Data Analytics Empowers Internal Controls in Organizations

pwc 普华永道

In the current landscape of rapid expansion and increasing operational scale, effectively managing real-time, large, and diverse data has emerged as a critical issue for organizations, often impacting the efficient execution of internal control design and assessment. Significant challenges faced include intricate business models, escalating data volumes, and inexperienced workforce. These elements collectively hinder management's ability to transform extensive data into actionable insights and accurately identify weaknesses in its management, thereby impacting the enhancement of internal control.

Therefore, it is important that organizations adopt a sophisticated and advanced data analytics solution. This solution can facilitate the seamless integration of data, embed data analytics into day-to-day internal control operations, and streamline the organization of complex and disarray data into valuable information. Such an approach enables management to process data more effectively, easily identify issues, and swiftly implement responses, ultimately support the establishment of a robust and pragmatic internal control framework.

Challenges to Traditional Internal Control in the World of Big Data

In the current world of big data, traditional approaches in dealing with internal control are facing new challenges. If organizations can utilize data analytics reasonably in dealing with their internal control processes, they can significantly bolster their internal environment, risk assessment, control activities, information and communication, and internal oversight. However, many organizations encounter lots of obstacles when attempting to adopt and utilize data analytics, hence resulting in traditional internal control approaches fail to fully analyze crucial information and data approaches and also risk assessment becomes overly relying on human capabilities and experiences. The following are some of the challenges that organizations may encounter:

Data complexity and quality

In the big data environment, there are widespread problems such as large volume, diversity, and poor data quality, hence making it difficult for traditional internal control approach to process and analyze effectively, potentially leading to information omission or misunderstanding.

Real-time requirement

Data is generated and changes rapidly, requiring organizations to be able to monitor and intervene in real time or timely in business processes.

Diversity of data sources

Data often comes from multiple sources, including social media, sensors, mobile apps, etc., and internal control efforts need to carry out examination across different data sources, hence increas the complexity.

Data privacy and security

Big data often contains sensitive information, and internal control efforts need to ensure data privacy and security to ensure compliance requirements and reduce the risk of data leakage.

Risk Identification and Operational Costs

Lack of comprehensive analysis of operational data may result in failure to accurately identify risks and operational weaknesses, which is not conducive to effective control of operational costs.

Skill Requirements

Traditional internal control specialists need to upgrade their skills, including data analytics, data mining and machine learning, to adapt to the big data environment.

Considering these challenges, organizations need to continuously innovate and integrate data analytics with conventional internal control endeavors to cope with the needs of the big data era.

Data Analytics Brings Value to Corporate Internal Controls

The proposed internal control solution is focused on data analytics and is supported by advanced data models, analytics tools, and in-depth industry knowledge. The primary goal is to improve the connectivity between organizations' information systems, facilitate efficient data integration, and streamline the flow between business and financial information. This helps to enhance the accuracy, timeliness, and reliability of internal control risks identification.

Additionally, the timely deployment and continuous upgrading of data analytics solutions provide management with the flexibility to navigate unfamiliar territory, enabling them to make prompt and decisive actions. This drives the modernization of the organizations' control environment, management of people and processes, to effectively responding to potential risks.

Identify and Monitor Potential Risks

- Risk identification: Leveraging data analytics enables companies to analyze business and financial data, transaction records, and operational activities to detect exceptions and potential risks. This aids in identifying issues and taking targeted actions.
- Real-time monitoring: Implementing real-time monitoring of key business and risk indicators and configuring corresponding alert mechanisms for different risk levels, companies can timely notify relevant personnel of abnormalities, thus effectively responding to potential risks.

Optimize Internal Management Processes

- Automated processes: Data analytics can enhance automated processes for evaluating an organization's internal controls, minimizing the risks due to human errors, and delivering cost efficiencies.
- Working trails: Leveraging data analytics on working trails stored in the system facilitates diagnostic on recorded work details, optimization of business processes and procedures, thus reducing potential risks.
- Data visualization: Through data visualization, the results of data analytics are presented clearly, aiding management in understanding and analyzing risks to support decision-making.

