Investigating the development of human resources in line with digital transformation with the approach of structural equations (Case study: Hamrah Avval Company)

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Abstract

The current research aims to provide a human resource development model in line with the digital transformation of Hamrah Avval Company. The research method is applied-developmental in terms of purpose and descriptive in nature of the survey branch. In this regard, 317 employees of Hamrah Avval Company responded to the questionnaire from the first stage, and the data analysis was based on descriptive statistics, inferential statistics (Kolmogrov-Smirinov test and one-sample t-test) and structural equation modeling. The results of the present research showed that the six dimensions of "organization strategy", "internal processes", "products and services", "customers and market", "information technology architecture" and "organizational culture" were determined as the dimensions of digital transformation in Hamrah Avval company. Also, the indicators and components of human resources development are in line with each of the dimensions of digital transformation in the Hamrah Avval Company including 26 indicators and 5 components for the organization's strategy, 26 indicators and 6 components for internal processes, 18 indicators and 4 components for products and Services are 29 indicators and 6 components for customers and market, 16 indicators and 3 components for information technology architecture and 24 indicators and 5 components of organizational culture, and finally the relationships between them were confirmed based on the structural model.

Keywords: human resource development, digital transformation, Hamrah Avval Company
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1 Introduction

In recent years, the change and development in information and communication technology and its expansion in organizational businesses and digitalization of the work process have caused the formation of new opportunities for the growth of organizational activities [20]. In fact, today's organizations based on digital technology, which includes three key technologies, i.e. virtualization systems, mobile systems and analysis systems, move and grow every day in line with new goals [14] The field of modern activities needs to create a platform for the realization of digital

transformation in behavioral and structural frameworks, and such programs require effective employees with holistic features that the managers of organizations should have plans to achieve have a high level of it [5].

Also, digital transformation has created the ground for new competitive advantages in organizations, which is expanding every day and has led to the formation of new intellectual frameworks for future activities [3]. More precisely, developments in the field of technology have led to changes in human life and their application, which has changed our attitude towards life [24]. Of course, the mere use of digital tools does not mean the realization of digital transformation. Rather, the development of human resources with special characteristics can help organizations in rethinking the path of digital transformation so that organizations can become effective in businesses through the development of human resources in line with digital transformation [11]. On the other hand, the emergence of new digital technologies has created many challenges for the traditional models of human resources development, which requires the attention of managers to review these models. How to combine digitalization with traditional structures of human resources management, optimization of the reform framework in the face of recent changes, and the development of individual learning in harmony with digital transformation, and many different cases can be raised among these challenges that cause the attention of researchers. And theorists have focused on the issue of harmonizing human resources development standards in line with digital transformation [13].

Tubey et al. [25] suggested that the nature of human resources has changed as a result of globalization processes, new technology development and fundamental changes related to businesses. These external and internal changes and their possible effects on organizations, employees and the general conditions of the organization have caused managers in organizations to continuously develop human resources as an innovation that solves the ethical nature of work through indicators. They need to solve problems creatively and have a strategic approach to organizational issues. Alhalboosi [2] also stated that the development of human resources with the approach of new technologies based on the three functions of the human resources management unit, i.e. organization development, career path development and human resources training, can happen successfully. In this regard, the development of human resources includes the components of improving communication, creating teams and groups, managing change and encouraging cooperation and participation. Career path development includes the components of promotion, improvement, differentiation and career communication. Finally, human resources training includes sharing knowledge and experiences, upgrading specialized skills, and teaching problem-solving methods.

Fenech et al. [7] pointed out in their research that in recent years, the transformation of human resources into a strategic function in digital transformation has faced problems and the most important field for the growing movement of organizations is the development of skills. It is their knowledge and experience that if the managers succeed in this issue, it will cause growth and increase the profitability of organizations. Kuchinke et al. [10] proposed that the development of human resources requires dynamic indicators in organizations with new approaches that have undergone fundamental changes based on the application of new technologies.

According to the mentioned materials, it is worth considering that the changes that have occurred in organizations, especially in terms of digital technologies, including changes in work methods and the process of establishing organizational communication, have led to new roles for human resources. It should be considered that in order to realize them, it is necessary to review the indicators and standards of human resources development and to identify and explain them according to the new conditions. In fact, in line with the changes that have taken place, Hamrah Avval Company has set its mission for the next five years to "realize the digital dream". "main" and "beyond the main business" through which it will become the most important and biggest driver of digital transformation for customers, organizations, industries and government in the country and also in its horizon, one of the supporters The main growth and development of Iran's digital ecosystem will be.

Now the question is, considering the changes that have occurred in Hamrah Avval Company, especially with the advent of digital transformation, can we use the previous models regarding the development of human resources? More precisely, today we are witnessing a multitude of human resource development models in various fields of social and organizational life, which have spread almost all over the world and there is even a lot of similarity between them; But it is worth pondering which of these models is applicable for the new conditions of organizations, including the Hamrah Avval Company? which should be mentioned in response; The comparative study of different organizations, despite many similarities, indicates the basic and fundamental differences between today's organizations in the modern era, which shows that a unique model should be provided for the development of human resources of each organization, because the difference In terms of the nature of human resources, the personality, cultural and value characteristics of the employees, as well as the social, economic and political conditions of the society, it shows the inapplicability of the previous models in such organizations, especially in Hamrah Avval Company in our country. This issue was raised as a concern for the researcher to seek an answer to the main question, what is the human resource development model in line with the digital transformation in Hamrah Avval Company?

2 Theoretical foundations and experimental background

2.1 Digital transformation

Digital in the Cambridge dictionary means recording or storing information as a series of numbers 0 and 1 and shows information that is in the form of electronic images and requires the use of information technology. Digital is a term that covers the intellectual and imaginative power of people on a global scale. By definition, digital is the new way of doing things. In fact, digital challenges and destroys common procedures and is based on the use of technology for fundamental changes. Digital refers to innovation, creating value at real prices, eliminating unnecessary costs, and eliminating unnecessary activities. In the use of data, digital brings high values to society compared to the past, and users and customers are at the center of gravity of digital developments [16]. In other words, digital refers to the change of attitude during trends, and if an organization aligns with the opportunities created through information technology and leads businesses to perform effectiveness based on new technologies, it refers to digital transformation in organizational structures and functions [8].

