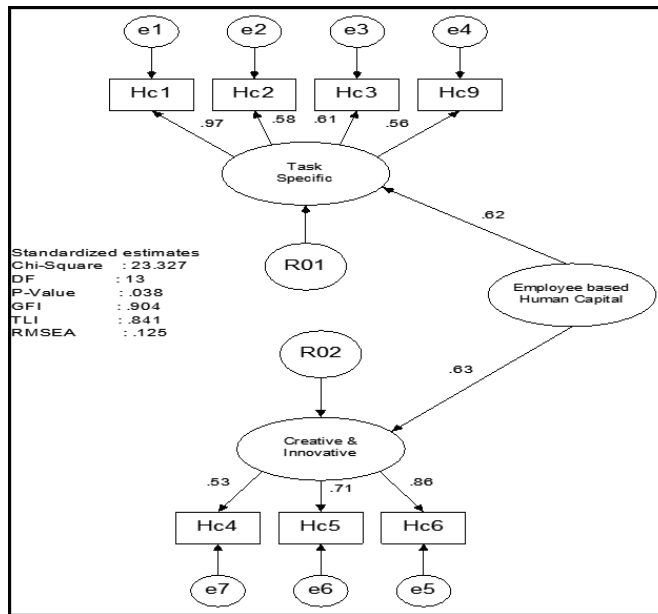
Source: Author's survey result

Figure 1: AMOS Graphics: Illustrated Hypothesized Model

The issue found in the hypothesised model through modification indices is between error items Hc3 and Hc9.This study modified the hypothesised measurement model and addressed the issue through the specification of an error covariance by adding a covariance between items Hc3 and Hc9 error terms.

5.1.4   Re-specified Measurement Model
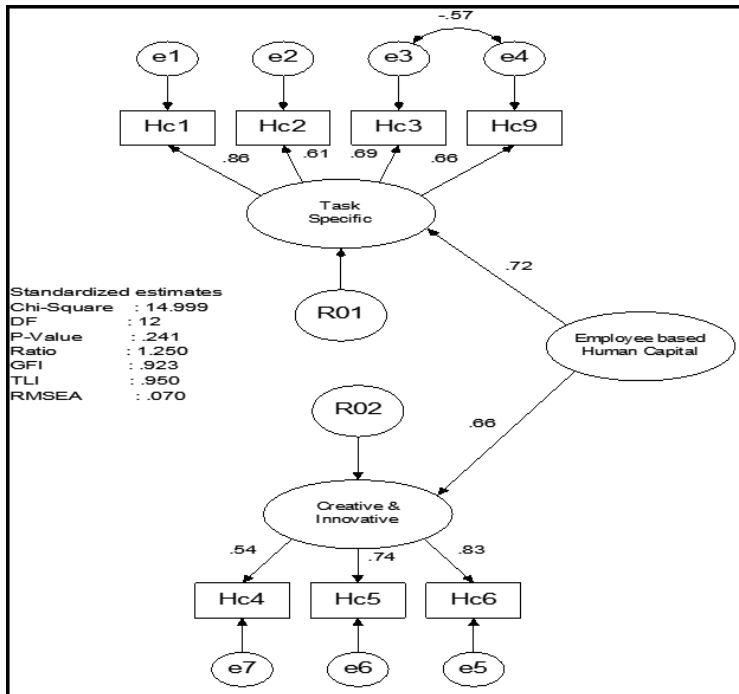
Source: Author's survey result

Figure 2: AMOS Graphics[5]

The significance of the measurement model is shown in Figure 2, which confirms that task-specific and creative and innovative are sub-constructs of employee-based human capital (H1a and H1b supported). Goodness of fit statistics related to the re-specified measurement model reveal that the incorporation of the error covariance between items Hc3 and Hc9 made a substantially large improvement (Figure 2). The value of chi-square decreased from 23.327 to 14.999, while an increase in the probability value associated with X2 from 0.038 to 0.241 is also an indication of good fit. The study also found improvement over other fit indices: the RMSEA reduced from 0.125 to 0.070, TLI improved from 0.841 to 0.950, CFI from 0.902 to 0.971, GFI from 0.904 to 0.923. The study also achieved comparatively good loadings between latent variables; 0.721 from employee-based human capital to task-specific, and 0.663 from employee-based human capital to creative and innovative capital.

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[5] Illustrated specification of covariance between the error terms associated with the item Hc3 and Hc9.

Table 2
Assessment of High Order Measurement Model

| Constructs/Items	EFA	CFA										
		Hypothesized Model					Re-specified Model					
	Loadings	Loadings	R^2	Error Var	CR	AVE	Loadings	R^2	Error Var	CR	AVE	
Task Specific					0.784	0.491				0.80	0.50	
Hc1	0.88	0.97	0.94	0.05			0.86	0.74	0.26			
Hc2	0.83	0.58	0.33	0.66			0.61	0.37	0.62			
Hc3	0.70	0.61	0.37	0.62			0.69	0.47	0.52			
Hc9	0.54	0.56	0.31	0.68			0.66	0.43	0.56			
Creative & Innovative					0.749	0.508				0.75	0.50	
Hc4	0.87	0.53	0.28	0.71			0.54	0.29	0.70			
Hc5	0.81	0.71	0.50	0.49			0.74	0.54	0.45			
Hc6	0.66	0.86	0.74	0.26			0.83	0.68	0.31			
Std.Estimate												
Task Specific ← Employee based Human capital		**0.62**					**0.72**					
Creative & innovative ← Employee based Human capital		**0.63**					**0.66**					

Source: Author's survey result

Composite reliability and AVE. assessed the reliability of the measurement model. Furthermore, from factor loadings and standard estimates, the study confirms H1a & H1b that both sub-constructs are confirmed dimensions of employee-based human capital in KP, marble manufacturing units.

