



WORKERS' LIFE QUALITY ASSESSMENT IN INDUSTRIAL PARKS IN VIETNAM'S NORTH CENTRAL REGION

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Abstract: This study develops and tests an integrative model of factors influencing the quality of workers' life in the industrial parks (IPs) in Vietnam's North Central Region. Both qualitative and quantitative research methods were applied. Data were collected from a sample of 381 workers in the factories in the targeted IPs, and multiple regression analysis was used to test the hypothesized relationships. The results reveal that the workers' income only meets their basic needs with poor spiritual life and a lack of future life security. Further, they have very few opportunities to enjoy recreational activities, and the majority of them do not own adequate living facilities. The one-sample t-test analysis shows that most of the assessment criteria of factors affecting workers' life have a mean value from 3.310 to 3.472, indicating that the need for improving workers' life is very urgent. Among the factors affecting the quality of workers' life in the IPs, *Living Conditions* and *Compensation Policies* have the greatest impact with regression coefficients of 0.461 and 0.419, respectively.

Keywords: quality, workers' life, industrial parks, North Central Region

1 Introduction

Vietnam's North Central Region includes six provinces (Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri, and Thua Thien Hue). With harsh natural conditions, the region's economy has not really developed. The GDP value ranks only sixth over seven Vietnam's economic regions [1]. The proportion of the industry-construction sector (accounting for 35.1% in 2018) ranks fifth in the seven regions. To deal with this fact, the local authorities have focused on building industrial parks (IPs) to exploit the advantages of labour resources and solve the social issues in the area. So far, the North Central Region has 34 IPs, of which 24 are currently operating. These IPs have attracted 61,406 employees, contributing to raising the average income and higher stable life for residents [1]. However, along with the benefits, the IPs also bring many drawbacks related to the life of local workers, such as bad accommodation conditions, unguaranteed equipment and working facilities in the factories, low attention of employers on the spiritual life of workers, and poor security policies. As an example, in the period 2015–2018, there were 18 suicides of workers at the IPs in Vietnam's North Central Region.

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Regarding the academic aspect, along with the trend of moving industrial and manufacturing activities from Western developed countries to Eastern developing countries, the topic of assessing factors affecting the quality of life of local workers in these developing countries has thus been recognized as a field of growing interest worldwide [5]. Many studies have been implemented to develop the assessment scale of the life aspects of local workers [1, 8, 9]. Some authors focus on clarifying the consequences of bad living conditions on the productivity of workers [4]. Despite the increase in the amount of related research, there are still gaps in the knowledge base.

Firstly, it is still a lack of an efficient and unified quantitative model to measure the relationship between living conditions and the overall quality of life of local workers. Secondly, most of the research focuses on financial aspects when assessing workers' living conditions. Thirdly, although numerous scholars in human resource management have developed a quantitative scale to assess the workers' living aspects in developed countries [4], the assessment scale of these standards was not thoroughly tested in the practice of a developing country, such as Vietnam [11].

Stemming from the above urgent problems, the study was carried out with two main objectives: Firstly, analysing the factors affecting the quality of life of workers in the industrial parks in Vietnam's North Central Region; secondly, proposing feasible solutions to help employers in IPs release more efficient remuneration policies and raise the quality of life of workers.

2 Literature review

Quality of Work Life refers to the level of satisfaction, motivation, involvement, and commitment individuals experience regarding their lives at work. Quality of Work Life is the degree to which individuals can satisfy their important personal needs while employed by a firm [4]. Quality of Work Life is used as a tactical way to raise the retention rate and preserve human talent.

There is a meaningful relationship between the quality of work life and organizational performance. Quality of Work Life related guidelines now becoming the elements of the organization approaches. These guidelines assist institutions to maintain the work-life balance with equal consideration given to the workers' performance and their commitment to the workplace.