The review of the literature on digital transformation proves that the concept of digital transformation lacks a unified perspective among researchers and practitioners, and there is no comprehensive paradigm of it. However, its impact on today's world is so fundamental that it cannot be ignored along with new businesses. In fact, digitalization has caused fundamental changes in the economy of societies and has changed the way businesses function [1].

According to Matt et al.'s [15] research, digital transformation includes the use of digital technologies with the aim of changing key business operations, products, processes, organizational structure, and management concepts. Also, digital transformation is described as changing an organization with the aim of providing new or improved products or services or both to customers. A key factor for this is the new proposal or increased use of information technologies. In this way, organizations try to create new business models, customer experiences or operational models based on possible changes. In other words, digital transformation starts with the application of information technology and solves the customer's problem at the end. Such changes in organizations have progressed in line with the process of using new and interactive technologies with customers and led to the realization of new ways of doing work.

Digital transformation is a dynamic and effective platform for displaying the capacities and capabilities of human intelligence through the use of digital tools. It not only powers the Internet and social media, but has increasingly become part of all products and processes. It is a new model in the field of implementing contemporary technologies to determine new products and services and change the mentality of presenting them to global markets. In one definition, digital transformation is a deep transformation of business and organizational activities, processes, competences and models to take full advantage of present and future changes and combined opportunities of digital technologies that are widely and widely used. A strategic approach has been effective at the community level [19].

Also, digital transformation is formed by the integration of personal and corporate information technology environments. In a broader sense, digital transformation is the integration of digital technologies and business processes in the digital economy [29]. It is an emerging model, which guides strategic and customer-oriented changes in the infrastructures and processes of modern organizations, relying on contemporary technologies and communications. Of course, the mere use of digital tools does not mean the realization of digital transformation. Rather, many businesses have taken steps in the path of digital transformation. But the discontinuity of these activities ultimately did not meet the expectations and did not lead to the improvement of operations [12].

In general, digital transformation means the application, development and governance of digital technologies to create fundamental and gradual changes in the principles and logic of businesses, which leads to the improvement of the organization's performance. It does not only affect operational processes; Rather, it includes various fields of business, including identification, development and supply of products, skills and competences, evaluation and improvement of activities and service delivery cycle, etc. Finally, digital transformation leads to structural improvement in which customers, employees and managers believe in the activities and exchange of common values as a mandatory framework. They interfere with their thoughts and learn appropriate behaviors. They determine the value and norms continuously and they respect each other's rights by knowingly identifying and recognizing their position. Such a position requires attention to the effects of digital transformation in organizations [9].

2.2 Development of human resources

Today, organizations operate in a complex, variable and dynamic environment, and phenomena such as globalization, changing tastes of customers and investors, and intensifying the competitive environment of the market affect them. In the past, organizations relied on traditional resources such as technology, natural resources, and financial capital to gain a competitive advantage, which are available today and can be accessed by other organizations as well.

Competitive advantage is not mentioned. Therefore, in these conditions, organizations pay special attention to their internal resources, especially their human capital. Because their success requires having competent and competent forces. In this way, organizations follow their growth and development through the development of human resources. In fact, what highlights the difference between organizations and shows the success of an organization from its competitors, is developed and capable human resources, which with unique characteristics cause the growth of organizations and societies. . What makes goals and missions come true is having human resources and using them with proper management and optimal planning [23].

The development of human resources is a set of activities that are obtained from changing the behavior and continuous learning opportunities of employees over time. Human resources development activities are carried out with the aim of developing the skills of employees to meet the current and future demands of the organizational environment. The general purpose of these activities is to achieve high performance and includes various activities such as training and development, feedback and evaluation, career planning and development, and change management. In other words, the development of human resources is a set of processes and activities that cause the capabilities and potential talents of people to flourish. These activities should start from the time an employee joins an organization and continue continuously throughout the work period; Human resource development programs must respond to job changes and be integrated with the organization's long-term strategies so that the organization can ensure the efficient and effective use of human resources [17]. What shows the priority of organizational actions in the functions of human resources management can be highlighted and summarized in the development of human resources? Most human resource management activities and measures are based on the retrospective approach or the existing situation. While the development of human resources continues continuously from the past and the current situation to the future.

In another definition, the development of human resources refers to the fact that the people of the organization should be equipped with qualities that do not have any conflict with the organization and with compassion, commitment and scientific insight, all their capabilities, energy, expertise and thought put them in line with the realization of organizational missions and constantly produce new intellectual and qualitative values for the organization [22]. Also, the development of human resources as one of the main processes in the cycle of human resources management is related to issues such as involving employees in dynamic organization, education and training to improve organizational effectiveness and finally adaptability in the path of career advancement.

Finally, human resources development can be called a short-term or long-term process or activity in order to develop knowledge, expertise, productivity and job satisfaction at different individual, team, organizational or national levels. From this point of view, human resources development is a framework to help employees in developing their skills, knowledge and individual and organizational abilities by providing training opportunities, career development, succession planning, performance management and development, coaching and organizational development. It provides for the realization of organizational goals [28].

2.3 Dimensions of human resources development

Due to the complexity of the concept of human resources development and the scope of research in its field, there is no comprehensive and complete view on the dimensions of human resources development. Pare and Tremblay [18] expressed the dimensions of human resources development in the form of methods of praise, empowerment, fair reward, competence development and sharing individual knowledge and information. Also, Valentine and Francis [26] described the dimensions of human resources development including four factors of positive selection (identifying and using opportunities), extensive training (increasing abilities and specialized skills), and team decision-making (participating in decision-making), and appropriate reward (material and non-material benefits).

In his research, Watkins [27] summarized the dimensions of human resources development in the components of scientific awareness and knowledge promotion, behavior production, promotion and development of work skills, updating information, correct work method, organizational learning for decision making and harmonious personality development. Also, Alhalboosi [2] showed that human resources development is a set of regular activities for enriching human resources in the organization, which is used based on the improved skills, knowledge and experiences of the employees to meet the current and future needs of the organization. . He defined the dimensions of human resources development in the three dimensions of organizational development (communication, professionalism, and empowerment), career development (adaptability, adaptability and use of opportunities) and training and development (specialized and team planning) stated.

