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The Factors towards Workforce Development in Industrial Parks in Hai Duong Province

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Abstract: *This study was conducted in order to evaluate the impact of different factors on workforce at the industrial parks in Hai Duong Province. The research datawas collected primarily by interviewing production workers and managers working at different companies at the industrial parks in Hai Duong Province In this study, the author uses the method of Structure Equation Modeling to analyze the impact of the factors on workforce development at the industrial parks in Hai Duong Province. The findings show the main factors affecting the workforce development at the industrial parks in Hai Duong Province. Based on these findings, some solutions are proposed to improve the quality of the workforce at the industrial parks in Hai Duong Province*.

I. Introduction

Workforce development is a topic that is highly concerned by not only the business managers, governmental administrators, and also the economics researchers in the world. The first studies in this area coined the original definitions on "workforce development" at the 60s and 70s of the twentieth century. Since then a lot of terms have been developed under various angles. Accordingly, a number of economics researchers have conducted actual studies on workforce development on two main levels: nationally and at sector/organization level.

Firstly, at national level, Bae and Rowley (2004) chose Korea to be the subject of the study. They suggested that social foundation (institutions, culture, society, family and so on) and the operational method of the company left direct impact on the decision of the workers at work and their career. In addition, the factor of training was considered to be a useful tool to enhance the development of workforce and the business outcomes of the companies in Korea.

Secondly, on the study of workforce development at sector level and organization level. The study of Ardichvili and Gasparishvili (2001) proved that the recruitment process had been place more importance in workforce development at Russian banks. Up until the present, the researches in the world have mentioned two main factors affecting workforce development. External factors include government policy, regulations , globalism, actual development of economy, society and politics; internal factors include operational methods, development orientation of the organization, training program and support of the organization towards the workers. However, the previous relevant studies haven't evaluated the impact of the quality evaluation of the workforce development.

In order to clarify the function of those factors towards workforce development, especially the work performance evaluation, the author has chosen the topic "***The factors towards workforce development in industrial parks in Hai Duong Province"*** to be the study subject.

II. Research methods

2.1.1. Data collection

** Primary Data collection*

In this Study, the author collected the primary data by interviewing production workers and managers working at different companies at the industrial parks in Hai Duong Province. The questionnaire used in this Study was built using the definitions of the factors, previous studies and comments and suggestions from experts.

2.1.2. Size Sampling Technique

In this Study, the author applied the Slovin's Formula Sampling Techniques, for instance:

$$n = \frac{N}{1 + N(e)^2}$$

Where:
n: is the number of samples (sample size)
N: is the population size
e: margin of error (%)

According to the statistics of the Board of Management of Hai Duong Industrial Parks, currently there are 103,968 people working at the companies in the Industrial Parks. Apply size sampling technique with e of 0.05, we have:

$$n = \frac{N}{1 + N(e)^2} = 398$$

So, the minimum sample size is 398 people.

III. Results

In this Study, the author evaluates the impact of 07 factors on workforce at the industrial parks in Hai Duong Province. Those factors consist of: Policy on benefits and bonuses; Recognition; Workforce Training and Development; Work Motivation; Work Performance Evaluation; Work Environment; Support from Business Manager and Company and Workforce Development.

In order to confirm that the outcomes of the research that is accurate and highly applicable, First of all, the Study analyzed the Cronbach Alpha testing outcomes, evaluated the theory and data via CFA method, and used the SEM structure model to estimate the impact of the factors on the workforce development at industrial parks.

2.1. Scale testing

** Cronbach Alpha Testing*

The measuring scales are primarily evaluated using Cronbach Alpha indicators with a sample size of 344 research employees. The outcome of the main variables are shown in Table 2.1.

Table 2.1: The outcomes of Cronbach Alpha scales

Monitoring variables	Cronbach's Alpha	Cronbach's Alpha based on standardized variables	Number of variables
Production workers			
Policy on benefits and bonuses	0.920	0.918	5
Recognition	0.913	0.914	5
Workforce Training and Development	0.852	0.854	4
Work Motivation	0.935	0.938	6
Work Performance Evaluation	0.815	0.817	4
Work Environment	0.909	0.909	5
Support from Business Manager and Company	0.859	0.860	4
Workforce Development	0.875	0.877	4
Managers			
Policy on benefits and bonuses	0.924	0.926	5
Recognition	0.911	0.913	5
Workforce Training and Development	0.827	0.830	4
Work Motivation	0.933	0.936	6
Work Performance Evaluation	0.689	0.689	4
Work Environment	0.903	0.902	5
Support from Business Manager and Company	0.848	0.849	4
Workforce Development	0,878	0,880	4

Resources: Based on the calculation of the author

According to the data in Table 2.1, we can see that the Cronbach Alpha reliability coefficient is met by all of the measuring scales used in those two models meet Where, the lowest is 0.816 (workforce development) and the highest is 0.944 (education on laws and regulations).