Regarding the evaluation scale of quality of life of workers, there have been several recent empirical attempts to validate the typical factors affecting the life aspects of workers [4, 7, 13, 14]. Namely:

Derek et al. [3] propose standard indicators of the quality of life, including not only wealth and employment but also the built environment, physical and mental health, education, recreation and leisure time, and social belonging.

Inda [15] defines eight important concerns of work-life including salary, work pressure, health care program, flexible work schedule, management participation and control of work, accreditation, relations with superiors and subordinates, complaint processes, providing adequate resources, seniority, and achievements in the promotion and human resource development on a long-term basis.

Shahbazi et al. [16] propose eight conditions to ensure high quality of life for workers in the industrial parks, including enough income, safe environment, advancement chance, order in work, social dependence, overall work atmosphere, social unity, and development of human potentials. These factors have a positive and meaningful relationship to performance.

According to Noor and Abdullah [17], the quality of work life is a concept that includes factors such as wages and benefits, working conditions and environments, job structure, management culture, technology development, employee satisfaction and motivation, work relations, participation, job security, fairness and social security, demographic structure, and continuing education.

Martel and Dupuis [18] argue that satisfaction with wages, working time and conditions, describing the "basic elements of a good quality of life in a workplace". This relates to a safe working environment, fair wages, equality and job opportunities, promotion opportunities.

Taylor et al. [19] identify the essential conditions of workplace quality of life, including basic factors outside of work such as wages, working hours and working conditions, internal factors of public nature. The authors argue that other aspects could be added, including personal capacity, employee involvement in management, equity and ownership, social support, use of skills, a future meaning at work, the social relevance of work or product, and the impact of overtime activities.

Normala [20] studies many perspectives and observes the quality of the workplace life concerning the following factors: fair pay corresponding to results, safe working circumstances and security, ability to use and learn new skills, conditions for social integration in the organization, maintaining legitimate personal interests, the balance of each division, unemployment, and creating a commitment to the organization.

In general, according to these findings, six main elements have been highlighted, including 1) Compensation Policies, 2) Working Conditions, 3) Living Conditions, 4) Physical and Mental Health, 5) Recreation and Leisure Time, and 6) Social Belonging.

In this study, the author builds up a framework according to the above-mentioned six factors and considers them in the practical situation in the Industrial Parks in Vietnam's North Central Region. The suggested research model is presented in Fig. 1.

