



# PROCEEDINGS

## The 4<sup>th</sup> International Conference on Sustainable Innovation (ICoSI) 2020

Cutting Edge Innovations for Sustainable Development Goals

Universitas Muhammadiyah Yogyakarta (Indonesia)

October 13 - 14 2020

<https://icosi.umy.ac.id/>

## Focal Conferences



- ✔ (ICPU) The 2nd International Conference on Pharmaceutical Updates
- ✔ (ICOMS) The 6th International Conference on Management Sciences
- ✔ (ICLAS) The 9th International Conference on Law and Society
- ✔ (ICMHS) The 4th International Conference Medical and Health Sciences
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- ✔ (IConARD) International Conference on Agribusiness and Rural Development
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- ✔ (ICONPO) The 10th International Conference on Public Organization
- ✔ (DREAM) The 5th Dental Research and Exhibition Meeting
- ✔ (ICHA) The 5th International Conference on Hospital Administration
- ✔ (ICOSA) The 3rd International Conference on Sustainable Agriculture





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## Preface by the Chairperson of the 4<sup>th</sup> ICoSI 2020



**Dr. Yeni Rosilawati, S.IP. S.E., MM.**

Assalamu'alaikum Wr. Wb.

All praise is due to Allah, the Almighty, on whom we depend for sustenance and guidance. Prayers and peace be upon our Prophet, Muhammad SAW, his family and all of his companions.

On behalf of the organizing committee, it is my pleasure and privilege to welcome the honourable guests, distinguished keynote & invited speakers, and all the participants.

With the main theme of “Cutting-Edge Innovations on Sustainable Development Goals (SDGs)”, the 4<sup>th</sup> International Conference on Sustainable Innovation (ICoSI) 2020 serves as a forum to facilitate scholars, policy makers, practitioners, and other interested parties at all levels from Indonesia and abroad to present their novel ideas, promote cutting-edge research, and to expand collaboration network. The conference has about 1373 participants participating from more than 8 countries 4 continents all over the world, making this conference a truly international conference in spirit.

This multidisciplinary conference was first held in 2012 and has undertaken various changes and adopted to the current technological trends of our education system. From having this conference with just 175 participants back in 2012 we have come a long way in making the conference a huge success with more than 1373 participants participating in this two-day conference.

Formerly, this conference consisted of only 9 (nine) focal conferences. This year, there are 14 focal conferences from various disciplines, namely: 1) The 2<sup>nd</sup> International Conference on Pharmaceutical Updates (ICPU), 2) The 6<sup>th</sup> International Conference on Management Sciences

(ICoMS), 3) The 9<sup>th</sup> International Conference on Law and Society (ICLAS), 4) The 4<sup>th</sup> International Conference Medical and Health Sciences (ICMHS), 5) The 6<sup>th</sup> International Conference for Accounting and Finance (ICAF), 6) The 2<sup>nd</sup> International Language and Education Conference (ILEC), 7) The 2<sup>nd</sup> International Conference on Nursing (ICONURS), 8) The International Conference on Information Technology, Advanced Mechanical and Electrical Engineering (ICITAMEE), 9) The 2<sup>nd</sup> International Conference of Agribusiness and Rural Development (IConARD), 10) The 10<sup>th</sup> International Conference on Public Organization (ICONPO), 11) The 2<sup>nd</sup> International Symposium on Social Humanities Education and Religious Sciences (ISHERSS), 12) The 5<sup>th</sup> Dental Research and Exhibition Meeting (DREAM), 13) The International Conference on Hospital Administration (ICHA), and 14) The 3<sup>rd</sup> International Conference on Sustainable Agriculture (ICoSA).

Accordingly, We are proud to announce that this year, the 4<sup>th</sup> ICoSI 2020 breaks the Museum Rekor-Dunia Indonesia (MURI) record as the Virtual Multidisciplinary Conference with the Largest Number of Area of Fields in Indonesia

In addition, this year, this conference holds special value since this is the first conference in the history of our university where the entire conference is taking place remotely on a digital platform through the use of advance technologies due to the Covid-19 Pandemic.

