

Elections and Russian Citizens Residing Overseas: Prospects for Internet Voting

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Abstract: The article deals with the prospects of Internet voting introduction into electoral process of the Russian Federation. The authors consider utilization of remote electronic methods of voting (online voting) as an instrument to facilitate voting and elevate voter turnout. Russian eligible voters residing overseas due to their limited number and spatial dispersion have been defined as a potential target group for testing Internet voting mechanisms. Reviewing pros and cons factors the authors argue that Internet voting applied for Russian citizens residing overseas is technologically, economically, socially, environmentally and politically viable. The article reasons that remote electronic voting is a crucial component of modern election process.

Index Terms: election system, electronic voting, Internet voting, online voting, Russian Federation, Russian voters residing overseas, voter turnout.

I. INTRODUCTION

A. Setting a problem

Foreign based citizens of the Russian Federation for 2016 represent more than 1.9 mln of 111.7 mln eligible Russian voters [1]. Russian citizens residing overseas are eligible to take part at the federal elections: to elect the President of the Russian Federation, to vote for representatives to the State Duma, the lower chamber of the Federal Assembly of the Russian Federation and participate at referendums. The tendency manifests growth of this number compared to the federal electoral 2008 year (approx. 1.6 mln voters) [2] and 2012 (approx. 1.84 mln voters) [3][4]. However the practice of recent federal elections conducted outside of the country demonstrates dramatically low voter turnout. Approximately 22% of Russian citizens based overseas participate at the elections. Low civic engagement and activism of that social grouping witness deficit of either motivation or possibility to vote.

B. Methods

Several methods have been employed for collecting data necessary for the research. Current election legislation of the Russian Federation, documentation of the Ministry of foreign affairs of the Russian Federation, reports of the

Ministry of communication and mass communications of the Russian Federation, Annual addresses of the President of the Russian Federation to the Federal Assembly of the Russian Federation, transcript of the president of Russia interview have been processed and analyzed for defining guidelines for technological development of the electoral system of the Russian Federation.

Electoral data of 2007, 2008, 2011 and 2012 federal elections and documentation of Central elections commission (CEC) of the Russian Federation were retrieved for crystalizing current electoral tendencies. Reports of international organizations focused on international cyber environment have been examined for conducting comparative analysis and revealing Russia's positions in field of electronic government deviltment.

All of those sources have allowed to identify mainstream tendencies in election process organizations for Russian citizens residing abroad. It also disclosed potential and technical readiness of Russia to implement Internet voting for a limited group of eligible voters located outside of its territory. This research initiates with the assumption about lack of comfortable affordable technological opportunity to vote at the federal elections for Russian citizens residing in foreign countries. Motivational factor is taken out of the framework of this analysis.

II. RECENT FEDERAL ELECTIONS TENDENCIES: VOTING BEYOND RUSSIAN BORDERS

At the elections of the President of the Russian Federation in 2008 only 400711 Russian citizens residing overseas were registered for voting, 326661 of them eventually voted [5]. At 2012 Presidential elections the number of registered voters grew to 459661. That time 436093 of the voted [3][4]. List of overseas registered voters at the elections to the State Duma of the Federal Assembly of the Russian Federation in 2007 consisted of 40500 voters, 289304 of them voted [6]. Elections to the State Duma of 2011 demonstrated another tendency. 320455 eligible voters were included into the voters list. 296537 ultimately voted [7].

Central election commission of the Russian Federation, federal institution responsible for elections organization, in collaboration with the Ministry of Foreign Affairs make cooperative efforts to stimulate turnout by intensive target information campaign, multiplying precinct

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election commissions located outside of the Russian Federation (precinct number increased from 357 to 378 in 2008 and 2012 correspondingly) [3-5] embracing over 143 countries etc. However the task of improving voter turnout remains unresolved. Forthcoming elections to the State Duma of 2016 unlikely to break that pattern.

