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The Quest for Innovative Human Capital: The Effects of Pro-Innovativeness Architecture and Social Embeddedness

¹Hasliza Abdul Halim, ²Noor Hazlina Ahmad and ³T.Ramayah, ⁴Seyedeh Khadijeh Taghizadeh

School of Management Universiti Sains Malaysia 11800, Minden Road USM Penang, Malaysia.

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ABSTRACT

The importance of human capital for innovation has attracted many researchers in examining its factors by which it enhances the innovative capabilities and performance of the organisations. However, many SMEs do not realize that a brilliant future of SMEs is portrayed by having innovative human capital. Therefore, this research is hoped to have a better understanding of what factors that may influence the innovative human capital i.e. highly knowledgeable, valuable and proactive employees which will be leveraged on the pro-innovativeness organisational architecture and social embeddedness. The sample is obtained from a cross sectional survey and the sample studied are 263 SMEs in Malaysia. The analysis was conducted via SMART PLS and the results showed several interesting findings: (a) management support only influence the value and proactiveness of innovative human capital (b) rewards has a significant impact on the value of innovative human capital (c) Business index has a significant influence on uniqueness and value of human capital (d) information network influenced value and proactiveness and research information influenced value of human capital and (e) Relational embeddedness has a significant impact on all three dimensions of innovative human capital. Conclusion was then discussed in this study.

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INTRODUCTION

Malaysia government has started to set the foundation for the knowledge-based economy in the mid-1990s, among others, with the launching of the National IT Agenda and the Multimedia Super Corridor (EPU, 2010). The knowledge-based economy will provide the platform to sustain a rapid rate of economic growth and enhance international competitiveness so as to achieve the objectives of Vision 2020. Nevertheless with the current situation that are uncertain and dynamic, Malaysia needs to encourage innovative human capital - to be innovative, creative and proactive among the SMEs in order to move towards innovation-centred economy. Malaysia has to strengthen its capability to innovate, adapt and create indigenous technology, design, develop and market new products. Furthermore, the government also has granted the “Strategic Knowledge-based Status” to organisations that have potential to generate knowledge content, high value-added operations, usage of high technology, and a large number of knowledge workers and possess a corporate knowledge-based master plan. In brief, Malaysia government has put an effort and continuous investment in its human capital to enhance technical skills, proactiveness, creativity and innovativeness to drive the knowledge-based and innovation-centred economy. Malaysia now has moved towards a sustainable economy, and has shifted the agricultural based production based economy to k-based economy to innovation-centred economy where knowledge, “know-how” and innovativeness become the main drivers for economic growth (EPU, 2010).

It is without doubt that the efforts to boost organisations’ competitiveness and success would have significant impact on the overall economy of the nation. In line with the Malaysian government aspiration to transform its economy by fostering innovative performance via innovative human capital, the study on innovation and human capital warrants significant attention. Previous studies have investigated the relationship between innovation and human capital (Alegre, Lapiedra and Chive, 2006; McKelvie and Davidsson, 2006), however, despite the role that human capital is assumed to have on innovation, very limited studies have considered the factors that could nurture the innovative human capital that are able to drive innovative performance. Taking this into consideration, it is crucial to undertake this study because it would help the researchers to better understand the factors associated with innovative human capital which in turn could

Corresponding Author: Hasliza Abdul Halim, School of Management Universiti Sains Malaysia 11800, Minden Road USM Penang, Malaysia.

improve innovative capability and organisational performance. In this sense, the innovative human capital could be achieved by leveraging the innovation of human capital through social embeddedness and pro-innovativeness organisational architecture.

Given that innovation is essentially an exercise in collaboration, social embeddedness plays a key role both directly improving human capital and stressing its effects on innovation. Hence, improving individual knowledge and creating the conditions for sharing it are issues that deserve attention. On top of that, the organisational architecture that support innovativeness via intrapreneurial activities, as an internal climate factor, could help to foster innovative human capital (Alpkan, Bulut, Gunday, Ulusoy and Kilic; 2010). For instance, organisational architecture that pro-innovative which refers to a suitable organisational setting in which entrepreneurs may easily access to necessarily organisational resources and conditions to develop and implement innovative ideas and projects may encourage the overall organisational innovativeness (Raisch and Birkinshaw, 2008). Based on the explanation above, the primary objective of this study is to investigate the relationship between pro-innovativeness organisational architecture and social embeddedness on innovative human capital among SMEs in Malaysia. This paper is organised in the following manner: The next section reviews the literature on the main variables. It also develops the hypotheses. The second section presents the methods used, analysis and the results. The final section presents the conclusion of the study.

