Journal of Information Systems Engineering and Management
2025, 10(22s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

The Moderation Impact of IT Knowledge on the Relationship Between TOE Factors and Cloud Accounting Adoption in Jordanian SMEs

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ARTICLE INFO

Received: 10 Dec 2024

Revised: 28 Jan 2025

Accepted: 14 Feb 2025

ABSTRACT

The study aimed to showcase the TOE factors (relative advantage, technological compatibility, senior management support organizational readiness, and competitive pressure) effect on the use of cloud accounting (CAC) in Jordanian small- and medium-sized enterprises (SMEs) with IT-related knowledge as a moderating variable, and the target group comprised accountants and internal auditors working in Jordanian SMEs. A questionnaire is used to obtain the data gathered via random sampling. SPSS analyzes the data. The results suggest that at least four dimensions of TOE: relative advantage, technological compatibility, and senior management support are important in the context of adopting CAC. Only the effect of technological compatibility on CAC adoption was partially moderated by IT knowledge. To increase the level of awareness in Jordan, the study suggested that more knowledge about CAC should be made available to the public and that Jordanian SMEs should receive training and continue with educational programs. To operationalize CAC with SMEs, reinforcing administrative support and obtaining buy-in from senior management are critical.

Keywords: TOE factors, cloud accounting adoption, IT Knowledge, Jordanian small and medium enterprises

1. Introduction

Recently, accounting information through cloud computing (CC) virtualization technology of many enterprises has been given much importance. Significant foreign scholars started analyzing the concept and application of cloud accounting (CAC) concerning CC in the early 21st century; the USA and Japan were two hotspots in this field until developed countries showed their interest (A. Y. B. Ahmad et al., 2023). Accounting has evolved and will continue to evolve with the fast pace of new technology. CAC is evolving as it outpaces customer expectations, requiring accountants to change their way of thinking to meet the new, likely stronger needs. It is no longer enough for people to be enslaved by the research, they simply want to get on and do what they are passionate about. The reality is that technology is helping them work with a better work/life integration. With CC, companies have financial figures up to the hour, if not to the minute, which are conveniently available and managed by their accountant (Khaled et al., 2024)

It is too tough to store and maintain data in a big organization where daily transactions happen. Moreover, employee mistakes or accidents could result in the loss of important data (A. Y. A. B. Ahmad, Tiwari, et al., 2024) . In today's fast-paced business environment, accountants must take advantage of new technologies to perform their tasks more efficiently and accurately. Emerging cloud technology is one of the most important technologies (Alnaimat et al., 2024). They believe that CAC will moderate the consequences and offer some resolution to the challenges developed from globalization, rapid technological advances, the rise of big data, and the widespread use of internet-based applications and standards (Adebimpe & Lola, 2024).

It has made a revolution in the Accounting field in a tenable way. Advances in CC technology have granted us the world of cloud accounting we inhabit today (Daoud, Taha, et al., 2024). CAC has ample storage to store all client company data. The fact you can set the device to auto backup regularly makes it an easy option as a data storage source and adds to its dependability and safety. CAC as mentioned earlier (2017) makes it possible to send information over "the cloud" for processing before receiving its end uses. In addition to improved accounting efficiency, the availability of financial data is another strength of an internet-connected accountant (Livera, 2017). With the help of the cloud, so to speak, data and software can be accessed online without restriction via any device that has an internet connection (A. Y. A. B. Ahmad, Abusaimeh, et al., 2024). CAC is web-based accounting used on a user's computer like a program, where his data is stored on the Internet and can be accessed from far-off servers(Li et al., 2023).

