

METHODOLOGY OF EVALUATION OF ELECTRONIC TECHNOLOGIES INTERACTION DURING THE MANAGEMENT OVER ADMINISTRATIVE SERVICES PROVISION PROCESS

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The article offers a methodology for evaluation of electronic technologies interaction during the management over administrative services provision process. The application of this methodology will give a possibility to perform a monitoring of state of electronic technologies interaction during the process of administrative services provision. It will also give an opportunity to show up the issues of concern that delay formation of the unified IT infrastructure of the system of administrative services provision. There have been used scientific recommendations of Ukrainian scientists as a methodology basis for investigation.

Keywords: evaluation, electronic technology, process, procedure, interaction.

Articulation of issue. The introduction of electronic technologies into the management over administrative services provision will allow converting it into the electronic form and providing administrative services to all subjects of appeal on a distant basis. The presence of a fully functioning e-governance is not only an indicator of the involvement of government to the global information – oriented society, but also one of the main universal instruments to stabilize social and economic systems, particularly, system of administrative services provision and their further all-round development.

Analysis of the latest researches and publications. The following scientists made a major contribution to the research of theoretical foundations of e-governance technologies: A. Bell, M. Bonem, M. Bouns, S. Zuridis, S. Klift, S. Buras, N. Katris, P. Norris and others.

Clearance of previously unsolved parts of the common issue. The formation of concept «e-governance» that involves modernization of traditional paradigm of hierarchical state governance based on the orders, control and subordination into governance with the help of electronic technologies that allows authorities of state government to perform hierarchically-network interaction.

Nowadays, the system of administrative services provision, being transformed into the electronic

form, primarily, through introduction of electronic forms of interaction, has been supplemented with different informational and communication technologies, which functioning requires the evaluation of their interaction.

Purpose of article. To develop methodology of evaluation of electronic technologies interaction during the management over administrative services provision process.

Statement of basis materials. In order to increase the effectiveness of the introduction of ICT into the management over administrative services provision process, it is necessary to evaluate the functioning of electronic technologies and their interaction, and therefore, the author offered to use the methods for interaction evaluation.

For estimation of electronic interaction, we offer to use methodology offered by D. Polishchuk [2], for interactive estimation of complicated hierarchically-network systems that will allow to evaluate a state and quality of electronic technology interaction in the process of governance over the administrative services provision at the level of functioning of such system components as electronic documents, departmental informational systems and electronic communication channels on the basis of analysis of their interaction. Herein methodology will allow defining components

of the system, which condition requires first emphasis for unimpaired operation of the unified IT infrastructure of system. In order to increase its efficiency, it is necessary that the results of monitoring would allow performing a precise forecast of the system behavior and reflect the most problematic components, which primarily needs to be developed.

We offer to perform the estimation of electronic interaction of IT infrastructure of system of administrative services provision at the level of such components as electronic document $S_i, i = \overline{1, I}$, and process $[P_0, P_N]$, the sequence of procedures $P_n, n = \overline{1, N}$ and electronic communicational channel that connects them and through which there is an electronic interaction $D_n = (P_n, P_{n+1}), n = \overline{1, N-1}$. Here I – means number of electronic documents that are under the process $[P_0, P_N]$ for the certain period of time. Let's suppose that the process of administrative service provision is completely determined that means it has a certain order of actions that is subject to the terms of legislation and these actions allow exchanging information in electronic form between two or more informational systems that are included into unified IT infrastructure of system of administrative services provision.

The obstacle for performance of electronic interaction directed at implementation of the process of administrative service provision in electronic form is a set of reasons. Firstly, technological incompatibility of the informational systems that means unsatisfactory state of the electronic communicational channel, secondly – non-conformity of electronic document form and recipient informational system that means unsatisfactory state of the electronic document, thirdly – the absence of informational system that means unsatisfactory state of informational system. From all above-mentioned reasons, there is only one that directly concerns the state of electronic communicational channel.

The delay of electronic document on certain procedure in the process of administrative service provision in the electronic form may be caused by unsatisfactory state of informational system, non-conformity of electronic document form and informational system and absence of informational system for the certain procedure. In this case, the obstacle to perform electronic interaction is non-maintenance of electronic document with informational system. It means that there is a direct influence of organizational aspect of IT infrastructure of system.