** Critical measuring model*

Critical measuring model (population measuring model) is created by linking the scales of principal components with promax rotation (CFA) of the workforce development definition. The results of both models are shown in Table 2.2

Table 2.2: CFA results

Indicators	χ^2	χ^2 (p)	CMIN/DF	CFI	GFI	RMSEA
Model (1)	2493.673	0.000	4.149	0.831	0.760	0.096
Model (2)	2203.954	0.000	3.667	0.832	0.751	0.095

Resources: Based on the calculation of the author

Critical measuring model of the two models used in the Study has 743 degrees of freedom. Based on the CFA results from Table 2.2, it is shown that χ^2 of both models have statistical significance of 0.001. CMIN/DF <5 withing acceptable range. CFIs of both models > 0.8, GFI > 0.7, RMSE < 0.1, though not too high, but is within the acceptable range. With these results, the author can conclude that those two models is practically and theoretically acceptable.

Table 2.3 shows the weight result of the monitoring variables of Model 1 (Factors affecting the development of production workers) First, average variance extracted (ρ_{vc}) of the variables are all > 0.5, where the variable of Work Motivation has the highest value of 0.930 and that of Work Performance Evaluation is lowest: 0.826. Second, composite reliabilities (ρ_c) of the sales are all > 0.7. Third, the estimate coefficients of the component variables all have statistical significance 0.001. These measuring outcomes verify that the scales of the factors using in Model 1 all meet requirements on reliability and high standard on convergent validity.

Table 2.3: CFA weights of the monitoring variables in Model 1

			Estimate	Standard deviation	Critical value	p value
Work Motivation (M): ρ_{vc} = 0.693, ρ_c = 0.930						
M 1	<---	M	1.000			
M 2	<---	M	0.933	0.059	15.739	***
M 3	<---	M	0.958	0.062	15.336	***
M 4	<---	M	1.131	0.056	20.078	***
M 5	<---	M	1.142	0.057	20.100	***
M 6	<---	M	0.938	0.070	13.441	***
Work Environment (E): ρ_{vc} = 0,638, ρ_c = 0,895						
E 1	<---	E	1.000			
E 2	<---	E	1.528	0.094	16.179	***
E 3	<---	E	1.564	0.095	16.386	***
E 4	<---	E	.961	0.084	11.490	***
E 5	<---	E	.972	0.083	11.671	***
Recognition (R): ρ_{vc} = 0,686, ρ_c = 0,916						
R 1	<---	R	1.000			
R 2	<---	R	0.953	0.055	17.359	***
R 3	<---	R	1.182	0.063	18.643	***
R 4	<---	R	1.122	0.062	18.189	***
R 5	<---	R	0.956	0.065	14.760	***
Policy on benefits and bonuses (B): ρ_{vc} = 0.717, ρ_c = 0.925						
B 1	<---	B	1.000			
B 2	<---	B	0.563	0.050	11.226	***
B 3	<---	B	1.224	0.067	18.162	***
B 4	<---	B	1.244	0.068	18.393	***
B 5	<---	B	1.234	0.066	18.750	***
Work Performance Evaluation (PE): ρ_{vc} = 0.548, ρ_c = 0.826						

			Estimate	Standard deviation	Critical value	p value
PE 1	<---	PE	1.000			
PE 2	<---	PE	1.210	0.108	11.177	***
PE 3	<---	PE	1.360	0.111	12.205	***
PE 4	<---	PE	1.019	0.101	10.051	***
Support from Business Manager and Company (S): ρ_{vc} = 0.608, ρ_c = 0.861						
S 1	<---	S	1.000			
S 2	<---	S	1.315	0.097	13.586	***
S 3	<---	S	1.176	0.086	13.707	***
S 4	<---	S	1.130	0.090	12.566	***
Workforce Training and Development (TnD) ρ_{vc} = 0.607, ρ_c = 0.855						
TnD 1	<---	TnD	1.000			
TnD 2	<---	TnD	1.891	0.152	12.412	***
TnD 3	<---	TnD	1.227	0.130	9.412	***
TnD 4	<---	TnD	1.666	0.136	12.274	***
Workforce Development (D) ρ_{vc} = 0.645, ρ_c = 0.879						
D 1	<---	D	1.000			
D 2	<---	D	1.130	0.073	15.479	***
D 3	<---	D	1.031	0.071	14.546	***
D 4	<---	D	0.928	0.063	14.801	***