Literature Review:

Pro-innovativeness organization architecture:

The term 'organizational architecture' refers to practice of designing and managing the joint infrastructure of organizational arrangement (Sauer & Willcocks, 2004) such as planning, reward system, people's personality and character, culture, value system etc (Kantur & Iseri-Say, 2013). There might have an existence of ambiguity between the concept of organizational structure and organizational architecture. However, organizational structure is the anatomy of organization, while organizational architecture goes beyond organizational structure (Miciunas, 2003). Organizational architecture puts emphasis on organizational behavior and design which aligns with structure, process, and design with strategy. Beside, organizational architecture gives accents in motivating people to execute their work in innovative ways (Miciunas, 2003). The innovativeness of the SMEs and its entrepreneurs is pounding for long in the extant literature (Radas & Božić, 2009). Bringing in the domain of innovation into the organizational architecture, Abdul-Halim and Hazlina Ahmad (2012) have conceptualized pro-innovativeness of organizational architecture to attain the organizational performance. Providing the suitable internal support climate throughout the organization, where intrapreneurs engage in opportunity-seeking entrepreneurial behavior, would essentially bring benefit from the market (Jeong, Pae, & Zhou, 2006). According to Abdul-Halim and Hazlina Ahmad (2012), intrapreneurship or entrepreneurship within organization denotes the employee initiatives to take on something new even though the employee is not being asked to do so. However, to develop the pro-innovativeness organizational architecture in the firm, there are few dimensions which are needed to be taken into account such as, management support, allocation of free time, work discretion, rewards, and tolerance for risk taking (Kuratko, Ireland, Covin, & Hornsby, 2005). It is expected that in such suitable organizational milieu, employees would develop state of pro-innovative (Alpkan, Bulut, Gunday, Ulusoy, & Kilic, 2010). However, Hornsby, Kuratko, Holt, and Wales (2013) also have referred the five dimension stating management support as willingness to facilitate entrepreneurship behavior; work discretion refers to delegating authority and providing decision making latitude. Reward has been considered as highlighting significant achievement and performance, allocation of free time signifies to provide available time for the persuasion for innovation.

Social Embeddedness:

The context of embeddedness suggests an individual's depth, nature, and extent of ties with environment that are configuring the elements of businesses (Dacin, Ventresca, & Beal, 1999). The concept of embeddedness has been entrenched in the perspective of social view, which illustrates the concept social embeddedness. Social embeddedness has been conceptualized as the total of the actual and potential resources embedded within, and consequent from network relationships holds by an individual or social unit (Cabello-Medina, López-Cabrales, & Valle-Cabrera, 2011). According to Hess, Lang, and Xu (2011), social embeddedness articulates the reign of the social actors within relational, institutional, and cultural contexts. Wang and Altinay (2012) suggested that social embeddedness in entrepreneurship is an entrepreneur's position in a social network which determine the information and resources accessible to the business. In the field of entrepreneurship business, social embeddedness refers to an entrepreneur's position in a social network that defines the information and resources available to the business (Wang & Altinay, 2012). Explicitly, social embeddedness allows the understanding of broader socio-economic factors such as, structural, political, cognitive and cultural encourage or hinder the entrepreneurial process (Karlsson & Dahlberg, 2003). However, there are two types of social embeddedness as suggested by (Nahapiet & Ghoshal, 1998) such as structural embeddedness and social embeddedness. The structural embeddedness comprises the layout of relationships among actors and the existence of network ties

and configuration in terms of density, connectivity and hierarchy. The relational embeddedness signifies the type of relationships that people develop among themselves throughout the time. This contains facets of relationships that affect people's behavior, such as friendship, trust and respect.

Innovative Human Capital:

The human capital of an organization refers to the knowledge, skills and abilities featured and vested in the individuals (Subramaniam & Youndt, 2005). According to Lepak and Snell (2002), focusing on the strategic value and uniqueness of human capital drives towards the employment setting and configuration in the organization. According to Barney (1991) strategic value refers the notion of exploiting market opportunities, diffusing potential threat which accelerates the efficiency and effectiveness of the firm. On the other hand, uniqueness of human capital has been conceptualized as the degree of its rareness and specialty (Barney, 1991). In addition, the domain of human capital approach asserts that the value and distinctiveness of knowledge are the most pertinent characteristics for innovation (Lepak & Snell, 2002; Subramaniam & Youndt, 2005). It has been agreed upon on the fact that such knowledge brings in high yields for the organization, in turn which expand the range of benefits to the customers (Lengnick-Hall & Lengnick-Hall, 2003). From the innovation perspective, employees with valuable and unique knowledge and skills are competent with innovative capacity (Taggar, 2002). The employees who possess the innovative capacity are also submissive towards acquiring new skills that positively impacts firm's innovative performance (Cabello-Medina, López-Cabrales, *et al.*, 2011). The uniqueness of knowledge has greater prominence in the domain of human capital as it facilitates the innovation capacity of the employees turning them to irreplaceable and idiosyncratic (Barney, 1991). It is foreseeable that such uniqueness of human capital generates differentiation which is the source of competitive advantages (Barney, 1991). Finally, proactiveness has been also considered as part of human capital. Proactiveness represents the willingness to be engaged in audacious moves (Keh, Nguyen, & Ng, 2007). The spirit of proactiveness remains in the anticipation of future demands and ability of firm to introduce new products to the market ahead of the competitors (Kreiser, Marino, Kuratko, & Weaver, 2013; Wang & Altinay, 2012). However, proactiveness has been also regarded as one of the dimension of entrepreneurial orientation (Wang & Altinay, 2012).

Hypothesis Development:

1. *Pro-innovativeness organization architecture and innovative human capital:*

The pro-innovativeness organization architecture considers the elements of management support, allocation of free time, work discretion, rewards, and tolerance for risk taking. It has been accentuated that organization should capitalize on their employee's skills and abilities to innovate for transforming the organization to be more competitive (De Jong & Den Hartog, 2007). Pro innovativeness organization architecture is facilitated by the organizational settings which are in favorable condition for entrepreneurs to innovate. Previous literature purported that elements of organizational support such as management support, allocation of free time, work discretion, rewards, and tolerance for risk taking have relationship with human capital (Alpkan *et al.*, 2010). In an earlier study by Edelman, Brush, and Manolova (2002) put up the notion that firm's strategy should be along the line with the resources of the organization. An organization-wide entrepreneurial spirit would be possible in provision that appropriate internal support architecture is established. Such condition would be make entrepreneurs able to seek opportunities for the firm (Jeong *et al.*, 2006). It has been supported in the literature that while supports are given, it will endeavor for resulting in competitive advantages (Hornsby *et al.*, 2013).

In such context, earlier studies have emphasized on the management support for generating new and creative ideas (Alpkan *et al.*, 2010). The support from the management would certainly open up the way to create valuable and uniqueness of knowledge, which can be referred as innovative human capital. In addition, management support is important to encourage the people to be proactive towards generating new ideas that yield innovation. As suggested by Alpkan *et al.* (2010), management support inspires the entrepreneurs to engage in new knowledge gathering efforts and to be proactive to innovate. Thus, it can be hypothesized that:

- H1a. Management support has a positive relationship with uniqueness of human capital
- H1b. Management support has a positive relationship with value of human capital
- H1c. Management support has a positive relationship with pro-activeness

Availability of time denotes the sufficiency of time to actively develop valuable and unique ideas (Bamber, Owens, Davies, & Sulman, 2002). The previous studies revealed that pioneering steps to materialize innovative ideas is fostered by the spare time allotted to the concern entrepreneurs (Van den Ende, Wijnberg, Vogels, & Kerstens, 2003). The availability of free time would necessarily give scope to actively involve in instilling valuable and unique knowledge and skills. Obtainability of free time certainly pushes forward the entrepreneurs to enthusiastically advance innovative activities (Hornsby *et al.*, 2013). Thus, it can be hypothesized that:

- H2a. Allocation of free time has a positive relationship with uniqueness of human capital
- H2b. Allocation of free time has a positive relationship with value of human capital
- H2c. Allocation of free time has a positive relationship with pro-activeness

In a recent study it has been revealed that rigid organizational structure decelerates the innovative process in the organization (Gurkov, 2005). Therefore, it is important to craft work discretion in the organizational architecture which is inclined towards innovativeness. The work discretion in the organizational configuration mainly concerns the state of devolution or autonomy in the decision-making for the entrepreneurs (Alpkan *et al.*, 2010) in order to materialize the novel ideas and work. It has been asserted in the literature that work should be more knowledge-based and flexible which would develop the ability to generate ideas, skills and acquire expertise (De Jong & Den Hartog, 2007). By fostering the entrepreneurs with the concept of autonomy, they can freely and proactively inculcate the valuable and unique knowledge which are regarded as human capital. Thus, it can be hypothesized that:

- H3a. Work discretion has a positive relationship with uniqueness of human capital
- H3b. Work discretion has a positive relationship with value of human capital
- H3c. Work discretion has a positive relationship with pro-activeness

One of the elements of pro-innovativeness organizational setting is appropriate use of rewards to the deserving human resource of the organization. A recent study by Coff and Kryscynski (2011) assumed to have linkage between intrinsic reward and human capital. Scholars have agreed upon the reality that the power of the value of human capital is mostly evident when reward system is in effect as part of organizational support (Lawler, 2000). When the entrepreneurs provide appropriate reward, this would encourage the search for innovative ideas with the valuable and unique knowledge and skills. Thus, it can be hypothesized that:

- H4a. Rewards has a positive relationship with uniqueness of human capital
- H4b. Rewards has a positive relationship with value of human capital
- H4c. Rewards has a positive relationship with pro-activeness

Tolerance to risk taking is another dimension of pro-innovativeness organizational architecture. In the organizational architecture which is featured as pro-innovativeness, entrepreneurs should allow themselves to be more tolerant to taking risk (Alpkan *et al.*, 2010). It has been argued by the researchers that risk-averse attitude of the organization diminishes the confidence level of the employees that will effect to condense the innovative approach concurrently (Gupta, MacMillan, & Surie, 2004). According to (Charyton, Snelbecker, Rahman, & Elliott, 2013) tolerance of risk taking refers to the ability to formulate individual's ideas despite critical environmental setting. When the organizational architecture demonstrate a tolerable attitude towards taking risk, entrepreneurs do not hold any pressure to proactively come up with valuable and unique knowledge that build up the innovative human capital. Thus, it can be hypothesized that:

- H5a. Tolerance to risk taking has a positive relationship with uniqueness of human capital
- H5b. Tolerance to risk taking has a positive relationship with value of human capital
- H5c. Tolerance to risk taking has a positive relationship with pro-activeness

2. *Social embeddedness and innovative human capital:*

Social embeddedness has been conceptualized as the sum of the actual and potential resources embedded within available through and derived from networks of relationships possessed by an individual or social unit (Cabello-Medina, Carmona-Lavado, Pérez-Luño, & Cuevas-Rodríguez, 2011). According to Nahapiet and Ghoshal (1998) social embeddedness comprises of structural embeddedness and relational embeddedness. The elements which are engrossed in the structural embeddedness are also considered as the social capital, such as business network, information network, and research network. The social capital comprises of social structures (Coleman, 1989) that denote the establishment of network within the parameter of the society. Granovetter (1985) in the seminal work referred such network as the embeddedness which signifies the social capital. However, Coleman (1989) asserted that social capital may play vital role in the creation of human capital. Association between social capitals (e.g. networks) and human capital (e.g. knowledge) has been discussed to an extent manner in the literatures. Specifically in the area of entrepreneurship, social capital presumed to be the enabler of diversified opportunities for the owner(s), employees, and as well as for the business itself (Davidsson & Honig, 2003). In the previous literatures it has been also found that researcher are arguing, network increases the scope of attaining knowledge from the surroundings. Ucbasaran, Westhead, and Wright (2008) contended that the human capital which comprises of valuable knowledge triggers by the intention to explore opportunities utilizing potential networks such as business network and information network. Utilizing the structural and relational embeddedness, individuals can create a unique and valuable asset of knowledge;

similarly increase the pro-activeness among the individuals. Besides, it has been argued by the scholars that possessing higher quality of human capital of the individuals is influenced by the greater scope to exploit the opportunities (Davidsson & Honig, 2003).

However, as conceptualized by Abdul Halim and Hazlina Ahmad (2012), structural embeddedness which includes the pattern of relationships among actors and the existence of network ties and configuration in terms of density, connectivity and hierarchy. Such network would be possible to materialize with the propensity of human capital inculcated by the employees or business owners. On the other hand, relational embeddedness refers to the relationships that people develop among themselves over the time. The valuable and uniqueness of knowledge with the degree of pro-activeness can however deepens the relationship among the people. Thus, it can be hypothesized that:

H6a. Business network has a positive relationship with uniqueness of human capital

H6b. Business network has a positive relationship with value of human capital

H6c. Business network has a positive relationship with pro-activeness

H7a. Information network has a positive relationship with uniqueness of human capital

H7b. Information network has a positive relationship with value of human capital

H7c. Information network has a positive relationship with pro-activeness

H8a. Research network has a positive relationship with uniqueness of human capital

