

REVIEW PAPER

THE CONNOTATION OF DIGITALIZATION FOR A COMPANY'S RISK MANAGEMENT

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ABSTRACT

Digitization is apparent. Due to this, business processes are transforming. Particularly for risk management, the digital revolution introduces amendment. Fresh chances are provided, while on the other hand, uncharted threats arise. Hence, risk management needs to actively adapt and change. The purpose of this paper is to understand if digitalization affects risk management. Subsequently, the focus is emphasized in innovations. In contrast to one another and concerning to one another, risk management facilitation and challenges are discussed. Twenty articles in financial journals provide the foundation of this paper and show that many companies are consulting firms such as the Big Four KPMG or Deloitte on the potential impact of technological advances. There are preparations and accompaniments for the implementation of new technologies. According to this, the premise is that the trend toward digitalization streamlines and expedites risk identification and subsequent risk assessment. Along with a case study on the current situation involving the company "Vienna Energy," which is heavily covered in the media, a scientific literature search was conducted. The organization has been accused of poor risk management. The findings demonstrate that there is already adequate knowledge available, and many businesses are already aware of the advantages of new technologies. Digitalization has a huge impact on business processes and will result in risk management rationalization and change. Thus, this research can add new dimensions to the risk assessment process and, particularly, express the benefits and opportunities of non-analog methods.

Keywords: digitization, risk management, rationalization, media case "Vienna Energy"

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I. INTRODUCTION

"The sharp rise in wholesale gas and electricity prices has put Vienna Energy in financial jeopardy. However, the company regrets its inability to pay." (Schlager, 2022, p.2). Since last August, these and other similar claims have been reported in the media. Hence, the issue of the group's risk strategy and whether risk management has failed arises.

"Vienna Energy" is a typical example of the current challenges that businesses face. Increasing digitalization, ongoing cost pressure, and the threat of trade wars are just a few of the many tasks that sap companies' energy and patience, and effort (Weikhard A., 2020). Therefore, thorough risk management should be an essential component of economic decisions. Recent market analyses and current research indicate that risk management, which is defined by data collection, aggregation, evaluation, and reporting, possesses enormous digitalization potential. Individual process steps as well as the data to be processed are viewed as opportunities for risk-oriented corporate management associated with digitalization (Schwenzer et al., 2020). There is no denying the subject's volatile nature.

Thus, the state of knowledge leads to the fundamental hypothesis of this paper, that digitalization simplifies the work of risk management. The purpose of this paper is to contribute to the various economic implications of digitalization on risk management and consequently highlight current risk management trends. The benefits of digitalization for risk management are discussed and contrasted with new emerging difficulties and costs. The knowledge gap regarding if innovations provide organizations with real added value in risk detection will be closed.

The paper is divided into two major sections. Based on a literature review, chapter one of this paper fundamentally explains digitalization in the context of risk management and defines technical terms. Subsequently, the possibilities and trends of non-analog risk management are listed and justified in detail. The second chapter focuses on a case study that uses the example of "Vienna Energy" to provide qualitative insights into the failure of risk management. The Stated Problem Method is applied. This entails a critical evaluation and assessment of the choices made in the "Vienna Energy" case based on the knowledge gleaned from the literature. The question whether the use of new

technologies could have prevented or defused the "Vienna Energy" situation through early warning signs is investigated. The discussion around appropriate digital risk management tools is constantly growing in companies. Therefore, this paper can be of high importance for many experts in their decision-making process. The results form a basis for their risk assessment and can revolutionize the risk management process.

II. Literature Review

Humanity went through the industrial revolution about 200 years ago, now we are currently in the digital revolution. Industry 4.0 is another term for the digital age in science. Currently, risk management is viewed as an integral component of corporate management. It encompasses all organizational measures and processes aimed at identifying, assessing, controlling, and monitoring risks, as well as shaping the risk situation (Diederichs, 2018). In contrast, modern, digital risk management entails not just decreasing risks, but also recognizing possibilities. The conflict of objectives between opportunities and risks must be made clear to be resolved in the best possible way, following corporate strategy (Hopfener & Timm, 2018). This is accompanied by increasing complexity. The number of available data as well as its volume is increasing enormously. In addition, companies must face the challenge that the information flow of this data is spreading at a rapid frequency. Hence, it can be concluded that digital data streams enhance risk analysis capabilities, but also introduce new risks such as potential cyberattacks.

