

Investigate Factors Affecting Labor Productivity Improvement, School of Dentistry Tehran University of Medical Sciences

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ABSTRACT

In this study the factors influencing the improvement of labor productivity of College of Dentistry Tehran University of Medical Sciences is considered. This research is a descriptive survey and Achieve model of factors affecting the productivity having criteria including: 1) ability; 2) understand the role; 3) organizational support; 4) Motivation; 5) Performance Appraisals; 6) validity; 7) environment was used. In order to collect data, a researcher made questionnaire including 28 questions was used. For reliability, the questionnaire was distributed among 30 employees and using SPSS software the Cronbach's alpha coefficient of the questionnaire was calculated 86.7. Population included 201 employees and sample 127 people were obtained from Morgan Table based on a stratified random sampling method. In this study to describe the data, tables of frequency distribution, linear chart of averages, the core indicators such as mean, standard deviation and skewness and elongation have been used. Then for statistical analysis of the research hypotheses, appropriate inferential statistics tests including single-sample t test and one-way analysis of variance were used. The results show that the variables of ability, clarity of roles, organizational support, motivation and environment are significantly associated with increased productivity. But variable of evaluation and validation are not the factors affecting increased labor productivity.

KEYWORDS: Factors Affecting Productivity, Productivity, Manpower, School of Dentistry

1. INTRODUCTION

Man has long thought about efficient and productive capabilities, facilities and resources. In the present era it is more than ever considered. Productivity beyond measure, as a culture and attitude to work and life have been proposed and its improvement is the main source of economic development. Numerous factors are involved in the promotion and improvement of productivity and performance. But according to the majority of scholars, human resources is the most valuable and the most prominent factor in achieving the organization's goals. One of the manifestations of the success of a manager is correct and optimized use of material resources [equipment, capital, etc.] and human resources of itself organization. An increased rate of productivity and success depends on proper utilization of human and material resources during the job [1]. In the vision of scientific management, rational organization or "rational behavior of organization" are used interchangeably with the productivity and productivity, and management mainly consists of knowledge of increased productivity and optimal use of available resources to achieve goals and interests [2].

Perhaps can be said that using the word efficient in its modern sense has been since the beginning of the present century and has spread the early 50th century onward. Due to the special features of Human Sciences has not provided a comprehensive definition of productivity, which is accepted by all the experts. Perhaps due to the different views that exist in this regard. However, some believe, productivity for the first time were used in 1766 in an article by mathematician and economist Francois Quesnay Pro physiocracy school (state of nature). Quesnay with designing the economic table argues that every public authority is subject to increase productivity in agriculture [3].

Productivity is one of the factors that guarantees organizations survive in the present competitive world. The prevailing culture of productivity, resulting in more efficient use of all material and spiritual enterprise and ability, talents and capabilities of the organization to continually flourish and without adding new technology and manpower can be utilize facilitates, situations, strength and staffing capabilities available with reproductive vitality and creativity in order to achieve maximum benefit for the organization's purpose. Optimal productivity with restructuring, adding technology, develop agenda and issuing circulars cannot be made, but human is a center for any kind of individual, social and organizational productivity. So, planning in organizational productivity should be focused on human factors [4].

Productivity is also one of the most basic foundations of competition, and countries those that have not paid attention to this important matter are in trouble in relation to the world markets because lack of productivity makes the potential difference in the use of resources, and the countries have to fencing around its economy for balancing and remove these barriers in their economies will create a severe imbalance [3].

In terms of Productivity Agency for Europe, the productivity is the rate of effective use of each of the factors of production [human resources and labor can be regarded as one of the factors of production.] or is a kind of way of thinking based on continued growth. With this theme we have to believe that anything of tomorrow will be applicable better than what is currently, and is always trying to improve the present [5].

Productivity can be examined from various angles, it can be said that the productivity has various types including a total productivity which is an indicator to measure the productivity of the entire organization that takes all the outputs and inputs [3]. One of the unique characteristics of the total productivity management is its ability in providing wholesale and retail productivity indicators not only at the overall level of the organization but also at lower and operational levels of the organization. In fact, a total productivity management can be applied in any organization. The total productivity management philosophy encompassing not only involved the principles of management by objective but also the total quality management and reengineering, but relies on the most important and most fundamental purpose of the society, namely the improvement of the material and spiritual welfare of human beings continually. In other words, total productivity management dissuade organizations ignoring human systems along with the other systems [5].