H8b. Research network has a positive relationship with value of human capital

H8c. Research network has a positive relationship with pro-activeness

H9a. Relational network has a positive relationship with uniqueness of human capital

H9b. Relational network has a positive relationship with value of human capital

H9c. Relational network has a positive relationship with pro-activeness

Operationalization of Constructs:

A questionnaire was developed from past studied. Pro- innovativeness organization architecture has five dimensions; management support (3-items), allocation of frees time (3-items), work discretion (3-items), rewards (4-items), and tolerance for risk taking (3-items) which are adapted from Alpkhan *et al.* (2010). Social embeddedness has four dimensions; business network index (5-item), information network index (5-items), research network index (4-items), and relational (four-items) which are adapted from Landry, Amara, and Lamari (2002). Innovation human capital has three dimensions; uniqueness of human capital (4-items), value of human capital (5-items), which are adapted from Cabello-Medina, López-Cabrales, *et al.* (2011) and proactiveness (2-items) which is adapted from Blesa and Ripollés (2003).

Methodology:

Sample and procedure:

Data for the study were collected using survey method. A structured study instrument was used for this purpose. In this study, only active current SMEs are required for the study to reflect the actual SME environment. These active SMEs were provided by SMECorp database in 2012 (SMECorp, 2012). 1000 companies were found to be active SMEs as provided by SME Corp. The questionnaires were distributed to this 1000 SMEs and a total of 263 SMEs (response rate = 26%) responded to the questionnaire. However, a total of 262 usable questionnaires were thus secured for analysis.

The respondents' company has been established since year 1929 to 2013. Majority of the respondents are from the services sector (45%) followed by manufacturing and agriculture with 30.5% and 5.7% respectively and others. The market of their business mostly is local (85.1 %). 68.3 % are the owner of the business. Sole proprietorship formed the majority of the respondents' company (64.5%) followed partnership (22.5%) and joint venture (5.7%) and others. In relation to the total numbers of employees, 63.4% of the respondents reported that they have less than 5 employees, 28.2% with 6-20 employees and 8.4% respondents with more than 21 employees. Their education level started from high school (20%), certificate (14.1%), diploma (28.6%), degree (23.7%), and master (2.3%).

Measures:

Multi-item scales were used to measure pro-innovativeness organization architecture, social embeddedness, and innovative human capital. A 5-point Likert scales (1=*strongly disagree* to 5 = *strongly agree*) were used to measure the level of respondents' agreeableness on the statement posed to them. The measurement items were adapted from ...

Method:

Partial Least Squares (PLS) structural equation modeling (SEM) were applied to estimate the measurement and structural model of this study using the software application SmartPLS 2.0 (Ringle, Wende, & Will, 2005). PLS-SEM was chosen as the method to analyze the data because First, PLS-SEM is a power method of analysis despite its minimal demands on sample size and multivariate normality of data as the CB-SEM and PLS-SEM results are highly similar (J. F. Hair, Ringle, & Sarstedt, 2011). Secondly, PLS-SEM is more suitable to the nature of this study as it provide better prediction capability. PLS-SEM maximizes the explained variance of endogenous latent variable through partial model relationships estimation in an iterative sequence of ordinary least squares (OLS) regression (J. F. Hair *et al.*, 2011). In PLS-SEM component approach, the causality concept is formulated in terms of linear conditional expectation that seek for optimal linear predictive relationships (Esposito Vinzi, Trinchere, & Amato, 2010). The results were presented in three steps. Firstly, the Harman single factor test was performed to test the existence of common method bias in the study. Secondly, the results of the measurement model were assessed and discussed. Thirdly, the results of hypothesis hypothesized in this study were assessed through the examination of the structural model.

Assessment of the measurement model:

In this study, at first, the existence of common method bias was examined. Common method bias was assessed using the Harman's single factor test. Common method bias exists if one principal factor accounts for the majority of the variance explained or an emergence of a single factor (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Podsakoff & Organ, 1986). This study found that 12 distinct factors emerged with the first factor captured 27.295 % of the variance in the data. Thus, this concludes that common method bias is negligible in this study.

The quality of the measurement model was assessed by examining the internal consistency reliability (composite reliability), indicator reliability (individual loading, cross loading), convergent validity (the average variance extracted) and discriminant validity, which have been suggested by J. F. Hair *et al.* (2011) as a rule of thumb for model evaluation.

