

Investigation and Evaluation of Intra-Organizational Factors Affecting Employee Productivity and Determination of Human Resources Productivity Indicators of technological organizations financial

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Abstract: Undoubtedly, to achieve a dynamic and developed future in today's world, technological organizations need to increase their productivity and maximize their use of intra organizational factors. Effective on employee productivity and determination of human resources productivity indicators have been discussed. As an applied type study, the present research made an attempt to investigate and evaluate the intra-organizational factors affecting employee productivity and determine manpower productivity indicators. Human resources often refer to intangible assets that can be used as a resource in order to enhance the organization's productivity. Therefore, organizations with better intra-organizational factors show a better performance, as technological institutions' productivity, as a factor in improving the society's general welfare, is regarded as a key criterion for evaluation of the effectiveness of technological and social activities and systems and the quality of the art of making a good production. The aim of this study was to investigate whether intra-organizational factors influence employee productivity in technological organizations. The research statistical population consisted of managers and experts who were active in technological organizations in West Azerbaijan. The Cronbach's alpha test was used to analyze the data in order to measure the questionnaire reliability, the Kolmogorov-Smirnov test was used to measure the normality of the data distribution, and the correlation test was considered to test the research hypotheses. After examining the effects of intra-organizational factors on the employee productivity in these organizations, all the hypotheses were confirmed at a confidence level of 95%.

Keywords: *Intra-organizational factors, employee productivity indicators, technological organizations, financial electronic services.*

Introduction

Technological organizations, as the vital artery of the country's economy, while identifying stagnant liquidity of the economy, circulate it and improve the cycle of the country's economy in various fields. Yet, these organizations are constantly improving their performance to attract customers in order to enhance their market share and profitability. Accordingly, evaluation of their performance is of high importance, making it one of the most important activities of managers in financial technological organizations. Meanwhile, the productivity of financial technological institutions, as a factor that improves the society's general welfare, is regarded as a key criterion for evaluation of the effectiveness of technological and social activities and systems and the quality of the art of making a good production [1, 2]. It refers to an institution's strength and ability in area of producing and competition, and at the national level, it reflects the authority level of a nation to have presence in global markets

and play a role in them; thus, productivity and quality have found a decisive role in global exchanges in recent decades, and financial technological institutions have employed science and technology along with the human resources development in order to compete in the global markets through lower prices and higher quality [3, 4].

Beyond an technological criterion/index, as a comprehensive approach, a system-oriented culture and attitude, and a total of all the components, productivity is considered as the key to organizations' continuous life, so that it can involve all of the technological, social, and cultural aspects of the organization's country and/or even people, e.g., by maximizing the use of resources, manpower, and arrangements in a scientific way, in order to reduce costs and satisfy employees, managers, and consumers. In some rapidly developing countries, productivity measures and productivity improvement have become a national movement, and huge investments are made in this direction as one of the main axes of development [5]. In recent years, our country has taken relevant steps in order to create a productivity movement and pay attention to quality. In this regard, the industry sector naturally has (and should) played the most significant role. Therefore, as a comprehensive approach, cultural and systemic attitude, and a total of all the components, productivity goes beyond a technological criterion/index, so that it can affect any of the technological, social and cultural aspects of an organization as well as the people working in it. With a history of several hundred years, productivity is regarded as one of the basic issues at different levels and in various human activities. The technological activities have strongly emphasized the importance of productivity. On the other hand, undoubtedly, human resources have occupied a high place among the available capitals. It should be noted that the progress of any nation depends on the work and efforts of all sections of the society, and productivity is a measure for evaluation of the effectiveness of these activities and efforts in different social and technological sectors. Accordingly, it can be said that improvement of the sustainable development-based productivity, the knowledge-based productivity, the productivity of the public sector, and the productivity of non-governmental sector as one of the most important technological sectors of any country, both as a profitable sector and as an efficient provider of capital and financial electronic services needed by the other sectors can have a significant impact on the society's technological growth [6].

In fact, as a philosophy and perspective based on the strategy of improvement, productivity is almost synonymous with progress, and as the most important goal of any financial organization, it can involve the activities of all sectors of the society as in a chain. Accordingly, it can be undoubtedly said that to achieve a dynamic and developed future and technological stability in today's highly competitive world, it is necessary to improve the productivity, which requires observing the scientific principles of doing activities. Today, the importance of productivity has been realized by all developed or developing countries as one of the necessities of technological development and gaining competitive advantage. Therefore, in a competitive environment, organizations need to concentrate on productivity and implement it. Considering a specific ceiling to reach productivity may not be possible, but what is important for financial organizations is to reach the optimal point in performing organizational tasks and duties. In such a situation, the human resources factor, among the other factors, is regarded as one of the most important main levers in increasing or decreasing organizational productivity, and given its special position in the organization, it requires special attention. In this way, most of the developing countries have made significant investments in order to spread the culture of a special attitude to productivity and to generalize the use of techniques and methods to achieve the productivity improvement. In Iran, the importance of the issue of productivity has been neglected for various reasons, e.g., due to the lack of culture and right attitude towards the productivity in the society. According to many experts, the missing link of Iran's economy is the lack of human resources productivity, rather than capital or natural resources [7].