III. CURRENT VOTING PROCEDURE

Key obstacle preventing majority of Russian eligible overseas voters from taking part at the elections is existing method of voting process organization stipulating allocation of polling stations mainly to the diplomatic and consular locations and localized current voting procedures frequently focused on paper ballot utilization. Current legislation on Fundamental guarantees of the electoral rights and the right to participate in referendum for the citizens of the Russian Federation of 2002 dictates direct personal ballot casting by voters either at the local polling station or with mobile ballot box delivered by the personnel of the election commission to a voter who due to a reasonable cause cannot physically arrive to the polling place [8]. Remote voting mode (by mail, fax or other technical means) is not embedded.

Two methods of casting of ballots are employed at precincts by local electoral commissions according to present election legislation:

1) Paper ballot voting. Voters obtain a paper ballot at polling place, indicate their selection and deposit ballot into a transparent/half-transparent ballot box. After elections are over ballot box is opened and personnel of local electoral commission counts ballots manually (precinct count).

Electronic technology intervention may be seen when optical scanning paper ballot terminals are employed. Such terminal - Complex for processing ballots - represent a ballot box equipped with optical scanning device allowing automatic counting voters' selection at the moment when ballot is cast.

When votes are counted either way the results are reported to the Central election commission.

Complex for processing ballots is employed at the election process in Russia since 2004. Since that it has been upgraded several times. Millions of Russian voters have casted ballots applying such a complex.

2) Genuine electronic voting machines are also in often use. They represent touch screen voting machines – Complex for electronic voting, allowing voting without paper ballot use.

Taking into account limited general number of overseas precinct election commissions (polling sites) and territorial dispersion of Russian citizens in foreign countries it becomes evident that nontraditional approaches to voting procedure architecture are required. Novel approaches relate to introduction of latest methods of electronic voting and remote voting especially.

IV. ELECTRONIC VOTING AS A METHOD TO TREAT LOW VOTER TURNOUT OF RUSSIAN OVERSEAS VOTERS

Electronic voting (E-voting) is a selection making process by an eligible voter involving application of electronic devices: terminals, information and

communication networks (e.g. Internet), personal electronic devices etc.

Technically electronic voting represents a transmission, receiving, tabulation of voters' selections – answers to a specific question. Citizen's vote is an answer to a question which of the candidates is more favorable for a voter [9].

A. Approaches to a spatial electronic voting organization

Electronic voting is suggested with two configurations: **localized** and **remote**. In a framework of localized electronic voting (polling place electronic voting) citizens cast their ballots utilizing electronic machines (touch screen terminals, optical scanners etc.) at the polling site. On the one hand voting process becomes a little more sophisticated and attractive in a short run. On the other hand it does not make a voting process more comfortable. The idea of polling place electronic voting is rather to enhance efficiency of local elections commissions providing more effective and precise tabulation of votes than to facilitate a voter. A voter still has to arrive to the precinct, to the polling place, sometimes spend time in line and afterwards vote. Accessibility of voting remains the same. It does not lead to growth of voter turnout. Experts agree that introduction of voting machinery at polling locations does not reflect on popularity of voting [10].

Localized electronic voting novelty also suggests internet voting within the polling place based on employment of polling place terminals of common use or personal electronic devices connected to Internet provided by the polling place routers. However localized Internet voting does not release a voter from the obligation to show up at the polling location.

Remote electronic voting (Internet voting (on-line voting)/ fax voting/ phone voting etc.) suggests a voter an opportunity to remotely vote outside of the polling place applying electronics devices and information networks. A voter does not need to arrive to polling station. Voting process can be ensured by electronic device, access to internet, identity verification mechanism and casting interface. Such technology aims at facilitating voting process, making it more accessible, attractive and comfortable.

B. Remote electronic voting spatial modes

Spatial configuration of remote electronic voting is represented by three patterns.

Precinct bounded remote electronic voting allows a voter to cast ballot electronically (applying to electronic devices and information and communication networks) remotely but within limits of a precinct.

Nationally bounded remote electronic voting admits remote electronic voting within national boundaries of voter's residence country.

Unbounded remote electronic voting does not impose any territorial limitations on a voter allowing to vote from any location all over the world. Post localized architecture of voting procedure solicits application of remote electronic ballot casting mode for stimulating voter turnout growth.