First we tested convergent validity which is the degree to which multiple items measuring the same concept are in agreement (Kassim, Ramayah, & Kurnia, 2012). As suggested by Hair, Black, Babin, and Andersen (2010), we used the factor loadings, composite reliability and average variance extracted to assess convergence validity. The loadings for all items exceeded the recommended value of 0.5 (Hair *et al.*, 2010). Composite reliability values, which depict the degree to which the construct indicators indicate the latent construct ranged from 0.836 to 0.904 which exceeded the recommended value of 0.7 (Hair *et al.*, 2010). The average variance extracted (AVE), which reflects the overall amount of variance in the indicators accounted for by the latent construct, were within the range of 0.506 and 0.804, which is above the recommended value of 0.5 (Hair *et al.*, 2010). Therefore, the findings show required presence of convergent validity of the measurement model (see Table 1).

Table 1: Results of measurement model

Construct		Items	Loading	AVE	CR	R ²
Pro-innovativeness Organization Architecture	Management support	MS1	0.777	0.699	0.874	-
		MS2	0.828			
		MS3	0.899			
	Allocation of free time	AFT1	0.809	0.666	0.857	-
		AFT2	0.784			
		AFT3	0.854			
	Work discretion	WD1	0.883	0.759	0.904	-
		WD2	0.880			
		WD3	0.849			
	Rewards	REW1	0.797	0.672	0.891	-
		REW2	0.800			
		REW3	0.897			
		REW4	0.781			
	Tolerance for risk tacking	TRT2	0.876	0.804	0.891	-
		TRT3	0.917			

Social Embeddedness	Business network index	BNI1	0.749	0.506	0.836	-
		BNI2	0.740			
		BNI3	0.675			
		BNI4	0.720			
		BNI5	0.667			
	Information network index	INI1	0.815	0.644	0.900	-
		INI2	0.797			
		INI3	0.813			
		INI4	0.759			
		INI5	0.827			
	Research network index	RNI1	0.868	0.760	0.927	-
		RNI2	0.882			
		RNI3	0.875			
		RNI4	0.862			
Relational	Relational	REL1	0.823	0.641	0.876	-
		REL2	0.878			
		REL3	0.826			
		REL4	0.659			
Innovative of Human Capital	Uniqueness of human capital	UHC1	0.783	0.640	0.877	0.264
		UHC2	0.799			
		UHC3	0.816			
		UHC4	0.803			
	Value of human capital	VHC1	0.816	0.634	0.897	0.332
		VHC2	0.789			
		VHC3	0.804			
		VHC4	0.824			
		VHC5	0.747			
	Proactiveness	PROAC1	0.890	0.755	0.860	0.335
		PROAC2	0.847			

AVE=Average variance extracted; CR= Composite reliability; One item was deleted (TRT1)

Next, the discriminant validity of the measurement items was tested through the criteria suggested by Fornell and Larcker (1981). Table 2 depict the discriminant validity of this study and showed that the all the square root of AVEs, shown in the elements in the matrix diagonals are higher in all cases in the off-diagonal elements in their corresponding row and column, hence establishing the discriminant validity.

Table 2: Discriminant validity of constructs

	AFT	BNI	INI	MS	Proact	RNI	Relational	Rewards	TRT	UHC	VHC	WD
AFT	0.816											
BNI	0.256	0.711										
INI	0.135	0.586	0.802									
MS	0.247	0.425	0.449	0.836								
Proact	0.156	0.442	0.450	0.380	0.869							
RNI	0.146	0.379	0.561	0.198	0.277	0.872						
Relational	0.233	0.437	0.431	0.318	0.456	0.428	0.801					
Rewards	0.417	0.446	0.385	0.453	0.357	0.290	0.455	0.820				
TRT	0.244	0.367	0.285	0.284	0.324	0.225	0.411	0.461	0.896			
UHC	0.137	0.404	0.377	0.305	0.534	0.301	0.425	0.295	0.285	0.800		
VHC	0.201	0.415	0.470	0.401	0.538	0.388	0.393	0.381	0.278	0.647	0.796	
WD	0.461	0.264	0.176	0.319	0.248	0.102	0.328	0.472	0.347	0.192	0.171	0.871

Diagonals (in bold) represent the average variance extracted while the other entries represent the squared correlations

*AFT= Allocation of free time; BNI= Business network index; INI= Information network index; MS= Management support; Proact= Proactiveness; RNI= Research information index; TRT= Tolerance for risk taking; UHC= Uniqueness of human capital; VHC= Value of human capital; WD= Work discretion