The problems of such character as technological incompatibility during the electronic document flow make work of the whole system of administrative services provision more complicated. Moreover, they cause destabilization of the electronic document flow and have a negative influence on the ways of establishment of unified IT infrastructure of system of administrative services provision. The main purpose of estimation is a detection and localization of these factors.

Let's mark T^0 as a minimum time period that takes into account a periodicity of electronic document flow with a process $[P_0, P_n]$. Let us suppose that T_j – is a period with duration of T^0 with the order number $j, j = \overline{1, J}, T^j = JT^0$.

Let's consider that estimation $e(S_i, P_n, T_j)$ of quality of carrying out the procedure P_n with electronic document S_i for the period T_j is equal to:

$$5, \text{ if } t_{i,n}^{c,r} = t_{i,n}^{c,\min}, \quad (1)$$

where $t_{i,n}^{c,\min}$ is the minimum period of time for carrying out the procedure P_n with electronic document S_i ; $t_{i,n}^{c,r}$ is real time of carrying out the procedure $P_n, n = \overline{1, N}$ for processing of electronic document S_i .

During the process of carrying out the procedure there were not any delays, the procedure is customized as much as possible that allows covering delays that happened before.

$$4 + (t_{i,n}^{c,r} - t_{i,n}^{c,g}) / (t_{i,n}^{c,\min} - t_{i,n}^{c,g}), \text{ if } t_{i,n}^{c,r} \in (t_{i,n}^{c,\min}, t_{i,n}^{c,g}], \quad (2)$$

where $t_{i,n}^{c,g}$ is time of carrying out the procedure P_n with electronic document S_i pursuant to the period set as a norm by regulators.

During the process of carrying out the procedure there were not any delays, the procedure is customized partially that allows covering partially delays that happened before.

$$3 + (t_{i,n}^{c,g} + t_{i,n}^{s,g} - t_{i,n}^{s,\min} - t_{i,n}^{c,r}) / (t_{i,n}^{s,g} - t_{i,n}^{s,\min}), \quad (3)$$

$$\text{if } t_{i,n}^{c,r} \in (t_{i,n}^{c,g}, t_{i,n}^{c,g} + (t_{i,n}^{s,g} - t_{i,n}^{s,\min})),$$

where $t_{i,n}^{s,g}$ is time that is designed for electronic document transmission S_i through electronic communicational channel D_n pursuant to the period set as a norm by regulators; $t_{i,n}^{s,\min}$ is minimum allowed time for transmission of electronic document S_i through electronic communicational channel D_n .

Thus, the delay of document during the carrying out the procedure P_n should be covered during the transmission through electronic communicational channel for the next procedure.

$$2, \text{ if } t_{i,n}^{c,r} < t_{i,n}^{c,g} + (t_{i,n}^{s,g} - t_{i,n}^{s,\min}), \quad (4)$$

Thus, the delay of electronic document during the carrying out the procedure P_n cannot be covered during the transmission through electronic communicational channel. In this case, $i = \overline{1, I}, n = \overline{1, N}, j = \overline{1, J}$.

Let's consider that an estimation $e(S_i, D_n, T_j)$ of quality of electronic document transmission S_i through electronic communicational channel D_n for the period T_j is equal to:

$$5, \text{ if } t_{i,n}^{s,r} = t_{i,n}^{s,\min}, \quad (5)$$

where $t_{i,n}^{s,r}$ is real period of time during which an electronic document S_i passes electronic communicational channel $D_n, n = \overline{1, N-1}, i = \overline{1, I}$.