Resources: Based on the calculation of the author

Table 2.4 shows the weight result of the monitoring variables of Model 2 (Factors affecting the development of managers) According to estimate value, average variance extracted (ρ_{vc}) of the variables are all > 0.5, where the variable of Policy on benefits and bonuses (B): has the highest value of 0.927 and that of Workforce Training and Development (TnD) is lowest: 0.832. Composite reliabilities (ρ_c) of the sales are all > 0.7. Besides, the estimate coefficients of those factors all have high statistical significance. These measuring outcomes show that the scales of the factors using in Model 1 all meet requirements on reliability and value.

Table 2.4: CFA weights of the monitoring variables in Model 2

			Estimate	Standard deviation	Critical value	p value
Work Motivation (M): ρ_{vc} = 0.661, ρ_c = 0.919						
M 1	<---	M	1.000			
Motivation 2	<---	M	0.984	0.075	13.128	***
M 3	<---	M	0.929	0.078	11.928	***
M 4	<---	M	1.290	0.076	17.055	***
M 5	<---	M	1.238	0.073	16.965	***
M 6	<---	M	0.988	0.087	11.397	***
Work Environment (E): ρ_{vc} = 0.640, ρ_c = 0.897						
E 1	<---	E	1.000			
E 2	<---	E	1.413	0.099	14.293	***
E 3	<---	E	1.453	0.099	14.648	***
E 4	<---	E	1.081	0.093	11.645	***
E 5	<---	E	1.079	0.093	11.662	***
Recognition (R): ρ_{vc} = 0.685, ρ_c = 0.915						
R 1	<---	R	1.000			
R 2	<---	R	0.961	0.056	17.188	***
R 3	<---	R	1.175	0.064	18.259	***
R 4	<---	R	1.138	0.065	17.567	***
R 5	<---	R	0.921	0.070	13.141	***
Policy on benefits and bonuses (B): ρ_{vc} = 0.718, ρ_c = 0.927						

			Estimate	Standard deviation	Critical value	p value
B 1	<---	B	1.000			
B 2	<---	B	1.096	0.073	14.976	***
B 3	<---	B	1.121	0.071	15.735	***
B 4	<---	B	0.963	0.065	14.700	***
B 5	<---	B	1.141	0.070	16.306	***
Work Performance Evaluation (PE): ρ_{vc} = 0,569, ρ_c = 0,837						
PE 1	<---	PE	1.000			
PE 2	<---	PE	1.246	0.116	10.697	***
PE 3	<---	PE	1.502	0.126	11.960	***
PE 4	<---	PE	1.098	0.112	9.803	***
Support from Business Manager and Company (S): ρ_{vc} = 0.589, ρ_c = 0.850						
S 1	<---	S	1.000			
S 2	<---	S	1.304	0.111	11.769	***
S 3	<---	S	1.226	0.100	12.296	***
S 4	<---	S	1.133	0.103	10.991	***
Workforce Training and Development (TnD) ρ_{vc} = 0.571, ρ_c = 0.832						
TnD 1	<---	TnD	1.000			
TnD 2	<---	TnD	2.129	0.217	9.809	***
TnD 3	<---	TnD	1.363	0.169	8.056	***
TnD 4	<---	TnD	1.722	0.175	9.816	***
Workforce Development (D) ρ_{vc} = 0.649, ρ_c = 0.881						
D 1	<---	D	1.000			
D 2	<---	D	1.125	0.075	15.018	***
D 3	<---	D	1.024	0.073	14.037	***
D 4	<---	D	0.894	0.063	14.215	***

Resources: Based on the calculation of the author

2.2. Testing official theoretical model

Table 2.5 illustrates the estimate of the impact of the factors to the development of production workers. To ensure the accuracy of the estimation, the author used Chi-squared test generally suitable with the entire model, CFI Test, GFI Test to evaluate absolute suitability (without adjusting degrees of freedom) of the structural model and measuring model with RMSE monitoring and testing data in order to evaluate the suitability of the model with the population. According to the accreditation at Table 3.30, the Chi-squared has statistical significance < 0.001, CFI accreditation value and GFI accreditation value both greater than 0.9 and RMSE accreditation reaches 0.093. The results of these tests are quite similar to the CFA testing results which means that the testing values are not that high but still acceptable. This also means that the estimate results of the model is ...