The mission and the main goal of management in any financial organization is the effective and optimal use of various resources and facilities, including labor, capital, materials, energy, and information. Moreover, considering the limited resources of the country, higher productivity can facilitate technological growth and social development, which has made the productivity and correct use of all production factors, both goods and services, a national priority, and has directed the organizations to the believe that their survival would not possible without paying enough attention to the productivity issue. By improving the productivity, workers will get more wages and better working conditions. At the same time, there will be more job opportunities. On the one hand, higher productivity can decrease prices and increase shareholders' profits [8].

Productivity in financial organizations is considered as a factor that plays a decisive role in determination of salaries, prices, and other production factors. Productivity ratios are used for management as a means of control in the production process. It is also considered as a criterion to compare performance of institutions. Human resources work involves environmental, organizational, and health factors, which can improve individual productivity, followed by the organizational productivity through the modification of these factors [9]. Today, the concept of productivity as a culture has manifested itself with its special values and insights. Currently, many countries have made a lot of investments to improve and promote their productivity at levels of nation, sector, regions, and even small units. Considering the fact that the human resources factor, among the other factors of production, is known as the coordinator of the other organizational factors and is the most important lever in increasing and decreasing the organization's productivity, it has a special position and special attention should be paid to it. This role becomes more important in financial service organizations. In this regard, in the first step, the estimation of productivity as well as the various factors affecting it are of particular importance. In addition, there are important and significant measures for productivity measurement, prioritizing which can increase the current productivity level to a significant extent. Some of these measures include the more effective use of information technology, improvement of management and work methods, evolution of human resources management, reduction of time and cost of projects, and improvement of project implementation quality. Now, when a person is motivated, capable and productive, he/she can use other resources efficiently, realize all kinds of productivity, and make the organization productive, while passive and unmotivated human resources lead to stagnation and backwardness of the organization. Therefore, it can be said that increasing productivity and maintaining it has become one of the most important goals of managers of organizations [10]. The issue of productivity and its improvement in the financial electronic services industry makes the importance of this issue doubled due to its unique features. The important point is that, in fact, the domestic private sector has made significant progress in many fields, and with proper guidance and supervision, the capabilities of this sector can be exploited in order to improve the productivity of financial technological organizations. In general, it should be acknowledged that organizational activities are influenced by a set of factors, and the recognition and investigation of these factors can help improve activities and achieve the organizational goals. On the other hand, given the fact that productivity is a function of many different factors, which are different from one organization to another under the influence of mission, activity, operation and other such factors, and considering that the importance and impact of these factors on the productivity of different organizations are not the same, organizations are not able to enter in all fields and influential aspects. In order to achieve the highest level of productivity, it is first necessary to identify and prioritize these factors based on their importance for the organization according to scientific standards and criteria, then to develop the necessary plans and implementation plans to improve the productivity; as the studies conducted on the American industrial managers, indicate that improvement of productivity has always been considered as one of the important issues [11].

In explanation of this concept, human resources efficiency refers to the maximum proper use of human resources in order to move organization towards their goals with the least time and cost. According to the view of the National Productivity Organization of Iran (NPO), productivity refers to a rational attitude towards work and life. It is similar to a culture that aims to make activities more intelligent to achieve a better and excellent life. Productivity is considered as the most important driver to achieve satisfactory results as well as a considerable competitive advantage. It is also a very important concern for service and non-service financial organizations; however, the problem is that it is possible to measure the productivity when the conditions are stable, the goals are clearly stated, and the outputs are measurable, as human has always directed his/her efforts towards achieving the maximum result with the least available facilities and factors, so that these efforts can be called productivity achievement [12]. Moreover, from a managerial and technological perspective, productivity is generally a function of three variables: technology, human resources, and organization. The variables of being up-to-date, modern equipment, professional and skilled human capital, and sufficient and consistent coordination can be a source of gradual or fundamental change in productivity. Meanwhile, the role of the human factor in increasing or decreasing productivity seems to be stronger than that of the other factors, as it is a factor without which the other factors do not appear. The workforce has faced new challenges in terms of composition and changes in job skills. Managers are working hard to address these challenges and push the rules and policies of financial organizations

in a direction where they can be used in a favorable way. Paying attention to human resources, both at the macro and micro levels, is becoming more and more important in today's economy. In industrial systems, the link between human resources and productivity has been transformed, so that it can be said that productivity is a result of awareness, consequences and abilities in humans' developed brains [13].

Undoubtedly, in order to achieve a dynamic and developed future and in today's competitive world, electronic service organizations need to increase their productivity and make maximum use of minimum facilities. Human resources planning is a process to assess the demand, size, nature, and supply of human resources in order to achieve the required demand. Therefore, human resources planning is regarded as the first step in any employee and human resources management program. Human resources and its management have an important role and place in financial organizations, so that they can be referred to as a productivity catalyst. Therefore, appropriate strategies should be considered in order to increase productivity. The importance of the discussion becomes clear when we never compare the role of the human factor in organizations with other factors, because the human factor, as an open system, can achieve an efficiency greater than one due to proper motivation and leadership. In fact, productivity is synonymous with the human resources quality, and it is the people who bring team spirit, efficiency, creativity, innovation, and customer orientation to organizations with their skills. This concept has been taken into consideration in developing countries in order to spread the culture of a special attitude to productivity and to generalize the use of techniques and methods to improve those investments, because in fact, productivity refers to decreased losses and maximized services with the available factors, as well as improved service quality to increase profit [14]. The importance of paying attention to the issue of productivity has been neglected in Iran due to various reasons, e.g., the lack of culture and the right attitude towards productivity in the society. Therefore, it can be said that one of the important problems the country is facing is the low level of productivity in different sectors. Considering this fact, in the development programs, increasing productivity has been emphasized as one of the important factors in development of the technological growth, so that it is emphasized in the development program that one third of the technological growth targeted by these programs depends on increasing productivity. Therefore, according to the importance of productivity and the task set by the development program in this field and considering the importance of the financial electronic services industry in realizing the country's technological growth, the need for complete implementation of productivity management in electronic service organizations is considered to be one of the undeniable necessities.