The risk management process starts with risk identification. Automation techniques enable systematic mass data analysis according to the parameters set by a company. Previously, this activity had to be performed analogously by an employee and cost not only more time but also a lot of money. Big Data relieves the employee and allows them to focus solely on the analysis of findings (KPMG, 2019). Big Data, which refers to rapidly increasing amounts of data, is a result of digitalization. Big data aids in the real-time monitoring of internal and external information sources in risk management. The effectiveness of risk-aversion measures can be continuously assessed, making risk management a dynamic component of the business process. The central prerequisite for this is transparency and knowledge of the business processes within the company and the surrounding ecosystem (Schwenzer et al., 2020).

Digitalization necessitates the transition from a reactive to a proactive risk management function. Currently, risks are updated for the majority of businesses on a monthly, quarterly, or annual basis in a traditional risk report about assessment criteria and the status of corresponding measures. This documenting of existing risks, like the identification and assessment that took place in analog risk management, is based on the human aspect. If several people are reporting in a larger company, this can lead to redundant reports or contradictions in the content of the reports themselves. This will be changed. Digital risk management enables forecasts far into the future and, thanks to the availability of data in real-time, a precise, timely, and accurate analysis of the risk dynamics and the associated potentially dangerous developments. An up-to-date risk report may be available at any time (Schwenzer et al., 2020).

Customer needs that are always changing, increased need to innovate, and increased competition do not end with a company's risk management. Risk management must evolve and frequently adjust to changing circumstances. Risk management must transform itself and regularly adapt to changing conditions.

When you examine risk management from the ground up for a business, the business model serves as the foundation. New technologies simplify many work steps and create automation, so companies' business models often change fundamentally. For example, for many businesses, the now-established online selling has been a significant adjustment. The increased reliance on web-based resources gives businesses more flexibility, but it also introduces new hazards. IT systems need to be periodically maintained to ensure quick and efficient processing of online purchases (Glaser, 2022). The digitization of business processes poses challenges for companies, as it goes hand in hand with the global networking of data flows. This requires a broad spectrum of security activities in the company to manage cyber risks appropriately (Röhm-Kottmann. M. Kesting. B. , 2022). This clearly shows that risk identification and evaluation are becoming less reliant on the human aspect. However, the employee is compelled to participate in new activities. Calibration and maintenance of risk management processes, as well as the systems and algorithms that support them, remain dependent on humans and must be performed by them. Digital systems benefit from the ability to communicate with one another. Hence, suitable interfac-

es with other departments can be developed for risk management, allowing a significantly larger amount of information and data to be collected within a single system. Each department does not need to be consulted separately and can make inputs straight into the system. This provides clarity for the entire organization (Röhm-Kottmann. M. Kesting. B. , 2022).

Non-analog risk management will secure future data flow and data security. Algorithms eliminate the need for a brain to collect and interpret data; instead, this is done automatically. However, the algorithm must be programmed, and the system must be instructed. Future risk management must be able to conceive in terms of networks and act rapidly. Flexibility and adaptability must become essential themes in daily work. Big Data and Artificial Intelligence will make it easier to identify threats and collect larger amounts of data. However, this rapid pace also introduces new dangers. Companies are becoming more technically exposed, and there is a greater chance that information will be accidentally created and leaked to the public. Employees in the field of digital risk management must think collaboratively and be aware of these specific threats. Overall, it is evident that risk management must become more adaptable considering digitization to capitalize on the corresponding advantages of digital intelligence and still not overlook any dangers for one's own company (Schwenzer et al., 2020).

New technologies can automate the original activity of a risk manager in the future. Intelligent software programs will provide their users with a push notification of the potential risk. Thus, the risk management team of a company can react immediately and consider measures. However, the consideration of measures will not be limited to risks that have already occurred. In the future, risk managers will have to build up technical know-how to understand their technology partners in the form of software and thus also to be able to analyze which risks are hidden behind them. The question must be asked as to how it can be ensured that no outside persons with IT knowledge have access to the enormous data flow of a company. Data protection is becoming increasingly important.

In summary, intelligent software means high acquisition costs for companies, as well as associated high training costs for all employees in risk management. However, it is to be expected that this use will quickly pay for itself. After all, even the

best risk managers cannot capture and analyze the volume of big data with the same speed and precision. Of course, due to the fast-moving nature of the data, a corresponding package of measures must also be decided upon and implemented by the management of a company within a short period. If this does not happen, the company will lag its risks.