Green Productivity is also another kind of productivity that as a goal has different effects on sustainable development, so that link the concepts of the environment by protecting and restoring natural resources in technical, strategic and proprietary affairs of productivity. Combine productivity with the protection of environment, led to the concept of inclusive Green Productivity [3]. Green productivity is a strategy for promotion of productivity and environmental performance in order to economic, social and all-encompassing development. Different perspectives have been proposed on a variety of factors affecting the productivity increase. Some of them are summarized in the following table and are discussed.

Table 1. different perspectives on the factors affecting the productivity increase

Row	Comment	Factors
1	Sumant	1. Capitalization. 2. capital-labor ratio. 3. Research and Development. 4. Level of take advantage of the capacity. 5. State rules. 6. Useful life of machinery and equipment. 7. Energy costs. 8. Labor composition. 9. Work ethic. 10. Clay workers about the impact of job loss. 11. Impact of labor unions and organizations 12. Management.
2	Propenko	<ul style="list-style-type: none"> • The inner sector 1. Software factors 2. Hardware factors • The outer sector 1. Government and infrastructure 2. Natural resources 3. Structural reforms [6].
3	Ross	<ol style="list-style-type: none"> 1. focuses on the productivity of result and system outcomes 2. integration of components or sub-systems of the organization
4	Kouplman	1. Characteristics of the environment. 2. Organizational Characteristics 3. Job characteristics 4. individual characteristics of employees
5	Desler	1. Individual behavior 2. Positively reinforced 3. Redesign and enrich job 4. Goal setting 5. Spirit 6. Power and leadership in the Organization 7. Groups 8. Intergroup relations 9. Organizational structure 10. Organizational communication and decision-making 11. Interpersonal Relationship of Assessment 12. Teaching and learning 13. organizational change and improvement
6	Dobrin	Dobrin says: the ability and incentive are the most important factors affecting employee productivity
7	Atkinson	Atkinson believes job performance is as a function of product of motivation and ability. performance = function (ability × motivation)

Addressing the factors affecting performance in organizations to improve the quality and proper functioning should be considered obvious and researchers and scholars interested in finding ever-clearer picture of how employees behavior and other characteristics of increase productivity in organizations. Managers to be effective in assessing and solving productivity issues need to determine the causes. Preliminary studies indicate that performance is a function of motivation and ability. Others have been expanded the think by adding individual's perception of his role or business knowledge and emphasis on organizational support. A number of experts have brought two other factors in the equation of productivity which are the feedback and reliability. So a performance considered as a function of factors affecting productivity (power, knowledge of support, motivation, feedback, reliability, environmental compatibility). At present, the role of human resources as the most original and most obvious factor has been more pronounced. Along with the development of organization the need for dedicated and efficient manpower has been more concreted. In this regard managers and leaders of organizations must be equipped with the tools of optimal use of their organization manpower.

To achieve productivity there are many processes that to express how the productivity is formed it is necessary to explain the concept of productivity. Since much discussion on the concept productivity has been proposed, the notion of productivity in terms of [1] is briefly shown.

Figure 1 shows almost all components of explaining the concept of productivity, but it should be noted that the proposed model about the productivity is not absolute, this model with respect to arguments about productivity in the past decades has been developed and what is today is referred to the formation of productivity may be discussed in the coming years as more complete, dynamic and modern or other topics replace the current topics, [4].