Research Theoretical Framework

In the current competitive environment with the main features of change and transformation, speed, complexity, and uncertainty, the survival and success of technological institutions and electronic service organizations requires the adoption and implementation of effective strategies and continuous improvement of the employees' performance. This is achieved through designing and setting goals and strategies, planning and implementing strategies, and accordingly controlling and evaluating performance. There are two views regarding employee performance evaluation: traditional and modern. In the traditional view, the most important aim of evaluation is to judge and recall performance, while in the modern view, the philosophy of evaluation is focused on the growth and development and improvement of the evaluated capacity. In the past, organizations used to consider technological indicators as the only tool for evaluation of efficiency, until Johnson and Kaplan in the early 1980s, after reviewing and evaluating the management accounting systems, revealed many of the inefficiencies of this information to evaluate the organizations' efficiency. This inefficiency was due to the increased complexity of organizations and market competition.

On the other hand, improved quality of work, acquiring new skills, and identification of factors affecting success in organizational efficiency could help the employees of an organization to improve their productivity. The term "productivity", which means usefulness and production ability, is calculated as the ratio of the output unit to the input unit. Thus, human resources productivity can be fundamentally defined as the amount of time required per day to complete a unit amount of an activity. This term was used for the first time in an article by Quesney in 1766, and in 1883, Leiter expressed productivity as the ability to produce. In 1900, Ariely defined the concept of productivity as the relationship between efficiency and the means used to achieve efficiency. It can be generally said that an organization's productivity depends more than any other factor on its employees' knowledge, skills,

abilities, attitudes, and behavior [15]. Other researchers have also defined productivity as the optimal, effective, and efficient use of facilities, capacities, funds, resources, and opportunities. Therefore, the effective and optimal use of time and value resulting from capital, life, thoughts, powers, and talents in a unit of time and the optimal use of all moments reflect the concept of productivity [16]. The history of productivity in Asia goes back to after World War II; so that the damage occurred to Japan led this country to make the maximum use of the available facilities in order to reach independence and make advantageous use of the country's resources. For this purpose, the Japan Productivity Center was established in 1958 as the Productivity Management Center.

There are different opinions on determination of the indicators affecting productivity. Scientists and experts have specified different factors. In summary, continuous job training of managers and employees, promotion of motivation among employees for better work, creating suitable fields for initiative and creativity of managers and employees, establishing a suitable efficiency-based payment system and a punishment and encouragement system, work conscience and social discipline, transformation in system and methods, strengthening governance and mastery of organization policies over affairs, and saving as a national duty have been introduced in studies as factors affecting productivity. One of the most important goals in any organization is to improve its level of productivity, and human resources play a key role in development of productivity [17]. Today, Human resources productivity has become a national priority in developed or developing countries. Improvement of human resources productivity is also a solution to modify the consumption pattern. Peter Drucker considers the human resources productivity as the most important management challenge in the 21st century. The challenge of today's organizations has changed from increasing the productivity of manual workers to measuring and increasing the productivity of academic staff. How to measure the productivity of employees who have neither a fixed task, nor a standard time for production, nor a fixed method for doing work is a challenge as well because knowledge-based work is not easily observable and measurable [18].

Human resources productivity refers to maximizing the use of human resources in a scientific way in order to reduce costs and satisfy employees, managers and consumers, as well as the maximum proper use of human resources in order to move towards the organization's goals with the least time and least cost. Similarly, the individual productivity of human resources is defined as the ratio of the work done by each person to the time spent by the same person. The productivity of the organization's human resources is also equal to the ratio of the work done by the organization, during a certain time, to the human resources spent in person-hours, person-weeks, or person-months.

Human resources are valuable assets of any organization. Achieving the goals of any organization depends on the proper management of this valuable resource. Human resources play an important and effective role in productivity. When the labor force has peace of mind and strong motivation and is not afraid of the future for various reasons, his/her productivity will be higher [19].