III. Research Methodology and Design

Objective and research question

Risk management and digitization are integrated, according to the scientific community. This article assumes that digitization will have a significant impact on risk management activities. Based on a traditional literature assessment, the existing scope of risk management activities is compared to potential modifications. The aim is to add new dimensions to the enlightenment of risk managers and to demonstrate the associated benefits. The primary research questions “Does the use of digital risk management tools achieve results that facilitate risk identification?” and “The use of which digital applications enables warning signals to be transparent and assists companies in the early detection of potential hazards?” accompany the entire research process and constitute as the foundation for this article’s techniques section.

The emphasis of the technique section has been on a qualitative case study. The case of the Vienna Energy company, which has recently received a lot of attention in the media, serves as a prime example of potentially failed risk management and is meant to demonstrate if digitization could have allowed the company to make earlier forecasts. The goal is not to conduct a thorough investigation of Vienna Energy; it is the responsibility of the International Court of Auditors. The aim is to reflect the current state of risk management developments and to use a tangible example to query whether the use of a specific tool might have saved Vienna Energy from a risk management failure. The objective is to conclude whether digitization can contribute to more transparent risk management in the future.

Clarification of the evaluation method

This paper used a qualitative research approach. Following the completion of the classical literature search, the company Vienna Energy was analyzed and newspaper articles about the recent liquidity crisis of the company were collected.

Throughout the course of the investigation, articles from traditional print media as well as publications from online periodicals were consulted. There were no constraints imposed on the source of the newspaper stories, such as focusing on specific databases. The key justification for using all sources was to capture the greatest possible range of background information on the existing risk management system implemented at the Vienna Energy company. However, it was obvious that only literature based on well-founded, retraceable sources was included in the analysis. The case of Vienna Energy is a recent event, hence no restriction regarding the publication period of articles was required. All the underlying literature focuses on the years 2020 to 2022.

Each author has a different focus in their publications, so the newspaper articles were categorized as a first step. The underlying ambition was to compile a well-rounded and clear case description from individual sources. The categories chosen include the major keywords and topic blocks that appear most succinctly and frequently in the literature on which this article is based. The frequent mention in connection with the topic of risk management and digitalization led to the assumption that it is precisely these selected keywords that best summarize the literature. The following literature categories have been outlined:

Table 1:
Literature categories

General data and history of the company
Case description – what happened?
Core Business
Stock market development
current risk management
Warning signs
Potential misconduct by management

Following that, the newspaper articles were summarized to create a case description of Vienna Energy.

The case description forms the basis for the analysis of the research underlying this paper. To conduct this process of investigation, the stated problem method was applied. This approach

summarizes a previously occurred event or already known problem. Based on intensive data collection and data gathering, an attempt is made to deduce possible causes and triggers for this and to work out conceivable proposals for solutions. This technique offers support to the previously mentioned study questions, "Does the employment of digital risk management technologies result in outcomes that facilitate risk identification?" and "Which digital applications are used to make warning signals transparent and help businesses find possible problems early on?". The causal investigation planned as a first stage in the data analysis may, for example, indicate whether the employment of new technology in the "Vienna Energy" scenario revealed plausible signs of potential hazards. This finding would imply that the company's risk management failed, confirming the assumption from the literature analysis that digitalization in risk management simplifies risk detection. Additionally, the applied methodology is effective in answering the second research question. The solution to the question of which tools make risks more transparent and thus produce early warning signs may be simultaneously associated with a possible solution approach in the Vienna Energy case.

Based on the case description, all difficulties identified were listed as categories.

Table 2:
"Problem" categories

0	Stock market dependency
1	Term of forward transactions
2	Dependency between electricity and gas

For these categories, the results of the literature research were examined and analyzed or assessed, respectively, with which scientific cause the named challenge can be justified and which solution can be derived from it. More detailed information on the results can be found in the results and discussion part.

Case description Vienna Energy

Vienna Energy is Austria's largest energy supplier with around two million customers. Millions of households are supplied with electricity, gas, and district heating. On Sunday, August 28, 2022, it suddenly became known in the media that the company was missing several billion euros. The

company is in a liquidity crisis. Without government assistance, Vienna Energy would no longer be able to purchase electricity and thus would no longer be able to adequately supply its customers. The company's official justification was that, due to the ongoing conflict between Russia and Ukraine, energy and gas costs had skyrocketed, making it far more expensive for Vienna Energy to purchase power for its consumers. Additionally, the stock exchange price had also doubled, so the company ultimately slipped into a financial emergency.

