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DATA ANALYTICAL RISK AND PROCESS ANALYSES IN THE CONTEXT OF THE THREE LINES MODEL[1]

A shared data platform is the basis for a structured cooperation between the three lines

Although the use of data analytics to gather knowledge in internal audit is frequently discussed, its implementation is hampered by the high initial expense, lack of expertise and lack of data within companies. A data and analytics platform that is developed step by step and shared between the three lines can create synergies that alleviate these difficulties.

1. BACKGROUND

The Three Lines of Defence Model was developed in 2010 during the adoption of the Eighth EU Directive with the aim of providing an overview of the functions and activities associated with companies' internal management and controls, and showing how these relate to each other. The model has since successfully established itself in practice [2]. As shown in *Figure 1*, the inherent business risk is systematically reduced to the level of the residual risk accepted by the board of directors by splitting the responsibility for risk management between three successive lines of defence: The first line is made up of the internal controls integrated into the operational business processes. As the risk owner, this line is primarily responsible for consciously taking, identifying and managing risks. The second line, which is responsible for risk control, supports the first line in measuring and managing risks and often operates at a portfolio level, rather than at the level of individual process steps. The third line, risk assurance performed by the internal audit function, is the only process-independent task, which provides an independent view of the risks and their effective mitigation. Although the model has proved itself worldwide as a structured framework and best practice for a holistic governance system [3], its focus on preventing risks and the often-arising hard separation between the three lines of defence when implementing the model are increasingly coming under criticism [4]. This raises the following question: How can the efficiency and effectiveness of this model be enhanced by improving cooperation and reducing redundancies, while at the same time shifting the focus to the (positively formulated) attainment of business objectives and generating added value, given that the third line in particular must remain strictly independent?

2. CONNECTING THE THREE LINES TO OPTIMISE RISK MANAGEMENT

In July 2020, the Institute of Internal Auditors (IIA) updated aspects of the well-known governance model [5, 6]. The main change is that the model is now called the *Three Lines Model*, rather than the *Three Lines of Defence Model*. This is intended to emphasise the positive focus on business success and – by going beyond a purely defensive perspective – to also underscore the contribution to this success made by the second and third lines. In addition, a principles-based approach that outlines the responsibilities of the three lines in broad terms aims to make the structure more flexible in terms of the details. This should also lead to a better cooperation between the lines that is tailored to the individual peculiarities of companies.

As shown in *Figure 2*, the updated model still describes three lines, reporting to and supporting the governing body in ensuring the effectiveness of governance, risk management and internal control. Although the separate lines were one of the main criticisms in the original model, these terms

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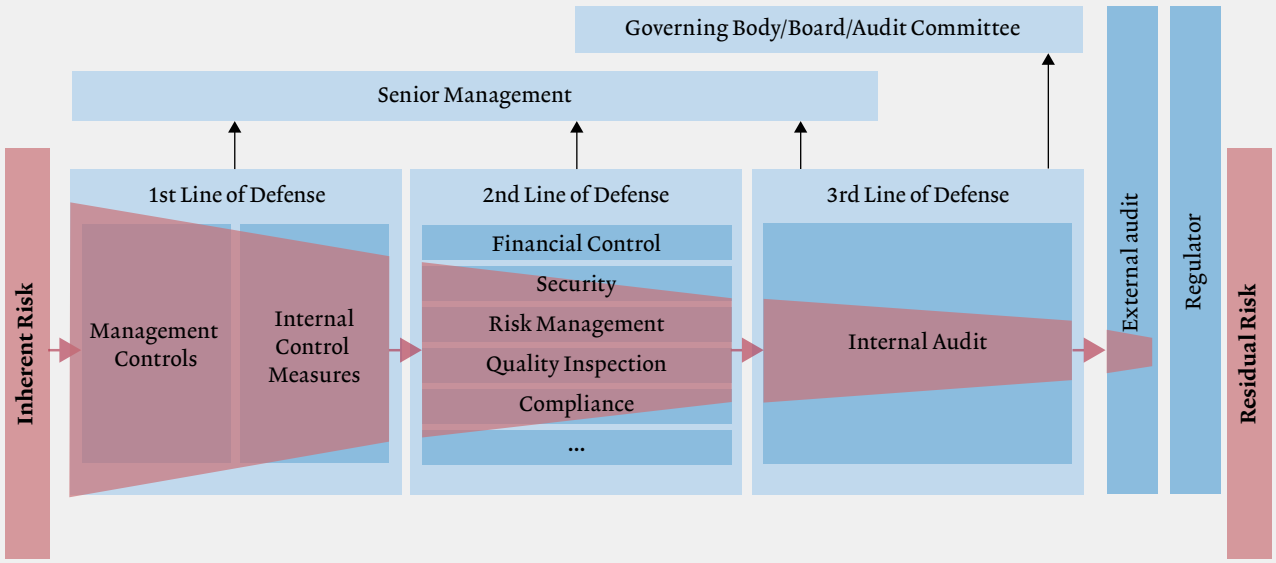
Figure 1: **THREE LINES OF DEFENCE MODEL**