Theoretically, the work motivation of production workers will be affected by the work environment, recognition from the company towards their contribution and work performance evaluation.

Based on the estimated results at Table 2.5, we can see that work environment has positive impact on work at statistical significance of 0.01. This means that the quality of work environment increases by 1%, then motivation of the employees increases 0.212%. This is absolutely suitable with the developed theory. Work Environment includes work space, tools to support production and organization culture, and so on. Currently, most of the businesses are building living space between shifts so that their employees can have some space to relax after work, A big company has built continent dormitory for out-of-town employees to stay. Work culture at companies in the industrial parks is mostly team working so the exchange of knowledge and work among workers is also easier. Moreover, the demand for workforce at the companies is increasing, thus most workers are not under the pressure of losing their job.

The recognition of the businesses towards production workers is their work motivation. Based on the estimated results, we recognition has positive impact on work at statistical significance of less than 0.01. This means that when the recognition increases 1%, then motivation of the employees increases 0.413%. This is absolutely suitable with the developed theory. The recognition of the businesses toward the workers plays an important role in increasing work satisfaction and motivation. The recognition here is the company paying

attention to feedbacks and acknowledge the contribution of the workers during work production. When the businesses sincerely acknowledge the work outcomes of their workers, they would be willing to contribute and work harder for the development of the company. In fact, production workers are the ones who work directly with the machines and the outgoing products of the company so they understand best about the quality of the machines at actual operation and also the product quality. Thus, by listening to them, the company itself will find a better solution for their production activities.

The third factor affecting work motivation is the work performance evaluation. Based on the estimated results, work performance evaluation has positive impact on work at statistical significance of 0.01. This results imply that when the work performance evaluation increases by 1 %, then the work motivation of the workers increases by 0.227 %. This is absolutely accurate to the developed theory. The work performance evaluation is the basis for work transition, salary review, and bonuses review towards production employees. If the work performance evaluation is conducted properly, ensuring the quality and fairness among the employees, then it will stimulate the workers to improve themselves, work harder to get special salary and bonuses from the company.

The impact of those 07 factors on the development of production workers all have a statistical significance of less than 0.05. Policy on benefits and bonuses has positive impact on the development of production workers at a statistical significance of 0.05. Accordingly, when the policy on benefits and bonuses increases by 1%, then the development of production workers increases by 0.071 %. The impact of the policy on benefits and bonuses on workforce development has been proved both theoretically and practically. The benefits and bonuses of the company is a way to show the recognition of the company towards the efforts of the production workers. The bonuses policy here means financial means (praise, retreat, extra-curricular activities, and so on) and the rewards of cash or valuable items. One way or another, if the policy on benefits and bonuses is applied to the right person with the right task will stimulate the development of production workers.

Work motivation is one of the key factors affecting the production activity, competition advantages, and workforce development. According to the estimate from the author, work motivation has positive impact on the development of production workers at a statistical significance of less than 0.01% This means that when the work motivation increases by 1%, then the development of production workers increases by 0.363%. This is absolutely suitable with the developed theory. Work motivation includes factors related to work environment, recognition from the managers, and relationships in the company of the production workers. Accordingly, a good work environment, with sufficient equipment needed for production activities will make the workers interested in working. The recognition from the managers and the company will make the workers want to work and make more contribution. More importantly, the union with coworkers and good relationship with the managers will help production workers to feel more comfortable at work. Thus, work motiviton has impact on emotion, spirit and development of production workers at industrial parks.

Work performance evaluation is found to be leaving a positive impact on workforce development of the company. The estimated results at Table 3.3 shows that when the work performance evaluation increases by 1%, then the development of production workers also increases by 0.275%. Work performance evaluation has positive impact on the development of production workers since this activity helps to record the work performance and contribution of the employees towards the company. When the work performance evaluation is conducted properly, it will enhance the efforts of the production workers, improve quality on training, evaluation and workforce assignation. In recent years, this activity has been paid more attention by some businesses. The positive effects of the work performance evaluation have been proven by the effectiveness of the workers and the yearly increasing revenue of the company.