The basic business of Vienna Energy happens on the stock exchange. According to its information, Vienna Energy sells large quantities of electricity via exchange for two years in advance at a price that has already been fixed. This is referred to as forward transactions, specifically so-called futures. In this way, electricity producers can hedge against price fluctuations and know what fixed revenues they can expect. In return, the electricity buyers secure a guaranteed energy supply. This is important for the security of supply. Without such forward transactions, energy suppliers would not be able to offer their household customers fixed tariffs, but only floater tariffs, which are adjusted depending on the development of the electricity price – usually monthly. The company must raise large sums in advance financing. In the case of such futures, the energy exchanges act not only as pure trading centers. They are coupled with clearing houses that guarantee the respective buyer and seller that the transaction will take place as agreed. For this purpose, both trading partners must deposit collateral with the clearing house – so-called margins. Part of this collateral is recalculated daily. If electricity prices rise, the seller must make additional payments; if they fall, the obligation to make additional payments falls on the buyer. Such cash settlement takes place daily in the case of futures. Let's assume that a producer offers to deliver electricity today for 100 euros per megawatt hour in a year. If the price of electricity rises to 150 euros in the meantime, he is hit by a so-called margin call and must pay 50 euros more. However, if the price falls to 50 euros per megawatt hour, it is up to the buyer to pay 50 euros more. This means that the business partners are mutually hedged. If the producer is unable to deliver on the agreed date, for example, because he has gone bankrupt, the buyer would have to buy his electricity at the current daily price of 150 euros and would not be able to purchase it for 100 euros as agreed. If, however, the current price on the delivery date is 50 euros and the buyer is unable to purchase and pay for the electricity, the producer

would have to sell his energy to another buyer at a lower price. The margins, therefore, serve to ensure that in the event of default by one of the two contracting parties, the exchange can indemnify the other. If the transaction goes through as originally planned, both counterparties receive their paid-in collateral back (Melichar & Hiptmayr, 2022).

Despite this understandable change in the market, the company is accused of having failed in its risk management. Rightly so? Voices are being raised that the company should have always anticipated unforeseeable inflation and built-up reserves. The sentiment is clear, instead of paying dividends to shareholders, preparation for possible crises and risks would have been called for.

This is exactly what the analysis of this case study is intended to answer. Did Vienna Energy's risk management fail? Could technological tools such as Big Data have helped in the early detection of stock market developments?

IV. Results

As stated in the previous chapter, the qualitative research for this work was conducted by building categories for the stated problems of Vienna Energy in the media and print media. The hypothesis that digitization will simplify risk identification was investigated.

The compilation of the results showed the following outputs:

0 – stock market dependency

Vienna Energy sells its electricity exclusively on the stock exchange and at the same time also buys the gas required for electricity generation there. The company only concludes forward transactions with a minimum term of two years on this trading platform. However, those exchanges that trade in energy are coupled with so-called clearing houses, which guarantee the buyer and the seller that the transaction will take place. For this service, however, market-price-dependent security in the form of cash must be deposited with the clearing house on both sides. (The exact function was explained in the case description).

This short paragraph and description make clear, that Vienna Energy exhibits a very high dependency on the stock market, especially on the clearing houses. The reason for this is obvious.

There is no maximum limit on the amount of collateral to be deposited, regardless of the amount of a transaction. Collateral is not part of the business contract. Clearing houses work exclusively at daily updated prices and depending on the current price development, the buyer or seller must make corresponding deposits.

If Vienna Energy concludes a transaction, this is always a fixed price. The obligation on the part of the buyer and seller to enter the transaction in two years is always variable. This is the crux of the matter and the cause of Vienna Energy's payment difficulties.

A possible solution is already proposed in the literature review. On the one hand, the company could reduce its dependency on the stock exchange by negotiating with the clearing houses about possible maximum limits or at least ranges of fluctuation in which the securities will be forfeited. On the other hand, the use of big data could also help to forecast market price developments more easily across the industry, so that a business can be abandoned in good time.

In detail, the company should use blockchain technologies to monitor market prices across the industry on a second-by-second basis and react immediately as soon as the collateral to be deposited exceeds the value of the transactions concluded. If this is the case, the company will no longer be able to make a profit even if trading is carried out as planned.

