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TOTAL QUALITY MANAGEMENT AND ITS IMPACT ON DEVELOPING THE SKILLS OF WORKERS IN ENVIRONMENTAL MANAGEMENT, AN APPLIED STUDY ON WORKERS IN ENVIRONMENTAL LABORATORIES AND OFFICES

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Abstract:

Total quality management is one aspect of quality management that pays attention to the needs of employees. In this research, the effect of this type of management on the development of environmental workers' skills was investigated. The statistical population includes all the environmentalists of the country and sampling was done in an accessible and targeted way, and finally 100 people agreed to cooperate with the researcher. Pearson coefficient test was used. Two ten-question questionnaires measured the variables of total quality management and employee skill development. These questionnaires were prepared based on the inspiration of the basic article and were approved by several prominent scholars and finally, Cronbach's alpha coefficient test confirmed its reliability. The results of the statistical analysis at the confidence level above 99% proved that total quality management has a positive and significant effect on the development of the skills of environmental workers. This means that if the environmental organization pays more attention to the rights and benefits of environmentalists and tries to satisfy the employees, it can witness the improvement of their motivation to acquire more skills, which will ultimately help to improve the performance of the organization.

Keywords: Total quality management, Employee skills, Skill development, Environmental organization.

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1.INTRODUCTION:

Every organization is concerned with having skilled workforce. Naturally, skilled workforce demands higher salaries and benefits, and yet sometimes organizations strive to attract skilled workers despite not offering suitable positions. Therefore, developing the skills of current employees and retaining experienced staff can be one of the management strategies of any organization. A successful manager seeks to maximize the use of resources. Management that makes decisions for all major and minor company issues should consider the satisfaction of the other party (Qadari, 2015). Customer satisfaction is considered the primary pillar of marketing products/services. However, the issue does not end here, as customers are satisfied with quality products/services and the manager does not directly play a role in providing them. Therefore, more attention should be paid to employee satisfaction (Kasmati, 2005).

Shiri et al. (2018) studied the impact of comprehensive quality management on the performance of banks in the city of Ilam and demonstrated the relationship between comprehensive quality management and bank performance. Esmaeili Ranjbar (2022) investigated the effect of pervasive quality management on organizational function development and confirmed this effect. Abbas (2020) examined the impact of management quality on the development of human resources in government organizations and concluded that with proper management, skilled human resources can be trained at minimal cost. Adawiyah et al. (2020) stated that with proper utilization of resources and balance in management objectives, skilled technical workforce can be easily trained and used to achieve company goals.

However, so far no research has been conducted regarding the development of skills for environmental personnel, and in this study, it is addressed for the first time, which is important because environmental protection is recognized as a public responsibility in all countries and has been emphasized in constitutional laws. Even international legal sources have called for countries to be obligated to this matter, which has received less attention. Currently, environmental organizations suffer from a lack of skilled workforce and employee dissatisfaction, which prevents skilled workers from having a desire to remain in the organization.

Therefore, the researcher aimed to study the effect of pervasive quality management on the development of skills for employees in these organizations. The statistical population included all environmental personnel in the country who were willing to cooperate with the researcher. Therefore, the sampling was accessible and purposeful, and after obtaining information from the Environmental Organization, they were requested to cooperate, resulting in a total of 100 individuals willing to participate in the study.

2-LITERATURE REVIEW

In 1924, the study of statistical quality control began, focusing on "pervasive quality management." Shewhart is considered the father of pervasive quality management and statistical control. In 1950, Dr. Deming introduced the method of statistical quality control to engineers and senior executives of large Japanese organizations (Aksamentov et al., 2021).In the 1960, the first quality control circles were established to improve quality. In the 1980, the concept of pervasive quality management was published. Finally, in the 1990s, ISO 9000and SQ 9000were recognized as global models and standards for quality systems (Collivignarelli et al., 2020). In the 1950 and 1960, Japanese products were known for their low quality and low prices. However, in the 1970 and beyond, Japanese products became famous for their high quality and reasonable prices. As a result, Japan's export volume increased, leading to trade deficits for some countries in relation to Japan (Hong et al., 2021).