5.2   Structural Model

The path coefficient emanating from employee-based human capital → marble manufacturing business success revealed a positive and significant relationship (Figure 3).

5.2.1   Re-specified Measurement Model
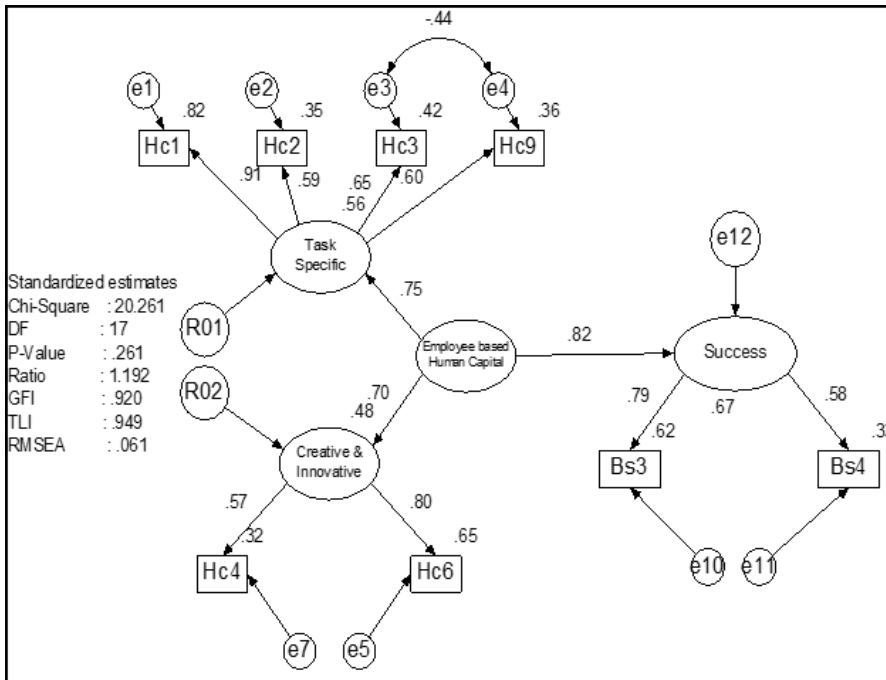
Source: Author's survey results

Figure 3: AMOS Graphics; Re-specified Structural Model

The research model was re-specified after the removal of item Hc5. As a result, the model fit the data well, as confirmed by the following indices: p-value=0.283, CMIN/df=1.170, RMR=0.016, GFI=0.923, TLI=0.954, CFI=0.974 and RMSEA=0.58. This study also found the positive and significant impact of employee-based human capital on marble manufacturing business success.

This result signifies that when employee-based capital goes up by one standard deviation, marble manufacturing business success goes up by 0.82 standard deviation. Employee-based human capital explains about 67% of the variance in marble manufacturing business success, meaning that the error variance of business success is approximately 33.4% of the variance of business success itself.

6.   Conclusion

This study applies the RBV to empirically measure employee-based human capital role on marble manufacturing business performance. In doing so, the study examines the proposed suggestions for future research by Chowdhury et al. (2014). Diagnostic results indicate that the higher-order construct (employee-based human capital) has strong relationships with its lower-order constructs (task-specific human capital and creative and innovative capital). Consequently, it can be concluded that the survey is not only robust, but also shows strong predictive validity. Statistical assessment of the structural model shows that employee-based human capital does breathe life into the marble manufacturing businesses (with a path coefficient of 0.82); when human capital goes up one standard deviation, the success of marble manufacturing businesses standard deviation rises 0.82 points. This finding suggests that the regression weight for employee-based human capital in predicting marble manufacturing business performance has significant differences from zero at the 0.001 level of one-tailed test. 67% of variance in endogenous constructs is explained by employee-based human capital. It can be concluded that the model is well specified. This finding supports prior disjoint studies of Bontis (1999), Chowdhury et al. (2014), and Unger et al. (2011). Therefore, task-specific capital as well as creative and innovative capital both drive the employee side of human capital, and are thus critical sources of success.

This study incorporated other sources of employee-based human capital to test its role on marble manufacturing business performance. Business performance of marble manufacturers has a critical dependency on its employee-based capital. It means that when employees apply their knowledge and skills, this can significantly influence the performance of a firm. Thus, it is important to develop and maintain task-specific and experience-based employees. Specifically, retaining creative and innovative employees, rather than all employees, is more appropriate for the success of marble industry. In order to benefit from these employees, it is recommended that marble manufacturers should introduce policies and packages to discourage turnover intentions and retain them for a long period.

6.1   *Implications, Limitations and Directions for Future Research*

The findings of the study generate policy-level, theoretical-level, and empirical-level implications. KP marble manufacturing business units' success is contingent upon employee-based human capital. This knowledge enhances the ability of marble manufacturer's management to understand deeply the relationship between employee-based human capital and marble manufacturing business performance. The finding is also valuable for policymakers such as the SMEDA (Small and Medium Enterprises Developing Authority). Moreover, the findings of the study contribute to the link earlier proposed in the study of Chowdhury et al.

(2014). He proposed that to estimate the combined effect of strategic HR resources on small firm productivity it is vital to look for other sources of human capital.

The survey data come from Pakistan, specifically from the province of KPK and this limits its generalizability. More research is required to understand the role of other key and core variables. Results are limited to single respondents' method; future research can enlist multiple-respondent approach. An additional limitation of this study is that success was measured by subjective measures, thus cognitive bias may affect the validity of the instruments.

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