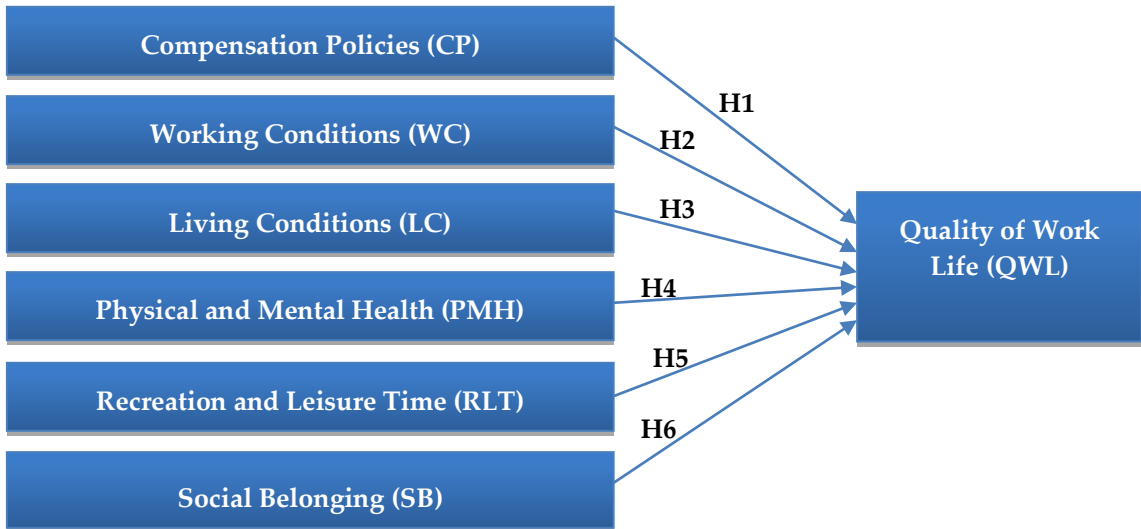


Fig. 1. Proposed research model

3 Research methodology

Data collection

In this study, the author utilised both secondary and primary data. Initially, the secondary data were collected from the Management Board of industrial parks of 6 provinces, namely Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri, and Thua Thien Hue. These data sources provide an overview of manufacturing activities and human resource management in the factories at the IPs in Vietnam's North Central Region.

The primary data then were collected on the basis of two steps. Firstly, the qualitative research step was implemented to discuss the adjusted measurement scales and proposed hypotheses and the integrated model. In this step, the in-depth interview and group discussion methods were used to explore the views of experts and business owners in large industrial zones in the North Central Region about the scale to assess the quality of life of workers. The average duration for an interview was about 60 minutes. The results of this step eliminated 4 unsuitable assessment criteria in the proposed framework and help to build a quantitative questionnaire with 32 items in the assessment scale.

For the quantitative research step, all the variables in the structured questionnaires were measured using the five-point Likert scale. The ratings started from 1 strongly disagree/ very dissatisfied to 5 strongly agree/ very satisfied. Samples include workers in large industrial parks in the North Central Region (such as Le Mon Industrial Park, Nam Dong Ha Industrial Park, and Phu Bai Industrial Park). The samples were selected using the systematic random method.

On the basis of the list of available individuals, the author used a random function with a jump $k = 5$ to select the sample to be examined.

The sample size was 381, which was judged on the basis of the function of estimating the population mean [8]. The research team contacted the respondents via phone, email, and direct interview and gave them the packet containing a consent letter and a questionnaire. The reminder notice was sent to the selected workers at a week and again two weeks after they received the questionnaire. In total, 412 questionnaires were distributed, and 398 ones were returned, 17 of which were unusable because of inappropriate responses and missing data. Finally, 381 questionnaires were completed for analysis. Therefore, a response rate of 92.5 percent was obtained.

Regarding analytical methods, the secondary data were analysed using the comparison method of changes over the years. For the primary data, the one-sample t -test analysis method was used to analyze the assessment of workers about different life aspects. Besides, the scale in the research model was built using the method of Exploratory Factor Analysis (EFA) and the verification of Cronbach's Alpha coefficient. Next, the study applied the multivariate regression model to test the proposed hypotheses (Table 1).

Table 1. Analytical hypotheses

Hypothesis	Description
H1	Compensation Policies (CP) positively affects the Quality of Work life (QWL)
H2	Working Conditions (WC) positively affects the Quality of Work life
H3	Living Conditions (LC) positively affects the Quality of Work life
H4	Physical and Mental Health (PMH) positively affects the Quality of Work life
H5	Recreation and Leisure Time (RLT) positively affects the Quality of Work life
H6	Social Belonging (SB) positively affects the Quality of Work life

4 Research findings

4.1 The status of quality of life workers' life in Industrial Parks in Vietnam's North Central Region

To clarify the status of workers' living conditions in the industrial zones, both secondary data and primary data were collected.

Assessment of different aspects of workers' life

The workers' life is reflected in four aspects: income, housing conditions, living facilities, and recreational activities. The secondary data were analysed to describe these elements.

