Macro factors affecting human resource quality in Dong Nai industrial parks

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A B S T R A C T

Good quality human resource plays an important role in the social development in general and business organizations in particular. To gain a competitive advantage through quality human resource, it is required to clearly capture what factors affecting the quality from both macro and micro perspectives. This paper presents a part of the findings from our current project in identifying the determinants of human resource quality in Dong Nai industrial parks; specifically, only macro factors, including central government, local government, and the socio-economic environment are investigated in this paper. Among them, the socio-economic environment has the strongest impact and the central government is ranked 2nd. It is also found that education and training system as part of the central government plays an important role in human resource quality because it provides knowledge and skills for the workforce to effectively work in practice.

1. Introduction

Human resource has been well considered as the most important factor affecting the survival and development of every organization and it has attracted several scholars and practitioners worldwide (Gond et al., 2011; Garavan and McGuire, 2010; Harmon et al., 2010; Daily and Huang, 2001; Gleave and Oliver, 1990). The recent advances in the science and technology and international integration provide fundamental bases for a so-called "knowledge economy" in which being competitive is a key for success on both macro and micro marketplaces (Lengnick-Hall and Lengnick-Hall, 2002; Drucker, 1999; Pfeffer and Villeneuve, 1994). To adapt to the fiercely competitive business environment, all businesses must continuously improve themselves in order to be pliable. One of the traditional ways for better competitive advantages is to invest in physical facilities and infrastructures. However, the existing literature of management

science points that investing in human resources (HR) brings the most benefits (Manasco, 1998) as their competences are the major determinants of organizational performance (Hitt et al., 2001; Yahya and Goh, 2002). The value of human resources has been thoroughly considered over the last few years and it is pointed that the development of a country or an organization depends heavily on the human resource quality (HRQ).

Located in South-Eastern Vietnam and bordered with other 6 provinces (Ho Chi Minh City, Binh Thuan, Binh Duong, Binh Phuoc, Lam Dong, and Ba Ria-Vung Tau), Dong Nai has its special role in the development of the Southern region of Vietnam, especially it works as an economic main hub and a junction of the South Eastern and Tay Nguyen Highland due to the network of national roads such as: National Road 1A, National Road 51, National Road 50, North–South railway lines as well as the most advanced port system in Ho Chi Minh City, Tan Son Nhat International Airport and the coming Long Thanh International Airport. Thus, several industrial parks have been opened in Dong Nai and thousands of workers have been attracted to these parks.

With the rising competition from many industrial parks in the other provinces, especially those in Ho Chi Minh City and Binh Duong, the ones in Dong Nai should pay more attention to improve the quality of their HR to have more competitive advantage for

their sustainable growth in the context of international and regional integration. Consequently, it is critical to clearly capture factors affecting HRQ which is the key objectives of our current project. Our project investigates affecting factors from both macro and micro levels so that we can propose some managerial implications to assist local authorities and businesses in Dong Nai industrial parks to create feasible policies to improve their HRQ. This paper only investigates the impacts of macro factors on the HRQ in the case of HR in Dong Nai industrial parks.

The rest of this paper consists of three parts. Section 2 briefly reviews the literatures of HRQ and its macro determinants while research method used in this paper is presented in Section 3. Relevant data analyses in the empirical case of Dong Nai industrial parks are shown in Section 4. Some conclusions make up the last section.

2. Literature reviews

2.1. Human resource quality

Existing literature in the field of management science has claimed that human resources, especially high-quality workforces are the most important factor in any businesses and they are regarded as intellectual capital in assuring the sustainable development (Saniruddin and Husain, 2016; Amstrong, 2009); thus, high quality HR is vital for the growth of an industry and the local or national economy in general. By the method of statistical analysis, Naoki (2011) has shown the impact of factors reflecting the quality of human resources on performance and labor productivity. It is also supposed that the development of HR should incorporate the "capacity, equity, empowerment and sustainability". Meanwhile, it is also suggested that HRQ can be evaluated via three necessary skills, including technical skills, human skills and conceptual skills. Or it can be considered in terms of competence and motivation policies, while the performance of local governments can be seen from the viewpoints of "productivity, quality of service, responsiveness, responsibility and accountability" (Levine et al., 1990). HRQ is referred to as the level of education, involvement, knowledge and skills required to conduct assigned tasks to achieve specified goals. Thus, HRQ can be effectively evaluated with key measures on the education, involvement, knowledge and skills of the HR.

