

Estimated wage in Outsourcing Maintenance Activities Using the Overall Craft Effectiveness Index

Saeed Ramezani ^{a,*}, Kiarash Jamali ^b

^a Assistant Professor in department of industrial engineering, Imam Hossein University

^b Master of Industrial Engineering, Engineering Management Attitude, Iran University of Science and Technology

ARTICLE INFO

Article history:

Received: 2021-01-01

Received in revised form: 2021-03-13

Accepted: 2021-03-16

Keywords:

Wages

Maintenance

Overall Craft Effectiveness Index

Outsourcing

ABSTRACT

Estimating the wage of maintenance activities depends on time, cost, and quality factors. For this reason, in the field of costs, rent management is very important, which with proper planning can lead to significant savings in organizational costs. In the case of maintenance, payments are made at the rate approved by the government and in companies and repair shops are made at the rate approved by the union. Due to the fact that the quality of repair work is different at different levels, wages should be different according to the quality and level of repair work. In this paper, we present an output-driven model (output-driven means that people's wages depend on their work output) in order to accurately calculate wages and also to create a bargaining framework in the maintenance sector using the Overall Craft Effectiveness Index at different levels of outsourced maintenance activities. In order to test the model, data related to the automotive industry in different brands of the market (Ikco & Saipa) under the supervision of legal agencies have been used. This method, in addition to motivating, causes the person who is more effective and provides better output will receive a fair wage commensurate with it.

1. Introduction

The cost of wages reflects the share of labor in the production of products and services and is one of the most important and most contributing operating costs of most institutions. Today's businesses are constantly changing. Gone are the days when employees were asked to spend their time in less valuable and low-paying jobs, and today employees are looking for attractive and productive job opportunities. At the same time, manufacturers are trying to improve their performance by employing talented employees and using state-of-the-art technology, they are facing a skill gap. Under these circumstances, businesses have the opportunity to invest in employees' desire for attractive work while filling skills gaps through the implementation of skill-based pay schemes [5]. On the other hand, payroll affairs are complex and delicate, and speaks of techniques for reducing of complexity and delicacy.

Salary cost as one of the important cost factors requires measurement, control, continuous analysis and improvement and updating. Skills-based pay schemes that reward employees for training in a variety of skill areas (multi-skills) allow employees to play a more valuable role in organizational success [10]. Continuously and graded skills development equips employees to do more important tasks.

How do skill-based payment programs work?

The basic concept of these programs is quite simple. A report from the Human Resource Management Association and the Association of Industrial and Organizational Psychology explains that a fee-based payment program involves using official documents to assess skills, knowledge, and competencies and then setting pay rates based on them. The following definitions are useful in this regard:

Skills: Abilities acquired by employees and from the point of view of other employees who perform the same activity, it is known as expertise in doing work.

Knowledge: Information that users obtain in a variety of ways and use that information to perform a particular activity more effectively.

* Corresponding author.

E-mail address: ramezani_s@alumni.iust.ac.ir

Competence: General skills or characteristics that employees have. In many cases, competencies will be especially useful when the operation involves multiple job roles. For example, a skill may be something like the ability to start a machine, while knowing the best practices for maintaining safety while operating the machine is considered knowledge, and the ability to identify and solve a problem is a competency [22]. Today's employees need a balanced combination of all three factors of skill, knowledge and competence. Simply put, training just a skill is not enough for a particular activity, as a larger percentage of employees will take on more knowledge-based roles in manufacturing plants. Skills-based pay schemes are designed to identify skills, knowledge, and competencies, and adjust employee pay based on the above three factors, rather than just a job title or organizational role. Therefore, employees with higher positions in the organizational chart may be paid less than employees with lower positions. This is basically a strong incentive for staff training and development.

On the other hand, increasing production, which leads to reducing the cost of each unit, along with increasing wage rates, has increased the trend of using advanced equipment to produce more with less working hours. One of the most important activities to improve access to a production system is to control costs in the maintenance the relevant system. As the production process increases, the rate of use of equipment and machines increases, and in proportion to that, the need for more maintenance activities increases.