There are different opinions on determination of the indicators affecting productivity. Scientists and experts have specified different factors, and one factor cannot be considered as the main factor, but the effective factors of human resources productivity should be considered as the result of a combination of various factors. In short, factors such as improving the quality of work, improving the relationship between managers and employees, improving the use of technological solutions, the motivation of the workforce in doing work, continuous job training of managers and employees, improving employees' motivation for better and more work, creating fields suitable for the initiative and creativity of managers and employees, establishing a suitable efficiency-based payment system and punishment and encouragement system, work conscience and social discipline, transformation in the system and methods playing a sensitive and key role in productivity, strengthening the governance and mastery of the organization's policies on the human resources productivity have been introduced by experts as factors affecting productivity. One of the effective factors in increasing productivity is employee training, which plays a significant role in productivity growth due to increasing skills and changing employee behavior. Education, creativity, entrepreneurship, and employee participation are also among the factors affecting the human resources productivity. The organization's organizational culture and atmosphere, especially in the context of giving importance to employee well-being, can bring about satisfaction and as a result increase the human resources productivity. Getting involved with the work of the organization as a result of solidarity and

dependence with the organization also leads to high motivation and higher responsibility, and as a result, increases the productivity [20]. Studies conducted to determine the prioritization of the factors affecting the human resources productivity have identified 12 factors as the main factors, including:

1. Motivation
2. Training
3. Involvement in decisions
4. Skill
5. Understanding the job
6. Interest in the environment
7. Modern and advanced equipment
8. Performance feedback
9. Organizational support
10. Suitability of job and employee
11. Appropriate system of payment and encouragement and punishment
12. Employing competent managers.

Paying attention to human resources, training and development of the organization's human resources, efforts to develop morale and motivation, stimulation of the creativity and initiative, and making the people involved in achieving the organization's goals and missions can increase the efficiency and productivity of human resources. Therefore, the human resources productivity in the organization requires paying attention to the employees' demands and needs and aligning these needs with the organizational goals. Attitude, value, personality, and motivation are other individual factors affecting the human resources productivity [21].

Regarding the research carried out in the field of this study, we can refer to the following studies:

Soufien (2005) investigated the total productivity of production factors in Malaysian commercial technological organizations during the period between 1998 and 2003, using the Malmquist index. The technological organizations' interest income from the granting of various types of facilities, the amount of loans paid as technological organizations proceeds, the volume of various types of technological organizations deposits, and the fixed assets of branches are considered as the inputs in the technological organizations. In total, according to the research results during this period, the productivity of production factors in technological organizations in Malaysia has decreased by 7%. The negative effects of technological changes have been among the causes of the decreased productivity in the technological organizations.

The volumes of the granted facilities, cash assets, and investments and deposits are considered as the outputs for the technological organizations and the number of employees and the volume of the fixed assets are considered as the inputs used by the branches. The research results generally indicate that the total productivity of the production factors increased during the period and enjoyed a growth of 7%. Positive changes in technical, technological, and managerial efficiency and scales changes have all played an effective role in increasing the productivity of the technological organizations.

Moreover, Blacher (2008) introduced some contradictions about productivity and quality, pointing out that productivity is seen only inside the organization, while quality is seen both inside and outside the organization. Management plays a role in productivity, while quality of labor and customers influence it. Quality and productivity make sense together. Most of the framework of business advantages is rooted in productivity, but the output of the system is the quality of the business.

Bernard et al. (2010) have also investigated the effects of integration and ownership rights on the Spanish technological organizations' productivity. In their research, they have evaluated the consequences and limitations

of integration in a time frame and its long-term effect on productivity. According to the results derived on the integration of the Spanish technological organizations, the productivity improvement has been halved during the period of the analysis.

Michael K. Fong and Jung (2010) in their article titled “Convergence of Total Factor Productivity among Technological organizations: The Hong Kong Experience” expressed that electronic service organizations with lower productivity should strive to catch up with those with higher productivity; if they do so, how fast should they move and what does this mean? They tried to answer the above question by examining the convergence of total factor productivity among technological organizations in Hong Kong. Previous studies have identified two main factors affecting the production governing the financial electronic services sector of the economy, including the scale of activity and efficiency of inputs. If the benefits of downscaling the activities are measured by downsizing the firms, the only difference between the technological organizations is their initial size, and the smaller units should try to catch up with larger units more quickly. However, the results of this study do not support this “absolute convergence” hypothesis. In fact, the research findings provide strong evidence for “conditional convergence”, meaning that the total factor productivity of any technological institution depends on the efficiency of their own factors. Conditional convergence indicates that initial differences in input efficiency between electronic service organizations can lead to permanent differences in their total factor productivity.

Silon (2011) pointed out that apart from the fact that productivity is effective at the society level, it plays a very decisive role at the individual level as well. Undoubtedly, improving productivity is a very effective factor in reducing workload. It can be said that the main cause of stress and psychological pressure in many cases is low productivity. One who does not think about productivity in his/her daily work does not have a mindset capable of distinguishing between effective and ineffective activities on the way to reaching the goal, so he/she cannot have a purposeful movement, and he/she is also unable to choose the most efficient way to perform activities. In other words, for a weak thought of productivity, doing the activity is more important than distinguishing the necessary and unnecessary activities.

Chang et al. (2012) in a study entitled “Origin of productivity growth of technological organizations in China” calculated the productivity index for the technological organizations inputs using the inclusive data analysis method. In their calculations, they used the inputs of fixed assets, capital and employees, and the results of loans and other assets obtained. The results showed that in the period under review, technical advances have reduced the productivity growth of the total factor productivity of production and efficiency.

In an article titled “Risk Management and Managerial Productivity in Chinese Technological organizations: A Network Data Envelopment Analysis Framework”. Kenneth Mathews (2013) suggested that the necessity of development, despite the existing political crisis, often lead to the repetition of standard risk management methods and, as a result, non-payment of relatively significant loans. They examined the risk management, establishment of appropriate criteria, and risk management in Chinese technological organizations. They used an intermediate input in the framework of a data envelopment analysis network in order to measure the income productivity, and performed a statistical test to evaluate the importance of risk criteria in the assessment of income productivity in the technological institutions.