1 – term of forward transactions

The literature research indicates that Vienna Energy only enters forward contracts with a term of at least two years (Melichar & Hiptmayr, 2022). This company guideline exists to be able to offer customers the security of supply. This guarantee is, of course, one of the decisive points that make the state-owned provider Vienna Energy one of the market leaders in the Austrian energy sector. The downside, however, is that Vienna Energy must calculate its market price forecasts far into the future. These calculations are associated with strong uncertainties in conventional analog risk management. Vienna Energy describes those past values of the last years (related to the term of the energy contract) including an inflation premium of 2.5% used for the calculation of market prices (Melichar & Hiptmayer, 2022).

Basing the calculation of market price forecasts only on past values no longer corresponds to the rhythm of the current era. This is also the cause of the company's problem area. Therefore, the recommendation is again that it would be advantageous for Vienna Energy to implement blockchain and its technology in the company.

2 - Dependency between electricity and gas

In addition to selling its power on the stock exchange, Vienna Energy also purchases the gas needed to produce electricity there. Yet, it is unknown how many contracts for gas trades are signed ahead of time (Melichar & Hiptmayr, 2022). The trajectory of gas costs has a big impact on the business. In this instance as well, the energy group's risk management only relies on hazy projections. According to what is known, Vienna Energy's similar risk management system creates an annual risk matrix and analyses each financial year's specific dangerous business activities. Analyzing the publications concerning the Vienna Energy case, the literature notes that by experts, the energy group devotes little effort to investigating the dependency between the development of the gas price and the electricity price. This aspect is perceived as one of the factors that have contributed to the company's payment difficulties. One reputable auditing firm, for instance, recommends building a so-called SWOT analysis from the price developments of both sectors. The justification behind this is to identify correlations easily. A comparison frequently mentioned in the literature is the relationship between supply and demand. If the supply on the market increases, but the demand decreases, then a price reduction is to be expected. Vienna Energy could apply the same principle in its considerations.

An overview of the Big4's perspective on Vienna Energy's risk management

Vienna Energy's wholesale obligations increased dramatically as early as 2021, but the company made no response. The company is also accused of speculating on falling gas prices and rising electricity prices since 2020. The company had sold electricity on the stock exchange for two years in advance for expensive money, which, however, could be produced cheaply by the company in its gas-fired power plants. The result was a nice contribution margin, which in the end could be distributed as a high dividend to all shareholders (Melichar & Hiptmayr, 2022). This business mod-

el contains an inherent risk and is not considered sustainable and reasonable.

Numerous industries, including the two largest accounting firms, have recognized the disruptive potential of digitalization in risk management. The aforementioned companies KPMG and Ernst & Young already offer services regarding the implementation of digital risk management tools and have publicly commented on the Vienna Energy case. In particular, they commented on whether Vienna Energy's auditors themselves should have already recognized an inherent risk in the annual financial statements of previous years.

• KPMG:

KPMG advocates the digitization of risk management. For the company risk management entails digitalization and is unavoidable for companies to include in their annual planning. Systematic, automated mass data analysis is required by KPMG to identify relevant developments for Vienna Energy. Particularly, KPMG highlights three innovations that are relevant for Vienna Energy. This technology does not replace the human risk analysis at the energy company on site, but it supports repetitive work and thereby ensures that all available data has been included. In the second case, KPMG emphasizes the application of blockchain technology, which enables real-time monitoring of identified risks both internally and externally. The efficiency of being able to continuously assess all actions taken is provided by this technology. In addition, the auditing firm recommends drill-down effects, which define automated navigation in historical data, in the key figure analysis (Otremba, 2019).

• Ernst & Young:

EY presents a similar vision for Vienna Energy. As a basic requirement for the future risk management of the energy group, the auditing firm sets out the systematic collection, processing, and interpretation of data from heterogeneous sources and thus clearly advocates the use of blockchain technology. Along with this, a planning calculation in a real-time format with a high degree of automation is recommended. With the help of this tool, unlike before, a basis for decision-making can be presented at any conceivable point in time and possible scenarios for alternative courses of action can be derived. Ernst & Young sees the digitalized risk management for Vienna Energy as having the advantage of giving risk management employees

more scope to develop and consider possible scenarios through automation and big data. In professional circles, this is referred to as Continuous Scenarios (Waniczek, 2020).

Both KPMG and Ernst & Young agree that digitalization has a huge impact on successful risk management. The auditing firms confirm that an algorithm reporting the price development of gas and electricity prices in real-time could have detected that the gap between gas and electricity prices seems to be widening. The audit firms support the implementation of blockchain and recommend the use of drill-down effects. Nevertheless, it is important to emphasize that neither the literature nor the company's published financial statements contain any indications that Vienna Energy speculates on price developments and thus that an inherent risk was overlooked by their auditors. On the contrary, the audit was carried out very precisely and carefully. The fact that the company's business model entails risks were known and only the company itself could have reacted to the movements on the stock exchange.