However, as there is no commonly agreed concept of HRQ, how to effectively measure it is challenging. Different approaches have been proposed and resulted in different measures; for example, Hanushek and Kimko (2000) suggested to assess HRQ with a number of observable variables such as the quality of training at existing training institutions or through school performance, or through total cost of training or salary of lecturers; whereas, Bolli and Zurlinden (2008) considered some observable indicators, such as education level, gender, health, working age, wages and labor

productivity while Naoki (2011) measured HRQ through the educational level of HR (reflected by the number of years of study: primary, secondary, college, university and graduate of human resources), gender, and age. But OECD (2013) utilized some other measures such as the proportion of high school graduates aged 25-34, the proportion of people who have graduated from high school within a particular job, or the percentage of students in total population at the age of 20-29. Clearly, such metrics help to collect data and analyze the results quite simply and conveniently; however, these indicators do not fully reflect the concept of HRQ because of its complexity and abstraction.

From an exhaustive literature review, HRQ can be effectively measured through multiple aspects, including structure and qualifications (education, expertise), knowledge, skills, physical strength, attitude and working behavior because these factors directly impact labor productivity, income, living standards for people and sustainable development of organizations, businesses and local, national and regional economies. Thus, this study examines HRQ in 4 different criteria; including: (1) HR structure; (2) Qualifications and skills; (3) Physical health; and (4) Attitude and working styles. These criteria are briefly shown in Table 1.

2.2. Macro factors affecting human resource quality

Searching for factors affecting HRQ has attracted many researchers around the world. Kuroda and Yoshida (2006) conducted surveys and investigated 500 enterprises of various industries through self-completed questionnaires. Their statistical analysis results show that HR management of the companies is positively influenced by internal and external factors; instead, industry factors, geographical position of their headquarters, ownership types and their nationality have insignificant impacts. However, they failed to determine factors affecting the HRQ but focused on HR management. This problem was remedied by Kammar (2011) who identified six important external factors affecting HR in an organization, including: (1) economics, (2) political-legal, (3) social and cultural, (4) technology - engineering, (5) trade unions, and (6) professionalism. However, Kammar (2011) failed to provide appropriate measures of these factors.

Hunko (2013) studied key factors affecting the process of HR formation, systematizing their impacts on HR formation by the level of occurrence (macro level or micro level), investigating factors affecting the performance of each employee in the organization, suggesting questions to assess employee satisfaction and identifying their potential motivation. It was found that affecting factors are divided into two main groups:

(1) Macro factors: economically active population, unemployment rate, average wages in industry,

regional average salary, regional requirements for workers, migration process;

(2) Micro factors: personnel policies, life cycle stages, technical and technological application levels, and business characteristics.

Table 1: Criteria and measures of HR quality

Criteria		Measures
HR Structure	Age	Ratio of each working age group to the total number of employees
	Seniority	Percentage of each working seniority group compared to total number of employees
	Gender	Ratio of each gender type to the total number of employees
Qualifications and skills	Education and professional qualifications	(1) Primary school; (2) High school; (3) Intermediate; (4) College; (5) University; (6) Postgraduate
	Knowledge	About: (1) Society; (2) Responsibilities and citizenship; (3) Laws; (4) Organization rules and regulations; (5) Labor contract; (6) Industry; (7) Professional career
	Working skills	* Cognitive skills (1) Logic thinking; (2) Intuitive thinking; (3) Critical thinking * Behavior skills (1) Soft skills: Communication skills; team work; time management; conflict resolution; independent work, etc. (2) Personality: Self-confident and self-learning * Technical and professional skills (1) Dexterity at work; (2) Job performance; (3) Know how to use advanced tools, facilities, technologies and equipment
Physical health	Physical health	(1) Weight; (2) Height; (3) BMI; (4) Agility; (5) Endurance; (6) Muscle strength; (7) Resistance to disease
	Spiritual Health	(1) Being self-confident; (2) Calmly facing challenges, stresses in life and work; (3) Being optimistic, happy, positive
	Social health	(1) The degree of integration into the labor community
Attitude and working style		(1) Discipline; (2) Responsibilities at work; (3) Working spirit; (4) Self-control; (5) Dynamic, creative and innovative; (6) Spirit of learning and progress

