

# Innovation and Human Capital Position in Housing Construction Industry Performance: Evidence from Malaysian

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## Abstract

The objective of this study is to evaluate the importance of human capital and innovation on the performance of small firms in the construction sector in developing countries. Primary data was collected from 255 small contractors in the construction sector in the state of Kelantan, Malaysia. Multiple regression analysis methods were used to analyze the data. The results show that all the human capital (experience, education and training) have a significant relationship with the performance of small firms in the construction sector. Among the three elements, the study found that "experience" exhibits the most significant positive relationship. This finding is consistent with the Theory of Human Capital. The findings also indicate that innovation has a direct influence on the performance of small firms in the construction sector. This supports the theory of economic development which explains the importance of innovation in creating competitive advantage and a firm's performance.

**Keywords:** Human Capital, Innovation, Housing Construction Industry, Small Firm Performance, Entrepreneurship.

## Introduction

The construction industry is the oldest industry which constantly plays a key role in fostering the development of Malaysia. In the realization of Malaysia's "Vision 2020", the construction industry has experienced many changes and has moved towards globalization where construction practices have revolutionized traditional construction products into ones of better quality. The rapid growth of the manufacturing sector can accelerate the economic development of a country as this sector is an important contributor to the Gross Domestic Product (GDP), employment and foreign exchange. The construction industry's contribution to Gross Domestic Product (GDP) has remained coherent over the last 9 years, between 2005

and 2013. From 2000 to 2014, a total of 196 private and government projects have been launched with total investments amounting to RM219.3 billion. These projects are projected to provide a large number of employment opportunities and contribute significantly to the Gross National Income (GNI), which is valued at RM144 billion. In 2015, Construction Industry Development Board Malaysia (CIDB) expected this industry to get a variety of main projects correlated to non-residential construction. Moreover, the industry is presumed to fetch up to 800,000 workers per year consisting of operative, technical and supervisory, clerical and general workers as well as management and professionals (Department of Statistics, 2014). Based on the statistic provided by Construction Industry Development Board Malaysia (CIDB), 60,000 contractors have been registered under CIDB in Malaysia in 2014. 40,000 of these registered contractors are Bumiputera. From the total of 60,000, 30,000 were sub-contractors (G1). Economic Transformation Programme has been introduced in promoting the development of the construction industry in Malaysia, which is assumed to be in high demand in the years to come. Economic Transformation Programme (ETP) is a government initiative to stimulate economic growth with the aim of becoming a sustainable and high-income country by 2020. To realize this program, ETP emphasizes on essential progress or National Key Economic Areas (NKEA) to ensure the results gross national income (GNI) grew at a yearly real growth scale of 6 percent in the period between 2011 and 2020. According to a report by CIDB in 2014, the construction industry has turned out to be a major segment of economic growth with an average growth rate of 18%.

To ensure the significance of the construction sector in economic development, the human resource development program will remain the primary aim of confirming that all people share the same prosperity. The significance of skilled labor, especially in the construction workforce is not denied where the government had to build a lot of skills training institutions to meet the growing demand for skilled labour. According to the Second Outline Perspective Plan (OPP2), the country has achieved full employment and the unemployment rate is maintained at a low level since 1993 despite the economic crisis from 1997 to 1998. (OPP3). As a country emerging towards becoming a developed nation by 2020, Malaysia requires skilled talents (Junaimah & Yusliza, 2011).

The importance of human capital in economic development was first proposed by Shultz (1961), which led to the introduction of the Human Capital Theory. This theory was further developed by Becker (1993) through the publication of Human Capital: A Theoretical and Empirical Analysis to Special Reference to Education. Apart from that, other economists such as Mincer (1997) also expand this theory. The Human Capital Theory in principle suggests investment in human capital, particularly experience, education and training, can improve employee productivity and efficiency thus contributing to economic growth.

Innovation is one of the basic elements contributing to sustainable economic development, achieving inclusive and advanced high-income targets by the year 2020. Therefore, innovation is important for inclusive growth to improve economic performance as well as address social challenges. According to O'Grady (2008), innovation is seen as an important factor contributing to survival and is regarded as an organizational process that needs to be managed. The need for innovation is prominent when entering new markets and enhancing existing market share. It also provides companies with more competitive advantages. Due to the use of more sophisticated modern technologies available nowadays, the value of existing products or services has been reduced. Empirical evidence suggests that companies focusing on innovation can increase operating margins at a faster pace and this increases sales (Ferrari

& Parker, 2006). The growing competition in the global marketplace now urges the service sector to understand the importance of innovation.

In this global market, it is important for organizations to achieve the best performance. To ensure competitiveness, organizations also need to perceive their human capital and innovation as important assets. Literature shows the importance of the role of human capital and innovation in improving the performance of the organization. It is a key element in improving productivity, performance and competitiveness. Undoubtedly, a skilled and efficient workforce is one of the most important tools to achieve the goals of the organization as it plays an important role in strategic planning and in increasing or reducing productivity. Despite the importance of intangible assets in a competitive advantage and organizational performance, studies on the nature of human capital, innovation and its relationship with organizational performance especially in the construction sector are scarce.

### **Objective**

This study aimed to explore the nature of human capital and innovation, and its relationship with organizational performance as well as to address the limitations and gaps in past studies.