V. E-VOTING POTENTIAL OF THE RUSSIAN FEDERATION

Russian Federation has developed quite a progressive system of electronic democracy. E-democracy or Internet democracy constitutes a format for communication of citizens and governmental institutions based on utilizations of electronic means. Internet represents the environment for such a communication. Electronic government (E-government) is one of the instruments of digital democracy. Governmental and municipal bodies maintain websites and accounts with social media directly and openly interacting with citizens. The Russian Federation's Government Order 583 of 10 July 2013 classifies public sector information as an open data and sets requirements for updating and publication this information (e.g. timeframe, content etc.).

Online voting by citizens being also a tool of electronic democracy turns to be one of the forms for communications of government and citizens.

Russia has very promising potential for introduction of remote electronic voting on the basis of Internet. This potential is recognized by various international institutions, such as the United Nations and International Telecommunication Union.

According to the 2014 United Nations E-government development index the Russian Federation is ranked as country with high Electronic government development index 0.7296 comparing to regional (European) average 0.6936 and world average 0.4712 [11]. Russia belongs to a group of top 50 world performers on e-participation, meaning Russia offers the highest level of engaging citizens and non-state actors in public policy decision-making and public service delivery, providing political and civic participation with the purpose to share responsibilities and accountabilities with non-governmental sector (*Ibid.*, p. 65).

The United Nations twice in 2012 and 2014 assigned 27 position in the international rating of E-Government Development Index to Russia out of 193 (*Ibid.*, p. 202).

Based on the level of electronic services offered to public Russia is ranked at the 17th position among other countries (*Ibid.*, pp. 217-221).

2015 International Telecommunication Union Development Index (IDI) ranked Russian Federation 45th out of 167 recognizing progress in developments in information and communication technologies in a country by the index 6,91 with IDI values ranging from 8.93 to 1.17 [12].

Disparity in use of Internet between men and women in Russia is not that high. Though there are more men users of the Internet than women the number stands 47.5% for men and 38.8% for women.

Cybersecurity allowing citizens to gain maximum advantage from application of information and communication technologies and especially use of the Internet becomes one of the most important issues for consideration in a framework of remote electronic voting discourse. According to 2015 Global Cybersecurity Index Russia is qualified as upper level rating [13].

Digital divide impact should be considered in this discourse. Internet is widely and intensively utilized in Russia with penetration almost at 70%. However it is not plain. The highest penetration is concentrated on Moscow and St.Petersburg. Nevertheless since the article is focused at the prospects of remote electronic voting introduction for

Russian citizens residing overseas national digital divide may be disregarded.

VI. FACTORS CONTRIBUTING TO INTRODUCTION OF INTERNET VOTING INTO RUSSIAN ELECTION PROCESS OVERSEAS

Then president of the Russian Federation Dmitry Medvedev in the address to the Federal assembly of the Russian Federation of November 12, 2009 commissioned the Cabinet, the Central Election Commission and regional authorities to prepare a program for accelerating the technological modernization of the electoral system of the Russian Federation [14]. The president underlined the importance of the electronic voting, information processing at the polling locations and Internet utilizations for making electoral system secure, effective and transparent.

July 14, 2015 at the Youth Forum "Domain of sense on Kliazma river" the President of the Russian Federation Vladimir Putin took part at the discussion with participants of the project "Young scientists and teachers of information technologies". The debates brought out the issue of whether methods of voting should focus only on localized technologies. The president endorsed the idea of Internet voting, specifying that such initiative have to be reconciled and coordinated with the Central election commission and representatives of the State Duma [15].

At the present time it is possible to distinguish a number of factors contributing to the implementation of remote electronic voting (especially Internet voting) into Russian electoral process conducted overseas.

1) International experience proves efficiency of the method. Currently more than 100 nations all over the world have established and practiced E-government. Majority apply remote voting, some employ remote electronic and Internet voting (Estonia, Canada, USA, France, Switzerland, India etc.). At the same time some countries having practiced trial Internet voting cause of different reasons postponed ubiquitous adaptation of the method (Germany, Ireland, the Netherlands).