Strengthening Organizations' Data Security

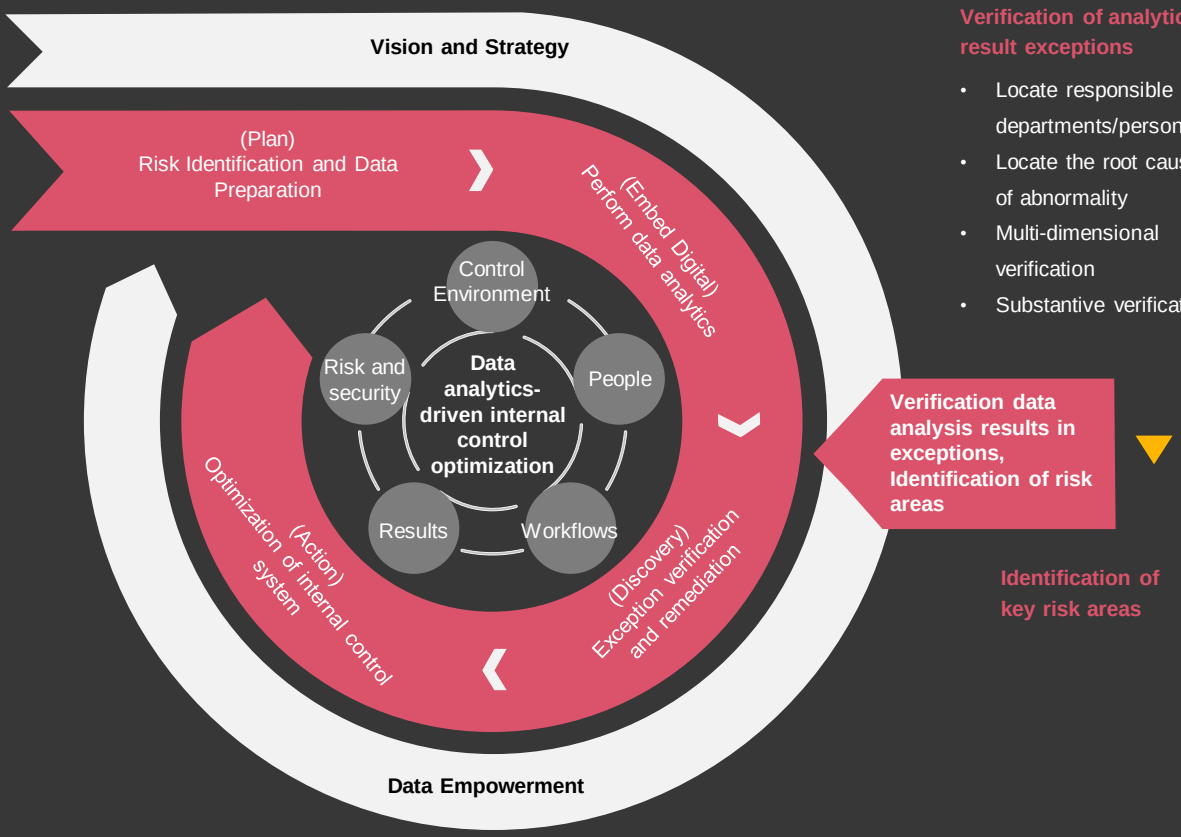
- Setting different dimensions of analytics criteria on various data usage scenarios reinforces control over data security, protecting sensitive data from unauthorized access and hence, reducing data leakage and information security risks.

How to Utilize Data Analytics to Achieve Internal Control Improvement

Closed-loop Solutions to Achieve Internal Control Enhancement

In respect of challenges faced by organizations, internal control solutions based on data analytics can facilitate in-depth analysis of business operations-generated data and effectively identify risk indicators. The accurate examination of these indicators can pinpoint the internal control weaknesses of organizations and assist in the targeted formulation of specialized enhancement solutions contributing to significant improvements in organizations' internal control.

In the following chapters, this article will explain specifically how to embed data analytics into traditional enterprise internal control to analyze and reduce risks in successive stages: Risk Identification and Data Preparation (Plan), Executing Data Analysis (Embed Digital), Abnormality Verification and Rectification (Discovery), and Internal Control System Optimization (Action).



Plan: Insight into Organization Risks and Controls, and Implementation of Data Readiness

At the planning stage, organizations identify key risk areas in the business cycle through market research and business scenario analysis and assess corresponding internal controls. Furthermore, to ensure that data analytics could provide a solid foundation for internal control establishment, organizations need to prepare for various types of data at this stage.