In general, the development of human resources has many dimensions and can include various aspects. In the following, some basic dimensions of human resources development are mentioned [4]:

- Intellectual dimension: The intellectual dimension of human development means that logical thinking is widespread in the organization and the whole organization pays attention to it. Human development is exemplified when an organizational person constantly produces new ideas and injects them for the organization and its reform. In this case, organizational processes are constantly improved and modified.

- Attitudinal dimension: The development of human resources in the attitudinal dimension means that the individual and organizational attitude towards improvement and transformation becomes flexible and can transform it into an organizational attitude as soon as new knowledge is obtained. Changing employees' attitudes leads to the formation of logical behaviors and functions. An organizationally developed person has principled and at the same time profound attitudes and this helps in the development of organizational knowledge.

- Occupational dimension: The development of human resources in the occupational dimension causes people with more interest to use advanced equipment and technology in production and show more accuracy and diligence in their application. When the people of the organization receive specialized and professional training in their jobs, they do their work in a good way, and this leads to individual and organizational success.

- Perceptual dimension: One of the dimensions of organizational human development is that employees have a comprehensive and general view of organizational issues and processes. Perceptual skills lead to better employees being able to connect processes and recognize gaps and redundancies. In general, the perceptive dimension of human development is exemplified in three categories of intellectual comprehensiveness, deepening and flexibility.

- Behavioral dimension: The meaning of the behavioral dimension of human development is that the employees of the organization have a standard behavior in the organization. When employees have standard behavior, employees' compliance and adaptability with organizational processes will be better. In general, the employees of the organization should constantly correct and improve their reasonable and standard behavior in order to have the necessary influence on the processes and organizational reform.

- Creative dimension: One of the important categories of organizational development is to transform the organization into a creative organization through individual creativity. Through creativity, the organization can improve its processes and reach the desired effectiveness and efficiency. Today, the competitive advantage of organizations is in having creative and thoughtful human resources.

2.4 The impact of information technology on the development of human resources

In today's world, information technology is the leaven of human resource development in the organization and society, and the basic axes of human resource development are formed based on the application of new technologies. In the development of human resources, new human capacities should always be recognized so that the development of human capabilities and qualities can be done as a permanent process, which requires the realization of such a development framework dependent on the application of information technologies at the collaborative level of organizations. Because in the process of information technology, information is constantly produced, processed, distributed and managed, and if the development of human resources has not happened, fundamental problems can arise in its implementation. In fact, information technology will be a solution to problems when it serves the development and cultivation of humans and human capabilities are integrated and lead to development and productivity [6]. Among the effects of information technology in the development of human resources, the following can be mentioned [21]:

- Information technology has both positive and negative effects on the skills of employees: on the one hand, information technology has increased the skills of employees in a wide range; And on the other hand, it has caused the work to be done by less and less specialized workforce and the life span of the skills that were much needed before has been greatly reduced.

- Making jobs meaningful: Information technology has made everyone respect people's jobs and know what part of the organization's goals is fulfilled by each person's job. Information technology causes the development or limitation of the job, its variety and significance.

- Independence of action: with the use of information and communication technology, employees are able to control their work environment because information technology reduces the independence of employees in some areas, which is not necessarily desirable, and the opposite can also happen.

3 Research methodology

The current research is a descriptive-survey type. In fact, in this type of research, a description of a situation or a definition of a set of attitudes, perceptions, and behaviors is provided that has been observed and measured at a specific point in time or a location. In fact, the current research at this stage is considered a survey due to the use of the attitude measurement method in measuring the variables.

In this study, the statistical population is all employees (administrative staff and managers) of the Hamrah Avval Company in Tehran, whose number is 1800, and based on Morgan's method, the sample size is 317 people, and the sample is based on stratified random sampling. Relatives were selected.

In this research, the basis of studying people's opinion about research variables was field method and semi-structured interview tools and questionnaire. In fact, first, through the managers and expert experts of the Hamrah Avval Company, as well as university faculty members who participated as examples, the indicators and components of human resources development in line with the dimensions of digital transformation in the Hamrah Avval Company were identified and then, the current situation of the Hamrah Avval Company was measured based on each of the categories with the help of a closed questionnaire. In terms of validity and reliability of the questionnaire, since Cronbach's alpha values are higher than 0.7, the reliability of the questionnaire is confirmed.

For data analysis, descriptive statistics and inferential statistics and structural equation modeling techniques have been used for data analysis:

- Descriptive statistics: at the level of descriptive statistics, data analysis is done using statistical characteristics such as frequency, percentage, mean, standard deviation, skewness coefficient and elongation coefficient.

- Inferential statistics: at the level of inferential statistics, the test of normality of data distribution and the one-sample t-test were conducted.

- Structural equation modeling: structural equations as a statistical model examines the relationships between hidden and obvious (observed) variables. Through structural equations, general hypothetical structures or causal patterns can be confirmed with non-experimental data. Structural equations provide a coherent framework for estimating the strength of relationships between all variables of a theoretical model.

Confirmatory factor analysis is basically a hypothesis testing method and is used when the researcher hypothesizes the relationships of indicators (factors) with questions (items) and wants to measure the data for a predetermined structure. In such a way that the set of items of each factor or index (factor) measure only the dimension related to them.

- Application of confirmatory factor analysis

  The confirmatory factor analysis of this article whether the items (indicators) that are presented to introduce each dimension; whether they are really representative of it or not, it tests and reports how accurately the selected items represent or produce their latent variables.

- Steps to perform confirmatory factor analysis

  The first step in factor analysis is drawing the measurement model in the software. After drawing the model and fitting it, checking the factor loadings and removing the items that have a low factor load is placed in the second stage. In the third stage, it is time to check the fit indices of the model.

- Examining factor loadings in confirmatory factor analysis (CFA)

  Factor loadings are calculated by calculating the correlation value of the objects of a structure with that structure. If this value is equal to or greater than 0.4, it confirms that the variance between the structure and its indicators is greater than the variance of the measurement error of that structure and reliability. In that case, the measurement model is acceptable. The important point here is that if the researcher encounters values less than 0.4 after calculating the factor loadings between the construct and its items, he should modify those items (questionnaire questions) or remove them from his research model.

- Confirmatory factor analysis measurement indicators

  After fitting the model, it is first necessary to check whether the model is sufficient to check the relationships (meaning the significance of path coefficients and error sentences) or not. For this purpose, goodness of fit indices is used by researchers to evaluate the goodness of fit from three groups of indices including absolute fit indices, comparative fit indices, parsimonious fit indices to ensure the theoretical model of the research.