In addition, Hunko (2013) also points out that one of the main factors affecting job performance is job satisfaction and this satisfaction is shaped by external and internal factors. However, this study has failed to systematically identify affecting factors from a general view. Or, Genc (2014) explored key factors affecting HR management activities of large companies in Turkey and has identified two main factors; including:

a) External environmental factors, such as: fluctuations/ events in international economy, changes/ advances in technology (similar to the findings by DeFillippi (2002), changes in the national economy that similar to Rosman et al. (2013); national and traditional culture, industry characteristics, Legislation and regulations that same findings by Tiwari and Saxena (2012) and Mabey et al. (1998).

b) Internal environmental factors: missions of organizations, their strategy/ objectives, business activities, size of organization, organizational structure, past history/ traditions/ practices, and organizational priorities.

Moreover, Tabibi et al. (2011) argued that HR development in health care services, especially in public areas, is very important but faces many difficulties because of the following factors: HR commitment, organizational planning, deployment of HR training and the process of evaluating these activities. They found that relevant components of commitment such as organizational development, management, engagement and employment system

have direct relationships with planning activities (career development path and overall planning of education system); in return, the planning activities have a bilateral relationship and directly relate to HR development activities of these organizations. Haenisch (2012) found several favourable factors including working environment, autonomy and freedom in work, recognition of personal achievements and personal responsibilities within their collectives. Similarly, from an exhaustive literature review on the factors affecting HRQ, this study investigates the following determinants: central government, local government (Kuroda and Yoshida, 2006), socio-economic environment (Genc, 2014; Hunko, 2013; Tiwari and Saxena, 2012; Kammar, 2011; Kuroda and Yoshida, 2006; DeFillippi, 2002; Mabey et al., 1998) in the case of Dong Nai industrial parks.

Besides these macro factors, HRQ is also affected by several other micro factors as listed in our previous publication (Quynh et al., 2017). Thus, HRQ is actually affected by both macro and micro factors as shown in Fig. 1. However, as the micro factors were investigated in our previous research, this paper only considers macro ones.

3. Research methods

This study was conducted in three phases. Specifically, the first phase includes the following activities: (1) document research, (2) discussion with focus groups; (3) establishing basic questions; (4) reorganize research items and (5) set up the first

questionnaire for pilot research. During this period, three different questionnaires were constructed to serve 3 different groups of surveyed subjects: workers in industrial parks of Dong Nai province, employers in the industrial parks and officials of related departments of Dong Nai province. The questionnaire included general information about respondents' demographic characteristics, their

assessment on the HRQ in industrial parks in Dong Nai province as well as all factors as presented in Section 2. After the pilot test, a refined questionnaire was created for our official survey. For the brevity and conciseness of this paper, full version of the questionnaire will be provided on request. Table 2 briefly shows the codes of respective observed variables.
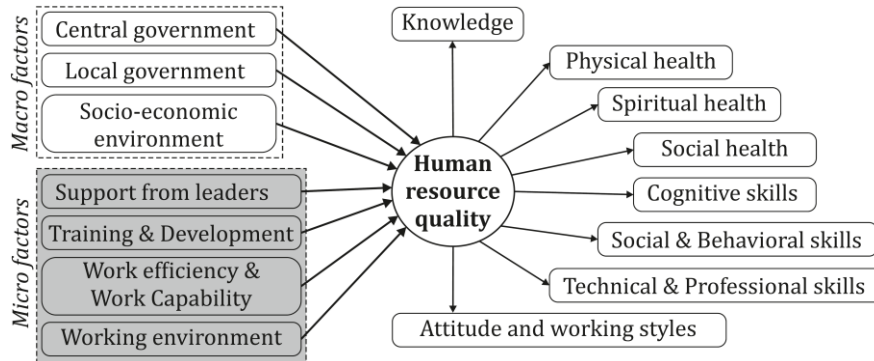