Risk identification and assessment phase

- Determine areas of focus: Define the objectives and scope of internal control system optimization, including business areas and key risks, by analyzing business and financial related data.
- Identify potential risks: Identify potential internal control risks, such as fraud risk, operational risk, financial risk, data privacy leakage, security loopholes, etc. through communication with relevant departments and stakeholders.
- Analyzing the potential impact of risks: Assess the likelihood and level of impact of each potential risk based on actual operation situation.

Data collection and preparation

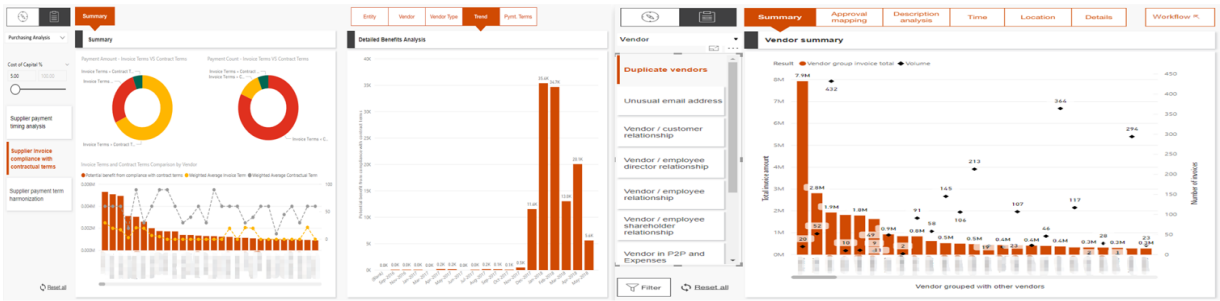
- Data collection: Define the problem and objectives, determine the direction to be further analyzed, collect relevant data, and ensure data source quality and reliability.
- Data Cleansing: Carry out data cleansing, process missing values, outliers, and duplicate data.
- Data labelling and annotation: Label and annotate data to match their respective actual meanings.

Embed Digital: Analyzing Internal Control Tools, Risk-Oriented Data Analytics Products

Based on the risk identification and data preparation in the planning stage, organizations can embed data analytics into their internal controls to identify internal control weaknesses and potential risks for comprehensive risk management support. PwC's successful application of data analytics in internal control assessment and optimization includes as below:

- Organization Process Risk Detection: PwC Process Risk Detection integrates data generated by organizations' processes to discover and analyze internal control risks belonging to the corresponding process, including:

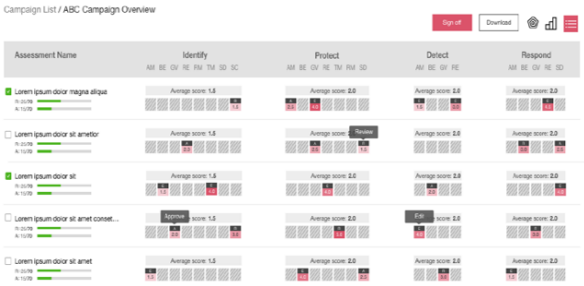
Procurement-to-payment analysis | Sales-to-collection analysis | Payroll analysis | Employees expenses analysis | Working capital analysis



*The illustrations are for illustrative purposes only

- Business Partner Trust Solutions (R^2): The Business Partner Trust Solutions are designed to assist organizations in building trust in their respective area.

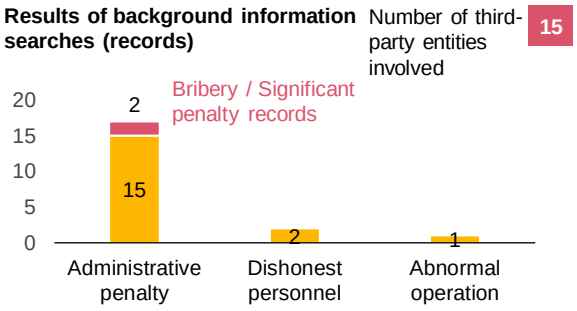
  - PwC Risk Monitoring Radar (RMOR): Based on the application's built-in business partner trust framework, it assesses the organizations' business partner control environment, generates dynamic reports and visualization of the assessment results, helping organizations to gain a deeper understanding of their own management level in specific risk areas, identify room for improvement, and formulate targeted enhancement solutions.