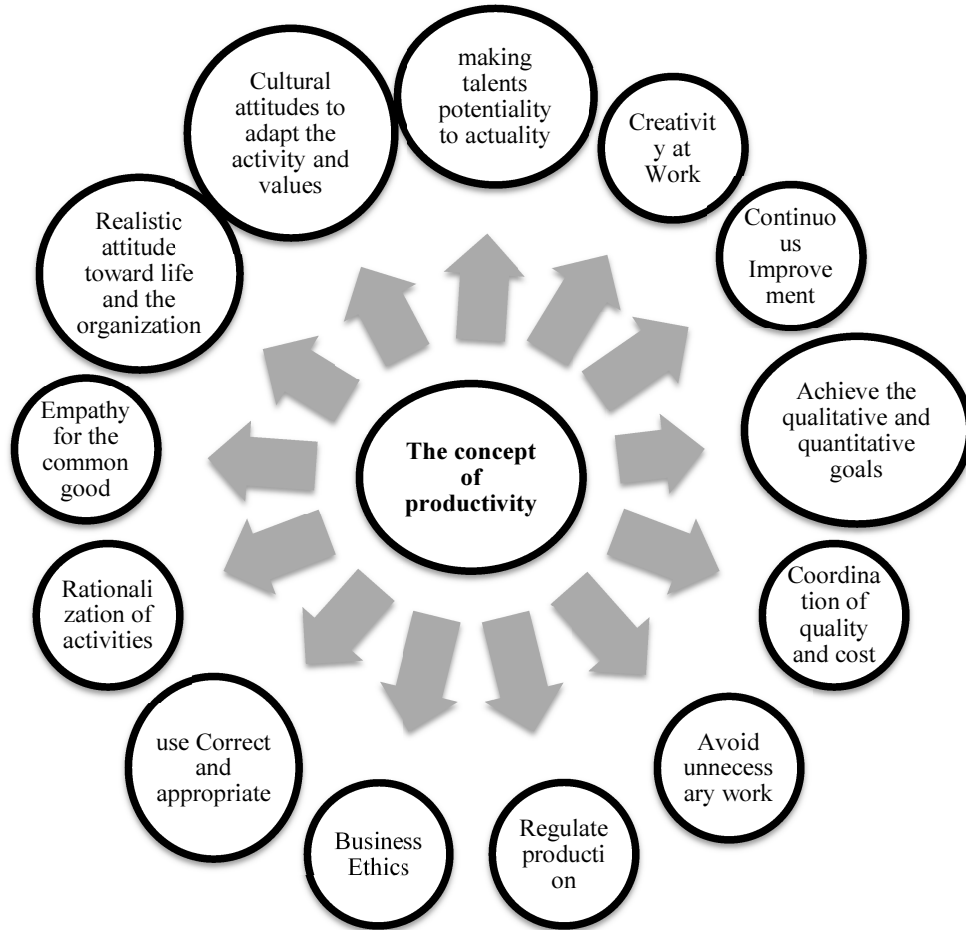


Figure 1. Components of explaining the concept of productivity

Productivity improvement has been the case since the beginning of human history, and in all political and economic systems have been proposed. But research on how to increase productivity on a regular basis and in the framework of science-analysis has been seriously considered by scholars nearly 230 years ago [3]. Although the adjective "productivity" was first used in 1612, but perhaps solemnly first word "productivity" appeared in an article by someone named "Quesnay" in 1766 AD [2]. Then in 1776, Adam Smith, the father of modern economics, in the sense of the term in the concept of economic in one of his studies said: "there is a workforce that adds on the value of something that is important [7].

If we want to accurately track trends in productivity, we must go back to the years 1976 to 2003, during which are available precise data about productivity, including productivity of factors of production and productivity of labor and capital in Iran. Results show that in 1976, total factor productivity growth was positive and during years 1977- 1981 declined sharply. The most important reasons for the decline in productivity growth between 1956 and 1957 were revolution and strikes and the 1980 war. [8]

In 1994, First Iranian National Congress of the productivity on productivity was held, its main goal was to recognize the status quo in terms of productivity in all aspects and development of practical methods to enhance the coming productivity. In 1993 for fostering for increased productivity in the country, "National Productivity Organization of Iran" was established as one of the subordinate units "Mines and Industries Development and Renovation Organization of Iran" [9]

Although Studies on productivity, we see that the results of previous research indicates that the productivity has always been the case that considered by organizations, agencies and institutions and the research community that is true in regard to the present research subject and other researchers have also examined the factors influencing productivity in different societies and some of the them are mentioned as follow. Mohammadi [10] examined the feasibility of management establishment of productivity in the Education of Persian Gulf and the results of this study suggest that the relationship between the ability, understanding of the role, organizational support, performance evaluation, reliability and environment and increasing productivity are significant and positive. Also, it has not seen significant relationship between the motivation and productivity. Shirzad [11] has been examined the factors affecting staff productivity increases General Department of Broadcasting of Political Department of the Islamic Republic of Iran Broadcasting organization. In this study, to investigate the research

topic, 7 variables of ability, job knowledge, organizational support, motivation, reliability, assessment and environment have been used based on the ACHIEVE model. Spearman correlation test results show that the variables of ability, job knowledge, organizational support, motivation, reliability, assessment are correlated to promote productivity, but there is not a significant relationship between variable of environment and improving productivity. Friedman ANOVA test results have shown that reliability is the most important variable among the variables to increasing the productivity by staff of General Department news broadcasts.