With the convergence of fundamental principles of CC and operations in accounting information systems, CAC appeared. However, in the SME business scenario, less work has been reported on adopting CAC (Daoud, Taha, et al., 2024). The notion of the based concept was applied as a primer mechanism to ensure the appropriateness of the topic with respect to the investigation. A summary of ICT adoption and usage research (A. Y. A. B. Ahmad, 2024)observed seven theories proposed. Subsequently, the TOE Framework (A. Y. A. B. Ahmad, Tiwari, et al., 2024) was identified as being the most preferred by organizations because such factors shape the technology adoption intentions of most organizations (Bani Ahmad et al., 2024).The cloud model is a new goldmine for IT providers since it is the fastest-growing segment in this sector. Cloud services were used by 44.2 billion worldwide in 2013 (Alibraheem et al., 2024). Developed countries are way ahead of developing nations in cloud services, even though the number of customers creating cloud accounts is increasing rapidly. One of the reasons for this is that developed countries are conducive to the Internet by extension. While access to the Internet is a privilege for 41.3% of the population in developing countries, this indicator climbs up to 81% among those who live in developed conditions. Finally, it is like a mechanism all developing countries must digest to survive and glow in this competitive global village. The incredible number of cloud service users also confirms the significance of these services in human life today. Additionally, the utilization of cloud services presents new methods for more effective IT resource usage while it has a net positive effect on job creation and conserving the environment (M. Allahham & Ahmad, 2024a).

Accounting professionals are confronting significant challenges due to the greater complexities of the business environment and vicious fights on global strengths', apart from facing increasing demands of global accounting standards and practices (Bani Ahmad, 2024) The fear of unknown and the lack of knowledge are the most significant barriers in implementing cloud-based applications (William et al., 2024). The introduction of cloud technology has impacted the field of accounting in a positive way (Alqsass, Al-Hakim, et al., 2023). by using the services of CC. People are beginning to fly out gradually from the old traditional accounting system to CAC as new and updated software is being launched in the market. The preface of CAC has yearned for higher performance in standard business operations (A. Y. A. B. Ahmad, Kumari, et al., 2024). This would enhance the accounting workflow by CAC. The probability of faster and exact data access by the users leads to increased transparency in the financial information provided by the cloud for running reports (Jebreel et al., 2023).

Now, not just in the private sector but also in government offices, hospitals, and even educational institutions, CAC is being adopted. A stereotype prevails that developed countries have improved rates of adoption against the developing nations, despite that certainty, there is a similarity. Dark-patterns. It is high time the developing countries learned that by not bringing in such a system, we are only looking at a way to perish and destroy within no time in this highly competitive global village. While some countries are moving towards the CAC system, there is still a significant number of these countries retaining and relying on the conventional accounting approach (Alqsass, Al-Haki, et al., 2023)

There are several reasons why some governments have made it mandatory to use cloud-based accounting services, such as the need for oversight and prevention of informality, improving the quality of public service, and systems that save time and costs. However, the rise of cloud-based accounting among small and medium-sized businesses has created a range of new risks and issues (Alharasis et al., 2024; Alharasis and Alkhwaldi, 2024; Alkhwaldi et al., 2024). Lack of infrastructure, security concerns, qualified workforce, and adaptation of changes in legislation to information systems (A. Y. B. Ahmad et al., 2023)are the problems faced by cloud-based accounting service users. (Mustafa & Marei, 2023). In the following sections, we discuss the literature review and methodology first, followed by the findings, and then the conclusion.

2. Literature review

Theoretical framework

2.1 CAC

Cloud technology is an innovation that has brought positive impacts in Accounting. CAC: Simply, accounting up-gradation to a new era using services of CC. New ages and new technological developments have just started by replacing old accounting to CAC system. The CAC systems on premises do the same things in function as a heritage accounting system, with precedence from an accounting system (Marei, Ashal, Abou-Moghli, et al., 2024). The cloud is just an access point to the data, and also it only works as a proxy for accessing data. The performance and capability of the cloud provider must be considered for the efficient execution of cloud migration (Alkhazaleh & Marei, 2021). Accessing cloud-based software from any device with an internet connection is one of the most popular CAC software (Mansour et al., 2023).

Accounting in the cloud is another innovative way of hitherto where business area led by its technology step-by-step nature cause (Mansour et al., 2023). Traditional methods of accounting on ERPs, have changed gradually and evolved as per ongoing technological advances. Over time, from manual to technology-based methods, adapted, modifications, and development are unceasing, which has left no stone unturned in any dimension of accounting that eases the accountant/user. The latest move to faster technologies in accounting has improved the capacity for this type of program to offer quality to its users. An emerging accounting formidability: CAC will revolve around creating more flexible, economical, and value-efficient aspects of accounting (Marei, Ashal, & Abou-monthly, 2024).

