Conference Paper

The Use of Analytical Tools in the Conduct of Internal Control Procedures

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Abstract

The work is devoted to the study of the problems of management, the activities of international companies in solving urgent problems of risk assessment, international cooperation of companies in the development and use of software and the applications of the Business Intelligence class, Data Quality and Business Analytics, the role of SAS in the domestic market. The first part is devoted to the activities of international companies in the field of risk assessment. The second part is devoted to the review of analytical products of SAS.

Keywords: audit, risk assessment, in-depth analytics, business intelligence

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1. Introduction

The Big Four are the four largest companies in the world providing audit and consulting services: KPMG, Deloitte Touche Tohmatsu, Ernst & Young and PricewaterhouseCoopers. The materials published by the representatives of the Big Four [1–4] state that the priority direction of the companies' activity is the risk assessment and optimization of the procedures for their assessment, since from year to year these processes become more complicated, and in the same proportion time and labor expenses. The allocation of more time for standard risk assessment procedures due to the growth in the volume of processed information makes it impossible to quickly implement new standards and procedures, resulting in an overall assessment of the risk becoming less reliable.

This factor has become one of the starting points for the international auditing companies to review their policies for risk assessment and, in conditions of rapid development of the digital economy, automation of the maximum possible number of operations. Thus, process automation will allow more time to study new types of risks and to develop and implement new procedures faster and more efficiently, which will increase the reliability of risk assessment.

2. The Activities of International Companies in the Field of Risk Management

Since the definition of a starting point for further development, more attention has been paid to companies working in the field of information technology and the products they provide. Many audit companies started trial projects together with various representatives of the information services market to familiarize themselves with the industry, find the best solutions for emerging issues and create their own platforms with a set of necessary analytical tools for their own purposes.

In a report prepared by Forrester Research Inc., for the first quarter of 2016, titled "The Forrester Wave (tm): advisory services in the field of information security" [5], KPMG International was recognized as a leader: It scored the maximum number of points for its current proposals and strategy. The company has achieved such a high result, including, due to the rate on services in the field of cybersecurity. Cybersecurity is declared one of the six global strategic initiatives for the growth of KPMG around the world. To successfully achieve large-scale goals in this direction, the company has expanded the range of services offered and invests considerable resources in research on this topic, as well as in transactions for the acquisition of companies operating in this field [2].

Such a high appraisal of the company's activities in the field of risk management was achieved as a result of all the innovations that occurred in the company during 2015 and that became the basis for further changes in the organization's policy [6]. In 2015, a number of innovations issued by the Central Bank of the Russian Federation (CBR) came into force in Russia and related to banking institutions and other financial sector companies. In particular, the procedure for calculating the amount of credit risk based on internal ratings has changed [7], new requirements to risk management systems and the capital of credit institutions and banking groups have emerged [8]. Earlier, a regulation was issued on the procedure for calculating the short-term liquidity indicator ('Basel III') [9].

The company actively cooperates and works with financial sector enterprises and all new regulatory standards have set an important task for management to develop and implement quality management processes in banks, since in the absence of confidence in the quality of data, it is impossible to build a model with high predictive potential.

To solve this problem, KPMG engaged SAS, and together they developed a joint solution for the data quality management system, which is a key element of the corporate data management system.

3. Overview of Software with In-depth Analytics from SAS

SAS is an American private company, developer of technological software and applications of the Business Intelligence class, Data Quality and Business Analytics. Independent agency Forrester in its report [10] recognized SAS as the leader in forecasting analytics and machine-learning solutions for the 1st quarter of 2017 (Figure 1).

