

ELECTRONIC ACCOUNTING APPLICATIONS IN MICRO-ENTERPRISES: CHALLENGES AND IMPACT ON FINANCIAL INCLUSION

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Abstract

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This study provides insights into current perceptions and possible improvements for the use of electronic accounting applications (EAAs) by micro-enterprises, in addition to identifying the impact on financial inclusion, which aims to promote the use of financial and banking services among various groups of society (Central Bank of Jordan [CBJ], 2018). A sequential exploratory mixed-method was adopted in this research (Creswell & Clark, 2017) where the qualitative phase was conducted first to help gather in-depth information about possible factors influencing the non-adoption of EAAs in addition to aiding in the design of the quantitative instrument, followed by the quantitative phase to test the posited catalysts that affect the adoption of EAAs by micro-enterprises. Thematic analysis revealed that costs associated with the use of EAAs and the need for qualified personnel to operate EAAs along with a lack of interest in and awareness of e-commerce culture were the main reasons for the lack of adoption and use of EAAs. On the other hand, the quantitative analysis showed a set of measures that promote the use of EAAs, in addition to a positive relationship in increasing the scope of financial inclusion. This study presents a number of policy implications for regulators such as 1) the central bank and social security as expanding financial inclusion means adequately providing financial support to affected enterprises; 2) Ministry of Digital Economy and Entrepreneurship to sponsor the development of customized, free, and easy-to-use accounting applications; 3) activating the social responsibility of local universities in promoting the financial culture through holding free training courses for micro-enterprises.

Keywords: Electronic Accounting Applications, Micro-Enterprises, Financial Inclusion, Exploratory Mixed-Method, Universities Social Responsibility

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1. INTRODUCTION

Micro and small businesses play a significant role in the economies and represent a basic pillar in the economy. Due to their widespread influence over the country, they contribute to reducing rates of poverty and unemployment. In Jordan, the fields of micro, small and medium-sized enterprises (MSMEs) vary from service activities to commercial and even industrial (Jordan Enterprise Development Corporation [JEDCO], 2021).

Before the emergence and development of computers, data processing was traditional and the devices used were slow and occupied a large area of the company's facilities such as file cabinets, and this resulted in additional costs for the company (Amanamah, Morrison, & Asiedu, 2016). With the acceleration of technological developments related to the use of computers, those problems gradually disappeared, especially with the increasing spread of the Internet. These days, with the technological development at the level of software, hardware, and cloud computing, the use of electronic accounting applications (EAAs) through mobile devices and tablets has become feasible (Kar, 2021). Yet, small and medium enterprises (SMEs) are reluctant to adopt EAAs and do not view them from a strategic perspective to add value to their products and services, albeit helping enterprises expand their customer base and develop their businesses (Hieu, Van, & Doanh, 2021; Thompson, 2013).

The use of the Internet and computerized systems in the activities of entities requires the presence of qualified users to deal with computerized systems in terms of how to operate, process, and read the results correctly (Gulirano, Dilorom, Khurshida, & Shadibekova, 2019). In Indonesia, most micro-entrepreneurs tend to get financing from informal institutions. This is because submitting loan applications to official financing institutions requires knowledge in accounting and economic feasibility studies, and this knowledge is not mastered by those working on small projects (Prijadi, Wulandari, Desiana, Pinagara, & Novita, 2020). Therefore, identifying the obstacles and challenges facing the use of accounting applications in micro-enterprises has become a necessity to address them effectively. This can be achieved by investigating the views of employers and workers in micro-enterprises about these obstacles and the proposed solutions to encourage the use of accounting applications.

Given the importance of overcoming obstacles to small and medium-sized companies, the Union of Arab Banks held a conference entitled "*Small and Medium Enterprises: The Path to Economic Growth*" in Amman, Jordan in 2015. The conference themes were: 1) promoting small and medium enterprises, 2) expanding financial inclusion, and 3) developing creativity, innovation, and financial education for workers in small and medium enterprises. According to the *Jordanian National Financial Inclusion Strategy 2018–2020*, financial inclusion was defined as "the state wherein individuals and businesses have convenient access to and use affordable and suitable financial products and services — payments, savings, credit, transactions and insurance — that meet their needs, help to improve their lives, and delivered in a responsible and

sustainable way" (Central Bank of Jordan [CBJ], 2018, p. 6).