### **Literature review**

#### **Human Capital and Performance**

The relationship between human capital and performance is related to The Human Capital Theory (Silvina *et al.*, 2000). The theory, pioneered by Theodore Shultz (Blaug, 1976), is an interesting evolution in the history of economic thought, particularly in relation to labor economics (Mixon *et al.*, 1994). The basic theory is to explain the benefits resulting from human capital investment in education, training, migration and health (Bruwer & Haydam, 1996), and demographical factors including age (Strober, 1990) and experience (Van & Rocco, 2004). While this theory has been criticized particularly in terms of its indirect effects on investment, it is still seen as a significant contributor to the field of economics especially in improving firms' performance. Ubeda *et al* (2013), empirically revealed the importance of human capital in determining a firm's performance.

Business experience is a crucial part of human capital driving the growth of a firm. Experience in small businesses and prior business ownership would widen particular entrepreneurial management skills which are useful for future growth and profitability (Miskin & Rose, 2015). Entrepreneurs may acquire business experience from parents, assisting businesses of close relatives or becoming employees to others. Business experience refers to the skills and knowledge of entrepreneurship and business acquired by the businessman before running his own business (Rosman & Rosli, 2013). Dyke and Fisher (1992) asserted that experience is usually obtained from various sources such as family businesses, involvement in business and the experience of helping others to start a business. Business experience can help improve skills and efficiency in management, particularly in creating an effective strategy (Harris *et al.*, 2014). It can also impact business development and performance (Tanriverdi & Venkatraman, 2005) as in generating business performance (Harris *et al.*, 2014). Extensive business experience is perceived to pave the way for creating business networks among various stakeholders including suppliers, potential customers, along with relevant agencies, providing the business a range of supports.

Previous studies clearly found inconsistency in the influence of experience on a firm's performance (Reuber *et al.*, 1990) where it depends on the type and source of the experience gained (Dyke & Fisher, 1992). A positive impact on a firm's performance is usually due to an

experience similar to the current business (Soriano & Castrogiovanni, 2012). Meanwhile, an experience that is not related to the current business will not help improve the performance of the firm (Reuber *et al.*, 1990). However, most studies (Rafiki, 2020; Rosman & Rosli, 2013; Soriano & Castrogiovanni, 2012; Lafuente & Rabentino, 2011) empirically explain the existence of the positive relationship between experience and firm performance. Based on empirical evidence from previous studies, this study endeavors to conduct a theoretical analysis of the relationship between the business experience of an entrepreneur and the performance achieved. To assess the relationship, the following hypotheses are derived:

*H<sub>1</sub>: Business experience is significant for positive firm performance.*

Education is perceived as an important element of human capital that can affect the performance of the small enterprise (Van & Rocco, 2004). Basically, The Human Capital Theory contends that entrepreneurs' formal education governs their income supremacy. Education and earning power are believed to be interrelated, the higher one's education level, the more he or she will earn, and his or her skills, knowledge and abilities shall be conveyed into work productivity (Kwon, 2009). A high level of education not only catalyzes the tendency of individuals to engage in business (Lafuente & Vaillant, 2013) but, will also affects their business performance (Mengistae, 2006). Highlights of the entrepreneurship research explain that the level of education will affect the ability of an entrepreneur to formulate effective strategies, have technical and higher skills to improve the efficiency of the firm (Omerzel & Antoncic, 2008), easy to obtain creditworthiness of financial institutions (Bates, 1990), and have values of innovation and creativity that can generate the ability to absorb changes in the environment (Rosman & Rosli, 2013).

In the context of developing countries, the majority of employers, particularly in micro-enterprises, including those working in the construction sector are composed of those who have relatively low levels of education (Nichter & Goldmark, 2009). Most of them only possess secondary school level education and university graduates are scarce. In fact, some of them have no formal education and their experience is derived from former employment activities. Such education distribution is the reason for a significant negative correlation between these factors and firm performance (Rosman & Rosli, 2013). Despite the diversity of findings explaining the relationship between education level and firm performance, the majority (Saha & Maji, 2022; Lafuente & Vaillant, 2013; Nichter & Goldmark, 2009) empirically explicate that there is a significant positive effect of education level on the performance of firms. This can be viewed from several aspects of performance including the firm's growth, profitability, and employment growth. These findings explain the positive relationship between the level of education with the firm's performance. This is consistent with The Human Capital Theory which emphasizes the importance of education level as a factor influencing the performance of the firm. This literature brings us to the following hypothesis.

*H<sub>2</sub>: The entrepreneur's education level is significant for positive firm performance*

Huang (2001) states that training is a learning activity to develop a person's performance via improved attitudes, knowledge and skills. Creativity can also be learned and improved through education, training and experience; which sequentially enhance firm performance. Entrepreneurs, particularly small housing contractors, who lack training, would exhibit low competitiveness in business (Andrews & Bradley, 1997). Similarly, training related to business

performance (Najihah *et al.*, 2016; Rosman & Rosli, 2013) provides a greater propensity to business growth (Rafiki, 2020; Goetz & Hu, 1996) and enhances the survival of businesses (Bates, 1990). Accordingly, investments in training are anticipated from business outlooks. Thus, an educated and well-trained small housing contractor is viewed as significant for a firm's competitive advantage in the global economy. In fact, training is prevailing for a firm to expedite the development and expansion of its competencies hence augmenting profitability (Cosh *et al.*, 1998). As evident in past studies, training activities are frequently correlated with sales, productivity, and turnover (Bishop, 1991; Black & Lynch, 1996; Faems *et al.*, 2005; Garcia, 2005; Rodriguez & Ventura, 2003; Zwick, 2006). Therefore, organizations that provide more training programs expect higher firm performance. The overall results of an empirical study by Shaheen *et al.* (2013) on employee training and organizational performance reveal a significant and positive association between training and organizational performance. Ravi *et al.* (2013) conducted a study on human capital investments and employee performance examining the effectiveness of human capital investment directed toward employee training in improving employee performance. The result reveals a significant positive impact of training on employee performance. A study by Mano *et al.* (2012) conducted in Ghana found that basic-level management training facilitates business performance and growth. To examine the relationship between the two variables, the study presents the following hypothesis:

*H<sub>3</sub>: Entrepreneurial training is significant for positive firm performance.*

### **Innovation and Performance**

Innovation, the main factor for growth and development, refers to the expansion, implementation and utilization of value-added activities in economic and social aspects (Crossan & Apaydin, 2010). Schumpeter (1934) defined entrepreneurs as innovators as he equates entrepreneurship to innovation i.e., identifying market prospects and employing innovative methods to exploit them. In other words, innovation is a vital competitive driver of a firm, which can turn opportunity into ideas that are then translated into practice (Flynn *et al.*, 2003). Schumpeter (1934) proclaimed that innovative entrepreneurs would implement entrepreneurial changes, such as; 1) introducing new (or upgraded) products; 2) new production methods; 3) new markets; 4) the exploitation of a new supply source; and 5) re-engineering business management processes. Bhaskaran (2006) stated that incremental innovation promotes extensive competitive advantages and performance to small and medium companies. In pursuing growth and development, small entrepreneurs should always innovate and adopt up-to-date business management structures and models besides exploiting new market opportunities strategically (Beaver & Prince, 2004). Hence, small housing contractors are entrepreneurs and business owners who need to come up with concrete manifestations of creative and innovative ideas. Specifically, to compete and withstand locally and globally, small housing construction firms should employ the structures and processes to tolerate the smooth creation of innovation. This is because firms' capability to develop new products and innovative concepts is crucial for venture performance (Sakinah *et al.*, 2015). Indeed, innovation is essential not only for the survival of the business organization, but also for the development of government agencies and institutions (Wan & Abd, 2007). Supported by Lokshin *et al.* (2009), in order to sustain and compete with other organizations, entrepreneurs should emphasize generating creative thoughts regularly and exploiting the innovation process to gather the possible value of those notions. In particular,

business organizations that can cope with the stiff competition are those that continuously innovate and find renewals in technology, product and market (Matekenya & Moyo, 2022; Amabile, 1988). Therefore, organizations need to develop and publish their own definition of innovation implicitly for better performance (Chen & Huang, 2009).

As revealed in many studies, there is a positive relationship between innovation and firm performance (Zahra & Das, 1993; Capon *et al.*, 1990; Han *et al.*, 1998). Lin and Chen (2007) stated that administrative innovations turn out to be the most vital factor in explaining increased sales compared to technological innovations. This finding is supported by Gaynor (2002), Hargadon and Sutton (2000) who emphasize that innovation entails hard, focused, and persistent work. Laeven *et al* (2015) highlighted that technological innovation will eventually stop, hence financial innovation is necessary for the economic growth and sustenance of an entrepreneurial firm. Similarly, innovation has a big impact on the performance of small business start-ups (Rosman *et al.*, 2017; Sakinah *et al.*, 2018). Mohd and Syamsuriana (2014), in their study, evaluated the impact of innovation on a firm's performance. Their findings confirmed the hypothesis that product innovation and process innovation influence firm performance significantly. Besides, other empirical researches provide evidence that innovation positively contributes to firm performance (Le *et al.*, 2023; Matekenya & Moyo 2022; Wang *et al.*, 2020; Baker & Sinkula, 2009; Hao & Yu, 2011; Zhang & Duan, 2010). To elucidate the connection technically, this study underlines the following hypothesis

*H<sub>4</sub>: Innovation is significant for small firms' performance.*

## **Research Methods**

### **Data Collection**

The research data was obtained from a small residential building construction contractor registered with CIDB. The study population consists of small construction companies (Grade G1 to B04). Based on the total population that has been identified, Krejcie and Morgan (1970) suggested the required sample size to be 322. At the initial stage, the population was divided into strata according to the 10 districts found in the state of Kelantan. Then, a sample is selected from each stratum based on the ratio of the number of small contractors in each stratum. Questionnaires that were self-administered by the researcher with the help of several enumerators were then distributed to the identified construction company managers. They are individuals who are directly involved in making company decisions in addition to being an informant on the firm's internal issues (Alam, 2009; Bateman & Snell, 1999). Based on the sampling method, the study has made a total distribution as suggested by Krejcie and Morgan (1970). After data cleaning was done, a total of 255 questionnaires (70.2%) could be used for the analysis of the study. These responses are from Bachok (18), Gua Musang (17), Jeli (17), Kota Bharu (90), Kuala Krai (17), Machang (13), Pasir Mas (28), Pasir Puteh (20), Tanah Red (21), and Thick (14).