Hijazi et al. (2008) in an article entitled “Analysis of the total productivity of the Export Development Technological organizations of Iran and the productivity growth of its branches using data envelopment analysis” evaluated the total productivity of the Export Development Technological organizations of Iran and changes in the productivity of its branches using the data envelopment analysis method. Using the SBM complete ranking model (the measure based on auxiliary variables), they analyzed the total productivity of this technological organizations during the period between 1994 and 2005. They also used the Malmquist productivity index in order to measure the growth of the productivity of this technological organizations branches during the years 2003-2005.

Khademi Zareh et al. (2009) found that there is a significant positive relationship between the reward system, motivational factors, and human resources productivity. In addition, among the reward options, in the order of the

factors, non-technological external reward, technological external reward, and internal reward had the greatest impact on increasing the motivation and productivity.

In a study titled “Application of information technology and its role in organizational productivity of Fars Province Medical Services Insurance Organization”, Kavousi (2013) showed that the application of information technology has led to better responsiveness to customers and there is a significant relationship between the establishment of information technology, increased productivity, and improved customer satisfaction. The managers of the mentioned organization believed that the application of information technology has led to a decrease in paperwork and an increase in customer satisfaction.

In a study, Amini et al. (2013) made an attempt to measure and analyze the general indicators of productivity, including monetary and technological intermediation, in different technological sectors of Iran during the period between 1996-2006. They measured the partial productivity indices, including labor force, capital and intermediate costs, and the total factor productivity index for the mentioned activity. The results of measuring the total factor productivity index indicated that this index increased by 0.6% annually during the period between 1996-2006, and about 6% of the production growth was achieved through the total factor productivity. The growth of total factor productivity was in line with the growth of human capital and technology indicators, especially electronic technological organizations.

Amini, Farhadi Kiya and Wali Nia (2013) analyzed the trend of the productivity indicators of petrochemical industries and its challenges in the fifth development plan, indicating that the annual average total factor productivity in the research industries is equal to 0.3, which is lower than the annual average productivity in the entire industrial sector.

Moghimini et al. (2012), in their study entitled “The impact of information technology on organizational productivity with a process-oriented approach in industries of Fars province”, indicated that information technology through tracking, communication, improvability, automation, flexibility, analysis, coordination, and process monitoring cannot affect productivity.

Abili et al. (2013), in their survey study on the factors affecting the productivity of the academic staff of National Iranian Oil Company, indicated that based on the respondents' statements, the prioritization of the factors affecting the productivity of the academics included individual factors, job factors, and organizational factors, respectively.

Rajabi Farjad et al. (2014), in a study on the effect of information technology on the dimensions of human resources productivity, showed that 41%, 30%, 20%, 16%, and 10% of the changes in employee performance feedback, work power, job recognition, motivation, and organizational support, respectively, can be explained by information technology.

Fazel Yazdi and Sarafraz Ardakani (2014) evaluated the efficiency and productivity of public and private technological organizations in Iran using the combined model of the inclusive data analysis and the Malmquist productivity index. They used the number of technological organizations cards issued, the total number of domestic and foreign branches, and the total assets as the input indicators, and the net profit and loss, the balance of granted facilities, the claims, and the total deposits as the output indicators of the model for 19 public and private technological organizations of Iran during the years 2007-2011. The results of evaluating the efficiency of the technological organizations indicated that for all the years of evaluation, the electronic service organizations of Sina, Pasargad, Karafarin, Parsian, and Sanat Madan have the best performance among the selected technological organizations. Also, the productivity results indicated that for the years 2007-2011, except for the national technological organizations, Mellat, Sanat Madan, Export Development, Modern Economy, and Pasargad (with the average productivity rate in the period under review greater than 1), for the other technological organizations, the average productivity growth rate was negative.

Concept of Performance Evaluation

The concept of performance evaluation is usually synonymous with the effectiveness of activities. Furthermore, effectiveness refers to the degree of achievement of goals and plans which having the feature of efficiency of activities and operations. Optimal performance occurs when the actual result is exactly the same as the expected

result. As complexity of the business environment increases in each decade, more measures of performance are considered. In recent years, new approaches have been developed to measure performance, e.g., activity-based costing and stakeholder value. New measurement frameworks, e.g., the balanced scorecard, and new evaluation frameworks, e.g., the business excellence model, have been invented within this period. Other frameworks such as the performance pyramid, the macro process model, and the new charter model have been developed as well. Moreover, paying attention to intangible assets has led to the development of other frameworks evaluating this important area. Such frameworks overcome many of the shortcomings of the traditional accounting systems; however, with the recent development of the concept of measuring all the stakeholders' satisfaction, new frameworks such as the performance charter have been presented.

Technological organizations seek authority among other organizations in their vision document; at the same time, they try to become modern and provide a variety of monetary and financial electronic services to their customers with the best, fastest, and most efficient quality. In addition, in terms of macro services, they seek to create value for their shareholders. The current performance evaluation system of the technological organizations is not in the field of technological organizations. In the other hand, with the current model, it is not possible to achieve the macro goals and measurement indicators in the strategic plan. As a result, the dimensions and indicators of the current performance evaluation system of the technological organizations do not try to measure the degree of realization of the main and supporting functions according to the upstream documents. In this way, it is necessary to develop a local model to evaluate the intra-organizational factors affecting the productivity of employees working in the electronic service organizations.