Cloud Accounting CAC enhances corporate efficiency, security, and flexibility. It reduced the cost of maintaining IT operations, eliminated time delays, and also offered low-cost real-time remote access (Rehman et al., 2023). For instance, by putting passwords and security checks, CAC has reduced financial data leaks (Ali, 2022).CAC also makes it possible for accountants to work from anywhere, aiding communication, decision-making, and global competition (Salhab et al., 2023). With the use of mobile devices and computers, financial data are constantly updated which makes obsolete traditional accounting methods (Daoud, Taha, et al., 2024). The solution is scalable and compatible with multiple operating systems and browsers. Lowered reaction times, physical installation hazards, infrastructure costs, and innovation are other benefits (Hatamlah, Allahham, Abu-AlSondos, Al-Junaid, et al., 2023). CAC enables efficient use of resources through automatizing non-core processes allowing staff to focus on core competencies (Hatamlah, Allahham, Abu-AlSondos, Mushtaha, et al., 2023). It helps enhance the quality of financial reporting, simplifies the accounting process, and enables instant data sharing, helping all decision-makers to align on the same line without having two sets of books as finance (Alharasis, 2024).

2.2 Theoretical Framework

The TOE framework is a theoretical model that explains how organizations accept technology and how the technological, organizational, and environmental context affects the acceptance and implementation of technological innovation. TOE is among the most common theories of adoption and provides a model that describes three dimensions or aspects of the administrative context in which innovations are incorporated (M. Allahham & Ahmad, 2024b). Additionally, the technology context describes internal and external technologies that this unit of analysis has access to (Almustafa, n.d.). Particular stakeholder resources, the scope, size, firm structure, and employee culture of a business, all fall under underlying resource categories and TOE organization. The environmental context is the determinant, as are necessarily clients, rivals, and business partners' infrastructure and the field are invariably regulated by economic coercion, in other words, pressures and resources of the business. The TOE provides a comprehensive theoretical framework based on consistent empirical evidence, while the individual factors identified within the three contexts and by the study may differ (Alharasis, 2023).

Lists the factors that affect the adoption of technology in 3 main categories: Technological factors first. Similar to other technology, He has been conceptually related to CAC adoption for also considered technological factors in the form of relative advantage and compatibility (Allahham, Sharabati, Al-Sager, et al., 2024). Technological involves internal and external technologies relevant to the organization. Different modern technologies can be compared to understand the advantages of CAC over them to improve organizational performance. These organizational factors are developed in this study. Organizational factors are sets of attributes, structures, processes, and resources in

organizations needed to be owned by the organization. such as TMS Top Management Support and Organizational competency

2.3 Conceptual Framework

This study posits that technological influences (relative advantage and compatibility), organizational influences on TMS and organizational readiness, and environmental influences and pressure have a positive effect on cloud advertising adoption based on TOE results and existing studies. They further suggested that IT awareness is a moderating mediator.