### **Measures**

In this study, firm performance is used as a dependent variable. The subjective performance measures used in this study are based on a modified version of Kotey and Meredith's (1997) and Gadenne's (1998) questions. Items related to firm performance are sales revenue, profitability, job creation, business stability, contribution to community development, business growth, customer satisfaction and business networking. For each item, the

respondents were requested to access their business performance indicators for the past three years using a 5-point Likert scale with potential answers ranging from 1 (*strongly unsatisfactory*) to 5 (*strongly satisfactory*). Kellermanns et al (2010) suggested that, when performance measures are not objective, the use of a multitude of items is reliable to measure firm performance.

There are three dimensions of independent variables, namely, business experience, education and training. For business experience, respondents were required to state the number of years that they have been involved in the business. Education refers to the highest formal educational level attained by respondents. There are six educational levels listed in the survey instrument, namely, primary school, lower secondary school, upper secondary school, diploma and first degree. For the purpose of answering this question, the respondents were required to choose the highest education level qualification earned. The education levels were then converted into the number of years. In order to measure training, respondents were asked to indicate the number of training courses attended over the past three years (2013-2015). Innovation is measured via twelve items, namely, innovative product design, attractive product design, product quality, unique design, searching for new ideas, creativity in operations, using the latest technology, exclusive after-sale services, exploring new market segments, using the latest advertising approach, creating special customer relations, and hiring a professional architect in construction design. Measurements of all items are based on a 5-point Likert scale with possible answers ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). In addition, the control variable comprised the firm's age and firm's size. The age of a firm refers to the number of years the business has been in operation while the size of a firm is represented by the number of full-time employees.

In order to determine the reliability and validity of the data, several statistical analyses were conducted. Initially, an analysis of Cronbach's alpha was run to assess the reliability of the instruments and to search for internal consistency or uniformity of the Likert scale's items. Table I shows that Cronbach's alpha coefficients of two variables are higher than 0.7, indicating that all items used in this study are reliable (Nunnally, 1978). While the factor loading of all constructs under the variables of innovation and firm performance exceeds 0.5, indicating good convergent validity.

Table I

*Reliability Test and Factors Loading*

Construct/measure	Coefficient alpha	Factor loading
<b>Innovation</b>	0.846	
IN1. Innovative product design		0.703
IN2. Attractive product design		0.613
IN3. Product quality		0.556
IN4. Unique design		0.672
IN5. Searching for new ideas		0.671
IN6. Creativity in operations		0.607
IN7. Using the latest technology		0.692
IN8. Exclusive after-sale services		0.705
IN9. Exploring new market segments		0.731
IN10. Using the latest advertising approach		0.794
IN11. Creating special customer relations,		0.576
IN12. Hiring a professional architect in construction design		0.694
<b>Firm performance</b>	0.896	
FP1. Sales revenue		0.840
FP2. Profitability		0.812
FP3. Jobs creation		0.805
FP4. Business stability		0.748
FP5. Contribution to community development		0.660
FP6. Business growth		0.831
FP8. Customer satisfaction		0.634
FP9. Business networking		0.728

Source: Based on the sample survey ( $n=255$ )

In addition, diagnostic tests were conducted to determine the validity of the data for multiple regression analysis. Multicollinearity checking is a common diagnostic test to ensure that none of the independent variables are highly correlated (Pallant, 2001). As presented in Table III, the results of the variance inflation factor (VIF) (less than 10 for all variables) and the value of tolerance (more than 0.2 for all variables) signify the non-existence of the multicollinearity problem. Finally, tests on the assumptions of linearity, normality and homoscedasticity revealed that the data were scattered on a straight line (p-p plot), and all the residuals seemed to be randomly dispersed around the horizontal line (Scatter plot). Due to no serious violations of the assumptions of multiple regression found in the inspection, the use of multiple regression analysis was appropriate.

### Finding and Data Analysis

Descriptive statistical analysis involving means, standard deviation and correlation between variables is shown in Table II. The mean and standard deviation for all variables showed a moderate value. Correlation analysis also showed that the relationship between independent variables is low, indicating the absence of multicollinearity problems thus allowing for multiple regression analysis.



Table II

*Descriptive Statistics and Correlation*

Variable	Mean	SD	1	2	3	4	5	6
1. Age of business	14.07	8.471						
2. Size of business	4.480	3.017	0.080					
3. Business experience	14.65	8.619	0.622***	0.258***				
4. Education level	12.68	1.765	0.108*	-0.110*	0.017			
5. Training	3.263	2.283	0.147**	-0.121*	-0.054	0.282***		
6. Innovation	4.465	0.373	0.069		-	0.316***	-0.064	
7. Firm performance	4.146	0.542	0.249***	0.140**	0.139**	0.317***	0.127**	0.415**
					0.140**			

\* $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $P < 0.01$

Source: Based on the sample survey ( $N = 255$ )

To explain the relationship between human capital factors and innovation with small firm performance, hierarchical multiple regression analysis was performed. The summary of the analysis is presented in Table III. In model 1, the study uses the age and size of the business as control variables. The value of  $R^2$  clearly shows that the two variables explain a 7.6 percent variance in small firms' performance in the construction sector. The two variables that control the age of the business ( $\beta = 0.239$ ,  $p < 0.01$ ) and the size of the business ( $\beta = 0.121$ ,  $p < 0.05$ ) visibly indicate significant relationships with firm performance. To analyze the effect of human capital on the performance of small firms in the construction sector, the study simultaneously analyzed the involvement of the independent variables and control variables as shown in Model 2. Moreover, the study found that there is a significant change in  $R^2$  ( $\Delta R^2 = 0.266$ ,  $p < 0.01$ ). Both control variables appear to have no significant relationship with firm performance. While the experience factor ( $\beta = 0.523$ ,  $p < 0.01$ ) and education level ( $\beta = -0.324$ ,  $p < 0.01$ ) significantly indicate a relationship with firm performance. However, the analysis demonstrated that training variables have no significant relationship with small firm performance ( $\beta = -0.005$ , not significant.).