- Absolute fit indices

  The absolute fit indices are the indices that are based on the difference between the observed variances and covariance's on the one hand and the estimated variances and covariance's based on the parameters of the developed model on the other hand, and by approaching. These values will improve each other. Goodness of fit index (GFI), modified goodness of fit index (AGFI), chi-square ratio to degrees of freedom are such indices.

- Comparative fit indices

  Comparative indices are actually a step towards completing the absolute fit indices. In this way, based on one or more models, the theoretical model developed under the test is compared with it and shows whether it is statistically more acceptable, weaker, or if there is a difference with it does not have.

- Thrifty fit indices

  Parsimonious fit indexes are indexes that try to compensate for the most important weakness of absolute fit indexes, i.e. improving the value of the fit index by increasing the parameters of the model. The main basis in this group of fit indices is that these indices are penalized for each parameter that is added to the model.

- General model of structural equations

  This model is a combination of two measurement and structural models, and in it both the relationships between hidden variables and manifest variables (measurement model) and the relationships between hidden variables (structural model) are considered.

  An example of a general structural equation model and its solution

  - The relationship between the three hidden variables m, p and g has been investigated as follows:
    * The external hidden variable g, p, m is the independent variable that affects the internal hidden variable n.
    * To measure variable m, three obvious index variables X1, X2 and X3 have been used.
    * To measure the p variable, three obvious index variables Y1, Y2 and Y3 have been used.
    * To measure the hidden variable g, three obvious variables Y4, Y5 and Y6 are used.To measure the p variable, three obvious index variables Y1, Y2 and Y3 have been used.
    * The path coefficient between two dependent latent variables is denoted by β and the path coefficient between the independent and dependent latent variable is denoted by γ.
    * The relationship between each hidden variable and the corresponding obvious variables is indicated by the letter λ, which is called factor loading.
    * ε indicates the error (residual) for the latent variable
    * δ indicates the error (residual) for the external manifest variable
    * ζ represents the error variance (residual) for the internal latent variable used to fit the model.

$$n_t = \beta_1 + \beta_2 g_t + \beta_3 p_t + \varepsilon_{1t} \tag{3.1}$$

  The model should be named according to the number of parameters of the model and the parameters should be entered into the model.

$$n_t = \beta_{11} + \beta_{12} m_t + \beta_{13} p_t + \varepsilon_{2t} \tag{3.2}$$

$$n_t = \frac{\{(\beta_1 \beta_{13} - \beta_{11} \beta_3) + \beta_{13} \beta_2 g_t - \beta_3 \beta_{12} m_t - \beta_3 \beta_{14} n_{t-1} + (\beta_{13} \varepsilon_{1t} - \beta_3 \varepsilon_{2t})}{\beta_{13} - \beta_3} \tag{3.3}$$

$$p_t = \frac{\{(\beta_1 - \beta_{11}) + \beta_2 g_t - \beta_{12} \beta_{12} m_t - \beta_{14} n_{t-1} + (\varepsilon_{1t} - \varepsilon_{2t})}{\beta_{13} - \beta_3} \tag{3.4}$$

$$erf(x) = \frac{2}{\sqrt{\pi}} \int_0^x e^{-t^2} dt.$$

$$n = \max(n_1, n_2) \tag{3.5}$$

where:

$$n_1 = \left\lceil 50 \left(\frac{j}{k}\right)^2 - 450 \left(\frac{j}{k}\right) + 1100 \right\rceil$$

$$n_2 = \left\lceil \frac{2}{2H} \left(A\left(\frac{\pi}{6} - B + D\right) + H + \sqrt{\left(A\left(\frac{\pi}{6} - B + D\right) + H\right)^2 + 4AH\left(\frac{\pi}{6} + \sqrt{A} + 2B - C - 2D\right)} \right) \right\rceil$$

$$A = 1 - p^2$$
$$B = parcsin\left(\frac{p}{2}\right)$$
$$C = parcsin(p)$$
$$D = \left(\frac{\delta}{z_1 - \alpha/2 - z_1 - \beta}\right)^2 \qquad (3.6)$$

where j is the number of observed variables, k is the number of latent variables, ρ is the estimated Gini correlation for a normal random vector of variables, δ is the predicted effect size, α is the corrected type I error rate, β is the type II error rate, and z is a standard score.

$$F(x; \mu, \sigma^2) = \frac{1}{2}\left[1 + erf\left(\frac{x - \mu}{\sigma\sqrt{2}}\right)\right] \qquad (3.7)$$

where μ is the mean, σ is the standard deviation, and erf is the error function. Now the same steps can be done using software.

- Goodness of model fit tests

  As their name suggests, goodness-of-fit tests are used to determine whether a particular distribution is well-fitted or not. Calculating goodness-of-fit statistics also helps to rank the fitted distributions according to how well they fit the data.

  - The first index- RMESA

$$RMESA = \frac{\sqrt{(X^2 - df)}}{\sqrt{[df(N-1)]}} \qquad (3.8)$$

  - The second index- GFI

$$GFI = 1 - \frac{F(S, \sum(\acute{\theta}))}{F(S, \sum(\cdot))} \qquad (3.9)$$

  - The third index – AGFI

$$AGFI = 1 - \frac{k(k+1)}{2d}(1 - GFI) \qquad (3.10)$$

4 Results

4.1 Determining the relationships of variables

In the current research, the main goal is as follows: "Determining the relationships between the indicators and components of human resources development in line with the digital transformation in the Hamrah Avval Company ". For this purpose, the questionnaire obtained from the indicators and components of human resources development in line with the dimensions of digital transformation was provided to 317 employees (administrative staff and managers) of the Hamrah Avval Company in Tehran, and the data analysis was based on the modeling technique. Structural equations were used to provide a general model of the relationships between research variables. In this regard, in the first step of the confirmatory factor analysis method, the relationships between indicators and components in each structure (dimension) were examined independently. In the following, through structural validity and internal reliability, the validity of relationships has been investigated and finally, a structural model of relationships between research variables is given.

4.2 Factor analysis

In the present study, confirmatory factor analysis was used. In this section, by using confirmatory factor analysis, the power of the factor model is validated and evaluated with a set of observed data obtained from a small sample.