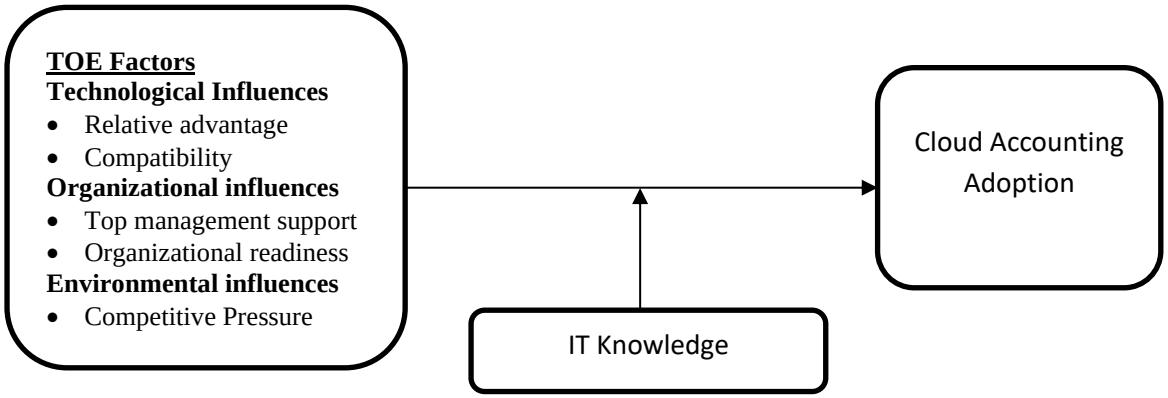

Figure 1: Conceptual Framework

2.3.1 Relative advantage

Relative advantage is defined as the "Degree of how much that particular innovation is perceived to be superior compared to what it replaces; may consist of expected outcome perceptions" (Khaled et al., 2024). The probability for firms to adopt an innovation increases when they perceive a relative advantage in that particular innovation A majority of Informants also believe that relative advantage whilst taking up an IT initiative by SMEs, including CAC, is very important. Among these comparative advantages are utility, accessibility, speed, precision, and professionalism, which, in the long run, are responsible for saving costs while increasing profits for SMEs. Therefore, the following is hypothesized:

H1: Relative advantage has a positive significant relationship with CAC Adoption.

2.3.2 Technology Compatibility

The first construct addressed the compatibility, namely the extent to which CAC as an innovation is perceived as consistent with existing values, needs and past experiences of SMEs (M. Allahham, Sharabati, Almazaydeh, et al., 2024) . Regarding compatibility, it is interesting to point out how the innovation is going to fit with what is expected from those in which innovation diffusion occurs . The level of compatibility between new innovation and existing values, past experiences, requirements for potential users' . Another technological characteristic that MSMEs defined as perceived compatibility was judged in accordance with how a new technology adapts to existing habits, values, and needs . The evidence from some studies shows that compatibility is critical in encouraging firms to adopt IT (Daoud, Sharabati, et al., 2024). For CAC, one should also check if the technology is incorporable in what a business already has using IT infrastructure and needs Business technology capabilities and the compounds of the cloud are correctly significant toward assessing the acceptance of the technology (Atta et al., 2023). Therefore, the following is hypothesized:

H2: Technology Compatibility has a positive significant relationship with CAC Adoption.

2.3.3 TMS

TMS is a juggling phenomenon in the sense that it needs to be maintained at a moderate level. There is a prominent significance of top management comprising CEOs influence on the successful adoption of IS or IT because they are in charge of making the strategic, operational, and tactical decisions. TMS has a direct relationship with cloud technology usage held through its resources budgeting, services integration, and business re-engineering.

Likewise, IT adoption literature has recognized TMS's need to initiate, execute, and adopt IT . *Enhancing Natural Language Processing with Machine Learning for Conversational AI.*,. Management's perceptions and actions about utilizing technology in developing company principles play an important decision-making part. TMS ensures the long-term vision survives, operating principles adherence, resources' commitment, total output maximization, positive organizational climate nucleus, individual self-efficacy enhancement, and the annoyance of change-triggered learning barriers and resistance(Demirbag et al., 2006). Therefore, the following is hypothesized:

H3: TMS has a positive significant relationship with CAC Adoption

2.3.4 Organizational Readiness

Organizational readiness is the extent to which managers believe their business to be aware of, resourced, and committed to a given IT adoption(Barney et al., 2021). Organizational readiness consists of two types: financial competency the financial resources for the establishment and implementation of CC and costs for ongoing usage and technological competency the infrastructure and human resources for projection, introduction, regular use, data management techniques regarding CC system) (Deb et al., 2024). Therefore, the following is hypothesized:

H4: Organizational Readiness has a positive significant relationship with CAC Adoption.

2.3.5 Competitive Pressure

Early technology adoption studies identified the power of competitive pressure in moving towards adopting as an enabler with serious influence. The intensity of competition that an industry feels from its rivals. It is believed to have a considerable impact on the adoption of IT, particularly when technology competition directly impacts and is key that new technologies are needed in order to compete in markets. Therefore, this is suggested:

H5: Competitive Pressure has a positive significant relationship with CAC Adoption.

2.3.6 IT Knowledge as a Moderator

IT knowledge is an important determinant in the literature of technology adoption as well. One well-known such model is the UTAUT, which suggests that IT knowledge is imperative to where even the extent of use would be related. This study suggests that IT knowledge acts as a moderating variable between TOE and the adoption of CAC.

H6: IT knowledge moderates the effect of relative advantage, technological compatibility, TMS, organizational readiness and competitive pressure on CAC.