The result of the quality revolution in Japan was that Deming's teachings taught the Japanese that these pervasive and comprehensive activities should be carried out at all levels of the organization and departments. Based on Deming's teachings and considering their social, cultural, and national characteristics, the Japanese invented methods of widespread participation and were successful in implementing them in industrial production. This participation has been demonstrated in various management sectors for manufacturing industries under the "Deming Cycle" model. This cycle is divided into four stages: plan, do, check, and act (PDCA) and (PDSA) (Mojibi Miklaei et al., 2012).

Each of these stages includes the following activities (Li et al., 2020):

1. Plan: Collect data to identify and define problems or issues that need improvement, and identify methods to achieve it.
2. Do: Implement the plan using preliminary tests, group tests, etc.
3. Check: Analyze the results to see if there is good alignment between the main objectives and the results obtained, and make judgments if necessary.

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4. Act: Based on the results of the control stage, implement the plan on a larger scale or with further activities from the beginning of the plan.

The Deming cycle can be described as a spiral that spins and goes upward, resembling a fast whirlwind. The upward movement signifies improvement in any organization. Each step of progress shows that the Japanese have been successful in institutionalizing the Deming cycle according to their national tastes and cultural and social structures. In the Japanese pervasive quality management system, they believe that quality precedes profit, and the path to profit goes through quality.

The quality of products and services must match the customers' perspective. Planning and production should be directed towards meeting customer needs. Systematic activities are carried out to identify customer needs, and the results of these activities are transferred to the production planning department. Deming's American perspective gave new life to Japan's economy. Americans quickly realized that they were lagging behind in terms of quality, so they sent their experts to Japan and invited Japanese consultants to the US, which indicated that in the 1980 , America declared quality as its national slogan.

The Americans were able to update the American version of pervasive quality management using the new achievements of Japanese pervasive quality management and to some extent bridge the gap in quality compared to Japan (Nikolaenko & Bal-Prylypko, 2020).

Improving quality begins with selecting a management philosophy. In the endless journey of quality improvement, consciously choosing a management philosophy is the starting point for organizational efforts. Senior managers of the organization should select a philosophy from among the common management philosophies to guide their organization's efforts. Total Quality Management, with its philosophical elements and simple and understandable principles, may be the only option for managers. The three important pillars of Total Quality Management philosophy, namely customer focus, process orientation, and continuous improvement, can be understood and implemented at both the top and foundation of an organization (Elhiyari et al., 2016).

Senior managers of the organization determine the key processes based on the analysis of the organizational philosophy and mission, and in line with achieving the organization's mission and meeting the needs and expectations of customers, they mobilize and prepare all members of the organization, the "process owners," for improving process performance. Employees also align with the organization's foundation by improving the performance of key processes, alongside senior managers. The combination of the "top-down" and "bottom-up" movements leads to fundamental and directional transformation in the organization. The continuity of these two movements and their support for each other will institutionalize Total Quality Management. Choosing and implementing such a philosophy gives meaning to improvement methods and tools, including statistical methods and tools (Pujiati et al., 2021).

Those who have tried to use methods and tools for "problem-solving" or "quality improvement" without introducing a management philosophy have never been able to bring about lasting changes. Organizations have witnessed decades of experience in the application of various methods and tools that have not had strategic impacts on their destiny. Organizations need an appropriate management philosophy above all else.

"Quality" usually evokes an expectation of excellence and superiority in the production of goods or the provision of services, encompassing various dimensions such as conformity, reliability, sustainability, delight, and aesthetics. Therefore, it can be said that it exceeds our imagination (Sharma et al., 2020).

"Quality control" is also known as the use of techniques and guidelines to achieve quality improvement in the production of goods or the provision of services. It involves the simple process of identifying, analyzing, and addressing product or service defects and deficiencies (Wulandari et al., 2023).

However, this was not enough to meet the strong desire of individuals for products and services that bring higher quality. Therefore, the concept of "Total Quality Management" emerged. The following discussion aims to briefly and beneficially examine the characteristics, assumptions, philosophical elements, goals, roles, structural elements, obstacles, and features of Total Quality Management. These characteristics are primarily derived from the Business Week magazine and are based on conferences held in the United States and Europe by the Conference Board under the titles of "The Quality Imperative" and "Total Quality" (Wulandari et al., 2023).