I would take this opportunity to express my highest respect to the Rector of Universitas Muhammadiyah Yogyakarta, Dr. Gunawan Budiyanto who gave approval and ensured the maximal support from all the faculty members of Universitas Muhammadiyah Yogyakarta (UMY) that made this event a big success. In addition, my appreciation goes to all the support teams who have provided their valuable support and advice from planning, designing and executing the program.

Let me conclude my speech by encouraging the delegates to participate with an increasing number in all the activities and discussions through the digital platforms for the next two days. I wish everyone a successful, safe, and fruitful conference.

Thank you!

Wassalamu'alaikum Wr. Wb.

Yogyakarta, Indonesia, 14 October 2020





## Welcoming Remarks by the Rector of Universitas Muhammadiyah Yogyakarta



**Assoc. Prof. Dr. Gunawan Budiyanto**

Innovation is the beginning of the development of technology, and technology is a development machine that is expected to provide benefits to humans and provide the smallest possible impact on environmental quality. In the concept of sustainable development, development must improve the quality of human life without causing ecological damage and maintain the carrying capacity of natural resources.

International Conference on Sustainable Innovation (ICoSI) is an international conference which is an annual conference held by the University of Muhammadiyah Yogyakarta (UMY), Indonesia. In 2020 this raises the issue of "Cutting-Edge Innovations on Sustainable Development Goals." Therefore, on behalf of all UMY academics, I would like to congratulate you on joining the conference, hoping that during the Covid-19 Pandemic, we can still provide suggestions and frameworks for achieving sustainable development goals.

# About The 4<sup>th</sup> International Conference on Sustainable Innovation (ICoSI) 2020

## *Cutting Edge Innovations for Sustainable Development Goals*

The 2030 Agenda for Sustainable Development is enacted by the United Nations as a shared blueprint for peace and prosperity for people and the planet, now and into the future. It consists of strategies to improve health and education, reduce inequality, and spur economic growth while also conserving natures by 2030.

This year, however, at the first one-third of its timeline, the SDG Reports shows that the outbreak of COVID-19 did hinder the achievement, or at least decelerate the progress of achieving the 17 goals. In fact, according to the report, “some number of people suffering from food insecurity was on the rise and dramatic levels of inequality persisted in all regions. Change was still not happening at the speed or scale required”, accordingly.

Therefore, in this event of pandemic, the quantity and quality of research, innovation, and more importantly multi-disciplinary collaboration are indispensable. Furthermore, there needs to be clear ends of those works. That is how those research are applicable and benefits directly to the society. That is how those research is incorporated as the drivers of policy making, and used practically in the society. Hence, the stakeholders especially the triple helix of higher education institution, government, and industry must be re-comprehended and supported to reach the common goal of the SGD.

International Conference on Sustainable Innovation (ICoSI) has been essentially attempting to strengthen this regard since its first establishment. One of the goals of ICoSI is to provide primarily a platform where scholars, practitioners, and government could grasp the development and trends of research. Hopefully, meeting these actors altogether would result in stronger collaboration, sophisticated and advantageous research, and brighter ideas for further research. Based on these reasoning, this year, the 4th ICoSI 2020 UMY is themed ‘Cutting-edge Innovations for Sustainable Development Goals’.

Improving from last year conference which brought nine focal conference, this year ICoSI 2020 UMY brings 14 disciplines, from social sciences, natural sciences, and humanities. ICoSI 2020 received as much as 1005 papers. The paper works submitted in ICoSI 2020 UMY will be published in Atlantis Proceedings, IOP Proceedings, National/International Journals, and ICoSI ISBN-indexed Proceedings.

Nevertheless, ICoSI believes that publication is only the beginning of research dissemination. The publications will enhance the chance of the research known by wider audience, and then used, applied, and incorporated at either system, institutional, or personal level of human lives.