Fig. 1: Proposed determinants of HRQ

Table 2: Coding of observed variables

No.	Factor (Code)	No. of items	Respective codes
	Dependent variables		
1	Knowledge (KT)	10	KT01 → KT10
2	Cognitive skills (KNN)	4	KNN1 → KNN4
3	Social and behavioral skills (KNX)	5	KNX1 → KNX5
4	Technical and professional skills (KNK)	4	KNK1 → KNK4
5	Physical health (STC)	8	STC1 → STC8
6	Spiritual health (STT)	6	STT1 → STT6
7	Social health (SXH)	4	SXH1 → SXH4
8	Attitude and working styles (TT)	13	TT01 → TT13
9	Overall evaluation of HRQ (CLNN)	5	CLNN1→CLNN5
	Independent variables		
10	Central government (CQTW)	4	CQTW1→CQTW4
11	Local government (CQDN)	6	CQDN1→CQDN6
12	Socio-economic environment (MTKX)	5	MTKX1→MTKX5

The questionnaires were sent by four methods: (1) soft copies via emails, (2) hard copies via postal service, (3) hard copies to standing executives at relevant offices, and (4) records via direct interviews. In this paper, we employ descriptive statistics and other sophisticated analyses such as exploratory factor analysis (EFA), scale reliability analysis using Cronbach's alpha, and multiple regression analysis with the support of a software package called SPSS 22.0. Literally, scale reliability analysis is used to measure the internal consistency of investigated items; and it is considered the most appropriate approach for measuring the difference in substantive areas among the items within a single construct (Schmitt, 1996; Revelle, 1979; Green et al., 1977; Cronbach, 1951). Scale reliability analysis uses Cronbach's Alpha (α) as the key coefficient. In social science, α should be no less than 0.6 and the corrected item-total correlation of each item be at least 0.3 so that the investigated items are considered reliable to measure the construct (George and Mallery, 1999). It is always suggested to perform reliability analysis of every scale before EFA is implemented.

In the second phase, EFA is usually used to cluster highly correlated variables into a factor to exemplify

a certain dimension within the data set (Hair et al., 2006). Thus, in EFA approach, a number of correlated variables are identified to be grouped into a representative variable. After the factors are extracted from EFA, they should be re-examined for their reliability. Once considered reliable, they are then transformed into suitable variables to be used in regression analysis. The transformation is done by computing factor scores of relevant factor loadings.

In the third phase, we use multiple regression analysis to know the causal effect of the independent variables mentioned in Table 3 upon the HRQ (dependent variable). Hence, the underlying independent variables are to be assembled before we employ regression analysis to assess their quantitative effect on the dependent one. Significance level is usually chosen at 0.05.

4. Empirical results

There were 2000 questionnaires delivered; among them, 974 pieces were successfully collected (response rate 48.70%). However, there were only 758 valid observations used in our data analysis phase. Among them, there were 54 officials, accounting for only 7.12%; 143 employers,

accounting for 18.87% and 561 workers, accounting for 74.01%. Different positions will provide different evaluations and better insights about the HRQ. Results of scale reliability analysis, exploratory factor analysis and regression analysis are presented as follows.

4.2. Exploratory factor analysis

4.2.1. Exploring observed variables in dependent scales

4.1. Scale reliability analysis

All of the scales are first tested for their internal consistency and their α coefficients are greater than 0.7 as shown in Table 3.

Table 3: Scale reliability analysis results

| No. | Scales | α | Corrected item-total correlation | | |
			Items	Min	Max
1	Knowledge	0.738	KT01→KT10	0.273	0.716
2	Cognitive skills	0.772	KNN1→KNN4	0.521	0.728
3	Social and behavioral skills	0.740	KNX1→KNX5	0.281	0.722
4	Technical and professional skills	0.816	KNK1→KNK4	0.517	0.809
5	Physical health	0.751	STC1→STC8	0.524	0.742
6	Spiritual health	0.784	STT1→STT6	0.284	0.763
7	Social health	0.769	SXH1→SXH4	0.541	0.759
8	Attitude and working styles	0.825	TT01→TT13	0.529	0.817
9	Overall evaluation of HRQ	0.809	CLNN1→CLNN5	0.506	0.794
10	Central government	0.793	CQTW1→CQTW4	0.532	0.768
11	Local government	0.788	CQDN1→CQDN6	0.546	0.775
12	Socio-economic environment	0.831	MTKX1→MTKX5	0.523	0.822

However, in "Knowledge" scale, the observed variables KT01, KT02, KT03 and KT04 are unsuitable to measure this concept because the corrected item-total correlation coefficients are less than 0.3. Similarly, the observed variables KNX2 and KNX5 in "Social and behavioral skills"; STT2 and STT4 in "Spiritual health" are also unsuitable. However, due to the importance of their contents, these observed variables were still kept for the exploratory factor analysis (EFA).

