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## AUDITING MANAGEMENT SYSTEMS IN DIGITAL TRANSFORMATION ERA

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**Abstract:** *The purpose of the study was to verify whether different methods of management systems auditing are perceived by the audited organizations as equally beneficial. On-site audits were compared with remote audits, as well as audits related to voluntary management systems with audits related to mandatory management systems. The survey on organizations from the food sector with the use of CATI/CAWI mix methodology was carried out. The analysis carried out has shown that remote and on-site audits are perceived as equally beneficial. The degree of credibility, usefulness in improving the organization and financial usefulness of these two audits methods were assessed at the same level. Statistically, significant differences have been identified between audits related to voluntary management systems and mandatory management systems. It was found that usefulness in improving the organization and financial usefulness of voluntary management systems audits are assessed higher than in the case of mandatory management systems.*

**Keywords:** *Management Systems; External Audit; On-Site Audit; Remote Audit; Usefulness; Credibility; Food Sector.*

## 1. Introduction

Implementation and certification of management systems, described in management standards published by the International Organization for Standardization (ISO) is well recognized and used within organizations all around the world (Piskar & Dolinsek, 2006; Siougla & Dimelis, 2020; Honore Petnji Yaya et al., 2013). According to the report published by ISO as of 31 December 2019, there were 1,4 million valid certificates in the scope of 12 the most popular management systems (ISO, 2020). That number is only a part of a certification business due to the popularity of other (i.e. published by organizations other than ISO) standards. In the food sector, popular systems that are under the surveillance of certification bodies are

supplier requirements describe in International Food Standard (IFS) and BRC Global Standards (BRC). Some of these systems are voluntary, others are obligatory. Organic certification within the EU countries can be an example of certification where law regulations obligate the certification (EU, 2007).

The motives, as well as the obtained results for the implementation and certification of management standards, differ depending on the implemented system and other factors that are widely described in the literature of the subject, e.g. in ISO publications (ISO, 2019). The common feature of activities related to the implementation and certification of management systems, regardless of the type of the assessed system, is the need to conduct audits in a certified organization (ISO/IEC, 2015). The general

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requirements for the audits are described in two standards. The first one is ISO 19011 Guidelines for auditing management systems, and the second is ISO/IEC 17021-3 Conformity assessment - Requirements for bodies providing audit and certification of management systems - Part 3: Competence requirements for auditing and certification of quality management systems.

Due to the pandemic situation, the digitalization progress has been intensified. For example, organic farming requirements for processing companies allowed the 'annual audit' of the control body to be substituted by an 'annual supervision audit' carried out also by any available means of distance communication, as long as national emergency measures related to the COVID-19 pandemic in the EU member state concerned prevent the competent authority from carrying out that audits onsite. That exception can be only used when a producer is assessed by the certification body as a low risk operator (EU, 2020).

The use of a remote method of conducting audits allowed to raise the question, to what extent can such activities be considered as equally credible and useful as the on-site audits? So far, little attention has been paid to this issue in the literature on the subject. Moreover, one can claim that extraordinary changes supported by digitalization will stay after the pandemic and will be the new normal (Grimm, 2021). Consequently, the main aim of the study was to verify whether methods of management systems auditing are perceived by the audited organizations as equally beneficial.

## **2. Literature review**

### **2.1 Audits usefulness and credibility**

An audit is most often interpreted following the definition provided in the international standard ISO 19011. It is understood as a systematic, independent and documented process for obtaining objective evidence and

evaluating it objectively to determine the extent to which the audit criteria are fulfilled (ISO, 2018). Publications in this field concern various types of audits. Most of them relate to financial audits and management system audits (such as quality management system, environmental management system, etc.). Some authors argue that the idea of these two types of audits is identical. Therefore, in some respects, they can be considered the same. For example, audit quality assessment criteria are identical for all types of audits, regardless of their type, area and scope (Lisiecka & Lisiecka-Bielanowicz, 2016).

The literature on the subject often mentions the categorization of audits based on the criterion of auditor independence. In this approach, there are three types of audits (ISO, 2018):

1. The first-party audit is performed within an organization to measure its strengths and weaknesses against its own procedures or methods and/or against external standards adopted by (voluntary) or imposed on (mandatory) the organization. Employees of the auditing organization usually carry out the audit.
2. The second-party audits are performed on a supplier by a customer or by a contracted organization on behalf of a customer. The audits are subject to the rules of contract law, as they are providing contractual direction from the customer to the supplier. Second-party audits tend to be more formal than first-party audits because audit results could influence the customer's purchasing decisions.
3. The third-party audit is performed by a specialized audit organization independent of the customer-supplier relationship. The independence of the audit organization is a crucial component of a third-party audit. Third-party audits may result in certification or registration (AQS, 2021).

