

Big Data Analysis for HR efficiency improvement at Ministry of Public Administration of Republic Slovenia

Published On: 12 June 2017

Organisation: Ministry of Public Administration of Republic Slovenia, IT Directorate

Country: Slovenia

Level of government: Central government

Sector: General public services

Type: Public Service

Launched in: 2017

Overall development time: 10 month(s)

Like this innovation

0 persons like this innovation

Description

The pilot project - Big Data Analysis for HR efficiency improvement has been established as part of the development oriented strategy supporting ICT as an enabler for development of data driven public administration in Slovenia. It has been run within Ministry of Public Administration of the Republic Slovenia (hereafter MPA) in collaboration with EMC Dell as an external partner. This pilot project has been launched aiming to learn what big data tool installed on the Slovenian State Cloud Infrastructure could enable in terms of research of HR data of our ministry to improve our efficiency. Therefore, anonymized internal data sources containing time management, HR database, Finance database and Public Procurement had been combined with external resources using postal codes of employees and weather data to identify potentials for improvement and possible patterns of behaviour. The results showed that there is considerable potential for improvement in the field of HR and lowering costs in the field of public procurement within our ministry.

Why the innovation was developed

- The Big Data pilot project has been launched aiming to learn what a big data tool installed on Governmental State Cloud Infrastructure could enable in terms of the research of HR data in MPA to improve our efficiency. The pilot project - Big Data Analysis for HR efficiency improvement has been established as part of the development oriented strategy supporting ICTs as an enabler of development of data driven public administration in Slovenia.
 - The pilot project was established in collaboration with international company EMC Dell (hereinafter EMC) which in 2015 signed a letter of intent for cooperation with the Government of Slovenia pursuing two common objectives: to increase the efficiency of public administration and to create a favourable environment for economic development.
 - The most important development opportunities are a combination of the innovative use of digital technologies, operations and processes, modernization of the systems for the citizens, business environment, and the state. In light of the European Digital Agenda and the Digital Single Market Strategies, Slovenia has been identified as a pilot country for specific digital solutions and reference “best practice state” receiving some highest awards in the field of specific digital solutions and society from different international organisations.
-

Objectives

Improve effectiveness, Improve efficiency, Other

- business intelligence
 - data management
 - human resource management,
 - public procurement
 - personal data
 - data based decision-making
 - public administration
 - anonymization
-

Main beneficiaries

Government staff, Other

- One of the fundamental tasks of the MPA is to establish efficient public administration. Therefore, the MPA implemented several activities, such as functional analysis, creating a data dictionary and renovation of registers, portal of open data, data warehouse and business intelligence.
- This pilot project confirmed that using big data tools could provide an effective and solid basis for predicting process, planning policies and decision-making process on all managerial levels in public administration based on existing internal data sources combined with some external data.
- Gained experience showed that big data analytics could help improve the efficiency of MPA in decision-making by using different statistical and quantitative analysis.
- MPA will continue with this project, first to spread the gained experience and knowledge of big data tools among its employees and share it to other ministries and administrative authorities within the Slovenian Public Administration.

Results

Results not available yet

- Gained experiences showed that big data analytics could help to improve the efficiency of MPA as basis for decision making by using different statistical and quantitative analysis.
- MPA will continue with this project, first to spread the gained experiences and knowledge of big data tools among its employees and in the second step to share it to other ministries and administrative authorities within Slovenian Public Administration.