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# TRACK ECONOMICS, LAW, EDUCATION, SOCIAL, AND HUMANITIES



# The Influence of Information Technology (IT) on Accrual Accounting Adoption of the Jordanian Public Sector

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## ABSTRACT

Jordan is one of many countries that intends to reform its public sector by adopting accrual accounting, which is primarily carried out through the International Public Sector Accounting Standards (IPSAS) implementation plan, scheduled to be completed by 2021. Considering the complexity of the adoption process, it cannot be completed without an appropriate Information Technology (IT) system capable of providing the accounting information required for this reform. Therefore, this study aims to examine the influence of IT on accrual accounting adoption in the Jordanian public sector. The study employed the quantitative survey approach. Based on 331 usable questionnaires, the descriptive findings showed that the use of IT in the Jordanian public sector is relevant to daily accounting transactions in general and to accrual accounting in particular. The regression analysis showed a positive, significant relationship between IT use and accrual accounting practice. The IT specialist should be able to understand the needs of public sector in adopting accrual-based accounting. In line with today's digital age, which integrates advanced technologies and numerous techniques, this study suggests that a combination of accounting and IT experts is required to enhance the success of public sector reform. This study contributes to the extant literature concerning the relationship between IT and accrual accounting adoption in the public sector in developing countries.

**Keywords:** *Public Sector, Accrual accounting adoption, Information Technology, Jordan*

## INTRODUCTION

Nowadays, there is a global trend towards public sector accounting reform. Jordan has taken the initiative to reform its public sector through the implementation of the International Public Sector Accounting Standards (IPSAS) in 2014. This initiative was successful, and Jordan adopted cash basis IPSAS in 2015 (Alghizzawi and Masruki, 2019a), making it the first Middle-Eastern country to successfully implement these standards. Consequently, the Jordanian government announced that it will adopt the accrual basis IPSAS, which is expected to be completed by 2021 (Alghizzawi and Masruki, 2019b). This initiative is aimed at improving the transparency of public financial accounts and quality of its financial reports. In addition, it is expected to enhance control and accountability, as well as simplifying the decision-making process, allowing it to be completed in a timely manner while using financial resources optimally (JMOF, 2015). Moreover, accrual basis IPSAS is expected to significantly alleviate several thorny financial issues in Jordan's economy related to financial aids, corruption, taxes, and budget deficit (Alghizzawi and Masruki, 2020).

Empirical evidence suggests the difficulty of public sector reform in developing countries. They face a myriad of challenges in adopting accrual accounting in

the public sector. Challenges are inevitable wherever change is instituted (Monteiro & Gomes, 2013). One of these important challenges is limited technological infrastructure, which reduces options and raises adoption costs. Accrual accounting adoption cannot be carried out without appropriate information technology (IT) that can provide the needed accounting information for the reform process, for example the recognition and valuation of assets and liabilities (OECD/IFAC, 2017; Athukorala & Reid, 2003). Additionally, several scholars stressed the simultaneously important and challenging roles of IT in the adoption of accrual accounting in the public sector e.g. Upping & Oliver (2012) in Thailand; Ahmad et al. (2015) and Mahadi et al. (2015) in Malaysia; and Setiyawati & Doktoralina (2019) in Indonesia.

In line with these evidences, this study seeks to examine the influence of IT on accrual accounting adoption. There is at present limited research on the subject in the context of the Jordanian public sector.

## LITERATURE REVIEW

The public sector is responsible for the provision of various services in a given country. It is an important agent of economic development that is monopolized by the state. Haider (2010) stated three importance of the public sector: (1) promoting economic development of



the country, (2) providing sound infrastructure, (3) serving the general public (tax-payers) without profit. It is the responsibility of the public sector to provide services to fulfill the needs of citizens (Barton, 1999). To ensure and upgrade their performance, these services must be continually maintained and improved. Because public sector reform is initiated for the aggressive betterment of numerous metrics, but especially delivery effectiveness and efficiency, governance, and transparency, it is imperative that public resources are managed well. Effective management of public resources is therefore a critical issue amidst the rapid transformation of government characteristics, including decentralization, outsourcing, re-delineation of state responsibilities, and management of outputs. The principal objective of public sector resources management is to boost the effectiveness of public services (Pina & Torres, 2003). To achieve this, the public sector must implement an accounting system that is capable of organizing its own operations (Norman, 1995).

Public sector accounting refers to the accounting method used by non-profit government entities, including central and local governments, and to the process used by government agencies to record financial transactions. Public sector accounting has at least two purposes. The first is to establish a public governance system. The public sector accounting system should be apposite to the needs of its users. The second purpose is to manage taxes and taxpayers within the state governance structure. Taxes are the main source of public revenue, and they should be assessed and recognized as an increase in taxpayers' equity. By paying their taxes, taxpayers entrust the government with the management of economic resources (Sakurauchi, 2002). Therefore, the fundamental purpose of public sector accounting is to safeguard the public treasury through the timely detection and prevention of corruption, and through the preparation of financial statements that disclose the management of public funds (Tanjeh, 2016).