The first-party audits are called internal audits. Second and third-party audits are known as external ones.

The subjects of the available publications focus on three main issues. The first one is to propose optimal ways to conduct audits. The issues covered in this regard relate to, e.g., independence and involvement of auditors (Al Balushi, 2020), planning of audits (Beckmerhagen et al., 2004), competencies of auditors (Harris & Williams, 2020), models, rules, methods and techniques (Abuazza et al., 2019; Karapetrovic & Willborn, 2002; Pivka, 2004).

The second topic is the assessment of the usability of audits. Opinions on the effectiveness of the audits are divided. Many authors emphasize the usefulness of audits in the processes of organizational evaluation and improvement (Alič & Rusjan, 2011; Jounila et al., 2020; Lenning & Gremyr, 2017). Scientists indicate three key types of real or potential (assumed) benefits associated with audits:

1. Increasing the credibility of the organization, its products and services (Alvarenga et al., 2018; Beckett & Murray, 2000; Jelic, 2012).
2. Enabling and initiating activities related to the improvement of the organization, its functioning, as well as products and services (Alič & Rusjan, 2011; Domingues et

al., 2019; Karapetrovic & Willborn, 2001; Kettunen, 2012).

3. Improving the financial performance of the organization (Chiarini et al., 2020; Lenning & Gremyr, 2017; Sharma, 2005).

On the other hand, some authors point out numerous problems with audits' effectiveness and reliability. In the case of the third-party audits, it is noted, for example, that there is a phenomenon known as "ceremonial conformity" (or "ceremonial certification"). This concept is understood as conducting audits, so they do not lead to a reliable image of the organization (Biazzo, 2005; Nurcahyo et al., 2019). An extreme manifestation of this phenomenon is "fake certification" (Heras-Saizarbitoria and Boiral, 2019).

The third group of publications consists of studies in which auditors' opinions, attitudes, and experiences are presented and analyzed (Shih et al., 2006).

## 2.2 Remote Audits

Audits can be performed on-site, remotely, or as a combination of these two techniques. ISO 19011 standard provides guidelines for these approaches (see table 1).

**Table 1.** On-site and remote audit methods (ISO, 2018).

Extent of involvement between the auditor and the auditee	Location of the auditor	
	On-site	Remote
Human interaction	<ul style="list-style-type: none"> <li>· conducting interviews</li> <li>· completing checklists and questionnaires with auditee participation</li> <li>· conducting document review with auditee participation</li> <li>· sampling</li> </ul>	Via interactive communication means: <ul style="list-style-type: none"> <li>· conducting interviews</li> <li>· observing work performed with remote guide,</li> <li>· completing checklists and questionnaires</li> <li>· conducting document review with auditee participation</li> </ul>
No human interaction	<ul style="list-style-type: none"> <li>· conducting document review (e.g. records, data analysis)</li> <li>· observing work performed</li> <li>· conducting on-site visit</li> <li>· completing checklists</li> <li>· sampling (eg. products)</li> </ul>	<ul style="list-style-type: none"> <li>· conducting document review (e.g. records, data analysis)</li> <li>· observing work performed via surveillance means, considering social and statutory and regulatory requirements</li> <li>· analysing data</li> </ul>

The standard states, among other things:

“The feasibility of remote audit activities can depend on several factors (e.g., the level of risk to achieving the audit objectives, the level of confidence between auditor and auditee’s and regulatory requirements).

At the level of the audit program, it should be ensured that the use of on-site application of audit methods is suitable and balanced, to ensure satisfactory achievement of audit program objectives” (ISO, 2018).

The analysis of the ISO 19011 content leads to the conclusion that the on-side method is introduced as the primary technique. The remote audit can complement it. It can also replace it, but not in all cases. Some more details are presented in IAF (International Accreditation Forum) MD-04 document, where the use of information and communication technology as part of the auditing methodology was described (IAF, 2019a). In the occupational health and safety management system, the IAF recommendation is clear. The remote processes should not be done when processes control and risk control within the scope of ISO 45001 are audited. The other activities such as documentation and records review or interviews with staff are allowed with the use of remote techniques supported by digital tools (IAF, 2019b).