Today, the lack of a reliable source to calculate and determine cost related to the wage of labor is one of the biggest problems of organizations and managers. A problem that affects both the payer organization and the recipient (and even the operator or customer).

2. Definitions

In the model presented in this research, terms and indicators have been used, which we will define first:

2.1. Classification of maintenance activities

The classification of maintenance activities is defined based on the location and how the facilities needed to perform the maintenance, how it is supported, the level of knowledge and expertise required, etc. In other words, maintenance classification refers to the type and characteristics of resources, services and facilities that were needed to perform maintenance activities at a particular level or organizational unit. Or it depends on the features that are related to the frequency of repetition or ease of doing activities with the like.

Types of classifications

Generally, in the country's organizations, according to the type of organizational equipment, two types of five-level and three-level classifications are done for the maintenance, and here the five-level classification is the criterion.

Level 1: class-1 maintenance is performed by the user of each equipment using mobile devices. These activities include simple and minor actions such as service, adjustment, cleaning, etc., which can be done very simply and in a very short time and perhaps without the use of special tools. Initial inspections and

troubleshooting, which can usually be done using the human senses, are the responsibility of users.

Level 2: These activities include simple replacements, service, maintenance, minor adjustments, visits and troubleshooting with simple devices to report to a higher class. The purpose of defining this class is to reduce the responsibilities of users' maintenance, to get the equipment ready to use the maintenance faster at lower levels and to reduce the volume of items in the waiting queue for repair in a higher-class repair shop.

Level 3: Third class maintenance activities include minor repairs of simple sets and replacement of complex sets, visits and making necessary adjustments. Troubleshooting collections to report to a higher class is also a third category activity. This type of repair is performed by repair battalions in fixed workshops located in units or on a mobile basis.

Level 4: This class of repairs is done for the purpose of overhaul or revitalization of any of the worn parts and subsets of equipment and in overhaul centers or reconstruction centers. This class includes all repair activities of each part or subset, including opening (disassembly) and complete assembly (assembly).

Level 5: If we consider each piece of equipment to consist of systems, subsystems, subsets and components, Fifth-class repairs include opening (disassembling), repairing or replacing, and then mounting (assembling) all of these components, which is done at remanufacturing centers. The purpose of this class of repairs is to revive worn-out equipment and items whose operational life has ended [1].

In the model presented in this research, finding the desired equipment maintenance level is one of the main input data. As can be seen in Figure 4, the first step in extracting the effectiveness table score on the maintenance levels is to find the maintenance level of the desired equipment, ie the same columns of the table (Figure 3). Also, the first step to use the Employee Rights Table (Figure 5) is to determine the level of the desired equipment maintenance, because if the equipment maintenance level is 1 and 2, this table is not used in calculating the salary.

2.2. Overall Craft Effectiveness (OCE)

The Maintenance Excellence Institute (2005) has introduced the Overall Craft Effectiveness Index to measure and improve the productivity of the maintenance workforce [23]. This index is the product of the three factors of Craft Utilization, Craft Performance and Craft Service Quality of work performed.

As can be seen in Figure 4, since the proposed model is an output-driven model, after determining the level of equipment, the next main step is to calculate the Craft Utilization rate, performance and Craft Service Quality by the network operators by a maintenance expert. In order to specify the rows of the effectiveness table in the maintenance levels to extract the points of this table. Also, using the product of these three rates, the Overall Craft Effectiveness is calculated to determine the row of the employee salary table (Figure 5). Figure 1 clearly shows the calculation method of this index and rates:

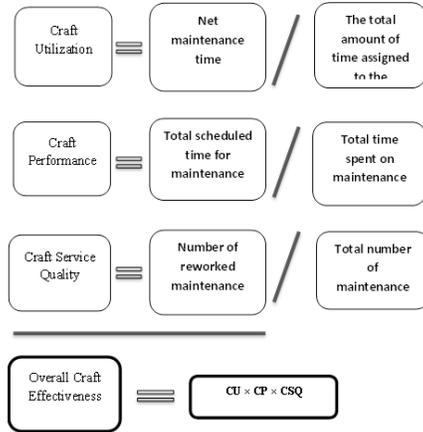


Fig. 1. Calculation of the OCE index

3. Theoretical foundations and research background

Usually, organizations prepare and adjust the salary model specific related to their gamut. Most of these models have common and similar structures and elements. Most firms pay close attention to the fairness and consistency of their wage structure [18]. Doeringer and Piore found that firms give more resources and importance to their wage policies in job evaluation programs [15].