The observed variables in Table 4 are now used in EFA to explore their contents in measuring HRQ in Dong Nai industrial parks. The results in Table 4 show the coefficient KMO = 0.757 and the significance level of Bartlett's test less than 0.001. In addition, Table 5 shows that the cumulative sum of square loadings of the 9 extracted factors is more than 76%; therefore, the use of EFA in this analysis is appropriate. Details of 9 extracted factors are shown in Table 6.

Table 4: KMO and bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.757
Bartlett's Test of Sphericity	Chi-square	58410.547
	df	1711
	Sig.	0.000

Table 5: Total variance explained

| No. | Initial Eigenvalues | | | Rotation Sums of Squared Loadings | | |
	Total	% of Var	Cum. %	Total	% of Var	Cum. %
1	10.354	17.549	17.549	9.676	16.400	16.400
2	7.688	13.031	30.580	6.550	11.102	27.502
3	6.388	10.827	41.406	5.721	9.697	37.199
4	5.175	8.771	50.177	4.951	8.392	45.591
5	4.555	7.721	57.898	4.200	7.119	52.710
6	3.958	6.709	64.607	4.076	6.909	59.619
7	2.914	4.939	69.545	3.592	6.088	65.707
8	2.152	3.648	73.193	3.354	5.685	71.392
9	1.902	3.223	76.417	2.964	5.025	76.417

Specifically, 9 factors are extracted with their responding items as follows:

(1) Factor 1 includes TT01 → TT13, referring to attitude and working style; thus, it is called "Attitude and working style" and denoted by NT1.

(2) Factor 2 includes STC1 → STC8, referring to physical health; thus, it is called "Physical health" and denoted by NT2.

(3) Factor 3 includes STT1, STT3, STT5, STT6, SXH1 → SXH4, referring to spiritual health and social health; thus, it is called "Optimism and integration" and denoted by NT3.

(4) Factor 4 includes KT05 → KT10, referring to professional knowledge in the field of their work; thus, it is called "Industry knowledge" and denoted by NT4.

(5) Factor 5 includes KNN1 → KNN3, KNX1, KNX3, and KNX4, referring to cognitive and social skills, HR behavior; thus, it is called "Personal skills" and denoted by NT5.

(6) Factor 6 includes KNK1 → KNK4 and KNX2, referring to HR technical skills; thus, it is called "Work skills" and denoted by NT6.

(7) Factor 7 includes KT01 → KT04, referring to general socio-economic knowledge of human resources; thus, it is called "General knowledge" and denoted by NT7. Because of this, in the scale reliability analysis in Section 4.1 above, all of these four observed variables were found unsuitable to measure the concept of "knowledge". In fact, the concept of "knowledge" is divided into two separate factors, professional knowledge and general knowledge (respectively NT4 and NT7).

(8) Factor 8 includes KNN4, KNX5, STT2 and STT4, referring to the ability to face and solve difficulties, problems in their work and life; thus, it is called "Ability to solve difficult problems" and denoted by NT8. In scale reliability analysis in Section 4.1 above, all of these four variables were found unsuitable to measure cognitive skills, social skills and behaviors as well as spiritual health of HR. However, they can form a very unique factor to reflect another aspect of

HRQ. Thus, we recommend scale reliability analysis to be conducted after EFA is completed.

(9) Factor 9 includes CLNN1 → CLNN5, referring to the quality of HR; thus, it is called "Quality of human resources" and denoted by NT9.

Table 6: Rotated component matrix

	Component								
	1	2	3	4	5	6	7	8	9
TT01	0.984								
TT10	0.909								
TT11	0.877								
TT13	0.876								
TT08	0.855								
TT04	0.852								
TT02	0.850								
TT09	0.827								
TT03	0.827								
TT12	0.812								
TT07	0.802								
TT05	0.794								
TT06	0.792								
STC1		0.979							
STC8		0.928							
STC3		0.915							
STC6		0.914							
STC2		0.857							
STC7		0.844							
STC5		0.836							
STC4		0.822							
STT1			0.951						
SXH4			0.881						
STT6			0.822						
SXH1			0.821						
SXH2			0.818						
STT5			0.817						
STT3			0.750						
SXH3			0.733						
KT05				0.942					
KT10				0.885					
KT08				0.875					
KT07				0.844					
KT09				0.823					
KT06				0.778					
KNN1					0.948				
KNN2					0.834				
KNX1					0.806				
KNX3					0.790				
KNX4					0.766				
KNN3					0.578				
CLNN1						0.951			
CLNN4						0.933			
CLNN5						0.912			
CLNN3						0.894			
CLNN2						0.803			
KNX2							0.935		
KNK4							0.851		
KNK3							0.772		
KNK2							0.760		
KNK1							0.743		
KT01								0.918	
KT02								0.873	
KT04								0.842	
KT03								0.775	
KNN4									0.877
KNX5									0.843
STT4									0.766
STT2									0.756

