Int. J. Nonlinear Anal. Appl. 16 (2025) 2, 235–243
ISSN: 2008-6822 (electronic)
http://dx.doi.org/10.22075/ijnaa.2023.32342.4803

The impact of technology on administrative bureaucracy with a structural equation approach

Amin Amiri[a], Aliakbar Aminbeidokhti[b,*], Mehdi Sanei[c]

[a]Department of Management, Semnan Branch, Islamic Azad University, Semnan, Iran
[b]Department of Educational Management, Faculty of Psychology College of Semnan University, Semnan, Iran
[c]Department of Management, Shahrood Branch, Islamic Azad University, Shahrood, Iran

(Communicated by Sirous Moradi)

Abstract

The process of social evolution and progress and the speed of this evolution depend on many variables, one of which is technology. Some believe that technological advances are changing many aspects of daily life. At present, in many developing countries, including our country, Iran, organisations are showing a great desire to use and use these information technologies. Given that in the future, no factor such as information technology will be able to change the design of organisations. Research in this field will be necessary, so the purpose of this research is to investigate the impact of technology introduction on administrative bureaucracies. The statistical population in a small stage includes all employees of the Ministry of Culture and Islamic Guidance, whose number is 800 people. The sampling method in this study is available. 260 people are using Cochran's formula. Also, to evaluate the variables and measure them in the field, a researcher-made questionnaire has been used. 48.866 and a path coefficient of 0.91 have a significant effect. The introduction of technology has had a significant effect on research strategies in the staff of the Ministry of Culture and Islamic Guidance with test statistics of 2.933 and path coefficient of 0.408 and research intervention factors on research strategies in employees of Ministry of Culture and Islamic Guidance with test statistics of 3.596 The path coefficient has a significant effect of 0.470 and the research factors have a significant effect on research strategies in the staff of the Ministry of Culture and Islamic Guidance with Azman statistics of 4.253 and the path coefficient of 0.556. Finally, the introduction of technology to administrative bureaucracy and the path coefficient of 0.843 has a significant effect.

Keywords: technology import, administrative bureaucracy, ministry of culture and Islamic guidance
2020 MSC: 91Cxx

1 Introduction

Technology is evolving in an age of information explosion. Different computer systems are becoming more and more entrenched in the various socio-economic, industrial, and administrative institutions of the developed world and are making fundamental changes in the decision-making process within the organization. Utilizing the facilities resulting

*Corresponding author
Email addresses: amin64amiri@gmail.com (Amin Amiri), a.aminbeidokhti@semnan.ac.ir (Aliakbar Aminbeidokhti), mehdisaneiphd@yahoo.com (Mehdi Sanei)

Received: October 2023 *Accepted:* December 2023

from the development of computer-based information systems to expedite administrative operations and the rapid and cost-effective delivery of services and products manufactured by organizations, has led to using such systems in almost all fields in developed countries [1]. On the other hand, due to the desire of our country's organizations to use information technologies, managers must be aware in advance of the effects that these technologies may have on the organization, and individuals, and enter the organization with a completely open eye. (With management levels and users' skills) and use them [10]. Technology is an effective and determining factor in the organizational structure. Technological changes and developments cause the emergence of new industries and jobs and the disappearance or insignificance of some previous industries and jobs, so the entry of technology into the organization creates limitations and opportunities. It affects the organization in all ways. Technology creates a new combination of human effort, machines equipment and methods of doing work that requires the organization to be ready to accept and choose the right combination [11]. Despite the benefits that bureaucracy can bring to any organization, in reality, bureaucracy is like a double-edged sword. On the one hand, it is a factor that invites people to obey laws and hierarchies, and on the other hand, it can be a threat to some of the most important human values. Sometimes the bureaucracy becomes so heavy that it negatively affects the performance of the organization and becomes a major obstacle to achieving organizational goals. Slowness of work, non-acceptance of responsibility for the consequences of ineffective actions, overlapping tasks, ambiguity in work processes, unclear scope of responsibilities and powers, unanswered correspondence, and the like are the consequences of bureaucracy. Based on experience and evidence, heavy administrative bureaucracy in the country and especially in the public sector has caused a decline in the efficiency and effectiveness of systems. Almost all institutions and organizations suffer to some degree [3].