Work environment is an important factor affecting the satisfaction of employees and helps to enhance their motivation which in turn stimulates the development of workforce. In recently, the work environment of production workers at the companies is gradually improved. The businesses have paid more attention to the safety of their employees while they are at work.

The last factor is the support from business manager towards the development of production workers. According to the estimate from the author, support from business manager has positive impact on the development of production workers at a statistical significance of less than 0.05% This means that when the support from business manager increases by 1%, then the development of production workers increases by 0.066%. In recent years, the companies always show great support towards employees with special background. Thanks to this support, production workers feel safe and secure and work even harder. Besides, the interaction between production workers and managers also help improve the development of production workers. The interaction here includes the activities of sharing, improving expertise, listening to their voices and answering their questions.

Table 2.6: The estimate of the impact of the factors to the development of production workers

Relationship	Estimate coefficient	Standard deviation	z value	p value
SEM model estimate results				
Work environment -> work motivation	0.212	0.047	4.49	0.000
Recognition -> Work Motivation	0.413	0.045	9.11	0.000
Work Performance Evaluation -> Work Motivation	0.227	0.047	4.86	0.000
Policy on benefits and bonuses-> Workforce Development	0.071	0.034	2.08	0.037
Recognition -> Workforce Development	0.163	0.043	3.79	0.000
Workforce Training and Development -> Workforce Development	0.074	0.033	2.26	0.024
Work Motivation -> Workforce Development	0.363	0.045	7.98	0.000
Work Performance Evaluation -> Workforce Development	0.275	0.040	6.85	0.000
Work Environment -> Workforce Development	0.176	0.041	4.28	0.000
Support from Business Manager and Company-> Workforce Development	0.066	0.033	1.98	0.048
Testing results				
χ^2 = 11,88, p= 0,008 CFI= 0.984 TLI= 0.932 RMSE = 0.093				

Resources: Based on the calculation of the author

In this model, the development of production workers is affected by two main causes: *Indirect* impact of the work environment, recognition, and work performance evaluation via work motivation is the *direct* impact of the factors of policy on benefits and bonuses, recognition, workforce training and development, work motivation, work performance evaluation, work environment and support from business manager and company. The summary of the factors affecting the development of production workers is shown in Table 2.7 Accordingly, work motivation leaves the greatest impact on the development of production workers, and then the , work performance evaluation, and so forth.

Table 2.7: Direct and Indirect Impact of the Factors

Dependent Variables	Impact	Workforce Development
Policy on benefits and bonuses	Indirect	-
	Direct	0.091*
	Total	0,091*
Recognition	Indirect	0.123*
	Direct	0.156*
	Total	0.279*
Workforce Training and Development	Indirect	-
	Direct	0.055
	Total	0.055
Work Motivation	Indirect	-
	Direct	0.347*
	Total	0.347*
Work Performance Evaluation	Indirect	0.061*
	Direct	0.247*
	Total	0.308*

Work Environment	Indirect	0.101*
	Direct	0.208*
	Total	0.309*
Support from Business Manager and Company	Indirect	-
	Direct	0,095*
	Total	0,095*

" - ": There is no relation between the two variables
**: Statistical Significance Level of 0.05; ** Statistical Significance Level of 0.01*
Resources: Based on the calculation of the author

Based on the analysis of the models of factors affecting the development of production workers at the industrial parks in Hai Duong we can see that this group of workers is mostly affected by work motivation and work performance evaluation.

IV. Conclusions

With all the contented presented above, the Study can give a summary on the impacts of the factors on workforce development at industrial parks in Hai Duong. Using primary dated gathered from production workers who are currently working at industrial parks in Hai Duong Province, the CFA Theoretical Testing Method, and SEM Analysis Method, the other has found out some of the following results:

Firstly, Policy on benefits and bonuses; Recognition; Workforce Training and Development; Work Motivation; Work Performance Evaluation; Work Environment; Support from Business Manager and Company all have impact on Workforce Development at the industrial parks in Hai Duong

Secondly, besides the direct impact, the factors of recognition, work performance evaluation and work environment also have indirect impacts on the development of workforce development at the industrial parks in Hai Duong Province.

Thirdly, the impacts of the factors are more influential towards production workers.

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