During the conference sessions, Dr. Mohammad Al-Jafari as the Director General of the Jordan Loan Guarantee Corporation (JLGC) called for the necessity of integrating SMEs into the economic cycle through the implementation of training programs, strengthening the role of business incubators in developing the capabilities of citizens, and ensuring access to financial services at a reasonable cost to all segments of society, especially poor in remote areas (JLGC, 2015; Al-Jafari, 2015). Al-Qahtani (2015), Dubaisi (2015), and Fattouh (2015) called for changing legislation to expand the base of financial inclusion and urge banks to finance small projects because of its positive effects on reducing poverty and promoting economic development. On the other hand, the head of the Jordan Chamber of Industry (JCI) summarized the most important obstacles facing small and medium-sized enterprises in obtaining the necessary funds by 1) lack of sufficient guarantees, 2) lack of experience in the basics of financial and banking transactions, and 3) the high costs and risks of obtaining bank loans compared to normal commercial lending (Hatahit, 2015). However, Hatahit added that the chamber provides advice in preparing feasibility studies and financial analysis for enterprises. While the Executive Director of the Jordan Enterprise Development Corporation (JEDCO) stressed the importance of enhancing the sustainability of small projects by maintaining an open channel of communication with universities and sources of scientific and technical expertise to keep pace with progress in information technology and leadership (Al-Aridi, 2015).

Further to the conference's recommendations regarding strengthening financial, accounting and banking culture, expanding financial inclusion, and promoting entrepreneurship among youth and graduates, the Central Bank of Jordan (CBJ) and SANAD¹ issued a *Practical guide for small and medium enterprises* (CBJ & SANAD, 2017) to support them technically and scientifically. The CBJ is aware of the difficulty of preparing financial statements according to accounting principles, as the guide explicitly stated that "not everyone has mastered the art of accounting and this makes preparing accounting records a difficult challenge for most entrepreneurs. It gets even more complicated when it comes to legal and tax systems" (CBJ & SANAD, 2017, p. 20). This, in turn, emphasizes the importance of the social responsibility of both banks and local universities, especially in remote and disadvantaged areas, in qualifying and financing workers in micro-enterprises.

The study contributes to the literature on micro-enterprises by investigating the reasons behind the very weak adoption and misunderstanding regarding electronic accounting applications. This study seeks to change the culture of "resistance to change" in a rural city in a developing country, where owners of small enterprises lack awareness of the importance of using EAAs and fear growth along with technological progress (Hieu et al., 2021). The results of this study may also provide some guidelines and

¹ SANAD Fund for MSME ("sanad" means "support" in Arabic).

recommendations to encourage micro-enterprises to employ technology and benefit from the advantages of e-marketing, e-commerce, e-maps, cloud accounting, and the use of modern financial applications because of their role in facilitating and accelerating online transactions.

Previous empirical studies have found that using mobile money has positive effects on increasing financial inclusion in sub-Saharan Africa such as Kenya, Uganda and Eswatini (Bongomin & Ntayi, 2020; Bongomin, Ntayi, Munene, & Malinga, 2018; Bongomin, Yosa, & Ntayi, 2021; Nyimbiri, 2021; Boro, 2017; Myeni, Makate, & Mahonye, 2020). In the Middle East and North Africa (MENA), Lyons and Kass-Hanna (2021) found that families with higher levels of financial literacy are the most involved in financial inclusion, while populations at economic risk are the least involved in financial inclusion, although they are more in need of financial support. The same results were also found in Kenya by Kodongo (2018) who recommended Kenyan government to boost financial literacy efforts. On the other hand, many studies have focused on examining the obstacles that prevent SMEs from obtaining the necessary financing, and on the role of applying communication technology and accounting records on the performance of SMEs (Ahammed, Beloucif, & Tarbert, 2019; Alattar, Kouhy, & Innes, 2009; Al-Smirat, 2009, 2013; Ashrafi & Murtaza, 2008; Dinka, 2019; Ezeagba, 2017; Ibarra & Velasco, 2015; Issa, 2017; Mouelhi, 2009; Musah, 2017; Onaolapo & Adegbite, 2014; Ramli, Zain, Razik, & Yaacob, 2017; Rufai, 2014). Yet, exploring the obstacles of adopting EAAs qualitatively, and testing the added value to micro-enterprises quantitatively were overlooked by the literature. Additionally, this study aims to fill the gap related to studying the impact of using electronic accounting applications on financial inclusion rather than focusing on the impact of "mobile money" as in the previous studies. The added value of this study can also be seen from the scope of this study as it seeks to research micro-enterprises in a less developed region in Jordan and has not expanded to the scope of small and medium-sized enterprises.

The importance of this study appears with the emergence of the COVID-19 in early 2020, as the closure of economic sectors weakens the financial and commercial positions of small enterprises and therefore they must adapt to the new reality if they are to survive. Small businesses must take the lead in joining technological development and be able to run their business remotely in a way that achieves conditions of public safety and social distancing (Lawal, Mohamed, Abdalla, Elkelish, & Lasyoud, 2022).

What adds value to the results of this study is that its potential outcomes serve a large segment of people, as the category of micro-enterprises is the largest among MSMEs, as shown in Table 1. According to the Jordan Department of Statistics (JDS, 2018), the vast majority of enterprises in the Tafila Governorate meet the definition of microenterprise and their proportion is over 96%. However, despite the prevalence of micro-enterprises in the Tafila Governorate, there is a lack of literature on the extent of their compliance with accounting principles and the use of accounting applications. To bridge this gap, this study examined

the challenges faced by micro-enterprises and came up with solutions and recommendations suitable for workers in remote areas, as they lack the same level of services and development found in modern cities.