Assessment of the Structural Model:

Once the measurement model has been assessed, the next step is to evaluate the structural model. The primary evaluation criteria for structural model are the R^2 values and the level and significance of the path coefficients (J. F. Hair *et al.*, 2011). As PLS-SEM does not presume that data are normally distributed, a bootstrapping procedure with a number of 1000 bootstrap samples was applied to generate the path coefficients and their corresponding t -values. The t -values were used to make inferences to determine the significance of each path coefficients. Figure 1 and Table 3 shows all path coefficients and their t -values and the R^2 of this study. The analysis showed that the R^2 of uniqueness of human capital is 0.264 which means 26.4 per cent of variance in degree of uniqueness of human capital can be explained by the model. The R^2 value of human capital is 0.332 which means 33.2 per cent of variance in degree of value of human capital can be explained by the model. And the R^2 value of and proactiveness is 0.335 which means 33.5 per cent of variance in degree of proactiveness can be explained by the model.

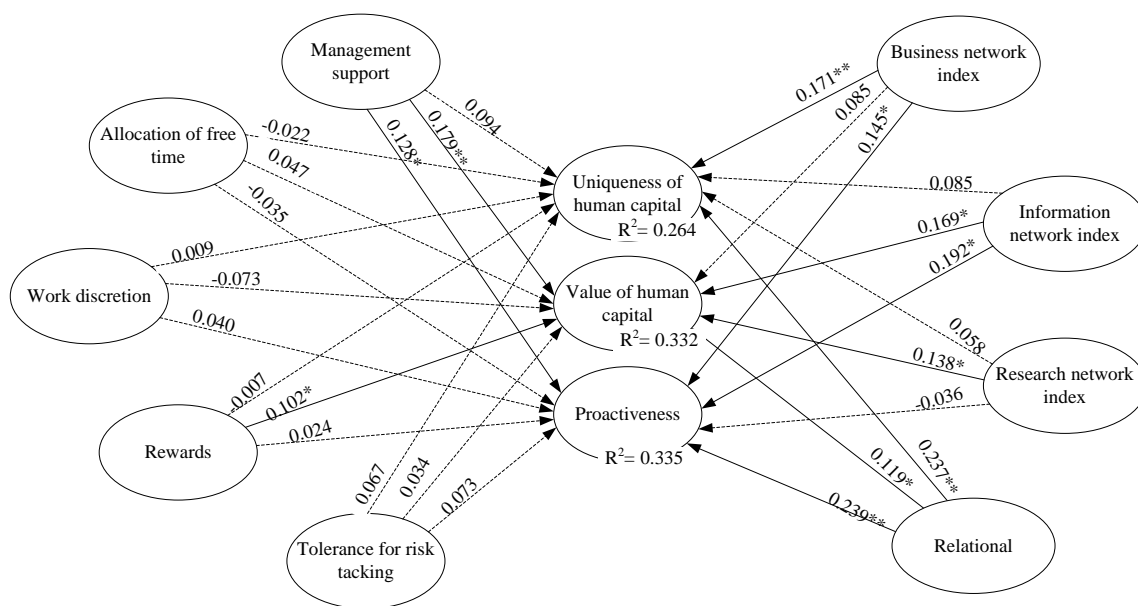


Fig. 1: Structural model

* $p < 0.05$, ** $p < 0.01$

Hypotheses Related To Pro-Innovativeness Organization Architecture and Innovative Human Capital:

The study hypothesized that five variable of pro-innovativeness organization architecture (management support, allocation for free time, work discretion, rewards and tolerance for risk taking) has relationship with three variables of innovative human capital in terms of uniqueness, value, and proactiveness.

The result shows that management support has relationship with value of human capital ($\beta = 0.179$, $p < 0.01$) and proactiveness ($\beta = 0.128$, $p < 0.05$) therefore, H1b and H1c supported. Rewards has relationship with value of human capital ($\beta = 0.102$, $p < 0.05$).

Hypotheses Related To Social Embeddedness and Innovative Human Capital:

The current research hypnotized that social embeddedness in terms of structural (business, information, and research network index) and relational have relationship with three variables of innovative human capital in terms of uniqueness, value, and proactiveness.