This is more important for firms that for their wages to match those of other firms. Contemporary economic theorists describe labor wages more similarly to terms such as commodity prices, in which individuals are the primary unit of analysis and the market process is the determinant of wages [12]. Researchers in industrial relations, on the other hand, place more emphasis on managerial and political processes, including bargaining which play a role in determining wages [6]. Fee, like any other price, plays an important role in informing. In fact, wages should reflect the real productivity of the labor force, and deviations from these two variables lead to economic inefficiency and reduced employment [14]. On the other hand, differences in wage levels may also compensate for non-cash aspects of work, such as existing social benefits or unusual work environments that are directly affected by the worker's well-being [17].

Adam Smith, the father of economic science, has discussed wages in his theory of wealth distribution. In expressing his theory, Smith proposes bargaining and says so: "The general wages of the workers in any society depend on a contract which is usually concluded between two groups that do not have the same interests."

Smith believed that workers should receive the minimum wage needed to support themselves and their families, and that employers could not reduce workers' wages to less than the wage rate needed to support a family. According to Smith, the method of determining wages is similar to the method of determining the price of any other commodity, and in the short run, it determines its supply and demand [21]. Shapiro and Stiglitz show in their dodgery model that evading work will not cost workers their fault, as they will be employed elsewhere immediately after being fired for the same wage as before; Therefore, this model predicts; Any factor that increases the cost of dodging also increases productivity [19]. Li et al. examined differences in

primary care nurse pay with regard to environmental impacts [13]. Previous studies have shown that nursing caregivers in the primary care setting may earn less than those working in the intensive care unit. However, few studies have concluded why there is such a wage gap. Krueger and Summerls used labor and population data from the United States in 1974, 1979, and 1984 for their model [11]. This data includes individual characteristics of the workforce such as gender, education, skills, occupation, age, gender and race, as well as characteristics of enterprises such as number of employees, field of activity, geographical location of the enterprise, etc.

The results of this study show that in the years under review, industries such as construction, manufacturing workshops, transportation, financial services and insurance, and the mining sector, on average, have paid higher than average wages. The highest level is related to the mining industry, whose average wage was 23.1% higher than the average.

Jirjahn et al. investigated payment based on performance and productivity [9]. This study shows that increasing performance with productivity only results when associated with a high-paying policy. This fee is for individual-based performance fees, group-based performance fees, and profit sharing. The researchers designed models that are used to estimate wage discrimination related to disability. They found that differences in model specifications and econometric methods affect differences in inappropriate wages among workers with and without physical disabilities, which are significant differences in estimates of the potential effect of wage discrimination on disability [6, 16]. Thurow studied the correlation between employees' wages received by type of industry and geographical location [24]. Because according to the theory of ultimate productivity, wages are determined based on the skills offered and do not depend on the industry or area used. He finally concluded that geographical and industry variables are statistically significant in the functions of individual receptions, which in fact this significance, creates a deviation from the norm of a competitive market. Dench and Grossman discovered a relationship between the two indicators of health and wages, in which a decrease in health leads to an increase in wages, but there is no evidence that there is a causal relationship between wages and health. This finding is also consistent with a model in which investing in professional development competes with investing in health over time [8]. Cobb et al. found that wage equality in the United States has increased dramatically over the past few decades [7].