### *Accrual Basis IPSAS*

The International Federation of Accountants (IFAC) first published IPSAS in 2000, and it has continually updated the standards since then. The rationale behind these standards is to ensure the consistency and allow the comparability of financial information across governments (Oulasvirta, 2014). The purpose of IPSAS is to unify the presentation of public sector financial statements across countries in order to improve the quality of accounting reports. IPSAS is based on the International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board (IASB). IFRS standardizes the financial statements of the private sector. Many IFRS standards have been audited and maintained to formulate IPSAS into a separate standard for the public sector (IFAC, 2014).

IPSAS unifies the structure and contents of public sector accounting reports across governments, improving their transparency and accountability and facilitating decision making. High-quality accounting reports embody the following characteristics (IFAC, 2014):

- a. **Relevance:** accounting information that contains confirmatory and/or predictive values would make a difference in the accomplishment of an organization's objectives. Confirmatory values are the current or past expectations of accounting values, while predictive values are their future expectations. Confirmatory and/or predictive values support the accountability of accounting reports and facilitate decision making based on these reports.
- b. **Faithful representation:** faithful representation of accounting reports is the complete, fair, and error-free recording of accounting values and information. Faithful representation results in transparent accounting information, boosting the reports' accountability.
- c. **Understandability:** accounting information should be presented in clear and simple format and concepts. The accounting information should be understandable by people of different education levels and knowledge. In other words, the accounting reports are accountable by citizens of various knowledge and skills. Likewise, the simple and clear accounting information allows decision makers to make better and more accurate decisions.
- d. **Timeliness:** timeliness is the timely disclosure of accounting information before it loses its usefulness. Timeliness of accounting information ensures that it remains useful for the purposes of accountability and decision making.
- e. **Comparability:** comparability is the capability of an accounting information item to be compared with another item for the assessment of certain metrics, such as standard or optimal financial situation. Comparability allows public sectors to understand their past mistakes and avoid them in the future and to provide accountability for wasted resources or errors (verifiability).

IPSAS is formulated on the two main accounting bases: accrual and cash (Christiaens et al., 2010). Accrual accounting is the recording of accounting transactions and activities when they occur (i.e. not when cash is paid), hence accounting records are documented in the financial statements according to the periods in which they need to be received or paid (IFAC, 2008, p. 3233). On the other hand, cash accounting is the documentation of accounting transactions and activities upon the receipt or payment of cash (IFAC, 2008, p. 926). Therefore,

financial performance measurement can be conducted based on the differences between the paid and received cash (IFAC, 2008).

IPSAS is becoming the benchmark for public accounting (Ernst & Young, 2012). When adopting the standard, a country may first opt to implement the cash basis first, before then moving to accrual accounting (Hughes, 2013). IPSAS chiefly focuses on accrual accounting rather than cash accounting. The final version of IPSAS consists of 40 standards for accrual accounting (IFAC, 2018).

Cavanagh et al. (2016) stated that governments may exploit the flaws of cash accounting. Since it recognizes accounting transactions only when cash has been received or paid, the absence of any cash exchange would cause the underlying economic event to be left unreported. By advancing cash receipts or deferring cash disbursements, it is possible for governments to artificially inflate their cash balance. Governments implementing this accounting method are also less incentivized to maintain a comprehensive and current record of the values of their assets and liabilities. This allows them to carry out transactions, for instance asset transfers (e.g. land or mining concession) and liability incurrence (e.g. public-private-partnership contracts and pension disbursements), without disclosing their financial implications to the state and taxpayers.

Accrual accounting, on the other hand, may cover the weaknesses of cash accounting and enhance the transparency, accountability, and financial management of governments. The method offers no less than three benefits: (1) providing a comprehensive record of the costs and performance of government activities; (2) increasing the effectiveness of public decision makers and making them more capable in managing assets and liabilities; (3) capturing a more complete picture of the public sector’s financial position. Therefore, the adoption of accrual accounting systems by the public sector is one of the most important steps in improving the management of public finances (Ball & Pflugrath, 2012).