Permanent application of online services all over the world is founded on the principle of online operations reversibility. The principle permits adjusting, corrections or cancelation of provided service in case of emergency. For these ends electronic system saves individual personal information and keeps track on individual actions. Philosophy of voting process is opposite. It maintains principle of secrecy of voting. Such a principle does not allow saving data on voter personality and actions. Consequently the process of internet voting opposite to internet commerce etc. is irreversible.

There is no way to reconstruct genuine accurate voting path in case of electronic system of Internet voting shutdown or unauthorized intervention. System errors and their consequences can be disastrous politically and socially.

Cyber security preventing hacking the system and manipulation with elections data is one of the main concerns of professionals and public that prevents Internet voting from ubiquitous application [16-18].

2) Russian citizens have enduring, extensive and successful experience of electronic services employment. Electronic services are provided by both government and private sector. Private electronic services vary: e-banking, e-finances, e-commerce, e-leisure, e-sport etc. Major part of Russian population with different intensity routinely applies to private electronic services.

Key governmental instrument in rendering electronic services is Common Government Services Portal of the Russian Federation. Project was initiated with adaptation on July 27, 2010 of Federal law № 210-FZ on Organization of rendering of governmental and municipal services [19]. The law envisages rendering of government and municipal services electronically. On February 15, 2016 the law was amended. Since 2013 citizens can acquire access to the Portal with their universal electronic cards, representing a unified mean for citizen payment and identification. Currently more that 30% of Russian population apply to government or municipal services online. Application of electronic services by 2015 has saved more than 100 mln hours to Russian citizens. General number of transactions carried through Common Government Services Portal in 2015 reached indicator of 2.2 bln annually [20]. Russian citizens residing overseas apply to both private and governmental, Russian and foreign electronic services even more intensively.

Russian population displays persistent public confidence and trust to electronic institutions. Electronic services have become one of the social values. Innovations are accepted by an individual if they correlate to his values. Thus such innovation as Internet voting for Russian citizens residing overseas can be definitely considered as an option for elections organization.

However public confidence does not resolve a dilemma of accuracy and cyber security. Nowadays personal electronic devices can be easily connected to Internet. Since that happens they are vulnerable and can be infected by viruses and malware. Very often this occurs and remains undetected unless serious breakdown. At the same time the same possibility exists for voting machines used in different parts of the world. Those terminals can be infected at many stages: while manufacturing, installing, maintaining, upgrading etc. Such fears do not prevent local authorities from massive utilization of electronic voting terminals.

3) Internet voting will stimulate voter turnout by offering more comfortable, accessible, attractive, time and money saving opportunity for Russian citizens residing overseas to participate at the elections. Online voting can attract both young generation and elderly citizens to election process [21][22]. The former may be reached through their interest to new technologies application. The latter through adaptability of the voting platform/interface for voters having special needs or disabilities to mark a ballot privately and independently. Both groups of potential overseas voters will be exempted from spending time and money for visiting sometimes distant polling station.

Critics of digital voting technologies argue that IT application in voting process has manipulative character since it targets specific social groups (young, rich, educated etc.) whose activism may be of interest of certain political elites.

It is true on the initial stages of Internet voting application. With subsequent electoral cycles such factor becomes irrelevant.

4) Internet voting is economically viable. It is feasible and sustainable in terms of investments. Internet voting vanishes costs of voting process related to paper ballot printing, secure ballot storage, transportation of ballots to overseas polling stations. Online voting is less expensive comparing to other electronic methods of voting since it relieves central election commission from purchasing electronic voting terminals: either complexes for processing ballots or complexes for electronic voting and software for them. Engineering and maintaining of a web-based voting platform likely to be financially saving. Such online voting platform can be established on the basis of Common Government Services Portal of the Russian Federation.

Online voting will deduct disbursements for hiring, training and retraining local of election commissions' personnel. Such expanses are large and cyclical. They are conditioned by periodic change of electoral legislation and enormous but non-permanent staff of local election commissions involved into work during elections.

5) Online voting will provide higher manageability and stronger control over a personnel ensuring election process because of application of electronic means of objective depersonalized surveillance over lessened number of people involved in maintenance of internet based voting.