- Determining the relationship between indicators and components of human resources development in line with the organization's strategy as a main dimension of digital transformation in the Hamrah Avval Company: accountability components for strategic planning (4 indicators), decision-making ability strategic (7 indicators), creativity in digital strategies (5 indicators), strategic and forward-looking perspective (6 indicators) and integration of digital strategies (4 indicators) in the form of a confirmatory factor analysis model based on standardized factor loadings in Fig. 1 is given.
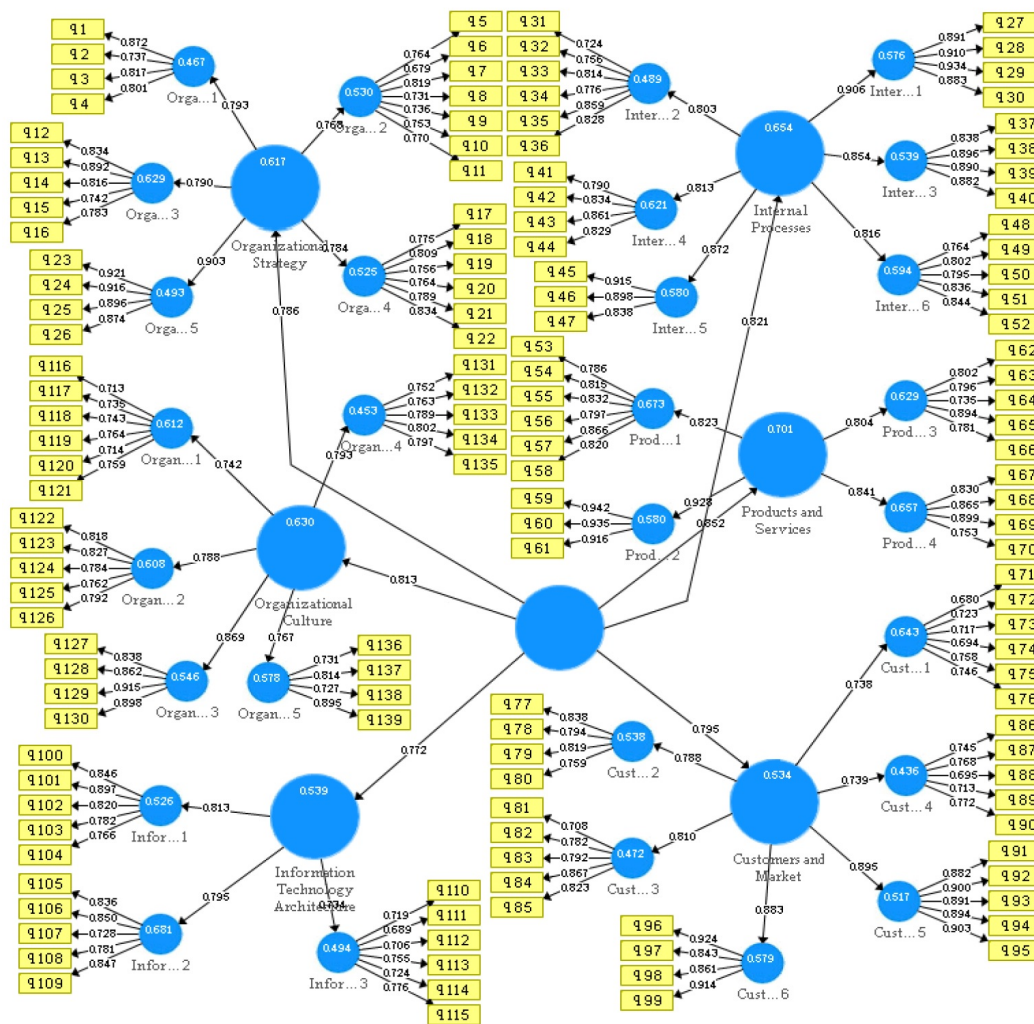

Figure 1: Structural pattern in the form of standard coefficients

To check the significance of the factor loadings and the relationship between the variables, the t-test statistic or t-value is used, and if the calculated statistic is smaller than 1.96, the relationship is not significant and it is displayed in a different color in the software; Otherwise, the relationship is meaningful and the obtained result can be generalized for the society. The calculated statistic for the structural model of the current research, which shows the confirmation of the relationships between the research variables, can be seen in Figure 2.