The characteristics of Total Quality Management are as follows:

1. Customer focus: Creating an organizational culture where employees at all levels, including top executives, exhibit appropriate behavior towards meeting customer needs and expectations.
2. Practical use of the concept of internal customers: Emphasizing the idea that internal workflow and interdependencies require members of the organization to treat each other as valuable customers across organizational lines and within units.

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3. Emphasis on measurement through statistical process control and statistical quality control techniques: Statistical quality control is a method of measuring and analyzing deviations in the produced products, while statistical process control is a method of analyzing and controlling deviations in production processes.
4. Competitive benchmarking: Continuous grading of products and company procedures against the best companies in the world, including other organizations in different industries (Panahande and Sofi, 2005).
These characteristics highlight the importance of customer satisfaction, internal collaboration, measurement and analysis, and continuous improvement to achieve total quality management.
Continuous search for causes and elimination of defects: The Japanese refer to this phenomenon as "kaizen." It involves continuously seeking the causes and origins of defects with the aim of eliminating them.
Participatory management: This element involves delegation of authority, supportive leadership style, consultation, and participation.
Emphasis on teams and teamwork: It encompasses self-directed teams and multi-level, multi-functional work groups.
Significant emphasis on continuous training: This refers to learning new methods and important ways of doing things and adding new skills. In many organizations, this is reinforced through changes in the reward system, such as introducing skill-based pay or pay based on new knowledge.
Continuous support from senior management: This requires having a long-term vision for the organization and a long-term commitment to providing supportive leadership.
The assumptions of total quality management are as follows:
1. Continuous improvement of processes that has no end.
2. The customer is the ultimate determinant of quality (Khalifeh, 2018).
The philosophical pillars of total quality management are as follows:
Process orientation: The organization is viewed as a process in which there is input, process, and output, and all individuals are involved horizontally in different stages of the process. There is no vertical and hierarchical division. If there is an output process, everyone is involved in it.

Customer focus: All individuals working on the process and those who obtain the result of the process are essentially collaborators and partners, and they must work together. If such an attitude prevails in the organization, a special position is created for the organization's customers. The customer is respected and their opinions are taken into account in such organizations. The health of the workflow and the health of processes are dependent on the customer and their feedback.
Continuous and widespread improvement of processes and systems: By focusing on improving the performance of processes and systems and empowering employees, efforts are made to continuously improve processes and systems to meet customer needs and expectations.
Some differences between total quality management and traditional management are as follows:
Traditional management relies on previous proven methods, while total quality management emphasizes creativity and innovation.
Traditional management seeks control over employees, while the total quality management system is based on employee training and empowerment.
Traditional management seeks short-term problem-solving, while total quality management seeks long-term solutions

3-RESEARCH METHOD:

The research method used in this study is quantitative-descriptive with a correlational approach. Variables were measured quantitatively using a questionnaire, and the quantitative data were analyzed. The Pearson correlation coefficient test was used to analyze the data and test the hypotheses. This research has a practical purpose and follows a descriptive survey approach. The researcher aims to achieve a practical goal and develop applied knowledge in the field of the subject. The data collection method is non-experimental and field-based, and the variables are not controlled. Therefore, it can be stated that the research method used is quantitative-descriptive with a correlational approach.
The population includes all environmental managers in the country. The researcher obtained contact information for all environmental managers from the General Directorate of Human Resources of the Environmental Organization, with a cooperation letter from the university. It was ensured that this information would not be shared with any other source.
A ten-item questionnaire was used to measure the status of total quality management. The questionnaire has been validated and approved by three prominent professors in the relevant field at the university. The Cronbach's alpha coefficient was calculated for further reliability assessment.
Another ten-item questionnaire was used to measure the employees' level of skills. Similar to the previous questionnaire, it has been validated and its reliability was calculated.

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This situation is presented in Table 1.

Table 1: General Specifications of the Questionnaire Used in the Study

Variable	Number of Items	Validity	Reliability (Cronbach's Alpha):	Source
Quality Management Questionnaire	10	Verified by experts	0.98	Velandari et al., 2023
Employee Skills Development Questionnaire	10	Verified by experts	0.76	Velandari et al., 2023

The Pearson correlation coefficient test was used to measure the relationship between these variables.