It means that time of electronic document transmission through electronic communicational channel covers previous delays in transmission as much as it possible.

$$4 + (t_{i,n}^{s,r} - t_{i,n}^{s,g}) / (t_{i,n}^{s,\min} - t_{i,n}^{s,g}), \text{ if } t_{i,n}^{s,r} \in (t_{i,n}^{s,\min}, t_{i,n}^{s,g}), \quad (6)$$

It means that time of electronic document transmission through electronic communicational channel covers previous delays in transmission partially.

$$3 + (t_{i,n}^{s,g} + t_{i,n}^{c,g} - t_{i,n}^{c,\min} - t_{i,n}^{s,r}) / (t_{i,n}^{c,g} - t_{i,n}^{c,\min}), \quad (7)$$

$$\text{if } t_{i,n}^{s,r} \in (t_{i,n}^{s,g}, t_{i,n}^{s,g} + (t_{i,n}^{c,g} - t_{i,n}^{c,\min})),$$

It means that delay of electronic document during the transmission through electronic communicational channel should be completely covered during the carrying out of the next procedure;

$$2, \text{ if } t_{i,n}^{s,r} < t_{i,n}^{s,g} + (t_{i,n}^{c,g} - t_{i,n}^{c,\min}), \quad (8)$$

It means that delay of electronic document during the transmission through electronic communicational channel cannot be covered during the carrying out of the next procedure. In this case, $i = \overline{1, I}, n = \overline{1, N-1}, j = \overline{1, J}$.

In order to estimate the quality of carrying out the procedure and transmission of electronic documents through electronic communicational channels that provide connection between procedures, we are using a rating scale of points. Due to the fact that a scale of points allow defining the level of load on the system's components, appeared in case of necessity to cover delays of electronic documents and connected with them risks. In number, the amount of supplements and efforts to intensify procedure are reflected with fractional parts of points $e(S_i, P_n, T_j)$, which exceed the magnitude of the whole number equal to T_q or fractional parts of points $e(S_i, D_n, T_j)$ that are less than the whole number equal to T_q . For example, the estimation $e(S_i, P_n, T_j)$ equal to four points means that carrying out the procedure P_n with electronic document S_i during the time period T_j was conducted rather efficiently, as during the period of carrying out the procedure, it was possible not only to perform all transactions on due time, but even to cover previous delays. But, the magnitude of compensation (fractional parts of points) indicates the level of delays and their influence on the loading level of system. If the meanings $e(S_i, P_n, T_j)$ are less than four points, the covering of delay is being defined with fractional part of point and may be performed through the electronic communicational channel on the way to the next procedure.

But, the local estimation of delay of separate electronic document during the conduction of separate procedure or passing through the electronic communicational channel cannot be a key factor of their state or quality of functioning. We can obtain more justified conclusions through estimation of delays of electronic documents that are under the certain procedure or sequence of procedures and electronic communicational channels during the specified period of time T^j . Such estimations allow revealing partially the reasons of delays in the functioning of separate system's components that are included in the process of administrative services provision.

Further, the estimation of procedure P_n and electronic communicational channel D_n pursuant to the results of electronic document processing S_i during the period T^j should be defined in accordance with the following correlation

$$E(S_i, P_n, T^j) = \langle 1, e(S_i, P_n, T) \rangle_{R^j} / J, \quad (9)$$

where $e(S_i, P_n, T) = \{e(S_i, P_n, T_j)\}_{j=1}^J$, $T = \{T_j\}_{j=1}^J$.

$$E(S_i, D_n, T^j) = \langle 1, e(S_i, D_n, T) \rangle_{R^j} / J, \quad (10)$$

where $e(S_i, D_n, T) = \{e(S_i, D_n, T_j)\}_{j=1}^J$, $T = \{T_j\}_{j=1}^J$.

With a successive increase of time period T^j , the meanings $E(S_i, P_n, T^j)$ allow following dynamics of quality changes during the carrying out the procedure $P_n, n = \overline{1, N}$ with electronic document S_i - transmission through electronic communicational channel $D_n, n = \overline{1, N-1}, i = \overline{1, I}$.

Using the method of nonlinear aggregation, we form generalized estimation of procedure P_n and electronic communicational channel D_n in accordance with results of processing of electronic document S_i during the period T_j , which are being defined pursuant to the following correlations

$$E^*(S_i, P_n, T^j) = \prod_{j=1}^J e(S_i, P_n, T_j) / (\sum_{j=1}^J e(S_i, P_n, T_j) / J)^{J-1}, \quad (11)$$

$$E^*(S_i, D_n, T^j) = \prod_{j=1}^J e(S_i, D_n, T_j) / (\sum_{j=1}^J e(S_i, D_n, T_j) / J)^{J-1}, \quad (12)$$

It allows identifying the level of stability of carrying out the procedure P_n with electronic document S_i and its transmission through electronic communicational channel D_n during the period T^j .