6) Online voting will strengthen productivity of voting by preventing accidental or intentional defacement of paper ballots. Recent elections of the president of the Russian Federation of 2008 and 2012 and representatives to the State Duma of the Federal Assembly of the Russian Federation of 2007 and 2011 demonstrate that the amount of defaced ballots varies from 1 to 2 percent at each voting.

7) Internet voting assures non-recurrent voting. It prevents double voting by the same voter at different polling stations.

8) Online voting prevents coercion and ensures secrecy of voting. The system maintaining online voting must prevent double voting allowing repeated voting. The purpose of admitting repeated voting backs up the principle of free and unforced voting. In circumstances when a voter is enforced to vote in a certain way, he or she later on can easily manifest his own will by voting again as many times as needed till the end of voting period. The computerized intellectual system must recognize only one, final vote of the person.

9) Repeated Internet voting prevents trade in votes because makes it unwarranted and thus senseless [23]. Simultaneously Internet voting unexpectedly can contribute to growth of identity thefts for identity fraud aiming at elections manipulation adding to the large amount of the same kind of crimes for commercial purposes. Identity thefts have become common incidents in many countries all over the world.

10) Internet voting averts elections recount because casted votes cannot be lost or mistakenly tabulated.

11) Internet voting affords immediate retrieving of the elections results almost at the moment of closing of elections. Such factor contributes to the public confidence building to the phenomenon of Internet voting.

12) Online voting is the most environmentally friendly method of voting. It does not require paper ballot printing or manufacturing electronic voting terminals. It neither requires to burn fuel for transportation of ballots or voting terminals to polling places and travel of voters to and from polling stations [24]. Elections to the State Duma of the Russian Federation to be held in September of 2016 attracted more than 70 political parties registered to run to be elected. The size of usual paper ballot in such case will amuse. Due to growing fields in Internet Technology [25-32]. It would be reasonable to expect either modification of paper ballot or turning it into electronic form to save enormous amount of paper to be used. At the same time lack of paper tracing deprives of the opportunity to double check the results of tabulation in emergency situation.

VII. CONCLUDING REMARKS

Electronic Internet voting offered to the eligible voters - Russian citizens residing overseas represents promising opportunity to decently test the concept of Internet voting. Taking into account limited number of Russian citizens residing overseas and limited risks of malfunction of the Internet based voting such initiative appears to be rational and pragmatic.

Comprehensive international practice in utilizing remote voting technologies proves vitality of the concept. Because of diverse reasons mentioned in the research certain jurisdictions in different parts of the world have completely left practice of voting at the polling stations. Such experience is growing with each electoral cycle.

Internet voting reflecting innovative approach to election process organization can stimulate voter turnout among Russian citizens abroad. Internet voting applied for Russian citizens residing overseas is technologically, economically, socially, environmentally and politically viable. Realization of the initiative requires three key outbreaks: modernization of current election legislation, intervention into existing voting technologies and political will. The latter descent appears to be the most important. In foreseeable future pilot project of Internet voting can be implemented with the next elections of the President of the Russian Federation.