Source: IIA (2013). IIA Position Paper: The Three Lines of Defense in Effective Risk Management and Control. Illustrated and amended by T. Flemming Ruud.

were maintained for reasons of simplicity, while clarifying that the lines are not intended to be successive structural elements, but to serve as a useful distinction between simultaneously acting roles. However, the greater flexibility means that the actual structure of the three lines and how they interconnect (taking into account the above-mentioned conflict) remains open [7]. In particular, the IIA does not specify the extent to which new technologies could influence and support the three lines. This is surprising given that the impact of digital transformation was mentioned in the original Exposure Document [4], and that dealing with and utilising the advancements in digitalisation are a major theme for the internal audit function [8]. On the one hand, a three lines model that focuses more on collaboration and synergies could enable a stronger use of technology in internal audit. This is because, according to the findings of Enquete 2020, high implementation costs, a lack of internal audit expertise and a lack of access to data in companies represent the main barriers to the increased use of data analytics by the internal audit function. If the three lines were to collaborate more closely in this area to establish a shared data platform, the synergies generated could reduce or remove these barriers. On the other hand, the intelligent use of data could also help resolve the conflict described above, making the model more practicable. Cross-functional, quality-assured business data that are simultaneously analysed from different perspectives through the appropriate technical tools, could:

→ prevent the need for evidence to be newly gathered by each line (elimination of redundancies);
→ create a common language for the three lines to communicate based on the same facts (improved communication); and
→ at the same time, enable the internal audit function to continue performing an independent risk analysis based on its own review of the data (ensuring the independence of the third line).

This article aims to show how a shared data and analytics platform can be developed in practice and to underline the added value this can generate for the internal audit function and the company. For reasons of simplicity, the terminology of the Three Lines Model is used below.

3. INTEGRATED DATA ACROSS ALL THREE LINES

The aim of integrated data analytics is to ensure that data only need to be collected once within the company – as far left as possible within the three lines (*Figure 3*). These data can then be used by all involved parties. A shared platform for risk analysis and risk monitoring makes it possible to reuse data and analysis modules, while this platform can also be used to draw on the company's existing data warehouses and data lakes, where available. To avoid expensive and time-consuming data duplication, a company-wide database is essential, particularly in a Big Data world, where there is a large amount of log, sensor and unstructured data alongside the traditional financial transaction data. It is important that the data are gathered and processed within a framework where accidental or deliberate errors are avoided, which means that there need to be effective IT general controls