Development

Design

The pilot project has been established in collaboration with international company EMC Dell which in 2015 signed a letter of intent for cooperation with Government of Republic Slovenia pursuing two common objectives: to increase the efficiency of public administration and to create a favourable environment for economic development. Project started with several introductory workshops aiming to select adequate data resources for further analysis as follows: data on employee's time management (Codeks), ISPAP – salaries data, HR data and finance data (MFERAC) and data on public procurement. Since some data bases contained personal data MPA contacted the Slovenian Informational Commissioner. Analysis had been performed within MPA premises on MPA IT infrastructure under strict security rules. Masking and anonymization of personal data was conducted to disable any possible identification on individual level. Furthermore, several interviews with data owners were conducted to clarify the content and to get interpretation of intermediate results. Additional external data sources were added, such as historical weather data and geographical distinct. During prioritization process 3 business initiatives (out of 40) were selected for further exploring. Several statistical techniques were used such as: Random Forest, Topic modelling, Z- Score Normalization, Multivariate Statistical, linear regression analysis and Log data transformation. Design time: 9 month(s)

Testing

- Results could be gathered as follows: Predictive Analytics for Facility Usage where possible savings on utilization of government facilities in alignment with facility budget, expenses, weather and employee working time were explored. Developing Employee Profiles where employee's profiles are segmented into relevant groups (clusters) based on multiple internal datasets containing employee job grade or specific role, HR features associated with high performance and low performance employees were analysed.
- Based on over 250 employee's characteristics 5 different groups (clusters) were designed containing different average performance scores. Employee Behaviours where employee's working styles related to start and end hour of their working hours and management of their individual needs ensuring their safety and flexibility were explored. External data sources such as weather and geographic distances were included to provide additional insights on the behaviours of employees. Analysing Procurement Patterns where text analytics on MPA procurements to identify purchasing behaviours across ministry was used.
- Results confirmed that using big data tools could provide an effective and solid basis for predicting process, planning policies and decision-making process on all managerial levels in public administration. Gained experiences showed that big data analytics could help to improve the efficiency of MPA as basis for decision making.

Testing time: 2 month(s)

Challenges and solutions

- Since some databases contained personal data, we had to mask and anonymise it. This was a challenge and it was done with external partner in a close involvement of the employees - owners of data sources.
 - Big challenge was the adequate interpretation and validation of mid-results and close collaboration of all involved parties: data owners, technicians (i.e., data scientists) and IT experts. Data owners were crucial part of the pilot working close with data scientists; this was challenge, but also a success factor of the project.
-

Partnerships

EMC Dell International Company

Private sector

The Big Data pilot project has been launched aiming to learn what a big data tool installed on National State Cloud Infrastructure could enable in terms of the research of HR data in Ministry of Public Administration to improve our efficiency. The pilot project - Big Data Analysis for HR efficiency improvement has been established as part of the development oriented strategy supporting ICTs as an enabler of development of data driven public administration in Slovenia. The pilot project has been established in collaboration with international company EMC Dell which in 2015 signed a letter of intent for cooperation with Government of Slovenia pursuing two common objectives: to increase the efficiency of public administration and to create a favourable environment for economic development.

Lessons Learned

Lessons Learned

- This pilot project confirmed that using big data tools could provide an effective and solid basis for predicting process, planning policies and decision-making process on all managerial levels in public administration based on existing internal data sources combined with some external data.
 - Gained experiences showed that big data analytics could help to improve the efficiency of MPA as basis for decision making by using different statistical and quantitative analysis.
 - MPA will continue with this project, first to spread the gained experiences and knowledge of big data tools among its employees and in the second step to share it to other ministries and administrative authorities within the Slovenian Public Administration.
-

Conditions for success

- There are multiple conditions needed for success of such kind of project. Firstly, strong leadership and promotion of the main goal of the project from the highest level in organisation.
 - Secondly, developing awareness and communication with employees is of outmost importance. Thirdly, close collaboration of all involved parties is very important.
 - Our project group consisted from people from different departments of MPA such as: Directorate for Public Sector, Directorate for Informatics, HR, Finance, Law and Directorate for Public Procurement.
 - On the other hand, 5 experts from EMC Dell covered also different roles such as data scientists, data presenter, interpreter etc.
-

Other information

Since our data sources contained personal information, some of the project members were skeptic at the very beginning of that project. They doubted that this is something where they should be involved, they meant that this should be done by IT. By the time when they were strongly involved in the interpretation and validation of the mid results, they changed their minds and were very satisfied with the outcome of the project.