So far, few publications have been devoted to remote audits. Studies on financial audits dominate among them, for example (Sorensen & Ortegren, 2021; Zhou, 2020). It should be noted that only a few papers concerned audits related to standardized management systems.

Stanciu et al. (2012) presented the general idea of remote audits, emphasized the need for their use and pointed out that the essential conditions for on-line audit are Internet access and compatibility of IT tools used by the auditor and audited entity, including the assurance of data transfer speed and quality. Implementation of digitalization and other elements of Industry 4.0 is indicated as an important driver and

key factor to reach competitive advantage in the nearest future (Hoyer et al., 2020; Li et al., 2020).

Nowicki and Kafel (2021) conducted a study to assess the degree of impact of the pandemic on certification bodies’ functioning. Based on 4 case studies, they found that to ensure the continuity of operations, the certification bodies have applied the elements of remote evaluation to a vast extent to fulfill their obligations. All the tested certification bodies consciously approached the difficulties of quickly adapting to new realities during the global COVID-19 pandemic. All investigated certification bodies after the end of the extraordinary period will additionally introduce the previously planned on-site evaluations, as a result of which the effectiveness of such activities will increase. Planned on-site activities for most of the tested certification bodies will still take place, and additionally, a remote form of assessment will be performed.

Based on survey responses of 271 German internal auditors who have conducted both remote and traditional audits, Eulerich et. al (2021) find that internal auditors perceive no difference in the efficiency and effectiveness of and stakeholders’ reliance on results from remote and traditional audits when considering all responses.

Interesting analysis of how transnational private regulatory programs (sustainability certification and eco-labeling schemes) have adjusted to the COVID-19 crisis by changing their audit policies and how these changes may affect operators (firms, farms, production sites) was conducted by Auld and Renckens (2021). The assessment showed that the changes may exacerbate existing barriers to participation and can create new barriers, at least temporarily.

Summarizing the literature review, it can be stated that many authors believe that the body of audit research is still small (Christ et al., 2020) and remote audits are indicated as one of the topics that should be given special

attention (Auld & Renckens, 2021). This is especially important because it is assumed that the provision of services using the online method is usually significantly different from providing the same services using the on-site method (Lin & Wang, 2011). Additionally, it can be noticed that, above all, there is a lack of knowledge about the usefulness of remote audits, taking into account the audit clients' point of view.

### **3. Methodology and data collection**

#### **3.1 Research hypotheses**

The main aim of the study was to verify whether different chosen methods of auditing approaches (related to management systems) are perceived by the audited organizations as equally beneficial. Based on the literature review, the following research hypotheses were formulated:

H1: The credibility of on-site audits is perceived as the higher than the credibility of remote audits.

H2: Remote audits enable the improvement of the organization on a higher level than on-site audits.

H3: Remote audits improve the organization's financial performance on a higher level than on-site audit.

H4: The benefits of audits related to voluntary management systems are higher than benefits of the obligatory management systems.

#### **3.2 Data collection method**

A research questionnaire was developed for the study. The respondents were asked to express their opinions using a seven-point scale, where "1" was the lowest assessment and "7" was the highest one.

The survey was carried out with the use of CATI (Computer Assisted Telephone Interview) method supplemented by CAWI

(Computer-Assisted Web Interview) method, by a team of interviewers.

According to Vannieuwenhuyze et al. (2010), the mix-mode survey can help:

- to reduce coverage error by improvement of the access to the groups of hard-to-reach respondents,
- to lower non-response and non-response bias because every respondent can choose his or her mode of preference among several modes,
- to reduce costs of data collection.

The above-mentioned advantages of the mix-mode method were the main reasons to choose that data collection model. On the other hand, the final small number of CAWI data (3%), minimized the disadvantages of that solution, which were discussed e.g. by (Blumenberg & Barros, 2018; Bowling, 2005).

After the development of the survey form, the interviews were made by a subcontracted professional research agency. The process of conducting the research was started with a pilot, as a result of which the correctness of the survey structure was verified and training materials for interviewers were refined. The implementation of CATI surveys by a team of interviewers began in November 2020 and was carried out for one month. If the respondent was unable to talk during the initial contact, she/he was asked for permission to contact her/him again at another time. If she/he agreed, the time and date of re-contact were noted. A five-time unsuccessful attempt to contact one number (at different times and on different days) released the interviewer from further attempts to call the company.