This study argues that large corporations are a prominent institution in the labor market that reduces inequality. Large US companies have reduced wage disparities by paying low and medium fines to their workers, with higher premiums than their counterparts, and with higher wages. Alvarez and Fuentes examined the effects of the minimum wage on firm productivity [3]. The main hypothesis is that the increase in the minimum wage is due to the negative costs of labor adjustment on the total productivity of the negative factors. The results were fixed for alternative measurements of productivity and adjustment of several variables to avoid other effects of policy changes, or exposure to minimum wage changes.

Slonimczyk and Skott analyze the effects of the minimum wage on wage inequality, relative employment, and over-education. They have shown that over-education can be internalized, and that raising the minimum wage can increase total employment and low skills and reduce inequality [20].

Evidence from the United States shows that these theoretical results are related to experimental results. Over-education rates have risen, and our regression analysis suggests that lowering the minimum wage may reduce the employment and relative wages of low-skilled workers.

At present, the calculation of wage rates in maintenance activities in various industries of our country is done in several ways:

- The rate of the union, the determination of which is the opinion of experts only.
- Determining a specific wage rate, with the agreement of both the payee and the payer.
- Determining the wage rate only with the view of the wage-recipient, for example, the repair of a piece of equipment may be done only by a single company or individual. And the only way for the payer is a positive response to the rate set by the payee, which of course still depends on the bargaining power of the payer.

In addition, other methods of calculating wages in different organizations and industries, factors such as education, experience, level of experience, training courses, etc. are effectively included. And the output of people's work is insignificant applied in maintenance activities. For example, suppose part of engine number 1 and part of engine number 2 need to be repaired. The organization first refers to repairman A, who has 30 years of doctoral experience, and person A can only repair engine number 2 in one week. The organization then refers to Repair B, which has 10 years of work experience and associate degree education. Person B repairs engines 1 and 2 in 5 days. As a result, the role of education and background in this part was insignificant.

In different industries of our country, the lack of a reliable model for determining wages in the maintenance sector has not made this sector free of defects. Among the significant destructive consequences they face:

- Lack of a general framework in cases where the basis for determining the wage rate depends on bargaining power.
- Lack of observance of justice and equality in the payment of wages in comparison with individual characteristics and features (such as years and experience, creativity and innovation, education, etc.) and the output of their work in maintenance activities.
- Loss of motivation of the recipient-wage, which leads to factors such as lower quality of work, lack of cooperation in the workplace, suppression of creativity and innovation, and so on.
- Separation of specialized personnel from the organization and the relevant job field and orientation to other organizations and occupations.
- Loss of legal rights and violation of the normal wage limit

In our country's industries, no model or plan has been presented about the problems, and there are many gaps in this field. For this reason, in this research, we seek to provide and develop a practical and output-oriented method and model in order to solve problems related to calculating labor costs for maintenance of labor in the industry.

4. Conceptual Model

In case the maintenance of equipment is entrusted to the organization or a person independent of the organization, the

wage rate is usually based on the union price. These prices are usually validated by experts. Due to the non-interference of the organization in the price of the union, factors such as quality and time of work are ignored. In order to consider these factors and the involvement of the organization in pricing based on the basic and effective factors on maintenance activities and increase the productivity of forces, a comprehensive output-oriented model considering all the important and basic factors affecting the maintenance, in order to obtain a salary, considering the principle of justice and the satisfaction of the parties, the payer and the recipient have been designed in this research.

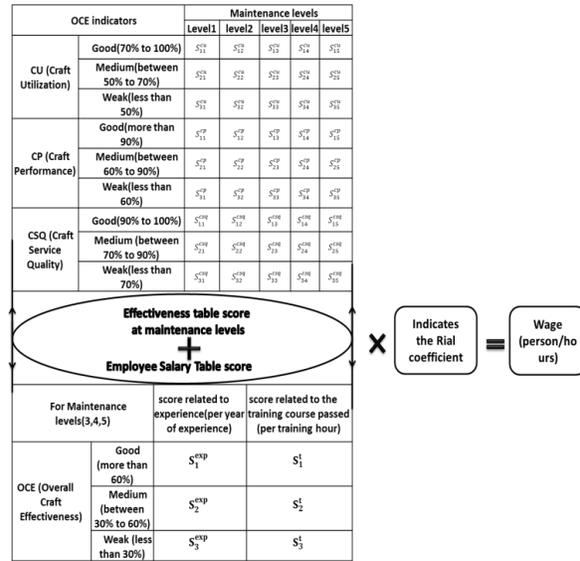


Fig. 2. conceptual model of wage calculation

Figure 2 is a conceptual model of the new model presented. First, in order to fully understand the model, we will define the symbols used in the model:

(S_{aj}^{cu}) Represents the score related to the craft utilization rate (cu), which "a" indicates the good, medium and weak intervals and is indicated by numbers 1 to 3. And (j) indicates the level of maintenance, which is indicated by numbers 1 to 5.

(S_{bj}^{cp}) Represents the score related to the Craft Performance rate (cp), where b represents the good, medium and weak intervals and is indicated by numbers 1 to 3. And (j) indicates the level of maintenance, which is indicated by numbers 1 to 5.

(S_{cj}^{csq}) Represents the score related to the craft service quality (csq), which indicates good, medium and poor intervals and is indicated by numbers from 1 to 3. And (j) indicates the level of maintenance, which is indicated by numbers 1 to 5. (j) Indicates the maintenance levels that equal to 1, 2, 3, 4, and 5.

(S_i^{exp}) Indicates the score related to experience (per year of experience) that i represents the good, average and poor intervals of the overall craft effectiveness Index (OCE) and is denoted by the numbers 1 to 3.

(S_j^t) Indicates the score related to the training course passed (per training hour), which indicates the good, medium and poor

intervals of the overall craft effectiveness Index (OCE) and is indicated by numbers from 1 to 3.

And (α) indicates the Rial coefficient, a coefficient that is predicted and approved by the Islamic Consultative Assembly according to the cost of living index in the annual budget bill (Article 64 of the Civil Service Management Law).

(S_1^{total}) Indicates the score of the effectiveness table at the maintenance levels.

(S_2^{total}) Represents the score of the Employee Rights table.

(Y) Shows the number of years of a person's history, which is a maximum of 30 years, and higher records are considered the same 30 years.

(h) Indicates the number of training hours spent by the person, which is a maximum of 500 hours, and higher training hours are considered the same as 500 hours.

5. Research methodology

The present study is of a combined type (quantitative and qualitative) in that initially to create the dimensions of the model, qualitative indicators in maintenance and in calculations, quantitative methods are used. The data collection approach is interview and field. Since it is used in most industries and also in different industries, the wage rate is different in different levels of maintenance, for scoring to the model tables, we must first select the desired industry, then collect data related to wage rates, in form of person/hours at different levels of maintenance. Then we have to categorize and average the data based on the level of maintenance (5 levels). For each level of maintenance, obtain a maximum, average and minimum rate in form of person/hours and divide by the Rial coefficient. Then, with the help of experts, we can divide the scores in the tables based on the importance of the indicators. It should be noted that since the model presented in this research is an output-oriented model, the weight of points in the table of effectiveness is higher at the maintenance levels and the table of employee rights has a small weight in the division of points.

5.1. Effectiveness at maintenance levels table

Table 1 consists of two parts, the first part (columns) is related to the five levels of maintenance, including five columns, and the second part (rows) consists of indicators of craft effectiveness. Each of these indicators with different values are classified into three categories: good, medium and weak according to experts.