3. Methods and Procedures

This study is viewed as a quantitative descriptive, focusing on the impact of TOE factors relative advantage, technology compatibility, TMS, organizational readiness, and competitive pressure on the adoption level of CAC in Jordanian SMEs in the presence of IT knowledge has moderated such a relationship. A study conducted among accountants and internal auditors in Jordanian SMEs was selected. This study used the simple random sampling distribution of questionnaires. Questionnaire Measurement, Measurement of CAC adoption (3 items), relative advantage (5 items), and IT knowledge (5 items) adopted from Venkatesh et al. (information technology compatibility scales,3-items); TMS (4 items)-adopted from Ramayah (Measurement of top management system support, 3-items); organization readiness (4 items) adopted; competitive pressure (3 items)-adopted. Two experts validated the measurements, and a pilot study was run to test their reliabilities. VIF and tolerance were acceptable. We used a "normality test" to determine whether the data on study samples followed a normal distribution. These use Skewness and Kurtosis (Table 1), and the value of both is less than 1, which indicates that these features have a normal distribution.

Table 1: Multicollinearity and Normality

	Multicollinearity		Normality	
Factors (TOE)	VIF	Tolerance	Skewness	Kurtosis
Relative advantage	2.007	.498	.131	.812
Technology Compatibility	2.096	.477	.312	.601
TMS	1.429	.700	.813	.801

Organizational Readiness	1.832	.546	.441	.804
Competitive Pressure	2.114	.473	.881	.701
IT knowledge	1.931	.314	.489	.609
CAC adoption	-	-	.501	.551

4. Findings

4.1 Hypothesis Testing

Linear regression analysis was used to test the study's hypotheses and determine whether there was a statistically significant effect. The study developed multiple regression analysis in which TOE factors (Relative Advantage, Technological Compatibility, TMS, Organizational Readiness, and Competitive Pressure) explain the adoption of CAC in Jordanian SMEs. as shown in Table 2.

Table 2: Multiple Regression Analysis of the Impact of TOE Factors on the Adoption of CAC

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.662[a]	.438	.423	.36353

ANOVAa

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.445	5	3.889	29.427	.000[b]
	Residual	24.977	189	.132		
	Total	44.422	194			

Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.190	.239		4.970	.000
	Relative Advantage	.157	.067	.182	2.351	.020
	Technology Compatibility	.197	.060	.258	3.261	.001
	TopManagementSupport	.186	.059	.206	3.166	.002
	Organizational Readiness	.057	.064	.065	.884	.378
	Competitive Pressure	.123	.072	.136	1.710	.089

a. Dependent Variable: CloudAccountingAdoption

As per the outcome of Table 2, the correlation coefficient (R=0.438) reveals, again, statistically significant for the CAC adoption cases that TOE explains almost one-third (i.e., 43%) of adopting CAC as well. As for the coefficient table, it suggests that the Beta value of "Relative Advantage" is (0.182) and the T-value is (2.351), so Sig value = (.020 <0.05), which indicates that this dimension has a significant impact since < 0. authorities should be limit to check for statistical significance). The Beta value for technological compatibility is (0.258). The t-value respectively is (3.261), in Sig<0.001 level, which can be implied as it was recognized as significant, similar to H1a and b, in the TAME model, technological attributes are more relevant than TAM components, at least when looking at the role of them on user acceptance perception supporting recommender usability literature Table 2: Basic Statistics]. The TMS: The Beta value is (0.206), and the corresponding T-value (3.166), sig in this dimension is (0.002 = Sigmant), which means that this dimension has a statistical significance on all of its levels with respect to its effect on S2CC. The author

applied hierarchical multiple regression analysis to assess the effect of TOE factors in CAC adoption by the Jordanian SMEs operating through a moderating variable: IT Knowledge. Refer to Table 3)

Table 3: Hierarchical Multiple Regression Analysis to Determine the Impact of TOE Factors on CAC Adoption with the Moderating Variable of IT Knowledge.