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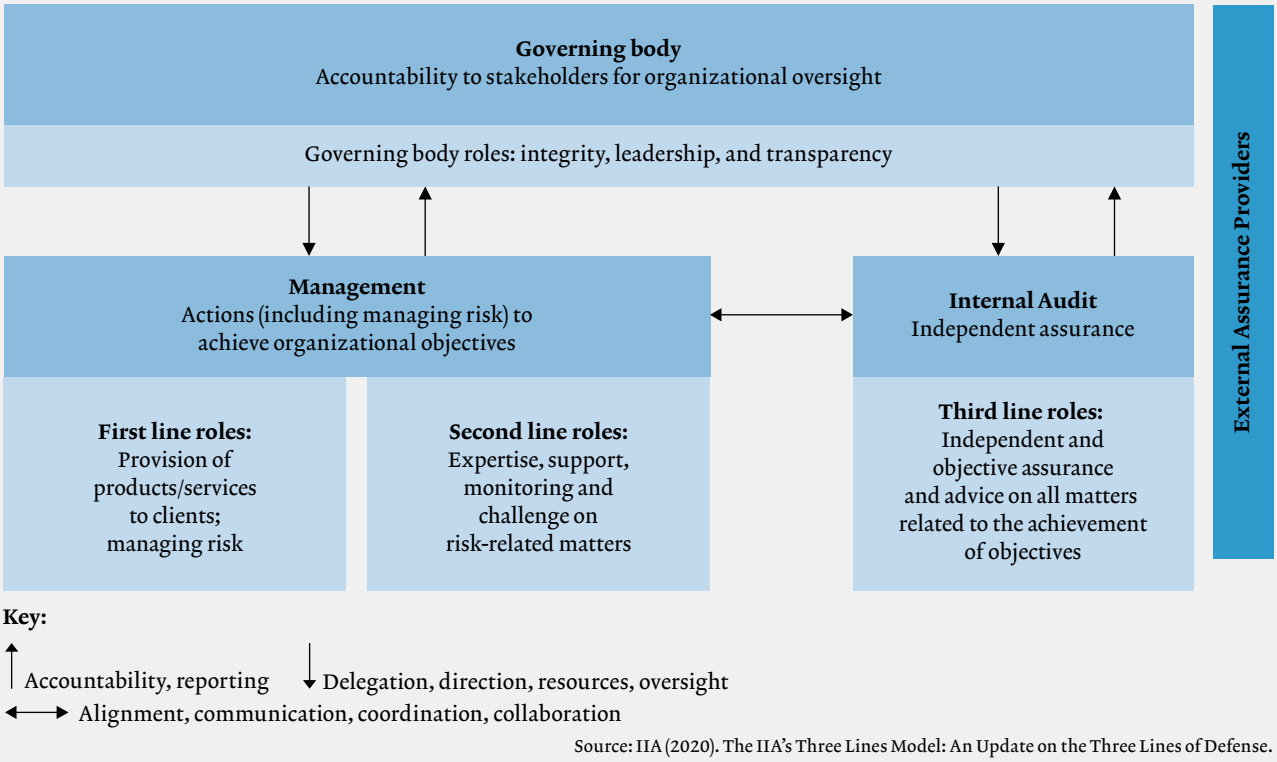
(ITGC). To ensure that the independence of the internal audit function is not threatened, internal audit must determine that the data gathered by the first and second lines is reliable by conducting an independent assessment of the data processing measures and the underlying ITGCs. This is required before the data can be utilised for the work of the third line. The proposed approach of using the same data for different analyses in the three lines considers the fact that, although all three lines contribute to the improvement of process quality, they have different aims. The first and second lines focus on controls, which means managing the individual process steps and the (ideally ex ante) avoidance of process errors. The first line has an "in-process focus", while the second line plays a supportive role and has a comprehensive overview with a focus on systematic process deviations. Using a simplified "assembly line" analogy, this equates to quality control within the first line, which filters out or corrects defective process output on an individual basis, while the second line monitors the resulting rejection rate. The second line does not work on an operational level and only intervenes when the rejection rate exceeds certain limits. As the third line, the internal audit function focuses on the process as a whole and on how a process corresponds to the risk tolerance set at a strategic level. In particular, risk management by the first and second lines is taken into account in its assessment, so that internal audit can deliver a comprehensive, independent picture (assurance). To perform these tasks, all three lines require precise process data. However, there is a difference between how frequently the data are required: While data should be available to the first and second line in real time and ex ante (streaming), the aim for the third line is just a higher frequency than the still common multiple-year audit cycles. There is also a difference with regard to the data to be analysed: Rather than individual process deviations, the focus is on systematic and overarching issues in relation to the process as a whole. In addition, the third line also needs process data from the risk management processes of the first and second lines in order to assess their effectiveness. To generate further insights, the internal audit function can then independently add information to the – already comprehensive – set of data. A data set as described, which has been collectively created by the three lines, enables the internal audit function to use data analytics to support several potential tasks at the same time:

1. When conducting its independent risk analysis, the internal audit function can, alongside to reviewing documents and surveying relevant parties, draw on current data at any time; this enables the internal audit function to respond to changes more rapidly.
2. The internal audit function can evaluate the effectiveness of the first and second line controls on the basis of the KPIs and KRIs in the controlled process in a timely manner and based on outliers.
3. The metadata and assurance findings from the control processes of the first and second lines are gathered, analysed and enhanced with independent analyses automatically; this enables the internal audit function to efficiently produce the assurance map proposed by the IIA.
4. Through independence and a bird's eye view of information and data from all areas of the business, the internal