Table 1. Effectiveness at maintenance levels table

OCE indicators		Maintenance levels				
		Level1	level2	level3	level4	level5
CU (Craft Utilization)	Good(70% to 100%)	S_{11}^{cu}	S_{12}^{cu}	S_{13}^{cu}	S_{14}^{cu}	S_{15}^{cu}
	Medium(between 50% to 70%)	S_{21}^{cu}	S_{22}^{cu}	S_{23}^{cu}	S_{24}^{cu}	S_{25}^{cu}
	Weak(less than 50%)	S_{31}^{cu}	S_{32}^{cu}	S_{33}^{cu}	S_{34}^{cu}	S_{35}^{cu}
CP (Craft Performance)	Good(more than 90%)	S_{11}^{cp}	S_{12}^{cp}	S_{13}^{cp}	S_{14}^{cp}	S_{15}^{cp}
	Medium(between 60% to 90%)	S_{21}^{cp}	S_{22}^{cp}	S_{23}^{cp}	S_{24}^{cp}	S_{25}^{cp}
	Weak(less than 60%)	S_{31}^{cp}	S_{32}^{cp}	S_{33}^{cp}	S_{34}^{cp}	S_{35}^{cp}
CSQ (Craft Service Quality)	Good(90% to 100%)	S_{11}^{csq}	S_{12}^{csq}	S_{13}^{csq}	S_{14}^{csq}	S_{15}^{csq}
	Medium (between 70% to 90%)	S_{21}^{csq}	S_{22}^{csq}	S_{23}^{csq}	S_{24}^{csq}	S_{25}^{csq}
	Weak(less than 70%)	S_{31}^{csq}	S_{32}^{csq}	S_{33}^{csq}	S_{34}^{csq}	S_{35}^{csq}

The method of calculating scores from the effectiveness table at the maintenance levels is as follows:

$$S_1^{total} = S_{aj}^{cu} + S_{bj}^{cp} + S_{cj}^{csq} \quad (1)$$

5.2. Employee Salary Table

If the level of the desired equipment is among the levels 3, 4 and 5, this table will be effective in the final number of rent. This table consists of 3 rows and 2 columns, that columns including experience and training course. Rows include three levels of good (60% or more), medium (between 30% and 60%) and poor (less than 30%) for the OCE index. The number extracted from the Employee Salary Table, depending on one of the OCE levels, is subject to experience points per year of experience and training course per hour of training.

Table 2. Employee Salary Table

For Maintenance levels(3,4,5)	score related to experience(per year of experience)		score related to the training course passed (per training hour)	
	OCE (Overall Craft Effectiveness)	Good (more than 60%)	S_1^{exp}	S_1^t
	Medium (between 30% to 60%)	S_2^{exp}	S_2^t	
	Weak (less than 30%)	S_3^{exp}	S_3^t	

The method of calculating points in the employee salary table is as follows:

$$S_2^{total} = \begin{cases} (S_i^{exp} \times y) + (S_i^t \times h) & \text{if } j=3,4,5 \\ 0 & \text{Otherwise} \end{cases} \quad (2)$$

Finally, using Equation (1) and Equation (2), the final number of wages in form of person/hours is calculated from the following relation:

$$(S_1^{total} + S_2^{total}) \times \alpha \quad (3)$$

6. Research Findings

In order to ensure the validity and reliability of the model and its simple understanding in this research, we have studied the car industry. For this purpose, we collected more than 600 data related to wage rate from different car brands at different levels of maintenance using reputable agencies throughout the country. We first categorized the rental rate data into five levels of maintenance and then averaged a maximum, average, and minimum rates for each level. After converting the rates by dividing by the Rial coefficient, we scored the tables by commenting and consulting with experts in the field.

By applying the model in different repair centers as well as in different brands and evaluating the model in different modes of

maintenance levels, we compared and evaluated the obtained outputs with most of the wage rates in the car industry. The results show that the output of the model is very fair and in accordance with the wage rates in the area and the wage rate framework is based on justice and equality. Also, the model has been reviewed and evaluated by a number of professors and experts in the fields of payroll, maintenance, and the opinion of the majority has confirmed the accuracy of the method and model used in this research.

Example: Suppose a person with 25 years of experience and 400 hours of training in car repair is repairing a car with a maintenance level of 3 for a particular organization.

According to the calculations made by the maintenance expert of the organization, CP=0.9, CU=0.9 and CSQ=0.6 has been calculated, the amount of rent in form of person/hours is calculated as Table 3.