*Workers' income***Table 2.** Average income of employees in IPs in the North Central region in 2018 (thousand dong/month)

No.	Industrial Park	No. of employees (person)			Average income
		Total	Local employees	Migrant employees	
1	Le Mon (Thanh Hoa)	18,345	6,200	12,145	4,950
2	Lam Son (Thanh Hoa)	1,899	956	943	4,250
3	Bim Son (Thanh Hoa)	1,255	688	567	4,600
4	Tay Bac Ga (Thanh Hoa)	2,428	980	1,148	4,690
5	Dinh Huong (Thanh Hoa)	1,279	590	689	4,100
6	Bac Vinh (Nghe An)	4,861	3,457	1,484	4,458
7	Nam Cam (Nghe An)	1,957	1,320	673	4,278
8	Hoang Mai (Nghe An)	360	150	210	4,279
9	Gia Lach (Ha Tinh)	603	253	350	3,850
10	Vung Ang I (Ha Tinh)	880	407	473	5,400
11	Ha Vang (Ha Tinh)	672	230	442	4,130
12	Tay Bac Dong Hoi (Quang Binh)	2,757	1,270	1,487	3,983
13	Bac Dong Hoi (Quang Binh)	19	10	09	4,700
14	Hon La Seaport (Quang Binh)	274	150	97	5,800
15	Hon La II (Quang Binh)	273	38	253	4,200
16	Nam Dong Ha (Quang Tri)	1,674	670	1,004	4,790
17	Quan Ngang (Quang Tri)	470	217	253	4,750
18	Phu Bai (Thua Thien Hue)	16,590	11,150	5,440	4,600
19.	Phong Dien (Thua Thien Hue)	4,910	2,400	2,510	4,850
The whole North Central Region		61,406	20,036	30,990	4,800
Red River Delta Region		588,774	–	–	5,300
Southeast region		112,691	–	–	6,100
Northern Midlands and Mountainous Region		57,856	–	–	3,850

Source: Business Department – Management Board of Economic Parks of the provinces in North Central Region [1]

Income is money that a worker receives in exchange for providing labour. This includes salary, bonus, and overtime pay. To some extent, especially in the case of a low-income person, higher income could create a better quality of life [9]. The data indicate that most of the workers in the IPs in the North Central Region have an income of around 4 to 5 million dongs/month (Table 2). Moreover, there is a difference in income between the employees working for foreign

enterprises and those working in domestic enterprises in the same position. For example, in the garment industry, while the average income in foreign direct investment (FDI) companies is from 7 to 8 million dongs/month, this number in domestic companies is only 5 million dongs/month. Notably, among FDI companies, those from Taiwan and China have the worst compensation policies.

Regarding the branches, workers in textile, leather, and footwear companies, which are low-value-added industries, earn the lowest income. Consequently, these companies have the lowest retention rate of workers.

Accommodation conditions

Table 3. Workers' accommodation needs in the IPs (Unit: Person)

No.	IPs in North Central region	Total No. of employees	No. of employees with their own houses	No. of employees with accommodation granted by the enterprise	Number of employees with accommodation needs
1	Thanh Hoa	25,206	6,414	720	18,072
2	Nghe An	7,178	3,927	330	2,615
3	Ha Tinh	2,155	890	500	765
4	Quang Binh	3,223	368	155	2,850
5	Quang Tri	2,144	887	0	1,175
6	Thua Thien Hue	21,500	8,550	508	12,142
Total		61,406	21,036	2,213	38,157

Source: Business Department – Management Board of Economic Parks of the provinces in North Central Region [1]

Accommodation is where workers stay and spend most of their leisure time. Having satisfactory accommodation is one of the most important ways to boost workers' productivity [9]. Similar to other regions, in the North Central Region, the needs for new accommodation in the IPs are very urgent. On average, 62% of workers in the IPs do not have suitable accommodation. 80% of workers have to live far away from the factory or rent accommodation with a low living standard (Table 3).

Notably, while the number of migrant workers from rural areas is increasing, the number of new collective housing projects is very limited. In total, there are eight new collective housing projects in the IPs which would be built by Thanh Hoa Infrastructure Development – Investment Company Limited (Le Mon IP); Management Board of Dong Nam Industrial Park (Nghì Loc IP); Nhat Thang Company, Asia Mineral Joint Stock Company, Central Mineral Joint Stock Company, Tung Phuong Joint Stock Company (Nghe An IPs); Nam Ha Tinh Seafood Import and Export Joint Stock Company, Mitraco Mineral Corporation; Hung Nghiep Formosa

Steel Company Limited (Ha Tinh IPs); Dai Phong General Construction Company Limited (Dong Hoi IP); and Scavi Company (Hue IP). While these projects would provide 8,560 accommodations for workers, the actual needs are about 38,000 units.

