

Computer-Assisted Audit Tools and Techniques (CAATT)

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Computer-Assisted Audit Tools and Techniques (CAATTs) have been generally referred to as technology that assists in audit task completion. There is minimal level of use of CAATTs in developing nations regardless of their importance to audit productivity and cost reduction, and this holds particularly true in the public sector entities' internal audit departments.

Keywords: Computer-Assisted Tools and Techniques (CAATTs) ; internal audit effectiveness ; IT knowledge ; public sector

1. Introduction

Audit technology has been generally used for improving the quality of audits, which is why the US Auditing Standards has mandated its use ^{[1][2][3]}. More specifically, the US Statement of Auditing Standards (SAS) No 316.52 mandates the need for the auditor to use computer-assisted audit techniques to obtain enriching evidence concerning the data of accounts and electronic transaction files ^{[4][5]} towards the identification of fraud and risks. Along the same line, CAATTs can be generally referred to as technology used for audit task completion ^{[2][6]}. Additionally, CAATTs have also been referred to as various tools, technologies, and software that auditors use towards controlling and affirming tests, analyzing and controlling financial statement information, and overseeing auditing activities ^{[7][8][9]}.

Further, CAATTs are becoming increasingly important in the public sector as they can enhance the effectiveness and efficiency of internal audit activities. The use of CAATTs enables auditors to analyze large volumes of data in a more accurate and efficient manner, which is particularly important in the public sector where there are large and complex datasets ^[2]. In many countries, the use of CAATTs is mandatory for public sector auditors. For example, the United States Government Accountability Office (GAO) requires the use of CAATTs in its audits of federal agencies. Similarly, the International Standards for Supreme Audit Institutions (ISSAI) require that public sector auditors use CAATs where appropriate. However, the adoption and use of CAATTs in the public sector varies across countries and jurisdictions. Some public sector auditors may face challenges in adopting and using CAATTs due to a lack of resources, technical expertise, or organizational culture. In addition, there may be concerns regarding data security and privacy in the public sector, which may limit the use of CAATTs. Despite these challenges, there is a growing trend towards the use of CAATTs in the public sector. Many public sector auditors are recognizing the potential benefits of CAATTs and are investing in the necessary resources and training to support their use. Additionally, advancements in technology and data analytics are making it easier for auditors to use CAATTs and to derive insights from large datasets.

A review of relevant studies showed that CAATTs is the use of technology for the performance of auditing, and these include the use of Utility Programs, Electronic Working Papers, Electronic Spreadsheets, Purpose-Written Programs, Test Data, Parallel Simulation, Integrated Test Facility (ITF), Generalized Audit Software (GAS), and Embedded Audit Modules ^{[9][10][11][12]}. Moreover, CAATTs use effectiveness can lead to enhanced internal control, informed decision-making, and facilitated auditing task processes ^[13]. Such effectiveness is highlighted in the user's capability of using audit technology to obtain information for the purpose of meeting control and improvement requirements ^{[14][15]}. Hence, auditors' effective use of CAATTs is a must while auditing to ensure accurate and authentic evidence ^[13]. Lack of effectiveness among users and lack of qualification and experience may hinder the end game—auditor's IT knowledge thus has a moderating role between CAATTs use and the effectiveness of such use.

In the case of developing nations, technology use in accounting has progressed, which has given rise to the need to examine audit technology use within them ^[9]. This is of urgent need concerning the importance of high-level quality audits in guaranteeing the financial reporting integrity, particularly in developing nations, wherein questionable quality and transparency has been related to financial reporting ^{[11][16]}. Notably, the recent COVID-19 pandemic and its impact on the process of accounting has been followed by the automatic development of audit processes ^{[17][18][19]}, making CAATTs

important to keep abreast of developments, especially because a significant relationship exists between auditing and the auditing environment ^[20].

There exists a fairly extensive literature on IT audit, albeit those dedicated to the factors driving and inhibiting CAATs use are still limited ^[8]. For instance, the factors influencing IT audit quality, using support tools, were the focus of ^[21] work, but the authors did not address the factors of CAATs use among auditors. Studies concerning CAATs development and application auditors are plentiful ^{[2][9][13][20][22][23]}, but they have been largely conducted among external auditors ^{[21][24][25][26]}. Such studies include documented instances as to the reasons behind CAATs adoption among external auditors ^{[1][4][27][28]}, with only a few dedicated to internal auditors ^{[29][30][31][32]}. Aside from this, prior literature on the subject is limited to the private sectors of developed nations, with the public sector being the recipient of minimal attention, particularly when it comes to the internal audit public sector in Jordan.