It can be inferred from Figure 1 and 2, firstly, all values of factor loadings are higher than 0.4 and it shows the relatively strong measurability of each of the obvious and hidden variables of the research. Secondly, in all criteria (indices and components), the value of t statistic is greater than 1.96, which indicates the confirmation of the structural model. In addition, in each structural model, in addition to the factor load and the value of the t statistic, which is measured to confirm the measurability of hidden variables based on manifest variables, the
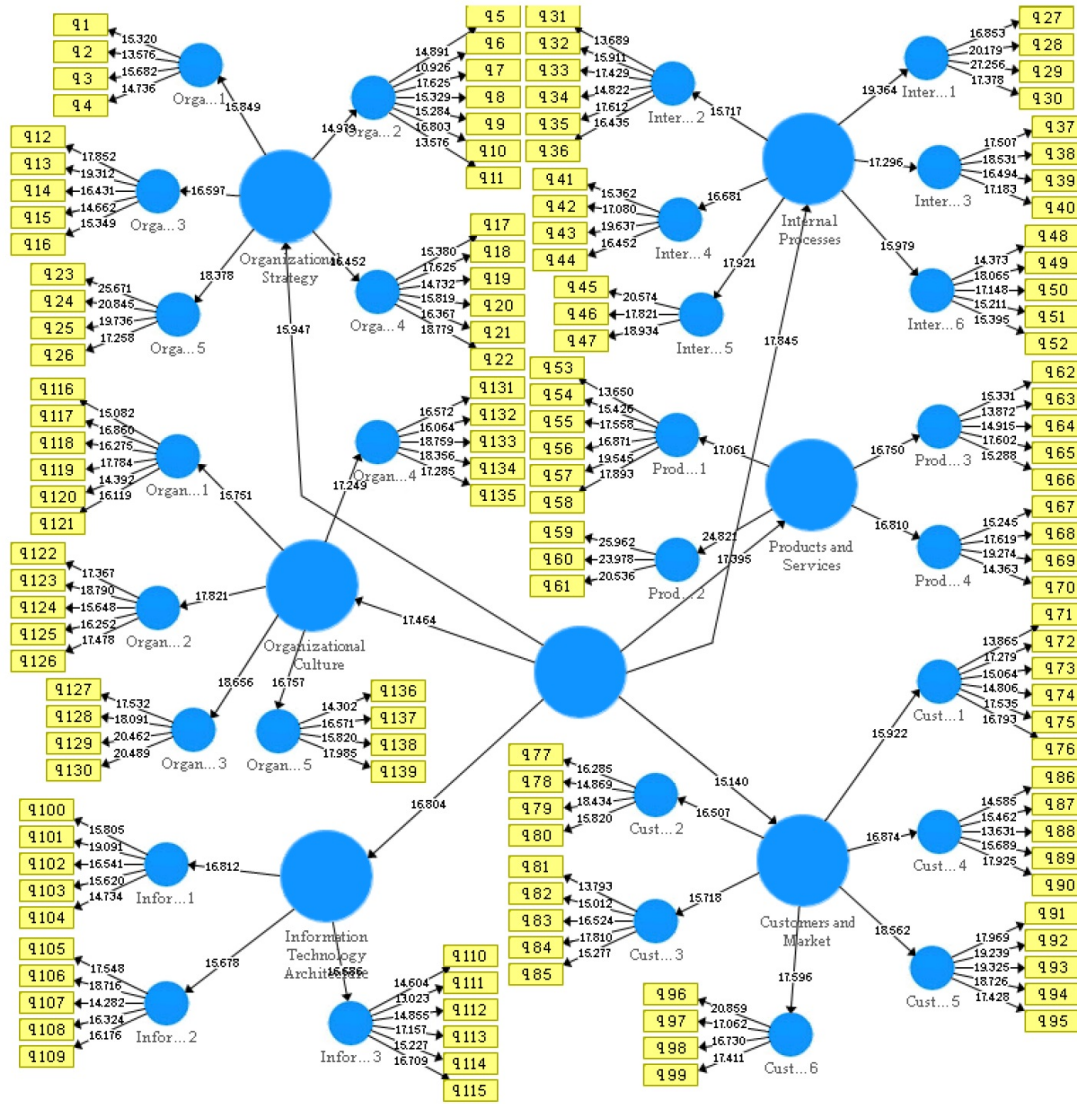
Figure 2: Structural pattern in the case of significant coefficients

determining power of each variable can be calculated. The values of the impact coefficient of human resources development in line with the dimensions of digital transformation in the Hamrah Avval Company and the value of the t statistic, which shows the significance of the relationships between the variables, are given in Table 1.

Table 1: Path analysis (relationships between variables) resulting from the structural model

Impact factor	Impact factor	t statistic
Development of human resources in line with organizational strategy	0.786	15.947
Development of human resources in line with internal processes	0.821	17.845
Development of human resources in line with products and services	0.852	17.395
Development of human resources in line with customers and the market	0.795	15.140
Development of human resources in line with information technology architecture	0.772	16.804
Development of human resources in line with organizational culture	0.813	17.464

It can be deduced from Table 1 that the values of the impact coefficient are above 0.4, which indicates the intensity of the relatively strong impact (determinant) of human resources development in line with the dimensions of digital transformation in the Hamrah Avval Company. Also, because in all the relationships between the variables, the calculated statistic values are greater than the table statistic (1.96). Therefore, relationships are confirmed. Finally, it should be mentioned that the structural model is the drawing of relationships between hidden variables with their own indicators and other hidden variables, which is confirmed by goodness of fit

indicators. The most important fit criteria are determination coefficient (R^2), predictive power of the model (Q^2) and overall model fit (GoF).

Table 2: Structural model suitability criteria

Criteria	Calculated value	Minimum acceptable value
The coefficient of determination	0.57	0.35
Predictive power	0.49	0.33
Overall model fit	0.609	0.4

From Table 2, it can be deduced that the values of the coefficient of determination and the predictive power of the structural model are higher than 0.35, which is expressed as a strong evaluation criterion. Therefore, the determining role of each of the variables in the structural model has a favorable impact intensity and is above average. Also, because the overall fit value of the model is 0.609 and more than 0.4, it can be concluded that the structural model is a good fit from the real world.

- Structural validity and composite reliability of human resource development in line with the organization's strategy as a main dimension of digital transformation in the Hamrah Avval Company: average values of extracted variance (AVE), composite reliability (CR) and interaction matrix for human resource development in the strategy of the organization is given in table 3.

Table 3: Structural validity and composite reliability of human resource development in line with the organization's strategy

Variable	Components	AVE	CR	Component 1	Component 2	Component 3	Component 4	Component 5
Responsibility for strategic planning	Component 1	0.847	0.86	0.92				
Strategic decision-making ability	Component 2	0.730	0.84	0.518	0.854			
Creativity in digital strategies	Component 3	0.792	0.89	0.497	0.328	0.889		
Strategic and forward-looking perspective	Component 4	0.655	0.91	0.526	0.345	0.521	0.809	
Integration of digital strategies	Component 5	0.804	0.81	0.531	0.416	0.633	0.576	0.897

Based on Table 3 because the average value of extracted variance (AVE) is more than 0.50; Therefore, the convergent validity is confirmed and also because the value of the average root of the extracted variance (AVE) in the main diameter of the matrix is higher than the correlation of the indices of one component with other components; Therefore, it shows the acceptability of divergent validity. Considering the confirmation of convergent validity and divergent validity, it can be said that the structural validity of human resources development in line with the organization's strategy is confirmed. It can also be seen from the table, all the structures (components) have good composite reliability, because the composite reliability values are higher than 0.7.

- Construct validity and composite reliability of human resource development in line with internal processes as a main dimension of digital transformation in the Hamrah Avval Company: average values of extracted variance (AVE), composite reliability (CR) and interactive matrix for human resource development in the alignment of internal processes is given in Table 4.

