Re-inventing Internal Controls in the Digital Age

Key Highlights

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Key emerging technologies

Cloud

Cloud providers have high standards of controls that can be passed on to their customers, e.g. control certifications and attestations of their technology control environment, along with tools to help organisations deliver their internal control objectives.

Data privacy and data residency risks and related regulations. Cybersecurity risks may also increase due to the use of third party infrastructure and multiple data centres for applications and data.

Control Analytics & Virtual Reality

Control analytics applies analytic techniques to transaction and financial data on a continuous basis to identify control weaknesses or failures. When combined with visual analytics and virtual reality, multi-dimensional analysis of controls and their impacts can be studied in greater detail.

Analytics relies on the right coding. If data analysts are too remote from the business, there is a risk of invalid results being relied upon by the business users. Data can also be deliberately manipulated to present misleading trends and results.

Internet of things

A network of physical objects, embedded with sensors and computing which enables it to collect, send and act on data. Placing sensors on "Things" can help to collect data about them and their environment.

Increased connectivity will increase cyber risks. Larger volumes of data, easily accessible from multiple points, give rise to data privacy risks.

Robotic Process Automation

RPA (robotic process automation) allows organisations to digitise repetitive and error prone manual processes and internal controls. A company can embed thresholds and guidelines into automated processes, expediting testing and risk compliance.

RPA software can be manipulated or hacked. This could generate a variety of risks to the organisation, including data privacy risks.

Drones

Drone inspections contribute to safety, precision and efficiency. The ability to share video and images with customers enhances level of service.

Air traffic rules must be followed to prevent collisions. Data privacy can become an issue if drone operators collect vast amounts of data, including confidential or sensitive information about property or behaviours.

Artificial Intelligence

Artificial intelligence (AI) and machine learning will transform internal controls and audit by augmenting human decision making. AI can help identify and predict control weaknesses or failures.

AI must be used responsibly. Organisations need to make AI explainable and take it out of the "black box". Biased training data can produce biased algorithms and predictions.

Blockchain

Blockchain is a decentralised ledger of transactions across a peer-to-peer network. It allows participants to transact with each other securely and transparently without the need for a central authority.

While blockchain technology in itself is highly secure and reliable, it does not provide account/wallet security. Credential and key management is crucial to protecting digital assets stored on the blockchain.

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EMI creates knowledge through research and disseminates it for practical application by the individuals, organizations and governments who seek to leverage the opportunities offered by these dynamic economies. Based at the Asia campus in Singapore, and set up in partnership with the Economic Development Board of Singapore, the Emerging Markets Institute reflects the changing focus of global growth and emphasises INSEAD's commitment to the region.

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About the report

In this report, we consider key emerging technologies and their impact on an organisation's internal control environment.

Referencing COSO's integrated internal control framework, we look at how organisations use robotics, IoT sensors, drones, cloud computing, advanced analytics, AI and blockchain to strengthen their controls.

How will this new environment affect our views of what ''internal'' controls are? What does it mean for corporate governance?

New technologies bring about new risks, particularly around cybersecurity and data privacy. Balancing innovation with safety and security is critical to mitigate risks.

This report assesses these risks and evaluates technologies for designing and strengthening the internal control frameworks of the future.

To download the full report, scan QR code or go to
https://www.pwc.com/sg/reinventing-internal-controls

Contacts

Mark Jansen
PwC | Data & Analytics
Leader
mark.jansen@sg.pwc.com

Andre Tan
PwC | Data & Analytics
Director
andre.tan@sg.pwc.com

Andreas Deppeler
PwC | Data & Analytics
Director
andreas.deppeler@sg.pwc.com

Joseph Alfred
ACCA | Head of Policy
and Technical
joseph.alfred@accaglobal.com

Pauline Javani
ACCA | Partnership Manager -
Employers
pauline.javani@accaglobal.com

Vinika Devasar Rao
INSEAD | Executive Director
Emerging Markets Institute
vinika.rao@insead.edu