2 Problem statement and research background

Modernist theorists from Marx and Weber to Bell and Toffler have pointed out that the emergence of an efficient modern society with uniform change in the traditional value system is related. The common denominator of most social, cultural and political theorists was the value of human beings. But the perception of the introduction of technology as well as value-normative changes in other approaches is not the same. Some argue that cultural traditions are remarkably enduring and that economic and political behaviour shape societies today. Another school of thought emphasizes the stability of traditional values despite political and economic changes. This school assumes that values are relatively independent of economic conditions. Consequently, the traditional values of the organization will continue to exert independent influence on cultural changes formed by economic development [2]. The needs of the growing population of the earth have no choice but to take advantage of technology and industry, and the introduction of new technology and the establishment of factories have led to an improvement in the condition of the people and human beings can do their job better in every way:

"A housewife with a washing machine is in a better position than another who does not have one." Even this argument values technology to the extent that it is the basis for the cultural development of organizations and societies: Through which this energy is used [4].

2.1 Technology transfer

"Technology transfer" is perhaps one of the most widely used terms in third world countries on the one hand and developed countries on the other. Industry speaks to developing and underdeveloped countries one of the most basic definitions of technology transfer in 1351 from the Handbook of Industrial Contracts (Technologist) states that technology transfer, through the transfer of technology results, is done in the form of documents with instructions and training of relevant specialists [5].

In general, technology transfer can be defined as the movement of technology from its place of creation to another place that can be used. In other words, technology transfer is a process through which technology is disseminated in a place other than the original place of its creation for the production of products, as well as a basis for the creation of new technologies. Technology transfer can be transferred from one industry to another (or from one part of the economy to another) or from one organization to another. International technology cross-border transfers may take place between two developed countries in a developing country, from one developed country to one developing country, or vice versa [6].

2.2 Technology development

The transfer and sale of technology and technical knowledge have been the basis of many development programs. Technical knowledge includes directly applied information and practical skills required to perform production operations. Technology development is the overall process of strengthening the ability to create and improve technology.

Usually in most development programs, the emphasis is on a slight increase in production capacity through the transfer and sale of technology, and in practice, "technology development has been overshadowed by a slight increase in production capacity, and eventually technology transfer contracts have become less the basis for technology development [9].

Considering the cases mentioned in the previous pages, it is appropriate to pay enough attention to the following definitions. Technology is a coherent system of information and tools needed to produce a product. In this definition, the components of a technology system, namely information and tools, are cited in their most general forms. For example, tools include any tools needed for production. From a simple hammer to very advanced machines, chemical and atomic reactors and even complete factories, by definition, information includes categories such as science, knowledge, data, notes, maps, technical documentation, experience, skills, management and organizational forms [12].

2.3 Information technology in the organization

The development of information technology over the years to the present has been centred around commercial applications that are transactional. Telephones, for example, enable audio interactions, and fax machines enable video interactions to share information between merchants. Businesses need some kind of interactive technology to connect remote locations and accelerate production. This will be achieved through information technology [14].

2.4 Organizational strategies

Information technology, if used properly, can be a tool for the organization to succeed in competition. In the information age, more and more organizations have invested heavily in information technology to adapt to the amount of information they need and reduce the time it takes to prepare it. As the value of information has become more and more recognized at the organizational level over the past decade, information technology has also become the agenda of managers. Current trends in information technology show that in the next decade and beyond, if information continues to be used as a national asset, there will be a need for major investment in information technology in organizations [15]. Information technology systems, if used properly, will bring significant benefits to organizations. Organizations can now better plan, control their activities more effectively, and establish better communication through the development and use of management information systems, decision-making systems, strategic information systems, and expert systems [7]. To measure the formality, indicators such as written job descriptions, written and registered job performance, employment contracts, written personnel evaluation documents, and documents on hiring and firing procedures, written communications were examined; To measure the hierarchy, questions such as how many levels there are between an operations manager and a senior manager in your organization are used, and to measure the division of labor, questions are used to measure whether organizations have separate departments for tasks because public relations, human resources, production, etc. are considered [8]?