Figure 2: **THE IIA'S THREE LINES MODEL**



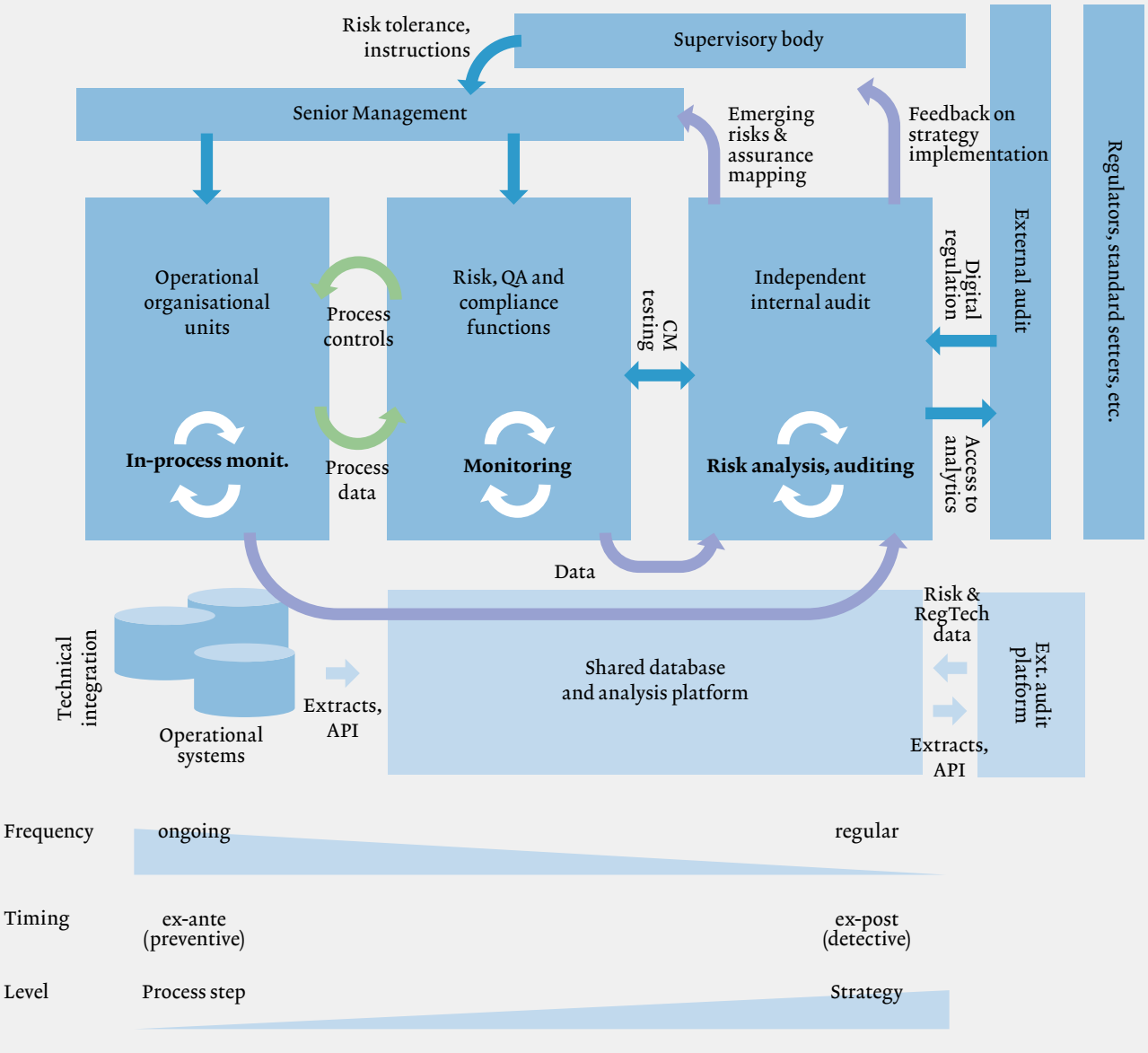
Source: IIA (2020). The IIA's Three Lines Model: An Update on the Three Lines of Defense.

audit function can – if desired – also play a role as a trusted advisor to the board of directors and thus take the much-discussed "seat at the table" advocated by the IIA in its definition of internal audit [9].