To validate the hypothesis, the study incorporates all the variables involved simultaneously, involving control variables, human capital factors, and innovation. The result of the multiple regression analysis shows that there is a significant change in  $R^2$  ( $\Delta R^2 = 0.208$ ,  $p < 0.01$ ). The result in model 3 (Table III) shows that both control variables (age of business and size of business) are significant to small firm performance. Three other variables of human capital factors i.e education level ( $\beta = -0.124$ ,  $p < 0.01$ ), experience ( $\beta = 0.615$ ,  $p < 0.01$ ) and training ( $\beta = -0.077$ ,  $p < 0.10$ ) reveal a significant relationship with the performance of a small firm. These findings confirm  $H_1$ ,  $H_2$  and  $H_3$  which explain the factors of human capital have significant influences on the performance of a small firm in the housing construction industry. However, the analysis reveals that the influence of experience on small firm performance does not only have a positive relationship but a greater influence than education and training. The innovation factor also shows a significant positive correlation with firm performance ( $\beta =$

0.543,  $p < 0.01$ ). This finding confirms  $H_4$ , which explains the importance of innovation in determining the performance of small firms in the construction sector.

Table III

*Multiple regression analysis*

Variable	Collinearity Statistics			Model 1	Model 2	Model 3
	Tolerance	VIF				
Controls						
Age of business	0.777	1.286		0.121**	-0.027	
Size of business	0.544	1.840		0.239***	-0.040	-0.163***
Human capital						
Education level	0.808	1.238			-0.324***	-
Experience	0.536	1.866			0.523***	0.615***
Training	0.902	1.109			0.005	-0.077*
Innovation	0.683	1.454				0.552***
R <sup>2</sup> change				0.076	0.266	0.208
R <sup>2</sup>				0.076	0.343	0.551
Adjusted R <sup>2</sup>				0.069	0.330	0.540
F statistics				10.433***	25.973***	50.653***

Note: Small firm performance as dependent variable; \*  $\rho < 0.10$ , \*\*  $\rho < 0.05$ , \*\*\*  $\rho < 0.01$   
 Source: Based on the sample survey (S=255)

**Discussion and Contribution**

Table IV

*Conclusion*

Variable	Empirical Result
Human Capital	Human capital variables have significant relationships with the performance of small firms in the construction sector.
Education Level	Education has a significant influence on the performance of small firms in the construction sector
Experience	Experience has a significant influence on the performance of small firms in the construction sector
Training	Training has a significant influence on the performance of small firms in the construction sector
Innovation	Innovation has a significant influence on the performance of small firms in the construction sector

The construction sector is a very important industry when it comes to generating economic development in a country. Among the key elements in the development of the sector are human capital and innovation generation. Human capital efficiency as well as innovation in the sector enhances competitiveness and further competitive advantage not only in the domestic market but also with foreign firms. The main objective of this study is to examine the influence of human capital factors (business experience, education, and training) and innovation factor on the performance of the housing construction industry. For analysis purposes, four (4) hypotheses have been developed. Data were obtained from a total of 255 samples of a small contractor of residential constructions (G1) through survey methods. Multiple regression analysis is used to validate the hypothesis of the study.

Research findings indicate that all human capital variables have significant relationships with the performance of small firms in the construction sector. This is consistent with the theory of human capital which relates the existence of human capital relations with a firm's performance (Ubeda *et al.*, 2013; Silvina *et al.*, 2000). The findings, at the same time, explain that the Human Capital theory introduced in the context of western countries can also be adopted in developing countries. Among the three elements of human capital, the contractor's experience shows a significant positive relationship with the firm's performance. This is consistent with the findings of previous studies (Rafiki, 2020; Rosman & Rosli, 2013; Soriano & Castrogiovanni, 2012). This explains that the more experience gained, the better the firm performs. They do not only overcome problems but also develop a more effective strategy based on the skills gained from business involvement.

Findings also show that education also has a significant influence on the performance of small firms in the construction sector. The findings are consistent with the study conducted by (Saha and Maji, 2022; Lafuente and Vaillant, 2013; Nichter and Goldmark, 2009). The negative correlation between education level and the performance of small firms is due to the majority of the survey samples being comprised of small contractors with low education levels. The distribution is consistent with what Nichter and Goldmark (2009) argued on the education level among small contractors in developing countries. The empirical study revealed that experience is more important compared to formal education level when it comes to determining the performance of small firms in the construction sector. The analysis of the study also found that training exhibits the weakest relationship with the performance of small firms. This is due to the lack of involvement in training programs, as well as the inclination of small contractors to very low training programs. They do not see the importance of training programs in improving their firm's productivity and performance.

From the theoretical aspect, the finding also significantly explains the major influence of innovation on the performance of small firms in the construction sector. This is consistent with the results of studies conducted by (Le *et al.*, 2023; Rosli and Rosman, 2013; Baker and Sinkula, 2009). The importance of innovation in affecting a firm's performance is consistent with the Theory of Economic Development by Schumpeter (1934) which highlights the importance of innovation in the development of entrepreneurial activities. To ensure the positive performance of a small firm in the construction sector, several elements of innovation need to be applied. This includes creativity, innovation and quality product design, and the use of the latest technologies.