Concept of Productivity

Literally, the term "productivity" refers to the power to produce, to be high-yielding, and to be productive. Productivity is an attitude that strives for improvement and achieves it; it is also the systems and set of activities that turn that attitude into action; it is an intellectual point of view that always tries to improve what is currently available. Productivity is a concept based on the belief that one can do his/he work and tasks better every day than yesterday. The Japan Productivity Center defines the concept of productivity as: The goal of improving productivity is to maximize the use of the obvious aspect of human existence, in such a way that voluntary activities are performed by sampling, designing, and inventing patterns to achieve the specific goals. Productivity is an attitude, way of thinking, and a point of view that tries to continuously improve what was and is. Experts believe that productivity is a multi-dimensional phenomenon and refers to effective and useful use of all resources, including human power, capital, consumables, energy, time, information, etc. In addition, it should be noted that productivity is not only focused on quantity considers, but it also involves quality. Considering that in order to improve the quality, several social, psychological, and technological factors should be taken into account, issues such as the work environment quality, job satisfaction, etc. are also considered as important in this regard.

Therefore, it can be said that the concept of human resources productivity is defined as the optimal use of human resources in order to achieve the company' goals as well as how to employ young people, middle-aged people, and even retirees. With human resources who are always waiting to be told what to do, an organization can never overcome their problems. People need to know how to maximize their productivity, how to manage their time, and how to stay organized. The hallmark of a healthy and productive organization is the presence of people with the necessary skills to turn the plans into actions, so that they help the organization to achieve their goals. Such an organization must have made the necessary planning for training basic management techniques and have taught the implementation methods of practical plans to all their employees. It is in such a situation that the necessary conditions for self-direction of employees are provided. This is an old skill that has gained importance in today's world. Of course, the condition of internal self-direction is that the necessary platform is provided by the senior and middle management. In fact, in order to increase the productivity, an organization must provide the basis for employment of the human resources. A productive organization involves a set of effective factors. People who self-directionally know what to do in order to achieve the organization's goals and have gained inner insight towards progress, in fact, have reached a suitable level in the index of loyalty to the organization and are moving along the path of excellence of the organization.

Factors Affecting Employee Productivity

Human resources productivity is defined as the hourly rate of work done by the organization's employees. In calculation of human resources productivity, if the added value is divided by the number of employees, then the index shows how much added value each employee has created on average. Improved productivity is achieved as a result of optimal and efficient use of resources and an increase in the employees' job motivation, which will result in the development of the organization. Undoubtedly, the productivity process of human resources is not affected by certain factors, but it is the result of the interaction and combination of various factors. Since productivity is not an abstract category and must necessarily have a practical aspect, the management of the organization plays a significant role in providing the right context for its institutionalization and improvement. Therefore, investigation of the factors affecting productivity is of high importance. On the other hand, it should be noted that in an economy where the other determinants of growth, i.e. technology and labor force employment, are certain and exogenous, diminishing efficiency in capital accumulation is inevitable, and this the factor that limits growth in the existing neoclassical models in the field of productivity [22]. Increasing productivity in technological institutions, as one of the main ways of technological development of the country, depends on various factors, which have been investigated by researchers in this field. Hersey and Blanchard (1999) listed the factors affecting employee productivity as follows:

1. Ability: Individuals' knowledge and skills that help in accomplishing work.
2. Clarification: Individuals' understanding and accepting the work, carrying it, and how to do it.
3. Assistance: Organizational assistance or support that employees need to complete their work effectively.
4. Evaluation: Daily performance feedback and occasional reviews that make people aware of how much and how to do work and correct their weaknesses.
5. Motivation: Providing people with incentives to complete the work towards the organizational goal.
6. Credibility: Appropriateness and legality of the manager's decisions regarding the human resources, and confidence in the decisions made for people.
7. Environment: External factors that can affect the individuals' productivity and ultimately the organizations despite the above six factors.

In 1998, Savary considered the factors affecting human resources productivity as follows: 1) Individuals' satisfaction with work and life; 2) Flexibility of working hours; 3) Cooperation between employees and management; 4) Continuous planning and up-to-date technology; 5) Training and empowerment of individuals; 6) Effective management; 7) Individuals' intelligence; 8) Wages and incentive systems; 9) Management's view of productivity; 10) Employees' spirit of commitment towards their work, profession, and organization; and 11) Employees' responsibility.

Viksi and Kepner considered the factors affecting human resources productivity as follows: 1) Nature of work and people's personality (suitability of job and employee); 2) Motivation (material and spiritual); 3) Job awareness and recognition; 4) Job satisfaction; 5) Quality of work life; 6) Individual involvement in the profit of action or activity; and 7) Fair treatment with people.

Moreover, Steiner suggested the following factors as the human resources productivity indicators: 1) Operation speed; 2) Operation quality; 3) Unit cost; 4) Work flexibility; 5) Individuals' commitment; 6) Right communication; 7) Understanding the necessity of productivity; 8. Satisfaction with and quality of work life; and 9) Good participation.

The Japan Productivity Center introduced the following items as factors affecting human resources productivity: 1) Training and empowering employees; 2) Participatory management; and 3) Justice and fair distribution.