Yaghoubi and colleagues [12] in an article examined factors influencing employee performance improvement based on ACHIEVE model from perspective of managers [senior administrative and nursing] in Isfahan teaching hospitals. The results show that the 7 factors of Achieve model have been effective in improving performance. Malekshahi [13], in an article examined the factors affecting labor productivity from perspectives of employee and department managers of Lorestan University of Medical Sciences. The results of the study about the importance level of factors affecting productivity showed job knowledge (89.4%), power (86.4%), motivation (85.6%), compliance with environmental factors [84.1%], organizational support (81.3%), reliability (79.3%), feedback on performance (72.4%), respectively, won the first place to seventh. No significant association was found between these factors and demographic variables. As a result, labor productivity is a function of seven factors. Ziavari [14] has been examined the relationship between Achieve model and employees' performance of public management training center. This study identifies affected factors of evaluation and resolve productivity issues and with the goal, examined the relationship between productivity variables and employees' performance in the Public Administration Training Centre, and the results of the survey show there is a significant positive relationship between recognition support, motivation, evaluation, validation and environment and productivity and validation factor more than other components are relatively modest correlation with the performance. Farhadi [15] examined the factors affecting the productivity of human resources employed in education Khodabandeh and Garmab from perspective of staff and experts based on Achieve model. The results show that the seven components of Achio model are effective in increased productivity.

With regard to what was said one of the fundamental questions that must be answered by managers is this how labor productivity can be increased. In other words, what factors are effective in improving labor productivity? According to what was said, this research aims to study the factor effective on improving labor productivity in School of Dentistry of Tehran University of Medical Sciences, and in this regard many hypotheses have been designed and with test of each them, the effect of different factors on productivity Achieve model have been specified, which is given below.

Assumptions

1. Ability of employees is one of the factors to promote productivity.
2. The understanding of the employee's job [role clarity] is one of the factors to promote productivity.
3. Organizational support is one of the factors to promote productivity.
4. Employee motivation is one of the factors to promote productivity.
5. Employee assessment is one of the factors to promote productivity.
6. Reputation of managers' decision making is one of the factors to promote productivity.
7. Environmental compatibility is one of the factors to promote productivity.

2. MATERIALS AND METHODS

This research is a descriptive survey. The population studied in this research, all employees [formal and contract] Faculty of Dentistry, Tehran University of Medical Sciences at various stages in their career, which included 201 people. In this study, a stratified random sampling method was used. The sample of the study is 127 subjects using Morgan Table.

The questionnaire was constructed by the researcher. It has 28 questions and how the rating based on the Likert (very low, low, medium, high, very high) that ultimately for effectiveness were rated as ineffective or less effective factor (very low, low), the average effect or neutral (middle) and the effective factor [much, or too much]. The questionnaire used in this study has content and formal validity. Also in this study to ensure reliability, the questionnaire was implemented in a sample with a size of $n = 30$ and reliability was estimated through Cronbach's alpha 0.86. This reflects the high reliability and internal consistency of questions in the questionnaire. In this study to describe the data, frequency table, linear chart of averages, the core indicators such as mean, standard deviation and skewness and elongation have used. Then to analyze the research hypotheses based on Central limit theorem that the tilt and strain values were between -2 and +2, therefore, distribution of indicators was approximately normal, so the mean and standard deviation as central indicators and dispersion and parametric single-sample t-test and one way ANOVA were used to elicit data.

3. RESULTS

Hypothesis 1: The ability of staff is one of the factors conducive to productivity.

As shown in Table 1, t calculated with 126 degrees of freedom at a significance level [$P < 0.001$] is greater than the critical value. Thus, the null hypothesis of no difference between the sample mean and mean comments is

rejected. Also, the sample mean is greater than the theoretical mean [3], therefore, concluded that in terms of the study sample, employees' ability to improve productivity is effective ($P < 0.001$, $df = 126$, $t = 13.37$).