2.5 Research Hypotheses

2.5.1 The main hypotheses of the research

- The model of technology entry into the organization in the Ministry of Islamic Guidance and Culture can be designed and explained.
- The model of technology entry into the organization has a significant effect on the administrative bureaucracy in the Ministry of Islamic Guidance and Culture.

2.5.2 Research Subsidiary hypotheses

- The components of the technology entry model in the organization in the Ministry of Islamic Guidance and Culture can be determined.
- The components of the technology entry model in the organization have a significant effect on the administrative bureaucracy in the Ministry of Islamic Guidance and Culture.

3 Methodology

In the present study, to analyze the data obtained from the questionnaire, SPSS statistical software and structural equation software PLS in the form of descriptive and inferential statistics in the form of linear and multiple regression have been used according to the statistical needs. To what extent can it measure the desired property correctly? The validity of the instrument is whether the instrument selected for the desired measure has the properties and characteristics for which the tool is designed or not. In other words, the concept of narrative answers the question of the extent to which the measurement tool measures the desired feature. In the present study, the questionnaire questions are tailored to the theoretical foundations and according to the quality of theoretical and operational definitions of each of the indicators, scales and variables, and to determine the validity of the content of the advice of professors, experts and researchers in the field related to the subject of the research who was aware of this field were used and the validity of each question and structures was examined. Then, after the questionnaire was approved by the experts, the questionnaires were completed among the statistical sample of the research and the construct validity was examined.

The structural equation model is one of the new statistical methods and one of the most powerful multivariate analysis methods, and its main application is in multivariate subjects. Multivariate analysis refers to a series of analysis methods whose main feature is the simultaneous analysis of several independent variables with several dependent variables. Structural equations are from the multivariate regression family, which allows researchers to test a set of regression equations simultaneously [13].

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

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

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

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

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

$$(x) = \frac{2}{\sqrt{\pi}} \int_0^x e^{-t^2} dt, \qquad n = (n_1, n_2) \tag{3.5}$$

where

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

$$n_2 = \left\lceil \frac{2}{2H}\left(A\left(\frac{\pi}{6} - B + D\right) + H + \sqrt{\left(A\left(\frac{\pi}{6} - B + D\right) + H\right)^2 + 4AH\left(\frac{\pi}{6} + \sqrt{A} + 2B - C - 2D\right)}\right)\right\rceil \tag{3.6}$$

where

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

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.

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

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

- The Goodness-of-fit tests

  As their name suggests, goodness-of-fit tests determine whether a particular distribution is well-fitted. Calculating goodness-of-fit statistics also helps to rank the fitted distributions according to how well they fit the data.

  – **The first index- RMESA**

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

  – **The second index- GFI**

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

  – **The third index – AGFI**

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

4 Findings

Considering that the present research model measures the relationships between several hidden variables (main research variables) simultaneously, structural equation modelling was used to analyze the data and test the hypotheses. In this study, for more accurate results, to test the conceptual model of the research, the PLS method was used, which is a variance path modelling technique and allows the study of theories and metrics simultaneously. In this method, two models are examined: 1- External model, which is used to examine the relationships between indicators (research questions) with the main variables related to themselves, which is equivalent to the same measurement model in covariance-based methods. 2. The internal model, measures the structural part of the model and is used to examine the relationships between the hidden variables (main variables) from which the research hypotheses are formed.

4.1 External model (measurement) of research hypotheses

In the first stage of the data analysis phase, it should be measured with a measurement model to determine that the model has an acceptable level of validity and reliability. By examining this model, the relationship between the variables and the observed markers is determined. This step is performed using the PLS-Algorithm function. For this purpose, the fitness indicators listed in (Fig. 1) should be examined.