In addition, factors such as speed of operation, quality of operation, unit cost, flexibility of work, individuals' commitment, right communication, understanding the necessity of productivity, satisfaction with and quality of work life, and good participation are considered as indicators of human resources productivity.

Research Hypotheses

- H1. Reward factors affect the productivity of employees working in technological organizations.
- H2. Individual factors affect the productivity of employees working in technological organizations.
- H3. Organizational factors affect the productivity of employees working in technological organizations.
- H4. Organizational changes affect the productivity of employees working in technological organizations.

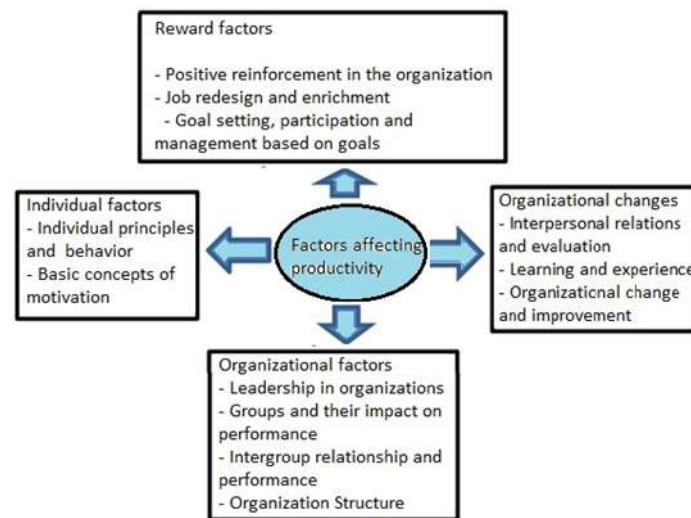
Research Methodology

Research is a process through which the researcher can search about the unknowns and gain the necessary knowledge about them. After the subject is specified, the researcher should seek to determine the research methodology based on the purpose and nature of the subject and the implementation possibilities. Considering the fact that there is a specific and definite procedure for conducting scientific research based on the scientific methodology, every researcher is required to pay attention to this issue. Research methodology is a set of valid and systematic rules, tools, and ways to investigate facts, discover unknowns, and achieve solutions to the problems specified. The present research is a descriptive-survey study in terms of nature and methodology, and it is an applied study in terms of objective. In addition, since this study uses the structural equation modeling (SEM) method, it is considered a cross-sectional research from the perspective of time and implementation. Moreover, given the fact that the current study is a field and applied research, it uses the approach of reviewing documents using databases in order to collect the information required. Also, a standard questionnaire is the main tool for the data collection in the survey phase. The technical characteristics of the questionnaire and the results of the confirmatory factor analysis (CFA) for meaningful items are listed in Table 2 along with the indicators of the CFA model. As can be seen in Table 1, the reliability derived is greater than 0.7, which confirms the reliability of the questionnaire. In addition, the convergent validity is greater than 0.5, indicating the correlation of the structure with its indicators.

Table 1. Reliability of the questionnaire.

Variable	Reliability	AVE
Reward factors	0.728	0.51
Individual factors	0.762	0.53
Organizational factors	0.78	0.54
Organizational changes	0.81	0.56

According to Table 2, the value of the KMO index indicates that the number of samples is sufficient for the factor analysis. In addition, the significance level of Bartlett's test is less than 0.05, indicating that the factor analysis is suitable for identifying the structure of the factor model. Thus, the assumption that the correlation matrix is known is rejected.



Research conceptual model: factors affecting employee productivity (resource: Dessler).

Research Findings

According to the evaluation of the participants' opinions in the section "Descriptive Statistics" of this study, 273 and 136 people were female and male, respectively. In addition, among the participants, 26 people had post-graduate diplomas, 51 had associate degrees, 208 had bachelor degrees, and 124 had master's and doctorate degrees. Moreover, the descriptive statistics related to the participants' work experience indicated that 83 people had employment experience under 10 years, 194 people between 10 and 20 years, and 132 people over 20 years.

Table 2. CFA results.

Latent variable	Standard coefficients	Significance level	Result
Reward factors	0.83	0.000	Significant
Individual factors	0.75	0.000	Significant
Organizational factors	0.72	0.000	Significant
Organizational changes	0.68	0.000	Significant

Considering that one of the preconditions for the use of the latent variables approach in the SEM model is the existence of correlation between the research variables, the Pearson correlation analysis was used to measure the research hypotheses. The results are listed in Table 3. Also, the significance level of in this study is 0.05, the hypotheses with p-values less than 0.05 are confirmed. Since in all the cases this value is less than 0.05, it can be said that the findings related to the measurement of the research hypotheses indicate the confirmation of the research hypotheses. The results of this study regarding the first hypothesis on the role of the reward factors in the productivity of employees working in the technological organizations are also consistent with those of Khademi Zare et al. (2018), who found a significant positive relationship between the reward system, motivational factors, and human resources productivity. Thus it can be said that non-technological external reward, technological external reward, and finally internal reward are associated with increased productivity. Also, the results from the test of the third hypothesis on the role of effective organizational leadership and the organization managers' efforts in creating intergroup relations among the personnel by improving the productivity of human resources are consistent with those of Silon (2011), who shows that improving productivity is definitely a very effective drug in reducing workload. This researcher has stated that the main cause of tension and psychological pressure during performing the tasks assigned to employees is low productivity. Therefore, if employees do not think about productivity in their daily work, they lack the mentality to distinguish between effective and ineffective activities on the way to achieving the organizational goal. So, they cannot have a