Living facilities

Mobile phone, recreational equipment (TV and computer), transport means, etc. are very necessary to maintain a happy life and a suitable level of social belonging. However, due to low income and high pressure on family responsibility, the living facilities for workers in the IPs are very limited. Among 1,230 asked workers in Phu Bai IP (Hue), 45% of respondents admit that they do not own any television or computers; 36% inform that they need money to buy a new motorbike and a mobile phone because their current facilities seem unusable. Similarly, among 950 asked workers in Le Mon IP (Thanh Hoa), only 10% of respondents own a personal motorbike. Most of them do not own any washing machines, refrigerators, or other high-end audiovisual equipment (Fig. 2).

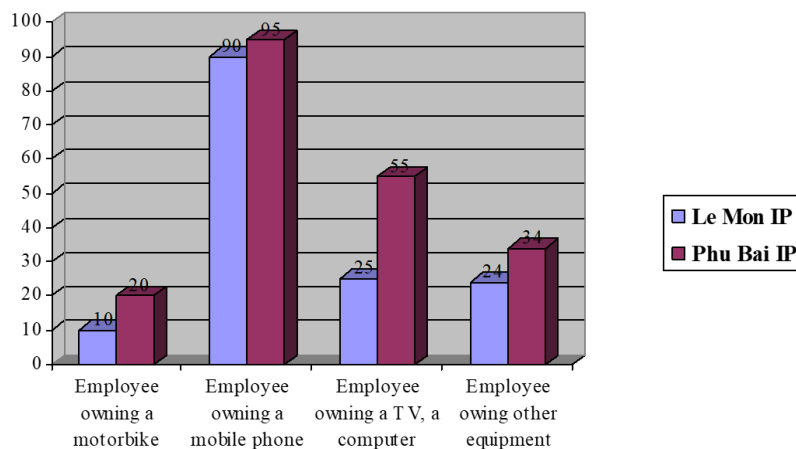


Fig. 2. Living facilities of workers in Phu Bai IP and Le Mon IPs

Recreational activities

Recreation is an activity of leisure time which is an essential element of human biology and psychology. Recreational activities could include watching TV, hanging out, playing sports, etc. This is when workers spend outside their productive activities, which has a major impact on their sense of well-being, happiness, and life satisfaction [11].

Some companies in the IPs in the North Central Region (such as Phu Bai, Bim Son, Le Mon, and Bac Vinh) have recognised the importance of these activities in boosting the motivation and productivity of workers. They have built more cultural facilities, provided law bookcases and established more clubs for their workers. However, the number and frequency of recreational activities in the companies are still very limited. Among 3,000 asked workers in

Phu Bai IP (Hue), South Dong Ha (Quang Tri) and Le Mon (Thanh Hoa), 64% of respondents “do nothing” after working time in the factories. Only 32% of respondents watch television, and 19% hang out. Remarkably, 35% of respondents even do a second job to earn more income, instead of taking rest and joining in recreational activities (Fig. 3).