4.2.2. Exploring independent variables

With the same token, we explore independent variables belonging to scales that affect HRQ, including central government (CQTW), local government (CQDN), socio-economic environment. The results in Table 7 show the KMO coefficient = 0.725 and the significance level of Bartlett's test less than 0.001. Also, Table 8 shows that the cumulative sum of square loadings of the 3 extracted factors is more than 86%; therefore, the use of EFA in this analysis is appropriate. Details of 3 extracted factors are shown in Table 9 which indicates that the factors well satisfy the discriminant requirement among factors.

4.3. Re-examine scale reliability

As the factors obtained after EFA in Table 6 are different from the original ones in Table 3, we further examine their reliability by using Cronbach's Alpha coefficients. Their new results are shown in Table 10 from which we can conclude that all of the new scales are reliable to be included in the next analysis.

Table 7: KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.725
Bartlett's Test of Sphericity	Chi-square	2033.220
	df	105
	Sig.	0.000

Table 8: Total variance explained

No.	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum. %	Total	% of Var	Cum. %
1	7.885	52.566	52.566	5.174	34.490	34.490
2	2.806	18.703	71.270	4.073	27.155	61.645
3	2.221	14.809	86.079	3.665	24.434	86.079

4.4. Multiple linear regression

In this section, two regression models are investigated; including:

M1: CLNN = f(CQTW, CQDN, MTKX);
M2: CLNN = f(NT1,NT2,NT3,NT4,NT5,NT6,NT7,NT8);

where CLNN is actually NT9 mentioned in Section 4.2.1 and Table 10. M1 is used to investigate the impacts of the macro factors on the HRQ whereas M2 is used to find out the relationships between HRQ and its related measures, i.e., which measures among the 8 identified measures plays the most important role in determining HRQ so that we can have proper policies to improve HRQ in Dong Nai industrial parks. The loadings of the extracted factors are saved for regression analyses; thus, the obtained values for the relevant factors are in standardized format.

Table 9: Rotated matrix

	Component		
	1	2	3
CQDN1	0.949		
CQDN3	0.947		
CQDN6	0.927		
CQDN5	0.895		
CQDN2	0.890		
CQDN4	0.783		
MTKX2		0.886	
MTKX1		0.884	
MTKX5		0.883	
MTKX4		0.843	
MTKX3		0.822	
CQTW2			0.936
CQTW1			0.930
CQTW3			0.901
CQTW4			0.895

Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization

4.4.1. Impacts of macro factors on HRQ

Regression results for M1 are shown in Table 11 where the three macro factors are all found statistically significant (sig. < 0.05). Other evidence can be referred to Table 12 where ANOVA analysis is done to test the model fit. The significance level of F-statistics in Table 12 is too small compared to the given significance of 5%. Therefore, it can be concluded that LRM1 is good enough to be used in this study. Moreover, small values of VIF (Variance Inflation Factor) indicate that no collinearity is found in M1.

Table 10: Scale reliability of extracted factors

No.	Scales	α	Corrected item-total correlation		
			Items	Min	Max
NT1	Attitude and working styles	0.825	TT01 → TT13	0.529	0.817
NT2	Physical health	0.751	STC1 → STC8	0.524	0.742
NT3	Optimism and integration	0.783	STT1, STT3, STT5, SXH1 → SXH4	0.581	0.764
NT4	Industry knowledge	0.775	KT05 → KT10	0.625	0.761
NT5	Personal skills	0.793	KNN1 → KNN3, KNX1, KNX3, KNX4	0.652	0.768
NT6	Work skills	0.843	KNK1 → KNK4, KNX2	0.547	0.825
NT7	General knowledge	0.798	KT01 → KT04	0.559	0.773
NT8	Ability to solve difficult problems	0.786	KNN4, KNN5, STT2, STT4	0.573	0.766
NT9	Overall evaluation of HRQ	0.809	CLNN1 → CLNN5	0.506	0.794