purposeful movement and are not able to choose the most efficient way to perform their activities. In other words, when the productivity thinking is weak in electronic service organizations, performing the activity would be considered more important than distinguishing the necessary and unnecessary activities. Therefore, according to the findings related to the fourth hypothesis of this research, it can be said that organizational changes can affect the employees' productivity. Consistent with the present study, Dezhpasand et al. (2018) concluded that the effective use of electronic tools, such as the non-present use of technological organizations cards, has a significant positive and impact on the human resources productivity. In addition, in line with this study, Abili et al. (2013), in their study on the factors affecting the productivity of the personnel working in the National Iranian Oil Company, indicated that based on the respondents' statements of, the prioritization of the factors affecting productivity includes individual, occupational, and organizational factors, respectively.

Table 3. Summary of the results of the research hypotheses test.

Research hypothesis	The correlation coefficient	Result
Reward factors affect the productivity of employees working in technological organizations.	0.602	Confirmed
Individual factors affect the productivity of employees working in technological organizations.	0.521	Confirmed
Organizational factors affect the productivity of employees working in technological organizations.	0.48	Confirmed
Organizational changes affect the productivity of employees working in technological organizations.	0.58	Confirmed

Conclusion and Suggestions

Human resources productivity plays a critical role in organizations continuous life. Beyond a technological criterion and index, it is considered as a comprehensive approach, a systematic culture and attitude, and a total of all the components, so that it can involve any of the technological, social, and cultural aspects of the country, organization or even people. In line with the realization of the country's technological, social, and cultural development plan, the National Productivity Organization of Iran has provided a road map to achieve the goal by developing the country's comprehensive productivity plan. Accordingly, the country's comprehensive productivity plan has been designed as a long-term document by relying on the integration of two strategic and process approaches. Considering the country's comprehensive productivity plan, the strategies for improving the country's productivity, including the improvement of the sustainable development-based productivity, the knowledge-based productivity, the productivity of the public sector, and the productivity of non-governmental, private, and cooperative sectors, have been considered. In the meantime, the technological system as one of the most important technological sectors of the country, both as a profitable sector and as an efficient supplier of capital and financial electronic services needed by other sectors, can have a significant impact on the society's technological growth. Therefore, this study made an attempt to investigate the intra-organizational factors affecting the productivity of technological organizations. It was concluded that reward factors, individual factors, organizational factors and organizational changes are associated with improved productivity in the employees of the technological organizations. Considering the findings of the first hypothesis, it can be concluded that there is a positive relationship between reward factors such as positive reinforcement (employee service compensation system), job enrichment, and human resources productivity. Therefore, it is suggested that the bonus to the employees of the technological organizations should be paid as soon as possible and immediately after positive performance. In addition, payment methods and systems should be clarified for the employees as much as possible, and discriminatory payment methods should be refused while observing the expectation theory. According to the findings of the second hypothesis that there is a relationship between individual factors and the productivity of

employees of the technological organizations, it is necessary to remember that since there is a relationship between proper training planning to promote the correct behavioral patterns in employees in the work environment and the human resources productivity, it is suggested to evaluate the effectiveness of the training courses held in the organization in order to identify the weak points of the courses, and to issue licenses for participants in training courses based on obtaining points in the exam and not only based on their attendance in the courses. It is suggested that the title of the training courses should be appropriate to the organizational positions and that virtual training methods should be used as much as possible with the aim of reducing organizational costs. In addition, attention should be paid to the use of a variety of collaborative management methods, including the establishment of a suggestion system, a reward system, and brainstorming, creating an atmosphere of trust between managers and employees in order to delegate authority to employees in the organization, and developing a cultural foundation. According to the results from the test of the third hypothesis on the role of organizational factors in improving the employees' productivity, it is possible for the managers of the organization to identify the characteristics of the employees of the organization while taking into account the requirements, based on which they can use the appropriate leadership style based. Based on the results from the test of the fourth hypothesis, since the correct selection of employees and continuous change and improvement in the process of handing over affairs to personnel are correlated with human resources productivity, it is suggested to consider issues such as appropriateness of education and employees' personality and psychological characteristics in process of selecting employees, and jobs should be given to employees according to their abilities. Conducting comprehensive tests during the recruitment process, conducting specialized interviews on the relevant job, familiarizing managers with the content of jobs as much as possible during appointments, as well as holding continuous in-service training courses seem to be necessary activities that should be considered in the process of selecting employees. Also, the officials of the technological organizations should develop specific job descriptions for all employees and identify communication barriers in order to facilitate organizational communication in Sepah technological organizations. Also, it is suggested to clarify the ambiguity in employees' minds regarding their position in the organization and to control the communications between work units. Also, managers of technological organizations are suggested to pay attention to the following items in order to achieve the goals of this research:

- Improvement of the conditions of the working environment in order to improve the work flow and the personnel' productivity;
- Enhancement of the quality of services provided to customers in order to raise the position of technological institutions in the financial electronic services industry;
- Alignment of human resources activities with the duties of technological institutions by clarifying the considered organizational measures, which should be carried out by employees working in technological organizations.

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