The processes of administrative services provision may have different priority ranking that depends on the demand for specific administrative service. Thus, it is necessary to define the estimation of procedure P_n and electronic communicational channel D_n pursuant to the results of processing of the set of electronic documents $S = \{S_i\}_{i=1}^I$ during the period T_j that should be defined according to the correlations

$$E_S(P_n, T_j) = \langle R_S, e(S, P_n, T_j) \rangle_{R^j} / \langle R_S, 1 \rangle_{R^j}, \quad (13)$$

where $e(S, P_n, T_j) = \{e(S_i, P_n, T_j)\}_{i=1}^I$; $R_S = \{\rho_{S_i}\}_{i=1}^I$ is weight coefficient vector that defines priority ranking of electronic documents from the set $\{S_i\}_{i=1}^I$.

$$E_S(D_n, T_j) = \langle R_S, e(S, D_n, T_j) \rangle_{R^j} / \langle R_S, 1 \rangle_{R^j}, \quad (14)$$

where $e(S, D_n, T_j) = \{e(S_i, D_n, T_j)\}_{i=1}^I$.

If we have estimations $E_S(P_n, T_j)$ and $E_S(D_n, T_j)$ for each from T_j periods, we will obtain a range of estimations, which investigation will allow revealing logical things and forecast the quality of carrying out the procedure with certain electronic documents or their transmission through certain electronic communicational channels that ensure the process $[P_0, P_N]$.

The estimation of carrying out the procedure P_n and electronic communicational channel D_n in accordance with results of transmission of electronic documents aggregate S during the time period T^j should be defined according to the correlations

$$E_S(P_n, T^j) = \langle 1, E_S(P_n, T) \rangle_{R^j} / J, \quad (15)$$

where $E_S(P_n, T) = \{E_S(P_n, T_j)\}_{j=1}^J$,

$$E_S(D_n, T^j) = \langle 1, E_S(D_n, T) \rangle_{R^j} / J, \quad (16)$$

where $E_S(D_n, T) = \{E_S(D_n, T_j)\}_{j=1}^J$.

With a successive increase of T^j the meanings of these estimations allow following dynamics of quality changes during the processing of electronic documents in the procedure $P_n, n = \overline{1, N}$, and their transmission through electronic communicational

channel $D_n, P_n, n = \overline{1, N-1}$. In case, if the estimation $E(S_i, P_n, T^j)$ of the processing of electronic document S_i in the procedure P_n for the period T^j is considerably less than $E_S(P_n, T^j)$ and (or) aggregative estimation $E(S_i, D_n, T^j)$ of its transmission through electronic communicational channel D_n for the period T^j is considerably less than $E_S(D_n, T^j)$, we can make a justified conclusion about the presence of drawbacks in the standard regulatory activity of herein electronic document transmission. If T^j – is a period between scheduled investigations of system's components, the estimations $E_S(P_n, T^j)$ and $E_S(D_n, T^j)$ are advisable to consider as components of aggregative estimation that is being performed on the basis of such investigations.

The estimations of processing of electronic document S_i in the sequence of procedures $P = \{P_n\}_{n=1}^N$ and its transmission through electronic communicational channels $D = \{D_n\}_{n=1}^{N-1}$ that ensure connections between procedures during the time period T_j should be defined according to the correlations

$$E_p(S_i, T_j) = \langle R_p, e(S_i, P, T_j) \rangle_{R^N} / \langle R_p, 1 \rangle_{R^N}, \quad (17)$$

where $e(S_i, P, T_j) = \{e(S_i, P_n, T_j)\}_{n=1}^N$; $R_p = \{\rho_{P_n}\}_{n=1}^N$ is weight coefficient vector that defines priority ranking of procedures in the process $[P_0, P_N]$.

$$E_D(S_i, T_j) = \langle R_D, e(S_i, D, T_j) \rangle_{R^N} / \langle R_D, 1 \rangle_{R^N}, \quad (18)$$

where $e(S_i, D, T_j) = \{e(S_i, D_n, T_j)\}_{n=1}^N$; $R_D = \{\rho_{D_n}\}_{n=1}^N$ is weight coefficient vector that defines priority ranking of electronic communicational channels in the process.