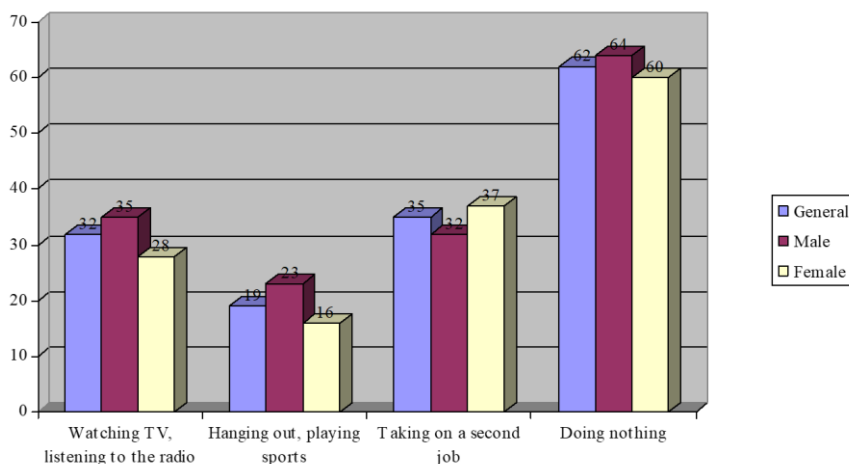


Fig. 3. Recreational activities of workers in the IPs in North Central region

Assessment on factors affecting the quality of workers' life

To determine whether the sample mean is statistically different from the known or hypothesized population mean, the one-sample *t*-test was conducted with the hypothesized mean of 4 (agree).

The analytical results indicate that among 6 tested hypotheses, there is only one hypothesis (H6) accepting the H_0 hypothesis (population mean = 4), The remaining values are significantly different from the hypothesized value of 4 (i.e., less than 4), with Sig. values smaller than 0.05 (Table 4).

Table 4. Results of one-sample *t*-test

Factors	N (number of items)	Mean	Sig.
Compensation Policies (CP)	6	3.418	0.000
Working Conditions (WC)	5	3.310	0.000
Living Conditions (LC)	5	3.251	0.000
Physical and Mental Health (PMH)	4	3.472	0.000
Recreation and Leisure Time (RLT)	4	3.248	0.000
Social Belonging (SB)	5	3.921	0.565

Likert scale: 1. Totally disagree; 2. Disagree; 3. Neutral; 4. Agree; 5. Totally agree

4.2 Analyse the relationship between proposed factors and quality of workers' life

Exploratory factor analysis and test of scale reliability

The EFA was conducted to determine the number of extracted factors on each scale. In this study, the principal components factor analysis and varimax rotation methods were applied. The results show that all of seven scales (Compensation Policies, Working Conditions, Living Conditions, Physical and Mental Health, Recreation and Leisure Time, Social Belonging, and Quality of Work Life) are satisfied with all requirements: Kaiser-Meyer-Olkin coefficient = $0.812 > 0.5$, the significance level of Bartlett's Test of Sphericity = $0.000 < 0.05$, the Eigenvalue of each extracted factor > 1 , total variance extracted = $78.228 > 50\%$ and factor loading of each item > 0.5 [7, 8] (Table 5). Seven representative factors are extracted from 33 observed variables.

Table 5. Results of EFA analysis and Cronbach alpha's coefficient

Factors	N	Initial Eigenvalues	% of Variance	Cronbach's Alpha
Compensation Policies (CP)	6	7.997	28.575	0.812
Working Conditions (WC)	5	3.070	15.585	0.857
Living Conditions (LC)	5	2.955	11.188	0.820
Physical and Mental Health (PMH)	4	2.197	8.577	0.811
Recreation and Leisure Time (RLT)	4	2.043	8.045	0.794
Social Belonging (SB)	5	1.525	6.258	0.771
Quality of Work life (QWL)	4	4.838	65.569	0.856
Total Extracted Variances: 78.228%				