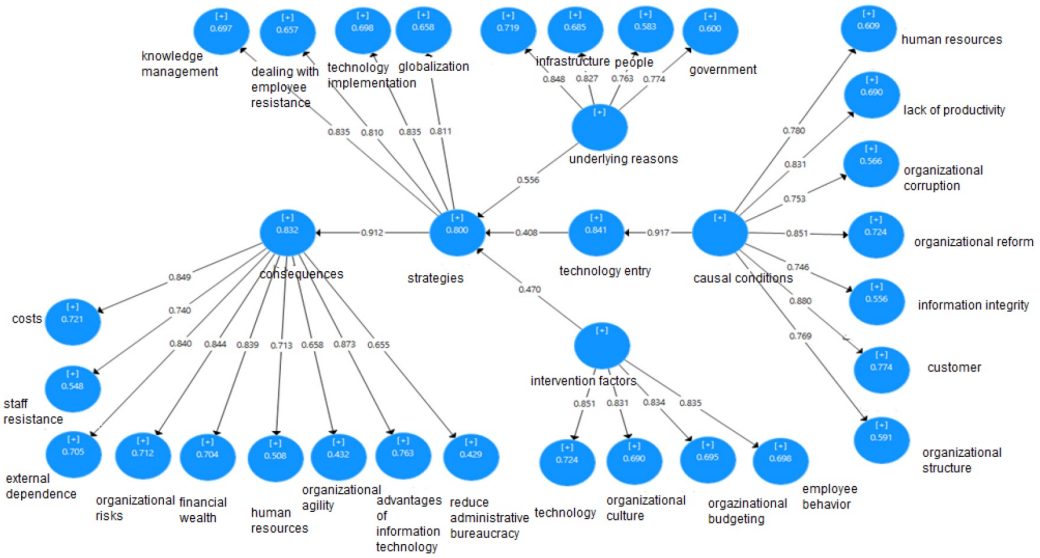

Figure 1: Output of external model (structural equations) model of research paradigm in smart pls software

After measuring the reliability and convergent validity, divergent validity or Fornell-Locker test should be taken. The Fornell-Larker criterion states that a variable should be more dispersed among its own definitions than the other

latent variables. Therefore, statistically, the AVE of each current variable must be greater than the highest second power of the correlation of that variable with other latent variables. To reduce the calculations, the equivalent method can be used, i.e. comparing the AVE root with correlations.

Table 1: Comparing the AVE root with correlations

	Technology Entry	Underlying Reasons	Intervention Factors	Strategies	Causal Conditions	Consequences
Technology Entry	0.799					
Underlying Reasons	0.762	0.864				
Intervention Factors	0.679	0.571	0.842			
Strategies	0.729	0.775	0.573	0.789		
Causal Conditions	0.632	0.522	0.766	0.502	0.913	
Consequences	0.745	0.657	0.774	0.618	0.740	0.948

4.2 Internal model (fitting structural research model)

In the next step, the structural model and the relationships between the structures must be examined. The Bootstrapping function is used for this purpose. The number of statistical samples in this research is 384 and the number of 500 is considered as Bootstrap test samples. Figure 2 shows the output of the structural model.