Variables		**Mode 1**			**Mode 2**		
		Beta	**T value**	**Sig**	**Beta**	**T value**	**Sig**
TOE factors	Relative advantage	.182	2.351	.020	.065	1.141	.255
	Technology Compatibility	.258	3.261	.001	.137	2.362	.019
	TMS	.206	3.166	.002	.066	1.360	.176
	Organizational Readiness	.065	.884	.378	.014	.257	.797
	Competitive Pressure	.136	1.710	.089	.030	.526	.600
IT Knowledge	IT Knowledge				.664	13.140	.000
CAC adoption	**R Square**	.438			.707		
	R	.662[a]			.841[b]		
	F	29.427			75.576		
	Sig	0.000			0.000		

The results of the hierarchical multiple regression analysis with two models are shown in Table 3. The results of Mode 1 reveal that TOE factors have a significant effect on CAC adoption, i.e., relative advantage, technological compatibility, and TMS, whereas organizational readiness and competitive pressure have insignificant impact. In Model 2, the moderating variable (IT Knowledge) was put in The regression model, and a good fit was obtained with a change in R Square value by (0.269%). This rise is statistically significant, as the F-value was (75.576) with a significance level of (0.000 = SIG), less than (0.05). Table 3 IT knowledge only: moderator for technological compatibility to CAC adoption.

5. Discussion and Conclusion

The findings relating to the study hypotheses indicated that there is a positive and significant effect of relative advantage, technological compatibility and TMS on CAC adoption. At the same time, neither organizational readiness nor competitive pressure has a significant effect. We can explain this because specific items of TOE factors (Relative Advantage, Technological Compatibility, and TMS) are important predictors for Jordanian SME's intention to adopt CAC. If CAC saves cost in comparison to the costs of a traditional system if it is compatible with company structure/ accounting requirements and receives support from an upper management perspective, it is much more probable that the company aims to use CAC as a way of increasing efficiency and competitiveness; as well satisfying market expectations. Our results are generally in line with several previous studies, including the one by Saad et al., 2022), which tell a significant influence on the adoption of CAC by Jordanian SMEs, but the following factors were relative advantages, security concerns, TMS, organizational readiness and competitive intensity and supplier computing support. The result also corresponds to a study by UMAR (2021) which indicated that all of the constructs in the TOE framework; perceived benefits outweigh costs and security and privacy concerns in a technological context, TMS and technology readiness in an organizational context, and external pressure in an environmental context is significantly related to the adoption of CAC among accounting practitioners at Jordan.

Technological, organizational, and environmental factors had a significant positive influence on CAC adoption. This is also in line with the study of El-Dalabeeh et al. Their findings supported the proposition that CAC has a positive relationship with TMS, organizational efficiency, service quality, system quality and also perceptual usefulness and ease of use in using this system (Aparecida et al., 2020).

This result is also in agreement with that of (Daoud, Sharabati, et al., 2024)which revealed that the availability of technology has an impact on the adoption of CAC practices by insurance firms. In addition, the availability of

supporting technologies is a factor in which CAC practices are adopted. The association between dimensions of CAC practices and cost savings is substantial. Regulatory support and adoption of CAC practices are correlated as well. Effect of TMS on the adoption of CAC practices

The findings of the study show that there is a significant influence, at a 5 % level significance, on CAC adoption in Jordanian SMEs, as moderated by TOE-adopted IT knowledge factors (i.e., relative advantage, technological compatibility, TMS, and competitive pressure) are presented in A Table. Table 3 When adding the IT Knowledge variable to the regression model, it leads to a Sharp increase in the value of determination coefficient R2, which was for (F=75.576) and SIG=0.000which is less than 0.05 table (4). Beta for IT Knowledge: 0.664, t = 3.623, Sig = 0.000 (Significant) Therefore, IT Knowledge moderated significantly the relationship between TOE factors and CAC adoption. An explanation is 63% better rising from a baseline of 43% to an overall variance of 70%.

The authors explain this by stating that IT knowledge helps us comprehend any technology background, particularly for CAC. It also promotes CAC among Jordanian SMEs by raising awareness and knowledge of the benefits and challenges of CAC. Furthermore, IT expertise improves companies 'understanding of technological compatibility and the organizational readiness needed to deploy CACCHS in addition to dealing with technical issues, particularly security-related to it. Libraries with good IT and CAC experience, plus a team of in-house specialists can run successful CAC projects even better.

Acknowledgment

The authors are grateful to the Middle East University, Amman, Jordan for the financial support granted to cover the publication fee of this article.

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