Big Data enables early detection of risks. After careful analysis and review of all the articles on the Vienna Energy case, it can be confirmed that the use of artificial intelligence could have been a support in correctly assessing the risk. The questions about data protection can only be answered ambivalently. Because Vienna Energy is a state-owned company, the Group also has certain disclosure obligations that must be met. In summary, however, it can be concluded that the Group's risk management should have recognized early warning signs and that at least the recommendation following a portfolio reduction on the stock market would have been the right step. Of course, a war situation and associated price increases cannot be predicted, but contingencies, even if not on the scale that will occur, must be recognized by risk management and packages of measures prepared. In the best case, these will never have to be used.

V. Discussion

The entire research of this article was accompanied by the basic hypothesis that digitalization and especially its effects of it (Big Data, Artificial Intelligence) simplify risk identification and assessment. It supports the fundamental hypothesis that digitization will simplify risk identification.

The activity of risk management is facing a transformation. The literature confirms that risk management is becoming increasingly important and extensive. Digitization can provide optimal support in this regard. The transformation is expected to be such that the human workforce will be supported by automation around data analysis and its focus will be more on deriving the right insights from these results. This is also confirmed by the case of Vienna Energy, which was explained in a case study in this paper. In the past, the energy group relied particularly on analogous risk assessments carried out on self-selected cut-off dates. KPMG's argumentation and recommendation confirm that this approach is outdated and no longer in line with current times. KPMG advocates the implementation of blockchain, as this software can be used to evaluate both internal and external information and data in real-time. Ernst & Young also see only advantages in the implementation of this and emphasizes that the energy sector must be well monitored, as it is a very fast-changing market. For the company, the proposals offer enormous time savings and the possibility to analyze larger amounts of data.

Similarly, risk management is thus expanding its competence. However, this is also accompanied by newly emerging risks. More captured data also means more attack surfaces for outside hackers who aim to access internal company data. The know-how of risk management must change the focus on lacing up the right packages of measures. In addition, the necessary knowledge to instruct intelligent software with parameters suitable for one's own company must be acquired. The change in risk management also means that the reaction time available for appropriate measures is becoming increasingly shorter. Data is changing faster and faster and almost by the minute due to big data acquisition, and corresponding decisions must be made just as quickly in the company (Waniczek, 2020).

Hence, it is valid to mention, that experience with digital risk management is currently quite limited and has substantial growth potential (Deloitte, 2016, p.5).

The cost factor for the acquisition and modernization of early detection systems will quickly pay for itself, but in addition, it is also a factor that cannot remain unnoticed.

The results might suggest that risk management will become much easier and the risk manager's job will become less important. The opposite is the case, risk identification and daily challenges will change. In particular, the assessment of risks and the actions to be taken as a result will come into focus. Organizations such as the auditing firms KPMG and Ernst & Young have commented in particular that companies must learn to design decision-making processes quickly. Risks of new business models leave little room and time for reflection. This also requires changes to internal business processes. The exact process and practical approach for the energy sector are not quite clearly worked out. A more comprehensive content analysis of such a risk management process and the development of a detailed strategy for future interactions between business and risk management would be beneficial. This paper is limited to a qualitative investigation of whether the relevance and importance of digital risk management are apparent and necessary in the Vienna Energy case. The Big Four were consulted to qualitatively support the findings, but not to determine the future risk management tools to recommend. Subsequently, it would be interesting to develop and test exactly the relevant possibilities of digital applications for Vienna Energy.

VI. Conclusion

In conclusion, digitization is gaining more and more importance in the field of risk management. In particular, Big 4 firms are informing and supporting risk management strategies in digital form in a variety of business segments. It is important to emphasize that they are aware that the risk management sector will be affected by the change brought about by Big Data and Artificial Intelligence. Risk management will evolve. The hypothesis that digitization simplifies risk management can be confirmed. The Vienna Energy example underscores the assumption that digitization brings benefits, especially in early detection, and can also contribute to data protection. Risk management and digitization go hand in hand. This confirms the fundamental assumption that the risk management profession is about to transform. However, it would be interesting to know what specific risk management tools should be used in the energy sector and what novelties significantly change the activity of risk management. This is where the further research of this article comes in, going through the process of functioning risk management step by step to find out which technologies will be relevant in the future.

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