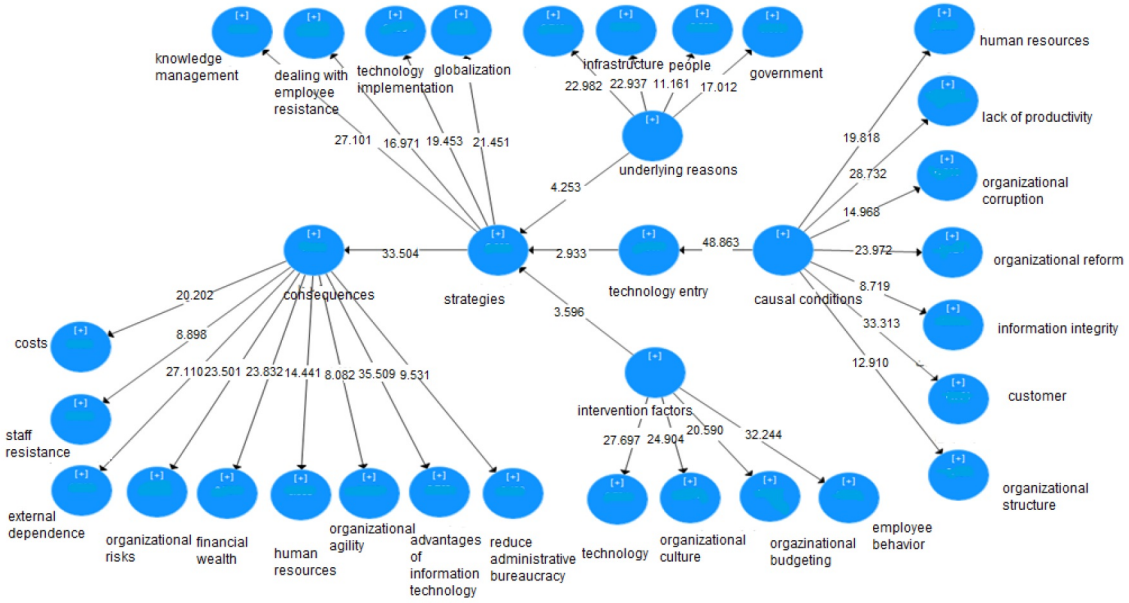

Figure 2: Internal model output (standard coefficients) research paradigm model in smart pls software

4.3 Coefficient of determination

The most common criterion for examining the fit of a structural model in a research is the R^2 coefficients related to the endogenous (dependent) latent variables of the model. R^2 is a measure of the effect of an exogenous variable on an endogenous variable, and three values of 0.19, 0.33, and 0.67 are considered as the criterion values for the weak, medium, and strong values of R^2. According to the table below, the value of R^2 has been calculated for the endogenous structures of the research, which confirms the suitability of the structural model according to the three values (Table 2).

Table 2: R Square

	R Square	Result
Technology Entry	0.842	strong
Strategies	0.798	strong
Consequences	0.832	strong

In Table 2 we see these values that the numbers are in the appropriate range.

4.4 Stone-Geisser Criterion (Q^2)

Another criterion shows the predictive power of the model, and if the value of Stone Geiser for a dependent (endogenous) variable achieves three values of 0.02, 0.15 and 0.35, respectively, it indicates the weak, medium and strong predictive power of the variable. Or the independent (exogenous) variables associated with that dependent variable. It actually measures the quality of the structural model for each endogenous block.

Table 3: Currency Index (Q^2)

Variable	Q^2	**Result**
Technology Entry	0.285	strong
Strategies	0.327	Relatively strong
Consequences	0.387	strong

In Table 3, we see the values for Q^2, which according to the criterion value indicate the strength of the model for forecasting, and the fit of the structural model is once again confirmed.

4.5 Hypothesis test results

Hypothesis 1: The causal conditions of research have a significant effect on the introduction of technology in the staff of the Ministry of Culture and Islamic Guidance.

Table 4: Results of the first hypothesis

	Path coefficient	**Standard Error**	**T**	**Significance level**
Technology Entry → Causal Conditions	0.9147	0.019	48.863	0.000

Based on the model output and the analysis of the obtained path in the standard coefficient and significance of the model, considering that the value of the statistic (t) in the path of the first hypothesis is greater than 2.57, it can be said that at 99.99% confidence level and 0.01 error level research has a significant effect on the introduction of technology in the staff of the Ministry of Culture and Islamic Guidance.

Hypothesis 2: The introduction of technology has a significant effect on research strategies in the staff of the Ministry of Culture and Islamic Guidance.

Table 5: Results of the second hypothesis

	Path coefficient	**Standard Error**	**T**	**Significance level**
Strategies → Technology Entry	0.408	0.139	2.933	0.004

Based on the model output and the analysis of the path obtained in the standard coefficient mode and the significance of the model, considering that the value of the statistic (t) in the path of the second hypothesis is greater than 2.57, it can be said that at 99.99% confidence level and 0.01 error level It has a significant effect on research strategies in the staff of the Ministry of Culture and Islamic Guidance.

Hypothesis 3: Research intervention factors have a significant effect on research strategies in the staff of the Ministry of Culture and Islamic Guidance.