*Information Technology*

Researches on public sector reform have focused on the role of IT infrastructure as a key success factor in the successful adoption of accrual accounting (e.g. Upping & Oliver, 2012; Ahmad et al., 2015; Mahadi et al., 2015; Setiyawati & Doktoralina, 2019). Negara (2015) stated that the complex adoption process of accrual accounting requires sophisticated IT and accounting systems. Additionally, it also requires adequate internal control systems to provide reasonable assurance on the effective and efficient achievement of organizational goals, reliability of financial reporting, security of public assets, and compliance with laws and regulations. Wynne (2003) explained that the IT capability of a country must be able to respond to the additional requirements of accrual

accounting adoption. The adoption process not only requires financial resources but also IT specialists. Governments must also consider redesigning their systems to ensure their ability to support accrual accounting (IPSASB, 2011).

McLeod and Schell (2007), Merino et al. (2016), and Nurharjanto et al. (2018) recommended that for a successful adoption, the IT systems must be: (1) accurate, in order to reflect the actual financial situation; (2) timely, to provide the needed accounting information on time; (3) relevant, to ensure that the accounting information is prepared as required; and (4) complete, to provide a comprehensive report of accounting information. Based on the previous discussions, the following hypothesis was developed:

H1: IT significantly and positively influences accrual accounting adoption in the Jordanian public sector.

**METHODOLOGY**

This study adopted the survey approach to collect the required data from government accountants in the Jordanian public sector, specifically the Jordanian Ministry of Finance (JMOF). The questionnaire was developed based on previous related research (Karimi et al., 1996; Zhu et al., 2006; Kwahk & Lee, 2008; Bosmans et al., 2010). The sampling method followed Krejcie and Morgan (1970). A total of 375 questionnaires were distributed, but only 331 were returned and valid for analysis.

Prior to the actual data collection, a pilot study was performed to determine the reliability and validity of the developed instrument, the appropriateness of its language, and the estimated time required to complete it. Appropriate statistical data analyses were accordingly used to assess the relationship between the independent and dependent variables. The reliability tests returned 0.912 for IT and 0.856 for accrual accounting adoption, indicating the reliability of the instrument.

**RESULTS**

*Demographics*

Table 1 shows the demographics profile of the respondents. The variables examined included gender, work experience, level of education, and educational background. Using SPSS version 24, a frequency analysis was carried out to describe the profile.

**Table 1:** Demographic Profile

	Profile	Frequenc y	Percentag e	Cumulativ e Percentag e



<b>Gender</b>	Male	205	61.9	61.9
	Female	126	38.1	100
<b>Experience</b>	Under 5 years	42	12.7	12.7
	6-10 years	58	17.5	30.2
	11-15 years	95	28.7	58.9
	16-20 years	52	15.7	74.6
	21-25 years	63	19	93.7
	26-30 years	20	6	99.7
	31 years and above	1	0.3	100
<b>Education</b>	High school	18	5.4	5.4
	2-year diploma	50	15.1	20.5
	Bachelor	205	61.9	82.5
	Master	49	14.8	97.3
	Doctorate	9	2.7	100
<b>Background</b>	Accounting and finance	230	69.5	69.5
	Law and political science	6	1.8	71.3
	Bushiness and information technology	33	10	81.3
	Public administration	18	5.4	86.7
	Others	44	13.3	100

Table 1 shows that 61.9 percent of the respondents were male. Most respondents had 11-15 years of experience (28.7%), followed by 21-25 years (19%), 6-10 years (17.5%), 16-20 years (15.7%), under 5 years (12.7%), 26-30 years (6%), and more than 31 years (0.3%). This suggests that the respondents had sufficient experience with public transactions. In turn, this increases the credibility of the survey responses. By educational level, the majority of respondents held a bachelor's degree (61.9%), followed by diploma (15.1%), master's degree (14.8%), high school (5.4%), and doctorate (2.7%). This indicates that the respondents were knowledgeable in answering the distributed questionnaires. The most common academic background

was accounting and finance (69.5%), suggesting that the respondents were specialists on the subject.

### *Descriptive Analysis*

#### Information Technology (IT) Items

Table 2 shows the mean, standard deviation, and minimum and maximum values of the IT items.