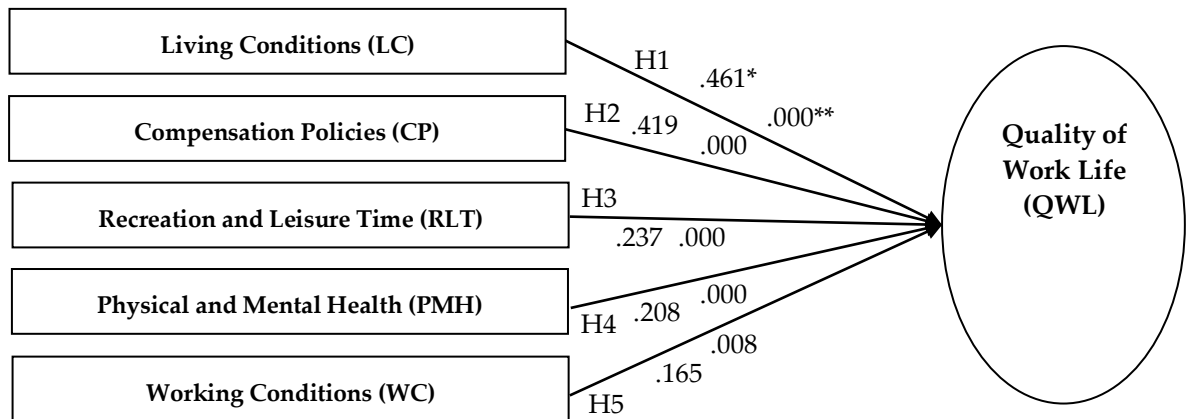
*N – number of observation variables

Regression analysis

The results obtained from regression analysis reveal the level and direction of the impact of the six independent variables on the dependent variable – the quality of work life. Firstly, the suitability test shows that the value of adjusted R^2 ($0.633 > 0.5$) and Sig. of F -test ($0.000 < 0.05$) are met with the requirement [8]. Similarly, testing multicollinearity and autocorrelation proves that the theoretical model also achieves the requirements to ensure significance (with the Durbin-Watson value = 1.902 in the middle of 1.6 and 2.6; VIF values are less than 10). Lastly, the results of the regression step indicate that 5 hypotheses H3, H1, H5, H4, and H2 are accepted (with Sig. values < 0.05). The corresponding regression coefficients are 0.461, 0.419, 0.237, 0.208, and 0.165, respectively, are shown in Fig. 4.

The general regression equation of the model is rewritten as follows:

$$QWL = 0.461 \times LC + 0.419 \times CP + 0.237 \times RLT + 0.208 \times PMH + 0.165 \times WC$$



*Standard Regression Coefficient; ** Significant value of hypothesis testing

Fig. 4. Results of regression analysis – the theoretical model with 5 hypotheses are accepted

5 Discussion and conclusion

Maintaining employee’s high job satisfaction and good quality of work life is becoming a compulsory standard for business success, especially in the IPs in Vietnam’s North Central Region, where the recruitment competition is very tight. Improving workers’ quality of life ensures a high retention rate and maintain a stable business operation. In this study, the author thus develops the integrated model to assess the quality of workers’ life in the IPs in the North Central Region.

The analysis of secondary data shows that the lives of workers in the IPs are still very rough. The income only meets the basic needs of the workers' life and fails to meet their other needs of spiritual life and do not ensure a stable life for them in the future. Further, workers in the IPs have very few opportunities to enjoy recreational activities and the vast majority of them do not own adequate living facilities. Besides, the findings from one-sample *t*-test analysis indicate that most of the life aspects of workers are currently very bad. And the need for improving workers’ life is very urgent. Lastly, there are six representative groups of elements that constitute to Quality of Work Life, including *Compensation policies*, *Working conditions*, *Living conditions*, *Physical and mental health*, *Recreation and leisure time*, and *Social belonging*. Among these factors, *Living conditions* (standardized weight is 0.461) and *Compensation policies* (standardized weight is 0.419) are the two most influential factors affecting the dependent variable. This reflects a notable feature of human life that physiological needs are still the first priority of poor workers [14].

Based on the analysis results and group discussion among factory managers and experts, the study proposes five groups of solutions to improve the quality of workers' life in the IPs. These solutions focus on improving accommodation quality, living environment issues (electricity, water, kindergarten and schools for workers' children, medical houses), and workers' spiritual life (cultural, art, and sports activities). Besides, a suitable workload, fewer overtime shifts, an attractive reward for workers who exceed the set targets are also important measures to raise the quality of their work life.

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