Table 2. Results of t-test for the ability of employees

Variable	Average	Standard deviation	t	Degrees of freedom	Significance level
The ability of employees	3.79	0.66	13.37	126	0.001

Hypothesis 2: The understanding of the employee's job [role clarity] is one of the factors to promote productivity.

As shown in Table 2, t calculated with 126 degrees of freedom at a significance level ($P < 0.001$) is greater than the critical value ($P < 0.05$, $df = 126$, $t = 1.96$). Thus, the null hypothesis of no difference between the sample mean and mean comments is rejected. Also, the sample mean is greater than the theoretical mean [3], therefore, concluded that in terms of the study sample, employee's understanding of the job is effective in improving productivity ($P < 0.0000$, $df = 126$, $t = 18.7$).

Table 3. t-test results for the recognition of employee job (role clarity)

Variable	Average	Standard deviation	t	Degrees of freedom	Significance level
The understanding of the employee's job [role clarity]	4.13	.68	18.7	126	.000

Hypothesis 3: Organizational support is one of the factors to promote productivity.

As shown in Table 3, t calculated with 126 degrees of freedom at a significance level ($P < 0.0000$) is greater than the critical value ($P < 0.05$, $df = 126$, $t = 1.96$). Thus, the null hypothesis of no difference between the sample mean and mean comments is rejected. Therefore, concluded that in terms of the study sample, organizational support of the employee's is effective on improving productivity ($P < 0.0000$, $df = 126$, $t = -4.52$).

Table 4. Results of t-test for levels of organizational support

Variable	Average	Standard deviation	t	Degrees of freedom	Significance level
Organizational support	2.69	.77	-4.52	126	.000

Hypothesis 4: Employee motivation is one of the factors to promote productivity.

As shown in Table 4, t calculated with 126 degrees of freedom at a significance level ($P < 0.0000$) is greater than the critical value ($P < 0.05$, $df = 126$, $t = 1.96$). Thus, the null hypothesis of no difference between the sample mean and mean comments is rejected. Therefore, concluded that in terms of the study sample, the employee's motivation is effective on improving productivity ($P < 0.0000$, $df = 126$, $t = -5.85$).

Table 5. t-test results for the indicator of employees' motivation

Variable	Average	Standard deviation	t	Degrees of freedom	Significance level
Employee motivation	2.53	.89	-5.85	126	.000

Hypothesis 5: Employee assessment is one of the factors to promote productivity.

As shown in Table 5, t calculated with 126 degrees of freedom at a significance level [$P > 0.0000$] is lower than the critical value ($P < 0.05$, $df = 126$, $t = 1.96$). Thus, the null hypothesis of no difference between the sample mean and mean comments is approved. Also, the sample mean is lower than the theoretical mean [3], therefore, concluded that in terms of the study sample, the employee's motivation is ineffective on improving productivity ($P < 0.0000$, $df = 126$, $t = -5.85$).

Table 6. Results of t-tests for the assessment of employees

Variable	Average	Standard deviation	t	Degrees of freedom	Significance level
Assessment Staff	3.9	.57	-1.27	126	0.206

Hypothesis 6: Reputation of managers' decision making is one of the factors to promote productivity.

As shown in Table 6, t calculated with 126 degrees of freedom at a significance level [$P > 0.0000$] is lower than the critical value ($P < 0.05$, $df = 126$, $t = 1.96$). Thus, the null hypothesis of no difference between the sample mean and mean comments is approved. Also, the sample mean is less than the theoretical mean [3], therefore, concluded that in terms of the study sample, reputation of managers' decision making is ineffective on improving productivity. ($P > 0.0000$, $df = 126$, $t = -1.77$)

Table 6. Results of t-test for reputation of managers' decision making

Variable	Average	Standard deviation	t	Degrees of freedom	Significance level
reputation of managers' decision making	2.89	.72	-1.77	126	.079

Hypothesis 7: Environmental compatibility is one of the factors to promote productivity.

As shown in Table 7, t calculated with 126 degrees of freedom at a significance level ($P < 0.0000$) is greater than the critical value ($P < 0.05$, $df = 126$, $t = 1.96$). Thus, the null hypothesis of no difference between the sample mean and mean comments is rejected. Therefore, concluded that in terms of the study sample, the employee's environmental compatibility is effective on improving productivity ($P < 0.0000$, $df = 126$, $t = 10.64$).