**Table 2:** Descriptive Analysis for the Items of IT

Item	Code	Mean	Standard Deviation	Minimum	Maximum
Our IT supports the business objectives and strategies of our organization.	IT1	3.66	0.779	1	5
In our organization, the responsibility and authority of IT operations are clear.	IT2	3.73	0.702	1	5
Our IT functions have clear performance criteria.	IT3	3.7	0.716	1	5
The structure of our IT functions fits our organization.	IT4	3.69	0.714	1	5
We constantly monitor the performance of our IT functions.	IT5	3.56	0.789	1	5
The IT specialist-user relation in our organization is constructive.	IT6	3.66	0.687	1	5

Our IT specialist understands our business and the organization's needs.	IT7	3.75	0.728	1	5
Overall, our current IT systems will support the accrual accounting adoption process that we need for our organization.	IT8	3.59	0.755	1	5

The results in Table 2 indicates that the JMOF uses IT systems that are suitable for its work and activities. On average, respondents considered the IT systems to be appropriate for them, and they were satisfied with the systems. The results also showed that the JMOF appoints IT specialists who understand the needs of the respondents. In addition, the respondents believed that the implemented IT systems can support accrual accounting adoption.

### Descriptive Analysis for Accrual Accounting Adoption Items

Table 3 shows the mean, standard deviation, and minimum and maximum values of the accrual accounting adoption items.

**Table 3:** Descriptive Analysis for the Items of Accrual Accounting Adoption

Item	Code	Mean	Standard Deviation	Min.	Max.
I look forward to the accrual accounting adoption at work.	AA1	3.65	0.789	1	5
Other people think that I support the accrual accounting	AA2	3.53	0.752	1	5
I intend to do whatever is possible to support the accrual	AA3	3.65	0.742	1	5

I usually support new ideas.	AA4	3.95	0.718	2	5
I often suggest new approaches to things.	AA5	3.85	0.761	2	5
I am inclined to try new ideas.	AA6	3.96	0.708	2	5
I feel ready to start working on the upcoming accrual accounting tasks.	AA7	3.72	0.819	1	5

The results of Table 3 demonstrated that the respondents agreed with accrual accounting adoption and were inclined to accept this reform process. In addition, the results showed the respondents' readiness for accrual accounting adoption. The respondents also stated their intention to do whatever is possible to support the reform process. They have also shown their support for new ideas, often suggesting a new approach for their work.

### Regression Analysis

Table 4 shows the regression results, that IT positively influenced accrual accounting adoption in the Jordanian public sector. Therefore, H1 was accepted. The result is consistent with previous studies (Upping & Oliver, 2012; Ahmad et al., 2015; Mahadi et al., 2015; Setiyawati & Doktoralina, 2019), all of which found a significant relationship between IT and accrual accounting adoption.

**Table 4:** Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	1.607	.183		8.805	.000
Mean IT	.586	.049	.549	11.919	.000

a. Dependent Variable: Mean AA

**Note:** \*Significant at 1% level

The results revealed that IT specialist should be able to understand the needs of the public sector during its adoption of accrual-based accounting. Likewise, accountants in the Jordanian public sector, specifically the Jordanian Ministry of Finance (JMOF), were more likely to learn related technology in adopting accrual accounting. It shows that the combination of accounting and IT experts is essential in the adoption of accrual accounting in public sector reforms.

## CONCLUSION

In accordance with the transition of the Jordanian public sector from cash to accrual accounting, this study has investigated to what extent technology may influence this initiative. The study found that IT positively influenced accrual accounting adoption in Jordan. The findings suggest that IT can lead the process of accrual accounting adoption. From the perspective of government accountants, the use of relevant IT systems in their work leads to their higher readiness for accrual accounting adoption. JMOF accountants expressed their satisfaction with the IT systems used by the Ministry and the IT specialists who facilitate their work, as these can support accrual accounting adoption. This study contributes to the extant literature on the relationship between IT and accrual accounting adoption in the public sector of developing countries, especially Arab states. Decision makers and policy makers in the Jordanian public sector have to consider the findings of this study to achieve better results for the reform currently in place. Finally, this study is limited as it only considers specific determinants of IT. Since this factor is one of the most important predictors of accrual accounting adoption, it would be worthwhile to incorporate other IT measures in future studies.

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