4.FINDINGS

In this section, the main operational findings of the research are presented. According to the information provided in the tables, the sample members are homogeneously distributed, and it can be ensured that they are not scattered. This information was asked from the sample members on the questionnaire cover sheet before filling out the items.

The distribution of the sample members by gender is shown in Table 2.

Table 2: Sample Description by Gender

Gender	Frequency	Relative Frequency (%)	Cumulative Relative Frequency (%)
Female	0	0	0
Male	100	100	100
total	100	100	

It is natural that the rangers are selected only from men.
The information on the age distribution of the sample members is shown in Table 3

Table 3: Sample Description by Age

Age Group	Frequency	Relative Frequency (%)	Cumulative Relative Frequency (%)
30-20	26	26	26
40-31	49	49	75
50-41	23	23	98
More than 50	2	2	100
total	100	100	

The age group between 40-31 years with the presence of %49, the age group between 30-20 with the presence of %23, the age group between 50-41 years with the presence of %23 and finally people over 50 years of age were present in the sample only %2.
The work experience information of the sample members is shown in Table 4.

Table 4: Sample Description by Work Experience

Work Experience	Frequency	Relative Frequency (%)	Cumulative Relative Frequency (%)
Less than 5 years	3.5	3.5	3.5
6 to 10 years	89	89	92.5
11 to 15 years	7.5	7.5	100
Total	100	100	

Most of the community members have work experience between 6 and 15 years (%89). Work experience of less than 5 years constitutes %3.5 of the sample members and experiences between 11 to 15 years constitute %7.5 of the sample members.
The information about the education status of the sample members is shown in Table 4-5.

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Table 5: Sample Description by Education Level

Education Level	Frequency	Relative Frequency (%)	Cumulative Relative Frequency (%)
Bachelor's	**80**	**80**	**80**
Master's	**20**	**20**	**100**
Total	**100**	**100**	

Bachelor's degree graduates make up %80, and master's degree make up %20 of the sample members.
Each variable was measured with several items. The scores of each variable, the mean and standard deviation of each variable are calculated and shown in Table 6.

Table 6: Descriptive statistics of research variables (score between 0 and 5)

Variable	Mean	Standard Deviation
Quality Management	2.58	0.75
Employee Skills Development	2.71	0.77

The average scores obtained for each variable show that the answers are around the average scores and according to the standard deviation, it is clear that there is not much dispersion between the answers. Low standard deviation indicates low dispersion.
The Kolmerorov-Smironov test was also used to measure normality. In this regard, the determined values all show that the distribution is normal. Table 7 shows the determination of this state and presented the results.

Table 7: Normality distribution of variables according to the Klermogorov-Smirnov test

Variable	**Quality Management**	**Employee Skills Development**
Test result	0.64	0.387

The variables were first analyzed in "Excel" and then in "SPSS" software, and the Pearson coefficient test was performed.
This test was used to investigate the relationship between variables, which is mentioned in Table **8** of its report. The meaning of the relationship in the table below is the relationship between two variables .

Table 8: Pearson's coefficient test report (the top row is the Pearson coefficient, the bottom row is the significance level)

Variable	**Quality Management**	**Employee Skills Development**
Quality Management	0.968	0.938
	0.000	0.000
Employee Skills Development	***	0.944
	***	0.000

The significance level of 0.000 is the best level of confidence and above 99 percent, and a positive Pearson's coefficient value means a positive effect. Therefore, the positive and significant relationship between research variables can be proven.

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5- SUMMARY AND CONCLUSION

The results indicate that comprehensive quality management has an effective impact on the development of employee skills in the environmental organization. This means that by focusing on the job satisfaction of environmental workers, they can be encouraged to acquire more skills and remain in the organization. Previous research by Shiri et al. (2018) in a similar study conducted in bank branches in Ilam found that meeting the financial needs and benefits of employees enhances their computer skills. Esmaeili Ranjbar and Esmaeili Ranjbar (2022) confirmed that comprehensive quality management can improve organizational performance through the enhancement of employee skills. Abbas (2020) considered this effect to be weak in government organizations while emphasizing the relationship between comprehensive quality management and employee skills. Adaoye et al. (2020) also identified employee skills as a mediating variable for enhancing organizational performance. Therefore, it is recommended for the environmental organization to adopt comprehensive quality management practices to motivate environmental workers to acquire more skills, ultimately contributing to the improvement of organizational performance. It is suggested that the environmental organization take the necessary steps to implement this recommendation.