As shown in Table 11, among the three macro factors, the socio-economic environment (MTKX) has the strongest impact on HRQ. It is because people can have an optimistic hope for having a good job once they invest in their education and taking relevant training courses. Otherwise, they may feel to be unsure about their future, resulting in less motivated feeling for taking higher education and training courses. In addition, the central government (CQTW) is ranked 2nd among the three factors. This implies that macro policies in economic development, education and training, vocational training, health care, etc. are critical to the quality of HR in practice.

4.4.2. Relationships between HRQ and its measures

Regression results for M2 are shown in Table 13 where the eight measures are all found statistically significant (sig. < 0.05). Other evidence can be referred to Table 14 where ANOVA analysis is done to test the model fit. The significance level of F-statistics in Table 14 is too small compared to the

given significance of 5%. Therefore, it can be concluded that M2 is good enough to be used in this study. Moreover, small values of VIF (Variance Inflation Factor) indicate that no collinearity is found in M2.

Table 11: Regression coefficients[a]

Model	Unstandardized Coefs.[b]		Standardized Coefs.[b]	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF[c]
(Constant)	-3E-16	0.032		0.000	1.000		
CQTW	0.141	0.032	0.141	4.385	0.000	1.000	1.000
CQDN	0.086	0.028	0.086	2.695	0.007	1.000	1.000
MTKX	0.445	0.031	0.445	13.890	0.000	1.000	1.000

a. Dependent Variable: CLNN; b. Coefficients; c. Variance Inflation Factor

Table 12: ANOVA analysis[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	170.628	3	56.876	73.135	0.000[b]
1	Residual	586.372	754	0.778		
	Total	757.000	757			

a. Dependent Variable: CLNN; b. Predictors: (Constant), CQTW, CQDN, MTKX

As shown in Table 13, among the 8 measures of HRQ, NT4 (Industry knowledge), NT7 (General knowledge) and NT6 (Working skills) are the top three measures that play the most important role in determining HRQ. These figures also imply the crucial role of education and training in the society. Moreover, other measures of HRQ should also be carefully considered and improved to enhance the quality of human resources.

Table 13: Regression coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-3E-16	0.032		0.000	1.000		
NT1	0.133	0.028	0.133	3.965	0.000	1.000	1.000
NT2	0.136	0.031	0.136	5.216	0.000	1.000	1.000
NT3	0.098	0.022	0.098	3.315	0.000	1.000	1.000
NT4	0.204	0.025	0.204	4.122	0.000	1.000	1.000
NT5	0.148	0.034	0.148	4.491	0.000	1.000	1.000
NT6	0.162	0.032	0.162	6.029	0.000	1.000	1.000
NT7	0.187	0.027	0.187	9.182	0.000	1.000	1.000
NT8	0.129	0.030	0.129	5.415	0.000	1.000	1.000

a. Dependent Variable: CLNN

Table 14: ANOVA analysis[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	303.707	8	37.963	62.749	0.000[b]
1	Residual	453.293	749	0.605		
	Total	757.000	757			

a. Dependent Variable: CLNN; b. Predictors: (Constant), NT1, NT2, NT3, NT4, NT5, NT6, NT7, NT8

5. Conclusion and managerial implications

Human resource, especially good quality workforce, is always important to the development of any country, any economy and any organization. To deal with the fierce competition from many industrial parks in Ho Chi Minh City and Binh Duong, Dong Nai have paid special attention to improve the quality of their human resources to increase their competitiveness for the sustainable growth of their industrial parks. Thus, to have proper policies to achieve the goals, fully identifying the determinants of the quality becomes crucial. Practically, several factors at both macro and micro levels have been identified. This paper further investigates the impacts of macro factors as a part of our research project because some micro factors have been identified. Specifically, this study considers the impacts of central government, local government and the socio-economic environment on the human resource quality. Among them, the socio-economic environment has the strongest impact and the central government comes in the 2nd. It is also found that education and training system plays important role in the quality because it provides knowledge and skills for them to effectively work in practice.

Compliance with ethical standards

Conflict of interest

The authors declare that they have no conflict of interest.

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