REFERENCES

1. CEC. (2016). Central Election Commission of the Russian Federation. *General number of voters, referendum participants of the Russian Federation as of January 1, 2016*. Retrieved on March 19, 2016, from <http://www.cikrf.ru/izbiratel/quantity/20160101.html>
2. CEC. (2009). Central Election Commission of the Russian Federation. *General number of voters, referendum participants of the Russian Federation as of January 1, 2009*. Retrieved on March 19, 2016, from http://www.cikrf.ru/izbiratel/quantity/quantity_010109.html
3. CEC. (2012). Central Election Commission of the Russian Federation. *General number of voters, referendum participants of the Russian Federation as of July 1, 2012*. Retrieved on March 19, 2016, from http://www.cikrf.ru/news/relevant/2012/08/15/sved_ob_chisl.html
4. CEC. (2012). Central Election Commission of the Russian Federation. *Results of the election of the president of the Russian Federation on March 4, 2012. Voting at the overseas territories*. Retrieved on March 19, 2016, from http://www.vybory.izbirkom.ru/region/region/izbirkom?action=show&tvd=100100031793509&vrn=100100031793505®ion=0&global=1&sub_region=0&prver=0&pronetvd=null&vibid=100100032124923&type=227
5. CEC. (2008). Central Election Commission of the Russian Federation. *Results of the election of the president of the Russian Federation on March 2, 2008. Voting at the overseas territories*. Retrieved on March 19, 2016, from http://www.vybory.izbirkom.ru/region/region/izbirkom?action=show&tvd=100100022249920&vrn=100100022176412®ion=0&global=1&sub_region=0&prver=0&pronetvd=null&vibid=100100022280270&type=227
6. CEC. (2007). Central Election Commission of the Russian Federation. *Results of the election of the representatives to the State Duma of the Federal Assembly of the Russian Federation on December 2, 2007. Voting at the overseas territories*. Retrieved on March 19, 2016, from http://www.vybory.izbirkom.ru/region/region/izbirkom?action=show&tvd=100100021960186&vrn=100100021960181®ion=0&global=1&sub_region=0&prver=0&pronetvd=null&vibid=100100022111493&type=233
7. CEC. (2011). Central Election Commission of the Russian Federation. *Results of the election of the representatives to the State Duma of the Federal Assembly of the Russian Federation on December 4, 2011. Voting at the overseas territories*. Retrieved on March 19, 2016, from http://www.vybory.izbirkom.ru/region/region/izbirkom?action=show&tvd=100100028713304&vrn=100100028713299®ion=0&global=1&sub_region=0&prver=0&pronetvd=null&vibid=100100028823292&type=233
8. Federal law № 67-fz. (2002). Federal law on Fundamental guarantees of the electoral rights and the right to participate in referendum for the citizens of the Russian Federation. Procedure of voting; Article 66. Method of casting ballots by voter, participants of referendum out polling stations.
9. Mursi, M., Assassa, G. (2013). On the Development of Electronic Voting: A Survey. *International Journal of Computer Applications*, 61 (16), 1
10. Berinsky, A. (2005). The Perverse Consequences of Electoral Reform in the United States. *American Politics Research*, 33, 471-491.
11. United Nations. (2014). E-Government Surveys 2014: E-Government for the Future We Want. New York: United Nations Department of Economic and Social Affairs, 31. Retrieved on December 24, 2015, from https://publicadministration.un.org/egovkb/portals/egovkb/documents/un/2014-survey/e-gov_complete_survey-2014.pdf
12. ITU (2015b). *Measuring the Information Society Report 2015*. Geneva: International Telecommunication Union, 12. Retrieved on December 24, 2015, from <http://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2015/MISR2015-ES-E.pdf>
13. ITU (2015a). *Global Cybersecurity Index and Cyberwellness Profiles 2015*. Geneva: International Telecommunication Union. Retrieved on December 24, 2015, from <https://www.itu.int/pub/D-STR-SECU-2015>
14. *Presidential Address to the Federal Assembly of the Russian Federation*. (2009). Retrieved on December 24, 2015, from <http://en.kremlin.ru/events/president/transcripts/messages/5979>
15. *Transcript (2015). President Putin discussion at Youth Forum "Domain of sense on Kliazma river"*. Retrieved on July 15, 2015, from <http://kremlin.ru/events/president/news/49985>
16. Moynihan, D. P. (2004). Building Secure Elections: E-Voting, Security and Systems Theory. *Public Administration Review*, 64(5), 515-528.
17. Nur Aminudin, Andino Maselena, K.Shankar, S. Hemalatha, K. Sathesh kumar, Fauzi, Rita Irviani, Muhamad Muslihudin, "Nur Algorithm on Data Encryption and Decryption", *International Journal of Engineering & Technology*, Volume. 7, Issue- 2.26, page(s): 109-118, June 2018.
18. Elhoseny, M., Shankar, K., Lakshmanaprabu, S. K., Maselena, A., & Arunkumar, N. (2018). Hybrid optimization with cryptography encryption for medical image security in Internet of Things. *Neural Computing and Applications*, 1-15.
19. Federal law № 210-fz. (2010). *Federal law on Organization of rendering of governmental and municipal services*. Retrieved on February 23, 2016, from <http://kremlin.ru/acts/bank/31584>
20. Ministry of communication and mass communications of the Russian Federation. (2016). *Electronic services for citizens and business*. Retrieved on February 23, 2016, from <http://www.minsvyaz.ru/ru/activity/directions/4/>
21. Eggers, W. D. (2007). *Government 2.0: using technology to improve education, cut red tape, reduce gridlock and enhance democracy*.