Research on the factors influencing CAATs use does exist in the literature, with the majority of them focusing on the individual level rather than on the organizational one. In this regard, the acceptance of CAATs needs to begin from the decision of the organization to obtain it through an investment and facilitate its use for individual working within the organization. Moreover, theories abound concerning technology use in the IS research field ^[33], with the most extensively adopted being ^[34] TAM, Ajzen's ^[35] TPB, and Venkatesh et al.'s ^[36] Unified Theory of Acceptance and Use of Technology. In addition to the above are Rogers's ^[37] Diffusion of Innovation (DOI) theory and Tornatzky and Fleischer's ^[38] TOE framework. From these theories, both DOI and TOE are firm-level theories, while TAM, TPB, and UTAUT are individual-level ones. Prior studies using TOE for examining CAATs use or a combination of TOE and DOI are few and far between, with each study employing various factors on the basis of the studies' contexts. Limited studies are more pronounced when it comes to using DOI in the internal audit case.

Furthermore, studies concerning IT use has adopted Rogers's ^[37] DOI to explain technology use among firms; in fact, DOI is a commonly utilized theory of the same, with the main focus on technological characteristics, namely relative advantage, complexity, observability, compatibility, and trialability ^{[39][40]}—factors that either promote or inhibit the use of technology ^[41]. Several studies acknowledge and accept the critical innovation characteristics that may influence its adoption/rejection ^[42].

2. The Computer-Assisted Audit Tools and Techniques (CAATT)

CAATs have been generally referred to as technology that assists in audit task completion ^[6]. This definition was followed by the one using the term 'different tools, technologies, and software' that assist auditors to directly control and affirm tests, analysis and monitor financial statement information, and oversee auditing activities ^[7]. Based on the above, researchers define CAATs as the technology use that assists auditors to perform audit, including Utility Programs, Electronic Working Papers, Electronic Spreadsheets, Parallel Simulation Software, Purpose-Written Programs, Audit Automation, Test Data, Embedded Audit Modules, Integrated Test Facility, Integrated Test Facility, and Generalized Audit Software ^[10].

CAATs enable the freedom to obtain information in the system while being independent of the user, confirm the used software quality, and enhance the accuracy of audit tests and their efficiency, leading to a long-term, low-cost audit. In the same way, CAATs enable the auditor to save time by facilitating the above, and in the majority of cases they supplant manual testing methods with strategies, sparing the auditor hours/days on the audit process. For instance, CAATs can be used in two sheets generated in a couple of seconds to determine if any invoice contains irrelevant order/goods receipts, a far-cry from the generation of 25 invoices and wasting resources on the items in order to confirm the same in a three-way coordination. Thus, using CAATs allows auditors to reap advantages while arranging and directing audits and reporting the audit findings ^[43].

The public sector's internal audit task effectiveness and the use of Computer-Assisted Audit Tools and Techniques (CAATs) could be influenced by auditors' IT knowledge. Auditors' IT knowledge can have two potential impacts: it can either enhance the benefits of CAATs use or mitigate their limitations. When IT knowledge is high, auditors can utilize CAATs more efficiently and gain superior insights for decision-making. This can lead to improved overall audit quality and increased effectiveness of internal audit tasks. On the other hand, low IT knowledge may result in challenges when using CAATs, forcing auditors to rely on manual testing procedures or misinterpret CAATs-generated results. Consequently, this may reduce internal audit task effectiveness and result in inaccuracies or errors during the audit process. Therefore, auditors' IT knowledge level plays a pivotal role in moderating the relationship between CAATs use and internal audit task effectiveness in the Jordanian public sector. Higher IT knowledge levels can increase the benefits of CAATs and

reduce their limitations. Conversely, lower IT knowledge levels may limit the advantages of CAATs, exacerbate their limitations, and diminish internal audit task effectiveness.

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