Table 4: Structural validity and composite reliability of human resource development in line with the organization's strategy

Variable	Components	AVE	CR	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6
Customer communication skills	Component 1	0.806	0.79	0.898					
Being market oriented	Component 2	0.795	0.82	0.415	0.892				
Ability to use positive literature	Component 3	0.749	0.86	0.527	0.461	0.865			
Customer problem solving skills	Component 4	0.761	0.76	0.355	0.488	0.519	0.872		
Respect for customer privacy	Component 5	0.728	0.81	0.469	0.435	0.620	0.439	0.853	
Timely adaptation to customer needs	Component 6	0.753	0.79	0.341	0.529	0.464	0.510	0.618	0.868

Based on Table 4, because the average value of extracted variance (AVE) is more than 0.50; Therefore, the convergent validity is confirmed and also because the value of the average root of the extracted variance (AVE) in the main diameter of the matrix is higher than the correlation of the indices of one component with other components; Therefore, it shows the acceptability of divergent validity. Considering the confirmation of convergent validity and divergent validity, it can be said that the structural validity of human resources development

in line with internal processes is confirmed. It can also be seen from the table, all the structures (components) have good composite reliability, because the composite reliability values are higher than 0.7.

- Construct validity and composite reliability of human resource development in line with products and services as a main dimension of digital transformation in the Hamrah Avval Company: average values of extracted variance (AVE), composite reliability (CR) and interaction matrix for human resource development In line with products and services, it is given in Table 5.

Table 5: Structural validity and composite reliability of human resource development in line with products and services

Variable	Components	AVE	CR	Component 1	Component 2	Component 3	Component 4
Development of innovative products and services	Component 1	0.811	0.84	0.901			
Virtual private networking	Component 2	0.783	0.83	0.502	0.885		
Value creation in services	Component 3	0.756	0.79	0.613	0.527	0.869	
Improvement and reconstruction of services	Component 4	0.780	0.80	0.567	0.461	0.518	0.883

Based on Table 5, because the average value of extracted variance (AVE) is more than 0.50; Therefore, the convergent validity is confirmed and also because the value of the average root of the extracted variance (AVE) in the main diameter of the matrix is higher than the correlation of the indices of one component with other components; Therefore, it shows the acceptability of divergent validity. Considering the confirmation of convergent validity and divergent validity, it can be said that the structural validity of human resources development in line with products and services is confirmed. It can also be seen from the table, all the structures (components) have good composite reliability, because the composite reliability values are higher than 0.7.

- Structural validity and composite reliability of human resource development in line with customers and the market as a main dimension of digital transformation in the Hamrah Avval Company: average values of extracted variance (AVE), composite reliability (CR) and interaction matrix for human resource development According to the customers and the market, it is given in Table 6.

Table 6: Structural validity and combined reliability of human resource development in line with customers and the market

Variable	Components	AVE	CR	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6
Customer communication skills	Component 1	0.806	0.79	0.898	0.898				
Being market oriented	Component 2	0.795	0.82	0.415	0.415	0.892			
Ability to use positive literature	Component 3	0.749	0.86	0.527	0.527	0.461	0.865		
Customer problem solving skills	Component 4	0.761	0.76	0.355	0.355	0.488	0.519		
Respect for customer privacy	Component 5	0.728	0.81	0.469	0.469	0.435	0.620	0.853	
Timely adaptation to customer needs	Component 6	0.753	0.79	0.341	0.341	0.529	0.464	0.618	0.868

Based on Table. 6, because the average value of extracted variance (AVE) is more than 0.50; Therefore, the convergent validity is confirmed and also because the value of the average root of the extracted variance (AVE) in the main diameter of the matrix is higher than the correlation of the indices of one component with other components; Therefore, it shows the acceptability of divergent validity. Considering the confirmation of convergent validity and divergent validity, it can be said that the structural validity of human resources development in line with customers and the market is confirmed. It can also be seen from the table, all the structures (components) have good composite reliability, because the composite reliability values are higher than 0.7.

- Construct validity and composite reliability of human resource development in line with information technology architecture as a main dimension of digital transformation in the Hamrah Avval Company: average values of extracted variance (AVE), composite reliability (CR) and interactive matrix of human resource development in the direction of information technology architecture is given in Table 7.

Based on Table 7, because the average value of extracted variance (AVE) is more than 0.50; Therefore, the convergent validity is confirmed and also because the value of the average root of the extracted variance (AVE) in the main diameter of the matrix is higher than the correlation of the indices of one component with other components; Therefore, it shows the acceptability of divergent validity. Considering the confirmation of convergent validity and divergent validity, it can be said that the structural validity of human resources development in line with information technology architecture is confirmed. It can also be seen from the table, all the structures (components) have good composite reliability, because the composite reliability values are higher than 0.7.

Table 7: Structural validity and composite reliability of human resource development in line with information technology architecture

Variable	Components	AVE	CR	Component 1	Component 2	Component 3
The skill of implementing applied technologies	Component 1	0.827	0.9	0.909		
Development of the culture of information technology application	Component 2	0.813	0.88	0.572	0.902	
Specialist in information technology networks	Component 3	0.796	0.83	0.628	0.508	0.892

- Construct validity and composite reliability of human resource development in line with organizational culture as a main dimension of digital transformation in the Hamrah Avval Company: average values of extracted variance (AVE), composite reliability (CR) and interaction matrix for human resource development in the alignment of organizational culture is given in Table 8.

Table 8: Structural validity and composite reliability of human resource development in line with organizational culture

Variable	Components	AVE	CR	Component 1	Component 2	Component 3	Component 4	Component 5
Development of ethical culture	Component 1	0.773	0.81	0.879				
Development of knowledge-oriented culture	Component 2	0.781	0.76	0.361	0.884			
Cultural identity	Component 3	0.728	0.80	0.542	0.370	0.853		
Social trust building	Component 4	0.735	0.85	0.721	0.528	0.559	0.857	
Creating cultural cohesion	Component 5	0.713	0.77	0.570	0.492	0.467	0.672	0.844

Based on Table 8 because the average value of extracted variance (AVE) is more than 0.50; Therefore, the convergent validity is confirmed and also because the value of the average root of the extracted variance (AVE) in the main diameter of the matrix is higher than the correlation of the indices of one component with other components; Therefore, it shows the acceptability of divergent validity. Considering the confirmation of convergent validity and divergent validity, it can be said that the structural validity of human resources development in line with organizational culture is confirmed. It can also be seen from the table, all the structures (components) have good composite reliability, because the composite reliability values are higher than 0.7.

5 Discussion and conclusion

The current research was conducted with the aim of providing a model of human resources development in line with digital transformation in the Hamrah Avval Company.