Analysis of sequences $E_p(S_i, T_j)$ and $E_D(S_i, T_j)$, $i = \overline{1, I}$, $j = \overline{1, J}$, allow discovering the cyclical movements and forecasting the quality of processing of the electronic document S_i in the procedures and its transmission through electronic communicational channel that ensure connection among procedures in the process $[P_0, P_N]$. The usage of method of non-linear aggregation for electronic documents of different priority ranking through the electronic communicational channels of different priority ranking is unreasonable due to the complexity of recording the weight coefficients.

The estimation of processing of electronic document S_i in the sequence of procedures $\{P_n\}_{n=1}^N$ and its transmission through electronic communicational channels $\{D_n\}_{n=1}^{N-1}$ that ensure interaction in the process $[P_0, P_N]$, during the time period T^j should be defined according to the correlations

$$E_p(S_i, T^j) = \langle 1, E_p(S_i, T) \rangle_{R^J} / J, \quad (19)$$

where $E_p(S_i, T) = \{E_p(S_i, T_j)\}_{j=1}^J$,

$$E_D(S_i, T^j) = \langle 1, E_D(S_i, T) \rangle_{R^J} / J, \quad (20)$$

where $E_D(S_i, T) = \{E_D(S_i, T_j)\}_{j=1}^J$.

With a successive increase of T^j the meanings $E_p(S_i, T^j)$ and $E_D(S_i, T^j)$, $i = \overline{1, I}$ allow following dynamics of quality changes during the processing of electronic document S_i in the procedures and its transmission through electronic communicational channel that ensures a process $[P_0, P_N]$.

The method of non-linear aggregation allows forming the generalized estimations of the set of procedures $\{P_n\}_{n=1}^N$ and electronic communicational channels $\{D_n\}_{n=1}^{N-1}$ that ensure a process $[P_0, P_N]$ pursuant to the results of processing of electronic document S_i during the period T^j . These estimations are being defined pursuant to the correlations

$$E_p^*(S_i, T^j) = \prod_{j=1}^J E_p(S_i, T_j) / (\sum_{j=1}^J E_p(S_i, T_j) / J)^{J-1}, \quad (21)$$

$$E_D^*(S_i, T^j) = \prod_{j=1}^J E_D(S_i, T_j) / (\sum_{j=1}^J E_D(S_i, T_j) / J)^{J-1}, \quad (22)$$

that give an opportunity to define the level of stability during the electronic document processing S_i in the subsystems and its transmission through electronic communicational channel that ensure the process $[P_0, P_N]$ during the period T^j .

We can define estimation of processing of the set of electronic documents $\{S_i\}_{i=1}^I$ in the sequence of procedures $\{P_n\}_{n=1}^N$, related to the process $[P_0, P_N]$, for the period T_j pursuant to the correlation

$$E_{S,p}(T_j) = \langle R_S, E_p(S, T_j) \rangle_{R^I} / \langle R_S, 1 \rangle_{R^I} = \langle R_p, E_S(P, T_j) \rangle_{R^N} / \langle R_p, 1 \rangle_{R^N}, \quad (23)$$

where $E_p(S, T_j) = \{E_p(S_i, T_j)\}_{i=1}^I$,

$$E_S(P, T_j) = \{E_S(P_n, T_j)\}_{n=1}^N, \quad j = \overline{1, J}.$$

The analysis of such sequence allow discovering the cyclical movements in quality of processing of all electronic documents that pass procedures related to the process $[P_0, P_N]$ during the period T_j .