Table 3. Effectiveness at maintenance levels scored table

OCE indicators		Maintenance levels				
		Level1	level2	level3	level4	level5
CU (Craft Utilization)	Good(70% to 100%)	75	100	110	130	155
	Medium(between 50% to 70%)	55	65	75	85	115
	Weak(less than 50%)	40	50	60	70	80
CP (Craft Performance)	Good(more than 90%)	85	110	120	140	165
	Medium(between 60% to 90%)	65	75	85	95	125
	Weak(less than 60%)	50	60	70	80	90
CSQ (Craft Service Quality)	Good(90% to 100%)	95	120	130	150	175
	Medium (between 70% to 90%)	75	85	95	105	135
	Weak(less than 70%)	60	70	80	90	100

According to Equation (1) we have:

$$S_1^{total} = S_{aj}^{cu} + S_{bj}^{cp} + S_{cj}^{csq}$$

$$\Rightarrow 310 = 110 + 120 + 80$$

Since the desired net level is 3, we use the employee salary table in the calculations:

Table 4. Employee Salary scored Table

For Maintenance levels(3,4,5)		score related to experience(per year of experience)	score related to the training course passed (per training hour)
OCE (Overall Craft Effectiveness)	Good (more than 60%)	1	0.05
	Medium (between 30% to 60%)	0.5	0.01
	Weak (less than 70%)	0	0

According to Equation (2) we have:

$$OCE = CU \times CP \times CSQ$$

$$\Rightarrow 0.486 = 0.9 \times 0.9 \times 0.6$$

$$S_2^{total} = (S_i^{exp} \times y) + (S_i^t \times h)$$

$$\Rightarrow 16.5 = (400 \times 0.01) + (25 \times 0.5)$$

Finally, According to Equation (3) we have final rate of wage in form of person/hour which is equal to:
 $(S_1^{total} + S_2^{total}) \times a = 310 + 16.5 \times 1797 = 586721$ Rial

7. Conclusion

As mentioned, the lack of a method and model that can be cited to determine wages in maintenance activities in the industry, has not left this sector without problems. And has caused problems such as the lack of a general framework for determining wage rates in bargaining situations, non-observance of justice and equality in the payment of wages, loss of motivation of the payee, separation of skilled workers from the organization and loss of legal rights.

In this research, in the presented output-oriented model, an attempt has been made to affect the amount of wages received by a person to the maximum of factors involved, such as the rate of craft utilization, craft performance, craft service quality, overall craft effectiveness, failure levels, experience and the amount of training courses passed. This model has advantages and features that include:

Degree of innovation: All elements of the effectiveness level table at the net levels and the employee salary table, including how indicators and factors are placed, how points are calculated, strategies, etc., are new and emerging from a scientific and practical point of view.

High operating accuracy: By including overall craft effectiveness such as craft utilization, craft performance, craft service quality, all labor factors such as time, quality, etc. that are effective in performing maintenance are considered in calculating the scores.

Output-oriented: The focus of this model is based on the result of the work. With a little care, we realize that the role of experience scores and training courses is in the faint model and the principle of scoring and calculations is based on output data (such as overall craft effectiveness, craft utilization, craft performance, craft service quality).

Attractiveness for employees: A limited number of job roles have the ability to instill a sense of trap in employees, especially if there are no higher-paying job opportunities and better benefits for that job in the organization. As employees feel that they have settled into a job, their motivation to improve and learn more skills decreases. Using payroll programs based on their skills and work output ensures that employees have the incentive to challenge themselves and remain fascinated by the job. Simple and understandable: One of the main advantages of the model is the simplicity and lack of complexity in how to use the indicators and calculate the scores, which itself makes it easy to understand in different classes of employees.

Retaining employees in the organization: The hiring process can be very costly for organizations, just as training new employees will be costly. Skills-based payouts can have a direct impact on retaining external forces. Also, the overall cost of paying more to employees due to skills development will often be much lower than the cost of hiring new employees.

Has a strong legal dimension: By including the annual Rial coefficient in the final calculation of wages, as well as the use of common data and the custom of wage prices in the community to calculate the points in the tables, the existing model has valid legal dimensions.