From the perspective of policies, the study highlighted the parties involved in the development of the construction sector including the government and small contractors of the importance of human capital and innovation on the performance of small firms in the construction sector. There is also a need of proposing a comprehensive policy to develop the

innovation capacity and high education to advance the capability of Malaysia as an innovator country especially in undergoing the Industrial Revolution 4.0. From the policy context, the study recommends that several suggestions should be taken into consideration in enhancing the performance of small firms in the construction sector such as emphasizing training programs to ensure that small contractors understand the basics of entrepreneurship, improving management efficiency and enriching business experience, being innovative, making use of technology, and the establishment of creative and innovative ideas in management. In addition, there is a need to enhance the self-development program for small contractors to strengthen their values of entrepreneurship.

### **Limitations and Future Research**

Although this study reveals a significant impact in explaining the factors that affect performance, particularly in the construction sector, there are some limitations as it only takes into account only some internal factors (human capital and innovation). Proposed future research should cover organizational/structural capital (such as market conditions, market potential and pricing strategies), and relational capital (for example professionals' advice and relationships with customers, suppliers, and employees). Apart from just the Bumiputera, the study should also include other major races who have already embarked on economic growth in the Malaysian housing construction industry. Therefore, diverse findings and reasons will be significant contributions to the literature, especially in research related to the performance of the construction sector.

### **References**

- Alam, S. S. (2009). Adoption of internet in Malaysian SMEs. *Journal of Small Business and Enterprise Development*, 16(2), 240-255.
- Amabile, T. M. (1988). A model of creativity and innovation in organizations. *Research in organizational behavior*, 10, 123–167.
- Andrews, M., & Bradley, S. (1997). Modelling the transition from school and the demand for training in the United Kingdom, *Economica*, 64, 387-413.
- Baker, W. M., & Sinkula, J. M. (2009). The complementary effect of market orientation and entrepreneurial orientation on profitability in small business. *Journal of Small Business Management*, 47 (4), 443-464.
- Bateman, T. S. & Snell, S.A. (1999). *Management: Building a Competitive Advantage*. 4<sup>th</sup> ed. Irwin/McGraw-Hill, Boston, MA.
- Bates, T. (1990). Entrepreneur human capital inputs and small business longevity. *The Review of Economics and Statistics*, 72(4), 551-559.
- Beaver, G., & Prince, C. (2004). Management, strategy and policy in the UK small business sector: a critical review. *Journal of Small Business and Enterprise Development*, 11(1), 34-49.
- Becker, G. S. (1993). *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education* (3<sup>rd</sup> Ed.). Chicago: University of Chicago Press.
- Bhaskaran, S. (2006). Incremental innovation and business performance: small and medium-size food enterprises in a concentrated industry environment. *Journal of Small Business Management*, 44(1), pp. 64-80.
- Bishop, J. (1991). *On the job training of new hires*. In *Market Failure in Training?* Edited by David Stern and Jozef M. M. Ritzen, (pp. 61-94). New York: Springer-Verlag.
- Black, S. E., & Lynch, L. M. (1996). Human-capital investments and productivity. *The American*

- Economic Review*, 86, 263-267.
- Blaug, M. (1976). The empirical status of human capital theory: a slightly jaundiced survey. *Journal of Economic Literature*, 827-855.
- Bruwer, J. D. W., & Haydam, N. E. (1996). Human capital investment: Higher educational and on the job training of the marketing practitioner. *South African Journal of Business Management*, 27(1 & 2),1-8.
- Capon, N., Farley, J. U., & Hoenig, S. M. (1990). A meta-analysis of Financial Performance. *Management Science*, 36 (10), 1143-1160.
- Chen, C. J., & Huang, J. W. (2009). Strategic human resource practices and innovation performance - The mediating role of knowledge management capacity. *Journal of Business Research*, 62, 104–114.
- CIDB News Issues 1. (2007). *50 tahu membina kegemilangan Malaysia*. CIDM Malaysia.
- Cosh, A., Duncan, J., & Hughes, A. (1998). *Investing in Training and Small Firm Growth and Survival: An Empirical Analysis for the UK 1987-97*, DfEE Research Report RR36, HMSO, London.
- Crossan, M. M, & Apaydin, M., (2010). A multi-dimensional framework of organizational innovation: a systematic review of the literature. *Journal of Management Studies*, 47(6), 1154-1191.
- Department of Statistics Malaysia. (2014). *Quarterly construction statistics, First Quarter 2014*. Economics, 16, 97 – 106.
- Dyke, L. S., & Fisher, E., M. (1992). An inter-industry examination of impact of owner experience on firm Performance. *Journal of Small Business Management*, 30(4), 72.
- Faems, D., Sels, L., DeWinne, S., & Maes, J. (2005). The effect of individual HR domains on financial performance. *International Journal of Human Resource Management*, 16, 676-700.
- Ferrari, B., & Parker, B. (2006). Digging for innovation. *Supply Chain Management Review*, 48-53.
- Flynn, M., Doodley, L., & Cormican, K (2003). Idea Management for Organizational Innovation. *International Journal of Innovation Management*, 7(4).
- Gadenne, D. (1998). Critical success factors for small business: an inter-industry comparison. *International Small Business Journal*, 17(1), 36-51.
- Garcia, M. (2005). Training and business performance: The Spanish case. *International Journal of Human Resource Management*, 16, 1691-1710.
- Gaynor, G. H. (2002). *Innovation by Design: What it Takes to Keep Your Company on The Cutting Edge*. AMACOM American management association, New York, NY.
- Goetz, S. J., & Hu, D. (1996). Economic growth and human capital accumulation: simultaneity and expanded convergence tests. *Economics Letters*, 51, 355-362.
- Han, J. K., Kim, N., & Srivastava, R. K. (1998). Market Orientation and Organizational Performance: Is Innovation a Missing Link?, *Journal of Marketing*, 62 (4), 30-45.
- Hargadon, A., & Sutton, R. I. (2000). Building an innovation factory. *Harvard Business Review*, 78(3), 157-66.
- Harris, M. L., Gibson S. G., & McDowell, W. C. (2014). The impact of strategic focus and previous business experience on small business performance. *Journal of Small Business Strategy*, 24(1), 29-44.
- Huang, T. C. (2001). The relation of training practices and organizational performance in small medium size enterprise. *Education and Training*, 43(8/9), 437-444.