The finding revealed that business network index has relationship with uniqueness of human capital ($\beta = 0.171$, $p < 0.01$) and proactiveness ($\beta = 0.145$, $p < 0.05$), thus H6a and H6c supported. Information network index has relationship with value of human capital ($\beta = 0.169$, $p < 0.05$) and proactiveness ($\beta = 0.192$, $p < 0.05$) therefore H7b and H7c supported. Research network index has relationship with value of human capital ($\beta = 0.138$, $p < 0.05$) then H8b supported. And relational embeddedness has relationship with all three dimension of innovative human capital; uniqueness ($\beta = 0.237$, $p < 0.01$), value ($\beta = 0.119$, $p < 0.05$), proactiveness ($\beta = 0.239$, $p < 0.01$), so H9a, H9b, and H9c supported.

Table 3: Result of Structural model

	Hypothesis	Path	Beta	SE	t-value	Decision
Pro-innovativeness Organization Architecture-Innovative Human Capital	H1a	MS -> UHC	0.094	0.062	1.528	Not Supported
	H1b	MS -> VHC	0.179	0.066	2.734**	Supported
	H1c	MS -> Proact	0.128	0.067	1.898*	Supported
	H2a	AFT -> UHC	-0.022	0.071	0.316	Not Supported
	H2b	AFT -> VHC	0.047	0.066	0.715	Not Supported
	H2c	AFT -> Proact	-0.035	0.060	0.583	Not Supported
	H3a	WD -> UHC	0.009	0.086	0.099	Not Supported
	H3b	WD -> VHC	-0.073	0.063	1.168	Not Supported
	H3c	WD -> Proact	0.040	0.065	0.606	Not Supported
	H4a	Rewards -> UHC	-0.007	0.077	0.092	Not Supported
	H4b	Rewards -> VHC	0.102	0.062	1.646*	Supported
	H4c	Rewards -> Proact	0.024	0.075	0.323	Not Supported
	H5a	TRT -> UHC	0.067	0.062	1.081	Not Supported
	H5b	TRT -> VHC	0.034	0.060	0.569	Not Supported
	H5c	TRT -> Proact	0.073	0.070	1.052	Not Supported
Social Embeddedness-Innovative Human Capital	H6a	BNI -> UHC	0.171	0.070	2.431**	Supported
	H6b	BNI -> VHC	0.085	0.074	1.145	Not Supported
	H6c	BNI -> Proact	0.145	0.068	2.146*	Supported
	H7a	INI -> UHC	0.085	0.081	1.043	Not Supported
	H7b	INI -> VHC	0.169	0.086	1.962*	Supported
	H7c	INI -> Proact	0.192	0.087	2.198*	Supported
	H8a	RNI -> UHC	0.058	0.070	0.821	Not Supported
	H8b	RNI -> VHC	0.138	0.061	2.263*	Supported
	H8c	RNI -> Proact	-0.036	0.069	0.521	Not Supported
	H9a	Relational -> UHC	0.237	0.076	3.105**	Supported
	H9b	Relational -> VHC	0.119	0.070	1.704**	Supported
	H9c	Relational -> Proact	0.239	0.072	3.318**	Supported

*p<0.05, **p< 0.01

*AFT= Allocation of free time; BNI= Business network index; INI= Information network index; MS= Management support; Proact= Proactiveness; RNI= Research information index; TRT= Tolerance for risk taking; UHC= Uniqueness of human capital; VHC= Value of human capital; WD= Work discretion

Discussion:

The aim of this study has been to examine the most persuading factors injecting innovative human capital into SMEs climate by drawing some lines from the dimension of pro-innovativeness architecture and social embeddedness. Previous literature on innovative human capital appears to be rather limited in general. This may be due to both research and practice in innovative performance being in its early stages of development specifically from the context of SMEs in Malaysia. The results showed that only management support and rewards have a significant impact on value and proactive innovative human capital. Other dimensions of pro-innovativeness do not have a significant effect on innovative human capital. Nevertheless for structural social embeddedness (business network) showed a significant impact on uniqueness and proactiveness of the human capital and social embeddedness (information network) showed a significant impact with value and proactiveness of the human capital. Social embeddedness (research information) on the other hand showed a significant relationship with value of the human capital. Finally relational social embeddedness has a significant impact with all dimensions of innovative human capital.

This study is prevalent as it offers a benchmark for SMEs which are breathing in high-volatility environments and are required to constantly acquire information on effective strategies to survive by being innovative by leveraging on the innovative human capital. Based on the explanation above, SMEs that provides suitable structure have the potential to focus attention and effort towards innovation. This study also assists researchers and practitioners of management to evaluate their organisations and illustrate good future through enhancing the organisation architecture and social embeddedness in order to acquire innovative human capital which provides the message of more and more innovation in the daily operation of the organisations.

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