In a similar manner, the estimation of the transmission of the electronic documents set $\{S_i\}_{i=1}^I$ through electronic communicational channels $\{D_n\}_{n=1}^{N-1}$, that ensure process $[P_0, P_N]$, for the period T_j should be defined pursuant to the correlation

$$E_{S,D}(T_j) = \langle R_S, E_D(S, T_j) \rangle_{R^I} / \langle R_S, 1 \rangle_{R^I} = \langle R_D, E_S(D, T_j) \rangle_{R^{N-1}} / \langle R_D, 1 \rangle_{R^{N-1}} \quad (24)$$

where $E_D(S, T_j) = \{E_D(S_i, T_j)\}_{i=1}^I$,

$$E_S(D, T_j) = \{E_S(D_n, T_j)\}_{n=1}^{N-1}, \quad j = \overline{1, J}.$$

The analysis of such sequence allow discovering the cyclical movements in quality of transmission of all electronic documents through electronic communicational channels that ensure the process $[P_0, P_N]$ during the period T_j .

The estimations of processing of the electronic documents set $\{S_i\}_{i=1}^I$ in the sequence of procedures $\{P_n\}_{n=1}^N$ and their transmission through electronic communicational channels $\{D_n\}_{n=1}^{N-1}$, that ensure process $[P_0, P_N]$, during the time period T^j should be defined pursuant to the correlations

$$E_{S,p}(T^j) = \langle 1, E_{S,p}(T) \rangle_{R^J} / J, \quad (25)$$

where $E_{S,p}(T) = \{E_{S,p}(T_j)\}_{j=1}^J$,

$$E_{S,D}(T^j) = \langle 1, E_{S,D}(T) \rangle_{R^J} / J, \quad (26)$$

where $E_{S,D}(T) = \{E_{S,D}(T_j)\}_{j=1}^J$.

With a successive increase of T^j the meanings $E_{S,p}(T^j)$ and $E_{S,d}(T^j)$, allow following dynamics of quality changes during the processing of the set of electronic documents $\{S_i\}_{i=1}^J$ in the procedures and their transmission through electronic communication channels that ensure interaction in the process $[P_0, P_N]$. If the generalized estimation $E_S(P_n, T^j)$ of the procedure P_n for the period T^j is much less $E_{S,p}(T^j)$, we can make a justified conclusion about the presence of crucial drawbacks in the organization of system work of administrative services provision or about unsatisfactory state of IT structure. Similarly, if a generalized estimation $E_S(D_n, T^j)$ of electronic communication channel D_n for the period T^j is considerably lower $E_{S,d}(T^j)$, we can make a justified conclusion about the presence of crucial drawbacks. Such conclusions are rather substantial foundations for unscheduled inspection of state or quality of functioning of the relevant system's components.

Thus, we created local and aggregated estimations of the electronic interaction of system's components that form a process. On the basis of these estimations, it is rather reasonable to forecast estimations of the electronic interaction that allow revealing and eliminating the threats on due time that were not foreseen by a forecast made on the basis of regular scheduled investigations, to make amendments to such forecast and to the terms of check-up and development of separate system's components.

The aggregated estimation of transmission of the set of electronic documents $\{S_i\}_{i=1}^J$ in the process $[P_0, P_N]$ at the average for the period T_j is being defined pursuant to the correlation

$$E_S(T_j) = (\rho_S E_{S,p}(T_j) + \rho_D E_{S,d}(T_j)) / (\rho_S + \rho_D), j = \overline{1, J}, \quad (27)$$

where $E_{S,p}(T_j)$, $E_{S,d}(T_j)$ is being defined in (23) and (24) correspondingly, and ρ_p, ρ_D – are weight coefficients that create priority ranking of the set of procedures and electronic communication channels that create processes, during the estimation.

The analysis of sequence $\{E_S(T_j)\}_{j=1}^J$ allow defining the cyclical movements in quality of processing of the electronic documents set $\{S_i\}_{i=1}^J$ in the process $[P_0, P_N]$ in general.

The average estimation of the transmission of the set of electronic documents $\{S_i\}_{i=1}^J$ in the process $[P_0, P_N]$ during the time period T^j is being defined pursuant to the correlation

$$E_S(T^j) = \langle 1, E_S(T) \rangle_{R^j} / J, \quad (28)$$

where $E_S(T) = \{E_S(T_j)\}_{j=1}^J$. With a successive increase of T^j the meanings $E_S(T^j)$ allow following dynamics of quality changes during the processing of the set of electronic documents $\{S_i\}_{i=1}^J$ during the process $[P_0, P_N]$. If the generalized estimation of the separate document $E(S_i, T^j)$ is considerably lower in comparison with $E_S(T^j)$, we can make a justified conclusion about its possible unsatisfactory state or the necessity to change standard regulatory activity of its transmission.