Table 8. t-test results for indicator of the staff environmental compatibility

Variable	Average	Standard deviation	t	Degrees of freedom	Significance level
staff environmental compatibility	3.54	.58	10.46	126	.000

DISCUSSION AND CONCLUSION

This study aimed to investigate the factors affecting labor productivity of Faculty of Dentistry of Tehran University of Medical Sciences and the results of the data is as follows:

Data analysis about the first hypothesis ($P < 0.001$, $df = 126$, $t = 13.37$) shows that the ability is one of the factors affecting productivity. Therefore, the hypothesis was confirmed. The result is consistent with the investigation of Shirzad [11]. Knowledge and work training with reducing dissatisfaction, turnover and absenteeism from work causes employees to make maximum use of his abilities [16].

Analysis of the data suggests that the second hypothesis ($P < 0.0000$, $df = 126$, $t = 18.7$) recognizing employees for job (role clarity) is one of the factors affecting productivity. So, the above hypothesis was confirmed. The result of the research is consistent with the research conducted by Ziavari [14], Malekshahi [13], Farhadi [15] who showed the role clearly is an important factor in increasing the productivity of labor. Mariner believes that job recognition leading to increased satisfaction and the quality of the work. In addition to recognizing the occupation, the need to harmonize the job with the one's spirit and job attractiveness is an important factor in sustaining jobs

Analysis of the data regarding to the third hypothesis ($P < 0.0000$, $df = 126$, $t = -4.52$) suggests that organizational support is one of the factors affecting productivity. The hypothesis was confirmed. The result of the research is aligned to the results of Shirzad [11], Yaghoubi [12], Mohammadi [10], Ziavari [14].

Data analysis of the fourth hypothesis ($P < 0.0000$, $df = 126$, $t = -5.58$) shows that employees motivation is one of the factors affecting productivity. The hypothesis was confirmed. The results is consistent with the results of the study of Shirzad [11], Yaghoubi [12], also the results of Ziavari [14], Malekshahi [13], Farhadi [15] suggests that motivation factor is effective in increasing labor productivity. Human resources employed in the organization is major fund of managers and managers with an understanding and predicting the incentives and the actual needs of their employees can satisfy their needs and incentives timely and accurately and use appropriately organization manpower in line with the objectives of productivity. Motivation is a key factor in labor productivity.

Data analysis of the fifth hypothesis showed ($P > 0.0000$, $df = 126$, $t = -1.27$), therefore, the assessment of employee on productivity is not affecting. The hypothesis was not confirmed. The results of the study of Shirzad [11], Ziavari [14], Malekshahi [13], Farhadi [15], Mohammadi [10] suggests that assessment is correlated with increase productivity significantly, so this is inconsistent with results of the research.

Data analysis of the sixth hypothesis shows ($P > 0.000$, $df = 126$, $t = -1.77$), the results of the study showed that the validity of management decision making is not affecting the productivity. The results of the investigation of Shirzad [11], Yaghoubi [12], Ziavari [14], Malekshahi [13], Farhadi [15], Mohammadi [10] is as one of the factors affecting productivity, so it can be argued that the findings are not consistent with our results.

Data analysis of the seventh hypothesis shows ($P < 0.000$, $df = 126$, $t = 10.64$) environmental employees' compatibility is effective on improving productivity. The results is consistent with the results of research of Yaghoubi [12], Ziavari [14], Malekshahi [13], Mohammadi [10], and environmental compatibility is one of the factors affecting productivity, so it could be argued that the findings are consistent with the results of this study. The findings of the present research is not consistent with the results of Shirzad [11].

It should be added at the end of that man is center of productivity, and all organization with any kind of mission should be allocate the greatest asset, careful and programs to breeding human from the different aspects, so the human be provide an organization in different aspects of ready, and be contain the nurtured and applied individual, team and organizational productivity. Productivity and its development is important at all levels, because increase of productivity cause to decline costs, prices and finally to create competence atmosphere. These will lead to the better quality and high and effective performance and in the highest form to increase the quality of life. But at the end, according to what was said, and with respect to his and as well as other researcher's findings,

the researcher provides suggestions regarding improving the productivity as following. It is recommended to the high-level managers and especially top executives that using good management techniques effort to turn constraints into opportunities, employee motivation creation, job enrichment, skill development, deployment of technology, facilities, technology and upgraded facilities, offering adequate staffing, policies and rules and regulations to improve the productivity.

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