REFERENCES

1. Abbas, J. (2020). Impact of total quality management on corporate sustainability through the mediating effect of knowledge management. Journal of Cleaner Production, 244, 118806.
2. Adawiyah, W. R., Purnomo, R., Pramuka, B. A., & Sholikhah, Z. (2020). Integrating workplace spirituality, total quality management, and job satisfaction. International Journal of Business and Society, 21(2), 749-766.
3. Aksamentov, I., Roemer, C., Hodcroft, E. B., & Neher, R. A. (2021). Nextclade: clade assignment, mutation calling and quality control for viral genomes. Journal of open source software, 6(67), 3773.
4. Elhiyari, Abbas; Rahnamaye Roodposhti, Fereidoon; Sadr, Parvin (2016) Comparative Study of Comprehensive Quality Management and Six Sigma and Its Relationship with Organizational Performance, International Conference on Innovative Research in Management, Economics, and Accounting.
5. Esmaeili Ranjbar, Shila; Esmaeili Ranjbar, Leila (2022) Investigating the Impact of Comprehensive Quality Management on Organizational Development Functions, International Conference on Management and Humanities Research in Iran.
6. Ghaderi, Ali; Ghaderi, Mostafa (2015) The Relationship between Comprehensive Quality Management and Continuous Improvement of International Project Management, International Conference on Innovative Research in Management and Industrial Engineering.
7. Hong, P. V., Nguyen, N. T., Huy, D. T. N., Thuy, N. T., & Huong, L. T. T. (2021). Evaluating several models of quality management and impacts on lychee price applying for Vietnam agriculture products value chain sustainable development.
8. Kasmati, Mohammad Reza (2005) The Relationship between Comprehensive Quality Management and Organizational Performance, National Conference on Performance Management.
9. Khalifeh, Ali (2018) The Effect of Comprehensive Quality Management on Productivity in the Petrochemical Industry (Case Study: Maroun Petrochemical Company), National Conference on Innovative and Creative Ideas in Management, Accounting, Legal and Social Studies.
10. Li, L., Li, Q., Huang, L., Wang, Q., Zhu, A., Xu, J., ... & Chan, A. (2020). Air quality changes during the COVID-19 lockdown over the Yangtze River Delta Region: An insight into the impact of human activity pattern changes on air pollution variation. Science of the Total Environment, 732, 139282.
11. Mojibi Miklaei, Touraj; Mahdizadeh Ashrafi, Ali; Emami Far, Mohsen (2012) Evaluation of the Readiness for Implementation of Comprehensive Quality Management System in Active Production Cooperatives in the Industrial Sector of Mazandaran Province, Researcher (Management).
12. Nikolaenko, M., & Bal-Prylypko, L. (2020). Development of an integrated food quality management system. Slovak Journal of Food Sciences, 14.
13. Panahande, Mohammad; Soffi, Mansour (2005) Preventive Approach to Pollution Prevention: Comprehensive Quality Management Environmental Approach, Environmental Science 31 (38) 59-66.

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
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ISSN: 2749-3628,

14. Pujiati, H., Sunarsi, D., Affandi, A., & Anggraeni, N. (2021). Effect of ISO 9001: 2015 Quality Management Implementation in Education on School Performance. The journal of contemporary issues in business and government, 27(1), 1848-1855.
15. Sharma, S., Zhang, M., Gao, J., Zhang, H., & Kota, S. H. (2020). Effect of restricted emissions during COVID-19 on air quality in India. Science of the total environment, 728, 138878.
16. Shiri, Ardeshir; Emamian, Yaser; Hemati, Khadijeh (2018) Investigating the Impact of Comprehensive Quality Management on the Performance of Ilam City Banks with the Mediating Role of Market Orientation, International Conference on Management, Entrepreneurship, and Economic Development.
17. Wulandari, M., Sriwahyuni, S., & Gunawan, D. (2023). QUALITY MANAGEMENT OF HEALTH SERVICES ON PATIENT SATISFACTION AT MONTELLA PRIVATE HOSPITAL WEST ACEH DISTRICT. MEDALION JOURNAL: Medical Research, Nursing, Health and Midwife Participation, 4(2),