4. ESTABLISHING DATA-BASED COOPERATION BETWEEN THE THREE LINES

In practice, the successful transition to a data-driven way of working does not happen all at once. Instead, new technological capabilities are experimented with and developed step by step. This way, initial successes arise at an early stage, which is a key factor in the acceptance of such a project [10]. A first step is establishing a network among data analysts and others with an interest in data analytics between the three lines. This involves sharing knowledge and data analyses, particularly with the aim of applying knowledge and solutions developed within internal audit as far left in the model as possible. This way, it is possible to intervene sooner and more effectively than is the case when underlying problems are identified ex post (after the end of the process). A typical sequence of events would be internal audit using a relatively broad data analysis for its audit, which is developed comparatively quickly, but can only deliver potential ex-post hits with a certain degree of ambiguity as a basis for subsequent manual investigations (intelligent sampling). This analysis can then be passed on to the second line, where it can be used as the starting point for monitoring possible process anomalies at a higher cadence. In general, the analysis will need to be refined and the accuracy improved, so that there is no proliferation of false matches when evaluation is more frequent. As soon as the analysis has reached a stage where it is possible to identify process anomalies accurately and fully automatically, it seems logical to integrate these rules ex ante during the process itself, rather than using them ex post. This way, process errors can be prevented before they occur. In a second step, once the value added by data analysis has been proved

Figure 3: **EXCHANGE AND USE OF DATA IN THE THREE LINES MODEL**



in all three lines, efforts to develop a shared data and analytics platform can begin. A joint project involving several different departments makes it easier to obtain financing within the company. Gradual implementation is also advisable here. The company's existing resources can and should continue to be used (e. g. existing data warehouses, data lakes and data virtualisations). It is often difficult for the internal audit function to recruit analytics experts. It has therefore proved useful for some audit departments to use expertise already available within the company by temporarily borrowing employees from specialist departments to at least support the initial development and improve the usability of existing data in the company for the internal audit function. Where data need to be newly gathered or prepared, this should be done step by step and based on actual, specific needs. For example, agile methods and the minimum viable product (MVP) technique can be used here [11]. Instead of waiting for the perfect version, the MVP is an early workable version, which already delivers added value to the user groups and therefore generates buy-in for further investment. The feedback on this MVP (as a prototype) then forms a well-founded basis for decision-making regarding the approaches to be pursued or abandoned, without already having incurred large costs. For such a project, however, it is important to understand that the transactions and quantitative figures recorded in ERP systems or other company databases are not the only relevant data. Qualitative data can and must also play a role: Reviewing meeting minutes, meeting with stakeholders, etc. are all important aspects of auditing and deliver key data in the form of qualitative insights.

5. CHALLENGES AND RISKS

The agile implementation of data analytics in the internal audit function has been demanded and recommended for a long time. However, the Enquete 2020 [8] revealed that this aim has not yet been achieved. Alongside the limiting factors of (personnel and monetary) resources and data availability, the "silo mentality" within the three lines – a frequent criticism of the Three Lines of Defence Model – remains challenging. Although company employees are in principle interested in cooperation, they often focus too intently on the definitions, methods and objectives within their own areas of work.

In addition, digital assurance requires digital processes. Where data are only partially digitally available and the processes are dominated by media breaks and filling in paper forms, the implementation of effective data analytics is made difficult or impossible. In addition, data provided by third parties such as vendors or support services are often unavailable. Overall, the approach outlined above requires a relatively high level of maturity in the three lines. The internal audit departments of SMEs, which should benefit from the greater flexibility of the Three Lines Model, are often still in the early stages of their assurance activities. In many cases, they are not able to draw on available expertise, existing data or analytical platforms in the company, let alone are they able to demonstrate the required level of maturity in terms of ITGC assurance. One of the major risks of a purely data-driven internal audit function is the development of a too narrow field of view, which can be particularly dangerous in a dynamic environment with newly emerging, yet unknown risks: If data are reviewed solely on a quantitative basis, risks that cannot be quantified or that are incorrectly or incompletely measured in the risk and internal control models can get lost or may no longer be covered by the audit function. Consequently, it is essential to have a qualitative, independent risk analysis by the internal audit function, which is based not just on figures, but also on discussions with management and other relevant parties, observations within and outside the company, and (even if to a lesser extent) traditional audit activities such as sampling.