In the case of companies that did not agree to the telephone survey (35 companies), a valid e-mail address was obtained and a questionnaire was sent to it with an individual token that allowed to track not only questionnaires but also whether the questionnaires were opened at all (displayed

in the browser by the respondent in a given company). To reduce the percentage of e-mails falling into SPAM folders, the dispatch was carried out only with the use of software belonging to the research organization and its authorized domain with a high trust index for mail server algorithms. The sent e-mail contained a link to the online survey with the content of the e-mail inviting you to the survey and a letter of recommendation in pdf format.

### 3.3 Research sample

For the purpose of the study, organizations processing organic farming products from Poland were chosen. According to the EU 834/2007 regulation (EU, 2007), all organizations that are processing or placed on the market organic food are required to obtain a third party certificate. For the study, that kind of certification is perceived as an obligatory one. According to the official database obtained from the polish official regulator, there were 910 certified organizations in the 2018 year operating on the market. The more recent database was not used because at least 2 years of participation in the organic certification system was assumed as a prerequisite for participation in the research.

Despite the emerging difficulties in contacting respondents related to "home office work" caused by the COVID-19 pandemic, a total of 109 questionnaires were completed in the course of the study. Out of this number, 100 valid questionnaires were included for further analysis, while 9 were excluded due to incompleteness or incorrectness of the data. That number of answers states of 11% of the whole studied population. Within the 100 organizations' responses, 97 were obtained using CATI method, the other 3 were sourced from the CAWI method.

Among studied organizations, 37% employed up to 9 people, 20% were in the group of small organizations up to 10-49

employees, 39% medium-sized companies and 4% of big ones with employment over 250 people. All of the studied companies have been certified according to organic requirements and implemented a food safety system - HACCP. More than half of the organizations (60%) have implemented and certified voluntary management system standards. In table 2 there are presented details concerning the implemented systems. The most popular management systems were IFS and BRC, which were implemented respectively in 33% and 25% of organizations. Some of them had two or three different management systems implemented, which is a common practice described e.g. by Kafel and Casadesus (2016).

**Table 2.** Voluntary management systems in studied organizations

Management system	Number of companies [%]
Suppliers food safety requirements - IFS/BRC	33/25
Quality management system - ISO 9001	12
Food safety management system - ISO 22000	12
Environmental management system - ISO 14001	4
Other certified management systems (e.g. Global GAP)	13

According to obtained data, 39% of respondents had the experience with remote audits. The remaining 61% of respondents participated in on-site audits. That result can be considered a similar one to the remote/on-site proportion described by Nowicki and Kafel (Nowicki & Kafel, 2021).

In order to evaluate the statistical significance of the relationship, the non-parametric Mann-Whitney test (U-test) was applied with the p-value significance level of 0.05 (if p-value > 0.05 then the difference between the medians is not statistically significant). According to Mann and Whitney (1947), this is the most suitable test

for the kind of data collected during empirical research. It is also used by researchers within the studies concerning quality management, e.g. Casadesus et al., (2011), Carvalho et al., (2019), Kannan and Garad, (2020).

#### 4. Results

*H1: The credibility of on-site audits is perceived as the higher than the credibility of remote audits.*

To verify the H1 hypothesis, respondents were asked to evaluate to what extent the audit results can be considered credible (i.e. reflect the actual state of the organization). The credibility of the audits was assessed highly. The median grade was 6.

According to the respondents, on-site audits are slightly more reliable than remote audits (see Table 3).

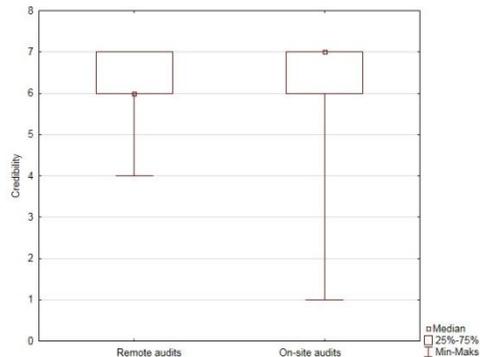
However, these differences are statistically insignificant. It can therefore be concluded that the credibility of both methods is seen to be the same. This finding is (to some extent) in line with the results of research by Gandia and Huguet (2020). They found that there are other factors, in the audit than its type or method, which can positively value the credibility. That factor is the audit fee. The more someone pays for the service like an audit, the more she/he values it, as far as the quality of the service is high. The fees for remote and on-site audits are the same, which may result in their credibility being equally assessed.