Table 6: Results of the third hypothesis

	Path coefficient	**Standard Error**	**T**	**Significance level**
Strategies → Intervention factors	0.470	0.131	3.596	0.000

Based on the output of the model and the analysis of the obtained path in the standard coefficient and significance of the model, considering that the value of the statistic (t) in the path of the third hypothesis is greater than 2.57, it can be said that at 99.99% confidence level and 0.01 error level research has a significant effect on research strategies in the staff of the Ministry of Culture and Islamic Guidance.

Hypothesis 4: Research contextual factors have a significant effect on research strategies in the staff of the Ministry of Culture and Islamic Guidance.

Based on the model output and the analysis of the obtained path in the standard coefficient and significance of the model, considering that the value of the statistic (t) in the path of the fourth hypothesis is greater than 2.57, it

Table 7: Results of the forth hypothesis

	Path coefficient	Standard Error	T	Significance level
Strategies → Underlying Reasons	0.556	0.219	4.253	0.000

can be said that at 99.99% confidence level and 0.01 error level research has a significant effect on research strategies in the staff of the Ministry of Culture and Islamic Guidance.

Hypothesis 5: Research strategies have a significant effect on the consequences of research in the staff of the Ministry of Culture and Islamic Guidance.

Table 8: Results of the fifth hypothesis

	Path coefficient	Standard Error	T	Significance level
Consequences → Strategies	0.912	0.027	33.504	0.000

Based on the model output and the analysis of the obtained path in the standard coefficient and significance of the model, considering that the value of the statistic (t) in the path of the fifth hypothesis is greater than 2.57, it can be said that at 99.99% confidence level and 0.01 error level research strategies It has a significant effect on the consequences of research on the staff of the Ministry of Culture and Islamic Guidance.

Hypothesis 6: The introduction of technology has a significant effect on administrative bureaucracy in the staff of the Ministry of Culture and Islamic Guidance.

Table 9: Results of the sixth hypothesis

	Path coefficient	Standard Error	T	Significance level
Administrative Bureaucracy → Technology Entry	−0.843	0.027	26.655	0.000

Based on the model output and the analysis of the path obtained in the standard coefficient mode and the significance of the model, considering that the value of the statistic (t) in the path of the sixth hypothesis is greater than 2.57, it can be said that at 99.99% confidence level and 0.01 error level. It has a significant effect on administrative bureaucracy in the staff of the Ministry of Culture and Islamic Guidance.

5 Summary of research results

A review of the research literature shows that before the eighteenth century, the industrial revolution of technology and industry relied more on experience, and after that, as events approach the present era, the dynamics of science in technology become broader and deeper to the point where advanced industry Today's core is only possible through the efforts of scientists and their calculations. In other words, technology and industry are completely dependent on science. Every new technology disrupts the order and tradition of the past. Such a process creates a cultural rupture in society, which, if no solution is found, gives way to imbalances. Cultural rupture makes it difficult to transfer thought and experience from the past to the present and the future. Such a cultural divide prevents the transmission of the national heritage, traditions and good customs of the past to the next generation. Today's generation may think that they have never had anything to say and that they should start from scratch. Repeating this from scratch fuels individual and social crises and perpetuates imbalances. Naturally, the clash of old and new technology tends to leave one and isolate the other. In today's world, technology is the dough of human development in the organization and society and determines the basic axes of human resource development and its nature by the needs of society and human beings. In human resource development, new human capacities must always be recognized, so that the development of human capabilities and qualities can be done as a continuous process. Achieving this depends on the use of technology because in the process of technology, information is constantly produced, processed, distributed and managed, therefore, technology will be the solution to problems when it serves human development and human capabilities are combined and integrated. Lead development and productivity.