Establish a general framework for determining wage rates when the final wage rate depends on the bargaining power of the payer. According to the scoring method, the model tables presented in this research can be used in most industries in order to estimate and create a framework for determining wages.

References

- [1] A group of authors, (1397). What commanders should know from the net, first edition, Mehr Armed Forces General Staff.
- [2] Marquez, A. C. (2014), Scientific and Practical Reference of Maintenance Management, Translators: S. Ramezani and M. Sedghi, Commercial Publishing Company, Springer Publications.
- [3] Alvarez, R. & Fuentes, R. (2018). Minimum Wage and Productivity: Evidence from Chilean Manufacturing Plants. *Economic Development and Cultural Change*, 67(1), 193-224.
- [4] Baldwin, M.L., & Choe C. (2014). Re-examining the models used to estimate disability-related wage discrimination. *Applied Economics*, 46(12), 1393-408.
- [5] Baumgarten, D., Ingo, G., & Holger, G. (2013). Offshoring, tasks, and the skill-wage pattern. *European Economic Review* 61 132-152.
- [6] Brown, W., & Nolan, P. (1988). Wages and labour productivity: the contribution of industrial relations research to the understanding of pay determination. *British Journal of Industrial Relations*, 26(3), 339-61.
- [7] Cobb, J. A., & Ken-Hou, L. (2017). Growing apart: The changing firm-size wage premium and its inequality consequences. *Organization Science*, 3, 429-446.
- [8] Dench, D., & Grossman, M. (2018). Health and the Wage: Cause, Effect, Both, or Neither? New Evidence on an Old Question. National Bureau of Economic Research.
- [9] Jirjahn, U. (2016). Performance Pay and Productivity: A Note on the Moderating Role of a High-wage Policy. *Managerial and Decision Economics*. 37(7), 507-11.
- [10] Klein, M. W., Moser, Ch., & Dieter M. U. (2010). The contribution of trade to wage inequality: the role of skill, gender, and nationality. No. w15985. National Bureau of Economic Research,
- [11] Krueger, A.B., & Summers, L.H. (1988). Efficiency wages and the inter-industry wage structure. *Econometrica: Journal of the Econometric Society*, 259-93.
- [12] Lavetti, K., & Schmutte, I. M. (2016). Estimating compensating wage differentials with endogenous job mobility.
- [13] Li, Y., Fraher, E.P., Mark, B.A., & Jones, C.B. (2018). Primary Care Nurse Practitioner Wage Differences by Employment Setting. *Nursing outlook*. 66(6), 528-38.
- [14] Mehr Ara, M., (2000), Study of the share of economic factors in wage fluctuations, productivity and unemployment, *Journal of Planning and Budget*, 58 and 59.
- [15] Doeringer, P., & Piore, M. J. (1971). *Internal labor markets and manpower analysis*. Lexington, MA: Heath.
- [16] Preston, A. (2018). *The structure and determinants of wage relativities: evidence from Australia*, Routledge.
- [17] Purse, K. (2004). Work-related fatality risks and neoclassical compensating wage differentials. *Cambridge Journal of Economics*, 28(4), 597-617.
- [18] Reeves, A., McKee, M., Mackenbach, J., Whitehead, M., Stuckler, D. (2017). Introduction of a national minimum wage reduced depressive symptoms in low-wage workers: a quasi-natural experiment in the UK. *Health economics*, 26(5), 639-55.
- [19] Shapiro, C., Stiglitz, J.E. (1984). Equilibrium unemployment as a worker discipline device. *The American Economic Review*. 74(3):433-44.
- [20] Slonimczyk, F., & Skott, P. (2012). Employment and distribution effects of the minimum wage. *Journal of Economic Behavior & Organization*, 84(1), 245-64.
- [21] Tafazoli, F., (1996), *History of Economic Beliefs*, Second Edition, Ney Publishing.
- [22] Wire-Man, T. (2006). *Modeling Best Practices in Maintenance Management*.
- [23] The Maintenance Excellence Institute
- [24] Thurow, L. (1976). *Generating Inequality*, New York: Basic Books.