- Junaimah, J., & Yusliza, M. Y. (2011). Propensity to leave by Malaysian professionals. *International Journal of Innovation, Management and Technology*, 2(2), 119-122.
- Kellermanns, F. W., Eddleston, K. A., Sarathy, R., & Murphy, F. (2010). Innovativeness in Family Firms: A Family Influence Perspective. *Small Business Economics*.
- Kotey, B., & Meredith, G. G. (1997). Relationship among owner/manager values, business strategies and enterprise performance. *Journal of Small Business Management*, 35 (2), 37-64.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607-610.
- Kwon, D. B. (2009). Human capital and its measurement. In *Proceeding of The 3<sup>rd</sup> OECD World Forum on Statistics, Knowledge and Policy*, 6-7.
- Lafuente, E., & Rabetino, R. (2011). Human capital and growth: Romanian small firms. *Journal of Small Business and Enterprise Development*, 18(1), 74-96.
- Lafuente, E. M., & Vaillant, Y. (2013). Age driven influence of role-models on entrepreneurship in a transition economy, *Journal of Small Business and Enterprise Development*, 20(1), 181-203.
- Laeven, L., Levine, R., & Michalopoulos, S. (2015). Financial innovation and endogenous growth. *Journal of Financial Intermediation*, 24(1), 1-24.
- Le, D. H., Le, H. T. T., Phan, T. T., & Vo, L. V. (2023). *Innovation and SMEs performance: evidence from Vietnam*. Applied Economic Analysis Emerald Publishing Limited 2632-7627.
- Lin, Y. Y., & Chen, Y. C. (2007). Does innovation lead to performance? An Empirical Study of SMEs in Taiwan. *Management Research News*, 30 (2), 115-132.
- Lokshin, B., Gils, A.V., & Bauer, E. (2009). Crafting firm competencies to improve innovative performance. *European Management Journal*, 27, 187– 196.
- Saha, R., & Maji, S. G. (2022). Board human capital diversity and firm performance: evidence from top listed Indian firms. *Journal of Indian Business Research*, 14(4), pp. 382-402
- Mano, Y., Iddrisu, A., Yoshino, Y., & Sonobe, T. (2012). How can micro and small enterprises in Sub-Saharan Africa become more productive? The impacts of experimental basic managerial training. *World Development*, 40(3), 458-468.
- Matekenya W., & Moyo C. (2022). Innovation as a driver of SMME performance in South Africa: a quantile regression approach. *African Journal of Economic and Management Studies*, 13(3), 2022 pp. 452-467.
- Mengistae, T. (2006). Competition and entrepreneurs' human capital in small business longevity and growth. *Journal of Development Studies*, 42(5), 812-36.
- Mincer, J. (1997). The production of human capital and the life cycle of earnings: Variations on a theme. *Journal of Labor Economics*, 15(1), 26-47.
- Miskin, V., & Rose, J. (2015). New venture initiation: factors influencing success. *Journal of Small Business Strategy*, 1(2), 1-9.
- Mixon, F. G., Jr., Laband, D. N., & Ekelund, R. B., Jr. (1994). Rent seeking and hidden in-kind resource distortion: some empirical evidence. *Public Choice*, 78, 171–185.
- Mohd, R., & Syamsuriana, S. (2013). The Impact of Innovation on the Performance of Small and Medium Manufacturing Enterprises: Evidence from Malaysia. *Journal of Innovation Management in Small & Medium Enterprise*, 2013, 1-16.
- Najihah, M. Y., Rosman, M., Sakinah, M. Z., & Mazidah, P. (2016). Factors Affecting the Performance of Small Business Start-Ups Under Tunas Mekar Programme. In