6. SUMMARY AND OUTLOOK

The objective of this article is to provide food for thought about fostering cooperation between the three lines, reducing redundancies and silo thinking, and thus establishing a more comprehensive risk assessment and risk mitigation, without replacing the established and widely accepted division of roles. By using a common data and analytics platform, the three lines can increasingly make use of synergies, efficiently exchange knowledge and information and find a common language and factual basis for the discussion of risk. Shared knowledge can be examined by the different lines in different ways with different focal points and thus lead to independent findings. Analyses that enable the internal audit function, as the third line, to uncover downstream process defects can be easily passed on to the first or second lines, allowing future problems to be identified and eliminated at an earlier stage – preferably, ex ante. The vision is to enable process control in the Three Lines Model to be shifted to the left: Through effective data analyses, problems are already identified and eliminated in the first or second line. The internal audit function can then make use of the meta, aggregate, and individual data to:

a) provide an independent assessment of the quality of this work in the preceding lines, and;

b) conduct an independent risk analysis to uncover any potential impact on the attainment of the company's objectives not (yet) identified by the other lines. ■

Footnotes: 1) This article is based on the dissertation of the main author: Rudyk, A., Adopting Continuous Assurance With a Front-End System for Ongoing Risk and Control Assessments: The Role of Internal Audit as Accumulator Across the Three Lines of Defence. Diss. University of St. Gallen, 2020, https://www.rudyk.ch/phd/, accessed on 23 August 2021. **2)** Dennery, M., Dequae, M. G., Garitte, J.-P., de Meulder, R., Pierre, C., Ruud, F., Taylor, P. & Rüdisser, M. F. (2010). Guidance on the 8th EU Company Law Directive article 41 (Tech. Rep.). Brussels, Belgium: Federation of European Risk Management Associations (FERMA) and European Confederation of Institutes of Internal Auditing (ECIIA). **3)** Ruud, F., & Bensultana, Y. (2020). Three Lines of Defense Model: Quo Vadis? Denkanstösse zur Überarbeitung eines erfolgreichen Governance-Models. Expert Focus, 94, 263–269. **4)** The Institute of Internal Auditors (IIA). Exposure Document: Three Lines of Defense, https://na.theiia.org/about-ia/PublicDocuments/3LOD-IIA-Exposure-Document.pdf, accessed on 23 August 2021. **5)** The Institute of Internal Auditors (IIA). The IIA's Three Lines Model: An update of the Three Lines of Defense, https://na.theiia.org/about-ia/PublicDocuments/Three-Lines-Model-Updated.pdf, accessed on 23 August 2021. **6)** Ruud, F., Bensultana Y., & Kyburz A. (2020). The IIA's Three Lines Model: An update of the Three Lines of Defense. Expert Focus, 2020(10), 716–721. **7)** Eulerich, M., The New Three Lines Model for Structuring Corporate Governance – A Critical Discussion of Similarities and Differences (February 1, 2021), http://dx.doi.org/10.2139/ssrn3777392., accessed 23 August 2021. **8)** DIIR, IIA Austria and IIA Switzerland. Enquete 2020, https://www.diir.de/fileadmin/fachwissen/diir_veroeffentlichungen/Enquete-Broschuere_2020.pdf, accessed on 23 August 2021. **9)** The Institute of Internal Auditors (IIA). Definition of Internal Auditing, https://global.theiia.org/standards-guidance/mandatory-guidance/Pages/Definition-of-Internal-Auditing.aspx, accessed on 25 August 2021. **10)** Rudyk, A., Adopting Continuous Assurance With a Front-End System for Ongoing Risk and Control Assessments: The Role of Internal Audit as Accumulator Across the Three Lines of Defence. Diss. University of St. Gallen, 2020, https://www.rudyk.ch/phd/, accessed on 23 August 2021. **11)** Schockenhoff, D., & Thai-Thanh, M. (2020). Transformation zu Agile im Risikomanagement, RiskNET, https://www.risknet.de/en/topics/news-details/transformation-zu-agile-im-risikomanagement/, accessed on 23 August 2021.