*The illustrations are for illustrative purposes only

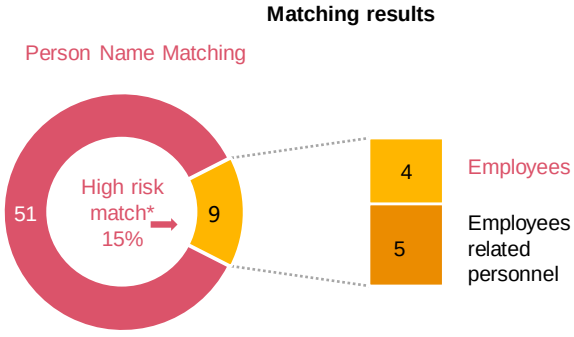
  - Risk and Compliance Engine (RACE): The RACE offers rapid risk profiling capabilities on specific business partners and conducts in-depth analysis of potential conflicts of interest. The analysis are such as scanning business partners' background information, checking for conflicts of interest between business partners and employees, as well as among business partners, and screening employees' own external postings and investments to identify critical risk indicators.

1 Results of background information searches on third-party entities



*The illustrations are for illustrative purposes only

2 Third-party and personal information matching screening results



* High-risk matches: there is an exact match for a telephone number, e-mail address or address

- Customized Tools for organizations

  - PwC has the capability to tailor tools or solutions to meet the unique needs of businesses, differentiating from PwC's standardised or off-the-shelf solutions. Our extensive collaborative experience with a diverse range of organizations has allowed us to deliver numerous tailored solutions.

Discovery: Precise Intervention, Anomaly Verification Facilitates Remediation Path

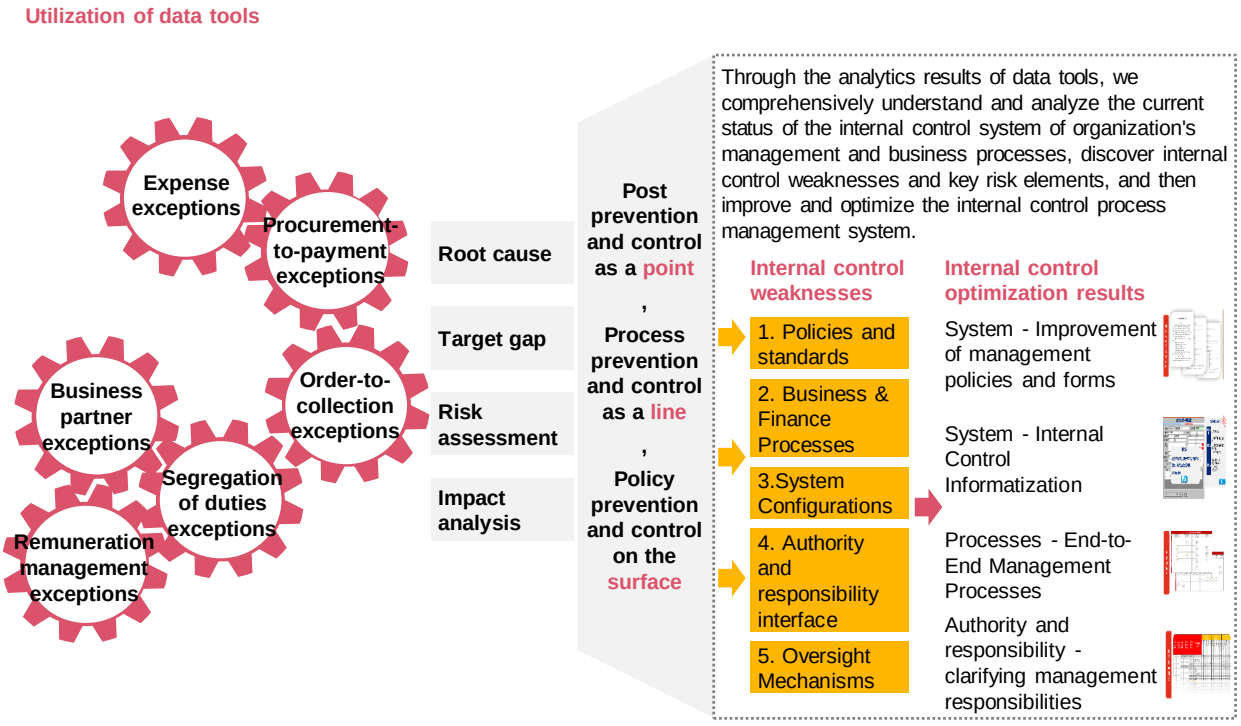
Traditional internal control approaches have been constrained by challenges such as limited experience of personnel, complex organization structures, information between business functions are silo, and common issues relating to high operational costs, untimely and incomplete identification of anomalies, all of which impact the subsequent effectiveness of internal controls establishment. By utilizing data analytics, organizations can enhance the efficiency and effectiveness of anomalies verification in two aspects:

- Real-time monitoring and analysis

By timely capturing data from business systems, analytics results based on indicators set by organizations are presented, and e data dashboards are generated according to user's needs in which analytics results are clear and objective. Through the data dashboards, organizations can monitor and analyze data in real-time, pinpointing issues and improving the timeliness, comprehensiveness, and accuracy of anomalies verification.

- Rectification effect monitoring

Effective verification of anomalies relies on formulating appropriate corrective action plans and monitoring timely the effects of corrective actions to ensure timely detection and resolution of issues. Organizations' management can monitor the effects of corrective actions in real time through data dashboards and adjusting promptly management strategies.



Action: Data Leads the Whole Process of Internal Control Optimization

Following the implementation of remediation measures of anomalies identified, management should continuously monitor the remediation results and propose ongoing optimization requirements. This closed-loop process aims to pre-emptively control the issues, provide early warnings, and correct the issues to achieve an overall effective strategy.

Furthermore, organizations should optimize their policies and internal control system through end-to-end process review to comprehensively address risks, streamline business operations, reduce associated costs, and enhance operational efficiency.

Throughout this process, organizations can leverage on data analytics and digitalisation tools to realise online optimization of the entire internal control system. This facilitates comprehensive assessment of diagnostic and internal control system optimization results, effectively enhances the efforts of standardization of internal control, strengthens the support to decision-making, and improves operational efficiency:

- Continuous monitoring of remediation results: Obtain comprehensive business data of various integrated business systems and perform further analysis, enterprises can establish a multi-perspective risk dashboard, automate the risk assessment process, and provide management with insights to monitor remediation results and support their decision-making analysis.
- Process review and internal control system optimization: In the process, updating data analytics results in real-time can assist organizations to gain a deeper understanding of the current stage's characteristics and requirements. This will aid in formulating targeted plans of internal control optimization to better align with the organizations' actual situation. At the same time, real-time monitoring of internal control operations will help management identify and address promptly potential issues.

Conclusion

To summarize, the seamless integration of data analytics into organizations' internal control systems can assist management to better identify organizations' risks and timely take corresponding measures. Serving as a catalyst for the modernization of internal control management in organizations, data analytics technology can assist organizations to effectively respond to the diverse opportunities and challenges presented in today's era of rapid growth in digitization and smart intelligence, thus fostering robust and efficient growth and development.

Please feel free to contact us

Claire Qian

Governance, Risk and Compliance Service Leader,
PwC China
Tel: +86 (21) 2323 3970
E-mail: claire.qian@cn.pwc.com

Keen Yip Ho

Director, Risk Assurance, PwC China
Tel: +86 (10) 6533 7767
E-mail: keenyip.ho@cn.pwc.com

Esther Yip

Director, Risk Assurance, PwC China
Tel: +86 (10) 6533 7720
E-mail: esther.y.yip@cn.pwc.com

Xiaochen X Ma

Manager, Risk Assurance, PwC China
Tel: +86 (10) 6533 2394
E-mail: xiaochen.x.ma@cn.pwc.com

Lucy Shi

Risk Assurance, Manager, PwC China
Tel: +86 (10) 6533 5709
E-mail: lucy.shi@cn.pwc.com

Tom JT Hu

Risk Assurance, Manager, PwC China
Tel: +86 (10) 6533 3444
E-mail: tom.jt.hu@cn.pwc.com

This content is for general information purposes only, and should not be used as a substitute for consultation with professional advisors.

© 2024 PwC. All rights reserved. PwC refers to the PwC network and/or one or more of its member firms, each of which is a separate legal entity. Please see www.pwc.com/structure for further details