In recent years, the change and transformation in information and communication technology and its expansion in organizational businesses and digitalization of work processes have created new opportunities for the growth of organizational activities, which are expanding every day and leads to the formation of new intellectual frameworks for activities in the future. Of course, the mere use of digital tools does not mean the realization of digital transformation. Rather, the development of human resources with special characteristics can help organizations in rethinking the path of digital transformation so that organizations can become effective in businesses through the development of human resources in line with digital transformation. The emergence of new digital technologies has created many challenges for the traditional models of human resources development, which requires the attention of managers to review these models. How to combine digitalization with the traditional structures of human resources management, optimization of the reform framework in the face of recent changes, and the development of individual learning in harmony with the digital transformation and many different cases can be raised among these challenges that cause the attention of researchers. And theorists have focused on the issue of harmonizing human resources development standards in line with digital transformation.

In this study, the current situation of the Hamrah Avval Company in terms of human resources development in line with digital transformation was investigated.

In this regard, it was done through the implementation of a questionnaire among 317 employees (administrative staff and managers) of the Hamrah Avval Company in Tehran; The current status of indicators and components of human resources development in line with the digital transformation in the Hamrah Avval Company was examined in terms of statistical parameters and the generalizability of the results to the entire society and the results showed:

- Development of human resources in line with the organization's strategy: in terms of average, the value calculated for all indicators and components is more than 3 (theoretical average). The highest value is related to the twenty-

sixth question with an average of 4.13 and the lowest value is related to the fifth question with an average of 3.67. The values of skewness and kurtosis are also in the range of (2-2). Because the level of significance in the one-sample t test is less than $\alpha = 0.05$; Therefore, the result obtained can be generalized to the whole society and it can be stated that the status of indicators and components of human resources development in line with the strategy of the organization as a main dimension of digital transformation in the Hamrah Avval Company is above average.

- Development of human resources in line with internal processes: in terms of average, the calculated value for all indicators and components is more than 3 (theoretical average). The highest value is related to the 34th question with an average of 4.19 and the lowest value is related to the 46th question with an average of 3.69. The values of skewness and kurtosis are also in the range of (2-2). Because the level of significance in the one-sample t test is less than $\alpha = 0.05$; Therefore, the result obtained can be generalized to the whole society and it can be stated that the status of indicators and components of human resources development in line with internal processes as a main dimension of digital transformation in the Hamrah Avval Company is above average.

- Development of human resources in line with products and services: in terms of average, the calculated value for all indicators and components is more than 3 (theoretical average). The highest value is related to the sixty-fourth question with an average of 4.13 and the lowest value is related to the sixty-eighth question with an average of 3.62. The values of skewness and kurtosis are also in the range of (2-2). Because the level of significance in the one-sample t test is less than $\alpha = 0.05$; Therefore, the result obtained can be generalized to the whole society and it can be stated that the status of indicators and components of human resources development in line with products and services as a main dimension of digital transformation in the Hamrah Avval Company is above average.

- Development of human resources in line with customers and the market: in terms of average, the value calculated for all indicators and components is more than 3 (theoretical average). The highest value is related to the ninety-seventh question with an average of 4.28 and the lowest value is related to the eighty-first question with an average of 3.78. The values of skewness and kurtosis are also in the range of (2-2). Because the level of significance in the one-sample t test is less than $\alpha = 0.05$; Therefore, the result obtained can be generalized to the whole society and it can be stated that the status of indicators and components of human resources development in line with customers and the market as a main dimension of digital transformation in the Hamrah Avval Company is above average.

- Development of human resources in line with information technology architecture: in terms of average, the value calculated for all indicators and components is more than 3 (theoretical average). The highest value is related to the 111th question with an average of 4.21 and the lowest value is related to the 115th question with an average of 3.84. The values of skewness and kurtosis are also in the range of (2-2). Because the level of significance in the one-sample t test is less than $\alpha = 0.05$; Therefore, the result obtained can be generalized to the whole society and it can be stated that the status of indicators and components of human resources development in line with the architecture of information technology as a main dimension of digital transformation in the Hamrah Avval Company is above average.

- Development of human resources in line with organizational culture: in terms of average, the calculated value for all indicators and components is more than 3 (theoretical average). The highest value is related to the 128th question with an average of 4.26 and the lowest value is related to the 120th question with an average of 3.76. The values of skewness and kurtosis are also in the range of (2-2). Because the level of significance in the one-sample t test is less than $\alpha = 0.05$; Therefore, the result obtained can be generalized to the whole society and it can be stated that the status of indicators and components of human resources development in line with the organizational culture as a main dimension of digital transformation in the Hamrah Avval Company is above average.

Also, the relationships between the indicators and components of human resources development in line with the digital transformation in the first companion company were investigated. In this case, it was done through the implementation of a questionnaire among 317 employees (administrative staff and managers) of the Hamrah Avval Company in Tehran; The relationships between indicators and components of human resources development in line with digital transformation in the first company based on factor analysis, validity and internal reliability and structural model were investigated and the results showed:

- The factor analysis model of human resources development in line with the dimensions of digital transformation is confirmed independently (separately) in the Hamrah Avval Company.

- Because the average values of the extracted variance (AVE) in all the components of human resources development in line with the dimensions of digital transformation in the Hamrah Avval Company are more than 0.50; Therefore, the convergent validity is confirmed and also because the value of the average root of the extracted variance (AVE) in the main diameter of the interaction matrix is higher than the correlation of the indexes of one component with other components; Therefore, it shows the acceptability of divergent validity. Considering the confirmation of convergent validity and divergent validity, it can be said that the structural validity of human resources development is confirmed in line with the dimensions of digital transformation. Finally, all the structures (components) have good composite reliability, because the composite reliability values are higher than 0.7.

- The structural model of human resources development in line with the dimensions of digital transformation in the Hamrah Avval Company is confirmed as a combination model of a set of hidden variables and observable variables.

In line with the researcher's experiences, the following are suggested for future research:

- In the present study, a practical and unique model of human resources development in line with digital transformation was presented for the Hamrah Avval Company, so it is suggested that future researchers strengthen the said model by conducting comparative research in similar organizations.

- The study of the antecedents and consequences of human resources development in line with digital transformation is one of the research items in future research that can strengthen the current research model and provide a comprehensive model of the subject.

- Obstacles to the development of human resources in line with the digital transformation and the pathology of this field in the organizations of our country can also be considered in future researches.

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