- Proceedings of the ASEAN Entrepreneurship Conference 2014* (pp. 3-14). Springer Singapore.
- Nichter, S., & Goldmark, L. (2009). Small firm growth in developing countries. *World Development*, 37(9), 1453–464.
- Nunnally, J. C. (1978). *Psychometric Theory*. 2<sup>nd</sup> ed., McGraw-Hill, New York, NY.
- OECD. (2011). *Education at a Glance: OECD Indicators*. Available: <http://www.oecd.org/edu/highereducationandadultlearning/48631582.pdf>
- O’Grady, W. (2008). Management controls for innovation: A multi-level framework. *AFAANZ/IAAER Conference*.
- Omerzel, D. G., & Antoncic, B. (2008). Critical entrepreneur knowledge dimensions for the SME performance. *Industrial Management & Data Systems*, 108(9), 1182-1199.
- Pallant, J. (2001). *SPSS survival manual - A step by step guide to data analysis using SPSS* (First ed.): Open University Press, Buckingham, Philadelphia.
- Rafiki, A. (2020). Determinants of SME growth: an empirical study in Saudi Arabia. *International Journal of Organizational Analysis*, 289 (1), pp. 205-225.
- Ravi, B., Nishtha, A. M., Ram, G., & Alok, G. (2013). Human capital investments and employee performance: An analysis of IT services industry. *Journal of Management Science*, 59 (3), 641-658.
- Rodriguez, J. M., & Ventura, J. (2003). Human resource management systems and organizational performance: an analysis of the Spanish manufacturing industry. *International Journal of Human Resource Management*, 14, 1206-1226.
- Rosman, M., & Mohd, R. (2013). Microcredit position in micro and small enterprise performance: the Malaysian case. *Management research review*, 36(5), 436-453.
- Sakinah, M. Z., Rosman, M., Ahmad, S. M. Z., & Najihah, M. Y. (2018). Moderating effect of innovation on human capital and small firm performance in construction industry: the Malaysia case. *Journal of Fundamental and Applied Sciences*, 10(1S ), 772-792.
- Silvina, E., & Fernandez, D. R. (2000). Human Capital Investment, Income Levels and Economic Growth In Latin American Countries. *Paper presented at 40<sup>th</sup> Congress of the European Regional Science Association*, Barcelona, Spain, August 29–September 1.
- Rosman, M., Ahmad, S. M. Z., Najihah, M. Y., & Sakinah, M. Z. (2017). Small firm performance: an empirical analysis in Malaysian housing construction industry. *International Journal of Housing Markets and Analysis*, 10(1), 50-65.
- Sakinah, M. Z., Rosman, M., & Najihah, M. Y. (2014). Intellectual Capital, Innovation and Start-Up Success in Small Business. *In: 1st International conference on Halal Global 2014*, 3 & 4 May 2014, Perdana Hotel Kota Bharu, Kelantan, Malaysia.
- Sakinah, M. Z., Rosman, M., Ahmad, S. M. Z., & Najihah, M. Y. (2019). The effects of innovation on the relationship between human capital and firm performance: an analysis in Malaysian construction industry. *Paper presented at Conference: 20th Colloquium of the Malaysia and Singapore Society of Australia (MASSA 2018)*, Kuala Terengganu.
- Schultz, T. W. (1961). Investment in Human Capital. *American Economic Review*, 51, 1-17.
- Schumpeter, J. A. (1934). *The Theory of Economic Development*. Massachusetts: Harvard University Press.
- Segal, G., Borgia, D., & Schoenfeld, J. (2010). Founder human capital and small firm performance: an empirical study of founder-managed natural food stores. *Journal of Management and Marketing Research*, 4, 1.

- Shaheen, A., Naqvi, S. M. H., & Khan, M. A. (2013). Employees training and organizational: Mediation by employee's performance. *Interdisciplinary Journal of Contemporary Research Business*, 5(4), 490-503.
- Soriano, D. R., & Castrogiovanni, G. J. (2012). The impact of education, experience and inner circle advisor on SME performance: Insights from a study of public development centers. *Small Business Economics*, 38(3), 333-349.
- Strober, M. H. (1990). Human capital theory: Implications for HR managers. *Industrial Relations*, 29(2), 214-239.
- Tanriverdi, H., & Venkatraman, V. (2005). Knowledge relatedness and the performance of multibusiness firms. *Strategic Management Journal*, 26, 97-119.
- Tseng, C. Y., Kuo, H. Y., & Chou, S. S. (2008). Configuration of innovation and performance in the service industry: evidence from the Taiwanese hotel industry. *The Service Industries Journal*, 28(7), 1015-1028.
- Ubeda, G. M., Marco, L. B., Sabater, S. V., & Garcia, L. F. (2013). Does training influence organizational performance. *European Journal of Training and Development*, 37(4), 380-413.
- Van, L. J. B., & Rocco, T. S. (2004). Continuing professional education and human capital theory. In *Academy of Human Resource Development International Conference*, 2004, 98-105.
- Wan, K. W. I., & Abd, M. R. (2007). Framework of the culture of innovation: A revisit. *Jurnal Kemanusiaan*, 9, 38-49.
- Wang, F., Li, Y., & Sun J. (2020). The transformation effect of R&D subsidies on firm performance An empirical study based on signal financing and innovation incentives. *Chinese Management Studies*, 14(2) pp. 373-390.
- Zahra, S. A., & Das, S. R. (1993). Innovation Strategy and Financial Performance in Manufacturing Companies: An Empirical Study. *Product and Operations Management*, 2(1), 90-101.
- Zhang, J., & Duan, Y. (2010). The impact of different types of market orientation on product innovation performance Evidence from Chinese manufacturers. *Management Decision*, 48(6), 849-867.
- Zwick, T. (2006). The impact of training intensity on establishment's productivity. *Labour Economics*, 11, 715-740.