**Table 3.** Credibility of on-site and remote audits

Assessed feature	Audit method		Mann-Whitney test result
	On-site	Remote	
Credibility (median)	7	6	p=0,25 (differences are not statistically significant)

It is worth noting that opinions on the credibility of on-site audits were more

diverse than the opinions on remote audits. It can be explained by the fact, that it is easier to form an opinion about the auditor and his knowledge during the personal face-to-face audit. In that contact, it is no a surprise that the lowest assessments of credibility indicated by the study participants were related to on-site audits (see Figure 1).



**Figure 1.** Credibility of on-site and remote audits

However, the share of these extremely low ratings was very low. Therefore, it can be assumed that they were a consequence of incidental situations.

*H2: Remote audits enable the improvement of the organization on a higher level than on-site audits.*

The respondents were asked to assess the extent to which the findings (from audits are useful for the company in improving its operations. Benefits that were measured in this hypothesis were related directly to the outcomes of the audits, such as:

- 1) recorded in the audit reports observations and non-conformities,
- 2) unrecorded observations and other information's that are generated during the auditing processes,
- 3) auditors' suggestions and opinions which are beyond the scope of the audit and still treated as a high risk for the company.

In this case, the median value was 6. This means that the usefulness of the audits was

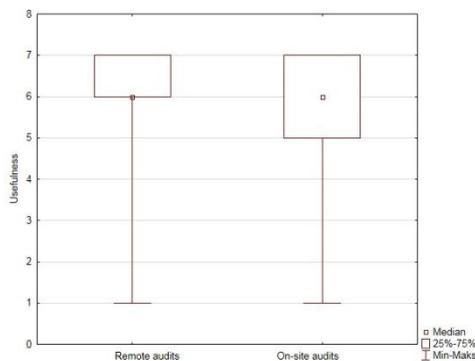
considered by the respondents as high (this result is similar to the one obtained in the case of assessing the credibility of audits). This conclusion confirms the opinion of many authors who find audits useful tools (Alvarenga et al., 2018; Beckermerhagen et al., 2004).

The median values for both auditing methods were the same (see Table 4). Thus, it can be concluded that the usefulness in the improvement processes of both auditing methods is the same.

**Table 4.** Usefulness in the improvement processes of on-site and remote audits

Assessed feature	Audit method		Mann-Whitney test result
	On-site	Remote	
Usefulness in the improvement processes (median)	6	6	p=0,52 (differences are not statistically significant)

In this case, however, the assessments of the usefulness of on-site audits were more varied (see Figure 2).



**Figure 2.** Usefulness in the improvement processes of on-site and remote audits

The opportunities and benefits of digital transformation are still not recognized by the auditees. It is possible, that common use of remote audits will lead to the improvement of the auditing processes and consequently to the higher assessment of the auditees. The obtained data suggest, that we are rather at

the beginning or market growth stage of the classic product life cycle (Levitt, 1965) and still have the problems characteristic to the market development stage. So the remote audits are still not fully proved out technically in all aspects.

The generally high usefulness rating obtained in the research may result from a large rate of small and medium organizations in the sample. As stated in many studies, for that sector the benefits of management systems certification are asses high. According to Kakouris and Sfakianaki (2018), various benefits gaining from the certification are observed, but mainly in the no financial areas, such as quality awareness or new market penetration possibilities.

*H3: Remote audits improve the organization's financial performance on a higher level than an on-site audit.*

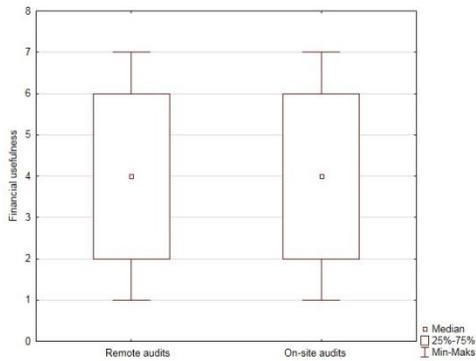
Generally, current research supports the positive impact of quality management to different performance measures (Castillo Apraiz et al., 2020). An audit or inspection can be perceived as a tool that helps to achieve the goals of the management system. Respondents were asked to rate to what extent the findings (observations, non-conformities) from the audit contribute to the financial benefits.