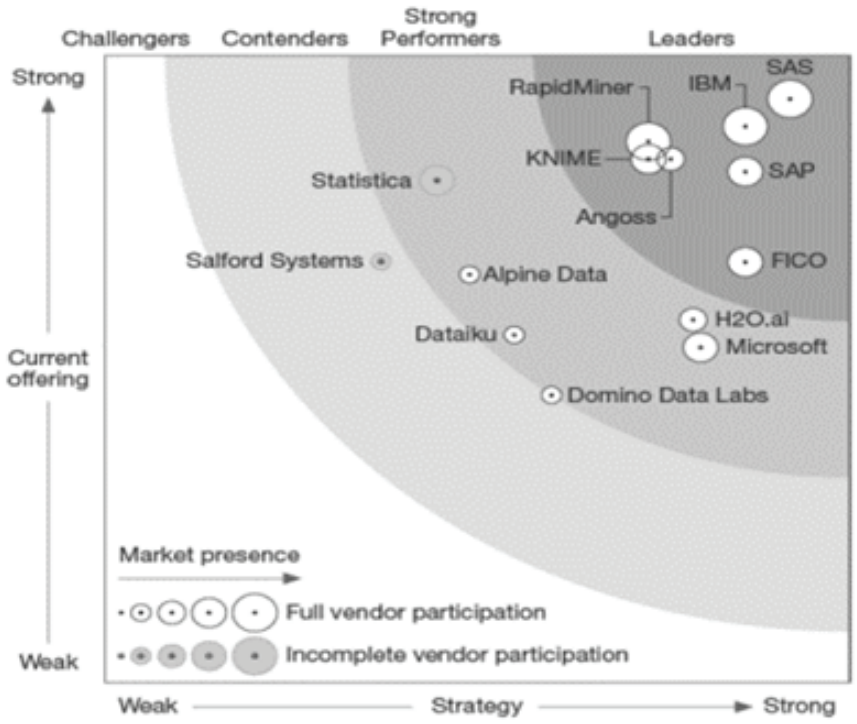

Figure 1: The rating of software vendors for forecast analytics.

The company's leadership in platform developers with in-depth analytics is also confirmed by the evaluation of the independent agency Gartner [11] (Figure 2).

In his report [12] on the Strategy for Success, the head of the SAS Public Sector Solutions Department in Russia and the CIS compares different products of companies operating in the field of information technology and highlights their strengths and weaknesses, including in comparison with each other. So, the strengths of SAS include:

1. reliability, stability and efficiency of the Company's products. These qualities, along with other capabilities of the SAS system, make it complete and perfect and

2. a wide range of possibilities and many ways of solutions for the integration of products in any enterprise in different conditions.

Figure 2: The rating of platform developers for in-depth analytics.

Thanks to various new-generation analytical tools used in SAS High-Performance Analytics, the calculation of any indicators, model building, analysis and decision-making becomes much faster, more accurate and, as a result, more effective. More and more companies start using the company's products for conducting analytical procedures. In Russia, SAS clients include all the top 10 banks, dozens of companies in the real and public sectors, including RZD, MTS, MGTS.

As a result of joint activities of SAS and KPMG, system problems were identified and eliminated, new data-quality control systems developed and implemented, and business rules for additional controls developed. All implemented controls meet both regulatory requirements and the internal needs of customers, moreover, a continuous process of data-quality management by management of various levels was organized [13].

Expansion of SAS presence in the domestic market and strengthening of its position as one of the world leaders in providing software for forecast analytics was demonstrated by the inclusion of the architectures of four SAS information and analysis tools in the report of the Analytical Center under the Government of the Russian Federation in January 27, 2017 [14]. So, this report includes the following analytical tools of SAS:

1. SAS High-Performance Analytics – used when there is a large amount of incoming data (more than 10 million objects, more than 1000 risk indicators and more than 100 GB of analytical data);
2. SAS LASR Analytics – used for interactive data research in real time and provides the possibility of multithreaded data processing;
3. SAS Grid Compute Nodes – used for simultaneous work of a large number of computational sessions balancing the load between servers;
4. SAS Micro Analytics Server Nodes – used to apply analytical models for processing streaming data with a frequency of applications of more than 500 pieces per second.

Thus, it can be seen that the company developed several products, with similar sets of analytical tools, but specialized them for specific production needs and conditions.

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