The results also showed that the causal conditions of research have a significant effect on the entry of technology in the staff of the Ministry of Culture and Islamic Guidance (0.917), the entry of technology has a significant effect on research strategies in the staff of the Ministry of Culture and Islamic Guidance (0.388). Research has a significant effect on research strategies in the staff of the Ministry of Culture and Islamic Guidance (0.467), research contexts have a significant effect on research strategies in the staff of the Ministry of Culture and Islamic Guidance (0.577), research

strategies on research outcomes in the staff of the Ministry Islamic culture and guidance has a significant effect (0.912) and the introduction of technology has a significant effect on administrative bureaucracy in the staff of the Ministry of Culture and Islamic Guidance (-0.843). Among the limitations of this research include the intrinsic limitation of the questionnaire. Given that the questionnaire measures individuals' perceptions of reality, the possibility should not be ignored that this perception does not fully correspond to reality. In this study, according to the purpose of the study, only some of the variables that can play a role in infrastructure, staff and client relationships were examined. The time frame in the present study is focused on a specific range that may fluctuate. In particular, this range has not been ineffective.

References

[1] M. Ahmadi, A. Jalalian, and I. Khorshidvand, *What effect has technology had on human life*, Fourth Nat. Conf. New Ideas Engin., Rasht, 2020.

[2] A. Ahmed, S.S. Abu-Naser, S.A. El Talla, and M.J. Al Shobaki, *The impact of information technology used on the nature of administrators work at Al-Azhar University in Gaza*, Int. J. Acad. Info. Syst. Res. **2** (2018), no. 6, 1–20.

[3] T. Azar Ain, *The role of human resources and technology in the development of third world organizations*, First Int. Conf. Ind. Engin. Manag. Account., Tehran, 2020.

[4] M. Baekgaard, P.B. Mortensen, and H. Bech Seeberg, *The bureaucracy and the policy agenda*, J. Public Admin. Res. Theory **28** (2018), no. 2, 239–253.

[5] D. Berry, *Designing innovative clean energy programs: Transforming organizational strategies for a low-carbon transition*, Energy Res. Soc. Sci. **67** (2020), 101545.

[6] D. Bolzani, F. Munari, E. Rasmussen, and L. Toschi, *Technology transfer offices as providers of science and technology entrepreneurship education*, J. Technol. Transfer **46** (2021), no. 2, 335–365.

[7] M. Bull, D. Watson, S.N. Amin, and K. Carrington, *Women and policing in the South Pacific: A pathway towards gender-inclusive organizational reform*, Police Practice Res. **22** (2021), no. 1, 389–408.

[8] M. Cayford and W. Pieters, *Effectiveness fettered by bureaucracy–why surveillance technology is not evaluated*, Intell. Nat. Secur. **35** (2020), no. 7, 1–16.

[9] P. De Filippi and S. Hassan, *Blockchain technology as a regulatory technology: From code is law to law is code*, arXiv preprint arXiv:1801.02507, (2018).

[10] A. Esfandiarpour, *The role of information and communication technology in the management of cultural diversity of modern workforce and virtual teams*, First Nat. Conf. Account. Manag., Shiraz, 2016.

[11] N. Ismaili Rador and J. Soheili, *The impact of new technologies in the construction of special smart residential buildings, The role of technology and information technology in human resource management*, Third Ann. Nat. Conf. Modern Manag. Sci., Gorgan, 2018.

[12] D.J. Provan, S.W. Dekker and A.J. Rae, *Bureaucracy, influence and beliefs: A literature review of the factors shaping the role of a safety professional*, Safety Sci. **98** (2017), 98–112.

[13] M. Sarstedt, L. Radomir, O.I. Moisescu, and C.M. Ringle, *Latent class analysis in PLS-SEM: A review and recommendations for future applications*, J. Bus. Res. **138** (2022), 398–407.

[14] D. Sastararuji, D. Hoonsopon, P. Pitchayadol, and P. Chiwamit, *Cloud accounting adoption in small and medium enterprises: an integrated conceptual framework: Five factors of determinant were identified by integrated technology-organization-environment (TOE) framework, diffusion of innovation (DOI), institutional theory (INT) and extended factors*, 2nd Int. Conf. Ind. Engin. Ind. Manag., 2021, pp. 32–38.

[15] K. Størkersen, T. Thorvaldsen, T. Kongsvik, and S. Dekker, *How deregulation can become overregulation: An empirical study into the growth of internal bureaucracy when governments take a step back*, Safety Sci. **128** (2020), 104772.