If for the set of electronic documents that are under the process during the time period T^j , the delays are mainly covered in the procedures, it is presumptive, but rather important evidence of the state of electronic document and state of electronic communication channel. On the other side, if the delays are mainly covered through the electronic communication channels, it is an evidence of the state of IT infrastructure or work efficiency during the conduction of procedures. If a generalized estimation of supplements that is an evidence of their mass character is lower in comparison with aggregated estimation of the system's components that create processes, we can make a justified conclusion that a standard regulatory activity of electronic documents transmission is non – optimal.

Supervision of behavior dynamics of aggregated estimations of the electronic interaction of system's components with a successive increase of the meaning T^j will allow determining trends of state and quality changes in the functioning of the relevant system's components. In these conditions, a short-term forecast obtained due to the extrapolation of electronic interaction estimations on the basis of known previous history of their meanings, will allow revealing beforehand the potential components that cause work destabilization. A long-term forecast of the electronic interaction estimations performed, for example, through device of temporal series, allows following the instable changes in the behavior of the main structural elements of complicated hierarchically-network systems and negative trends of their development [1].

Conclusions and offers. Thus, the estimations of electronic interaction of IT structure of the system of administrative services provision perform the following functions:

(9) – (12) allow analyzing the dynamics of quality changes of processing of the certain electronic document in the procedure or its transmission among procedures;

(13) – (16) give opportunities to follow dynamics of quality changes of processing of electronic documents set in the separate procedure or their transmission through separate electronic communication channel during the certain singular time period or largest period of time and to define drawbacks of the standard regulatory activity of electronic documents transmission;

(17) – (22) allow analyzing the processing quality of electronic document in the sequence of procedures or its transmission among procedures and to investigate response in case of small delays of transmission;

(23) – (26) give opportunity to form generalized conclusions about the passing of the sets of electronic documents procedures and among procedures for the certain time period and long time periods that allow revealing low-functioning system's components;

(27) – (28) help to analyze state and efficiency of organization of electronic documents transmission in the process between procedures and in general.

References:

1. Булах І. Система моніторингу та оцінка якості освіти / І. Булах, Ю. Вороненко, В. Кузнєцов, М. Мруга // Матеріали міжнар. семінару «Роль аналітичних досліджень у формуванні національної освітньої політики». – Київ, 11–13 вересня 2001 р.– С. 2–14.
2. Поліщук Д.О. Інформаційна технологія комплексного детермінованого оцінювання складних ієрархічно-мережевих систем: дис. ... канд. тех наук.: 05.13.06 / Поліщук Дмитро Олександрович; М-во освіти і науки, молоді та спорту України, ІППММ НАН України. – Львів, 2017. – 209 с.

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МЕТОДОЛОГІЯ ОЦІНКИ ЕЛЕКТРОННИХ ТЕХНОЛОГІЙ В УПРАВЛІННІ ПРОЦЕСОМ НАДАННЯ АДМІНІСТРАТИВНИХ ПОСЛУГ

Анотація

У статті запропонована методика оцінки взаємодії електронних технологій в управлінні процесом надання адміністративних послуг. Застосування якої дозволить здійснювати моніторинг стану взаємодії електронних технологій в процесі надання адміністративних послуг. Також дозволить виявити проблемні місця, що уповільнює формування єдиної інформаційно-технологічної інфраструктури системи надання адміністративних слуг. Методологічною основою дослідження виступили наукові рекомендації українських вчених.

Ключові слова: оцінка, електронні технології, процес, процедура, взаємодія.

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Аннотация

В статье предложена методика оценки взаимодействия электронных технологий в управлении процессом предоставления административных услуг. Применение которой позволит осуществлять мониторинг состояния взаимодействия электронных технологий в процессе предоставления административных услуг. Также позволит выявить проблемные места, замедляющий формирование единой информационно-технологической инфраструктуры системы предоставления административных слуг. Методологической основой исследования выступили научные рекомендации украинских учёных.

Ключевые слова: оценка, электронные технологии, процесс, процедура, взаимодействие.