The financial usefulness of the audits was rated the lowest among all analyzed issues. Its median score was 4. This result (higher than average 3.5), however, authorizes the conclusion that generally, the audits will contribute to the achievement of financial benefits. In this case, the same rating, as well as the distribution of answers, was obtained (see Table 5 and figure 3).

**Table 5.** Financial usefulness of on-site and remote audits

Assessed feature	Audit method		Mann-Whitney test result
	On-site	Remote	
Financial usefulness (median)	4	4	p=0,85 (differences are not statistically significant)

The conducted u-test showed that the financial usefulness of both auditing methods is the same. It can therefore be concluded that the financial usefulness of both methods is seen to be the same.



**Figure 3.** Financial usefulness of on-site and remote audits

One can state that the certification audits are voluntary, so if companies do not notice any usefulness from the process, they can simply resign from that service. Unfortunately, in many cases, the certificate is a “must have“ requirement in the food sector (Fontaine et al., 2018; Minor et al., 2019). The perception of financial benefits can be asses within the costs of certification. The use of digital tools with simultaneous reduction of audit fees (reduction mobility costs) should indicate the higher added value of remote audits. That conjecture has no confirmation in obtained data. As research of Nowicki and Kafel (2021) implicate, the certification bodies do not decrease the costs of certification after the change of auditing method from on-site to a remote one.

H4: The benefits of audits related to voluntary management systems are higher than benefits of the obligatory management systems

As the research sample consists of people with experience with audits related to various management systems, it was possible to conduct a comparative analysis. The responses were divided into two groups, i.e.

voluntary concerning management systems (60%) and concerning obligatory management systems (40%). The three issues discussed earlier were assessed, i.e. credibility, usefulness in the improvement processes and financial usefulness. The results are presented in table 6.

**Table6.** Usefulness of voluntary and obligatory management systems audits

Assessed feature	Audit method		Mann-Whitney test result
	Voluntary	Obligatory	
Credibility	6	7	p=0,42 (differences are not statistically significant)
Usefulness in the improvement processes	7	6	p=0,03 (differences are statistically significant)
Financial usefulness	5	4	p=0,02 (differences are statistically significant)

For usefulness in the improvement processes and financial usefulness of audits the differences were statistically significant. In both cases, companies with voluntary management systems (other than organic certification) asses higher usefulness in the improvement processes and financial usefulness of audits. It was quite surprising that, in the case of credibility assessment, there were no such differences noticed. Considering the digitalization aspect of the study, it can be concluded, that digital tools are supporting the audit processes but the real added value of the audits is elsewhere.

## 5. Conclusion

The study aimed to verify whether different methods of management systems auditing are perceived by the audited organizations as equally beneficial. The conducted analysis showed that there are no statistically significant differences between remote audits and on-site audits. Their credibility and usefulness in the improvement processes

and financial usefulness are, according to the respondents, at a similar level. These findings are fully consistent with the results of research carried out among German auditors (Eulerich Marc, Wagener Martin, 2021).

The situation is different when the type of management system to be audited is adopted as the division criterion. It turned out that in the case of audits related to voluntary management systems, both the usefulness in the improvement of organization processes and specifically financial usefulness of the audits are assessed higher than in the case of mandatory management systems. Only concerning audit credibility, no statistically significant differences were found. Unfortunately, due to the lack of studies on the topic, these results cannot be compared with other results.

In the presented research, the main limitation was the generalized approach established in the research methodology. There was no distinguishing between different audit schemes such as organic farming audits or quality management system audits. The study was carried out on a specific sample of organizations and it is recommended in future research to expand that to organizations that are operating in other

sectors and countries. It should also be remembered that most of the respondents had to deal with remote audits for the first time only recently. So they evaluated their first experiences with this auditing method. Therefore, the research should be continued to check whether after the next experiences (when the novelty effect has passed) the high rating of this method will be maintained.

As future research, a quantitative study with a direct focus on each particular certification scheme such as quality management system or food safety system is recommended. Due to the time passed by from the COVID-19 pandemic and wider use of remote audits within the organizations, it is recommended to investigate the new good practices and improvements that were implemented in the process. The other line of research is to linkage the risk assessment performed by certification bodies with the connection to the audit methods and its influence on the perception of usefulness and credibility for the organizations and other interested parties.

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