Lanham: Rowman and Littlefield Publishers Inc.

22. Gimpel, J. G., Morris, I. L. et al. (2004). Turnout and the local age distribution: examining political participation across space and time. *Political Geography*, 23(1), 71-95.
23. Stenerud, I. S. G., Bull, C. (2012). When reality comes knocking: Norwegian experiences with verifiable electronic voting. *Electronic Voting*, 205, 21-33.
24. Gimpel, J. G., Dyck, J. J., Daron, R. S. (2006). Location, knowledge and time pressures in the spatial structure of convenience voting. *Electoral Studies*, 25(1), 35-58.
25. Kamenez, N.V., Vaganova, O.I., Smirnova, Z.V., Bulayeva, M.N., Kuznetsova, E.A., Maseleno, A., Experience of the use of electronic training in the educational process of the Russian higher educational institution, *International Journal of Engineering and Technology(UAE)*, Vol. 7, No. 4, pp. 4085-4089, 2018.
26. Vaganova, O.I., Kamenez, N.V., Sergeevna, V.I., Vovk, E.V., Smirnova, Z.V., Maseleno, A., Possibilities of information technologies to increase quality of educational services in Russia, *International Journal of Engineering and Technology(UAE)*, Vol. 7, No. 4, pp. 4096-4102, 2018.
27. Huda, M., Maseleno, A., Atmotiyoso, P., Siregar, M., Ahmad, R., Jasmi, K.A., Muhamad, N.H.N, Mustari, I.M., Basiron, B., Big Data Emerging Technology: Insights into Innovative Environment for Online Learning Resources, *International Journal of Emerging Technologies in Learning*, Vol. 13, No. 1, 2017, pp. 23-36.
28. Maseleno, A., Sabani, N., Huda, M., Ahmad, R., Jasmi, K.A., Basiron, B., Demystifying learning analytics in personalised learning, *International Journal of Engineering & Technology (UAE)*, Vol. 7, No. 3, 2018, pp. 1124 -1129.
29. Amin, M.M., Maseleno, A., Shankar, K., Perumal, E., Vidhyavathi, R.M., Lakshmanprabu, S.K., Active Database System Approach and Rule Based in the Development of Academic Information System, *International Journal of Engineering & Technology (UAE)*, Vol. 7, No. 2.26, 2018, pp. 95-101.
30. Susilowati, T., Dacholfany, M.I., Amini, S., Ikhwan, A., Nasir, B.M., Huda, M., Prasetyo, A., Maseleno, A., Satria, F., Hartati, S., Getting Parents Involved in Child's School: Using Attendance Application System Based on SMS Gateway, *International Journal of Engineering and Technology (UAE)*, Vol. 7, No. 2.27, 2018, pp. 167-174.
31. Abadi, S., Huda, M., Hehsan, A., Mohamad, A.M., Basiron, B., Ihwani, S.S., Jasmi, K.A., Safar, J., Mohamed, A.K., Embong, W.H.W., Noor, S.S.M., Brahmono, B., Maseleno, A., Fauzi, A.N., Aminudin, N., Gumanti, M., Design of Online Transaction Model on Traditional Industry in order to Increase Turnover and Benefits, *International Journal of Engineering and Technology (UAE)*, Vol. 7, No. 2.27, 2018, pp. 231-237.
32. Amin, M.M., Sutrisman, A., Stiawan, D., Maseleno, A., Design Restful Webservice of National Population Database for supporting E-health interoperability service, *Journal of Theoretical and Applied Information Technology*, vol. 96, issue 15, 2018.