Given the importance of micro-enterprises in economic development, this research aims to explore the extent to which micro-enterprises use electronic accounting applications and what are the most important challenges that prevent the optimal use of these applications. This study also aims to find solutions that help to overcome these obstacles and thus encourage the use of accounting and banking applications, which contributes to expanding the base of financial inclusion. Specifically, this study aims to answer the following research questions:

RQ1: What are the most important obstacles that prevent and limit the use of EAAs in micro-enterprises?

RQ2: What are the most important measures that encourage the adoption and use of EAAs in micro-enterprises?

RQ3: To what extent does the use of EAAs contribute to raising the level of financial inclusion?

The structure of this paper is as follows. Section 1 provides an introduction to the importance and dimensions of the study and ends with research questions, while Section 2 reviews the relevant literature. The next Section 3 provides an overview of the current situation of micro-enterprises in Jordan in general, and in the city of Tafila (the place of the field study) in particular. Details of the adopted mixed method including methods of collecting both qualitative and quantitative data are explained in Section 4, followed by a presentation and discussion of results in Section 5. Finally, Section 6 presents the study conclusion, a summary of the limitations and provides guidance on future studies of this research.

2. LITERATURE REVIEW

Many micro and small enterprises, even in developed countries, still do not use financial information and software because of its high cost to them (Issa, 2017). This lack of financial information reduces the ability of entities to continue as a going concern because many financial institutions require the presence of reliable financial information for grant funding (Alattar, et al., 2009; Al-Smirat, 2009). In Nigeria, Onaolapo, and Adegbite (2014) pointed out that most small enterprises use the single entry system as an accounting method. This traditional method of accounting may discourage financial institutions from granting credit, and thus financial institutions may request other guarantees that may exceed the capacity of micro-enterprises (Martiniello, Marcello, & Savio, 2020), especially if these banks and financial institutions apply a strict lending policy.

A mixed-method study conducted by Rufai (2017) in Nigeria found a positive relationship between the use of communication technologies and the performance of MSMEs, the study employed mobile, personal computers (PCs), and the use of the internet as technological facilities. Another mixed-method study in Zimbabwe by Edison, Manuere, and Joseph (2012) found that costs of using accounting systems, lack of government

support, lack of capital, and the complexity of accounting systems had a significant impact on the weak adoption of accounting systems by SMEs. Bomani, Derera, and Mashingaidze (2022) investigated both the barriers and government support for urban SMEs using qualitative interviews and found that urban SMEs in Zimbabwe face many challenges such as lack of funding, lack of technical and financial skills, as well as the complexity of laws and regulations governing the work of SMEs. In South Africa, Bamata and Phiri (2022) found that management skills and awareness of workers in SMEs increase their access to finance. In Oman, Ashrafi and Murtaza (2008) also found a positive relationship between communication technologies and the performance of SMEs. They pointed out that most SMEs outsource information and communication technology services due to the 1) lack of qualified personnel, 2) the high cost of the acquisition and running of these technologies and 3) the inability of choosing the proper technology that suits SMEs' needs.

Financial and administrative problems faced by MSMEs in the southern regions of Jordan were surveyed by Al-Smirat (2009) who pointed out that the role of government institutions in supporting MSMEs is weak, especially in areas outside the capital of Jordan and major cities, which requires a review of the methods used by these institutions to support MSMEs, the study recommended qualifying the workers of small enterprises and preparing programs that consider the needs of small enterprises. Later, Al-Smirat (2013) conducted another study to investigate the extent of applying accounting Information by MSMEs in the southern regions of Jordan, the study pointed out that owners and employees have little awareness of the importance of bookkeeping considering it a waste of time and therefore, they prefer to use the single-entry bookkeeping. Al-Smirat (2013) also found that lack of accounting knowledge, cost, and time constraints were the most important obstacles that prevent the use of accounting records.

To confront the most important challenges faced by small and medium enterprises in the Arab countries, a conference was held in Cairo in 2015 on the role of supervisory authorities in enhancing the access of SMEs to financing. The conference pointed out that the limited capabilities of small enterprises in preparing financial statements limit the banks' desire to provide the necessary financing. The conference indicated that both the cost and the limited capabilities of small projects in preparing financial statements limit the banks' desire to provide the necessary financing, accordingly, one of the most important recommendations of the conference was to encourage the provision of advisory services, knowledge exchange and training workshops (World Bank Group, Central Bank of Egypt, & Arab Monetary Fund, 2015).

According to Ezeagba (2017), one of the main obstacles Nigerian SMEs face is the availability of qualified staff, and the lack of use of banking services in their financial transactions, to overcome these obstacles the study recommended that free courses be conducted in the basics of financial accounting to qualify workers in Nigerian SMEs.

In the Philippines, Ibarra and Velasco (2015) indicated that there is little use of computerized technologies in MSMEs, and recommended that the government provide adequate support and establish continuous training courses to qualify MSMEs workers.

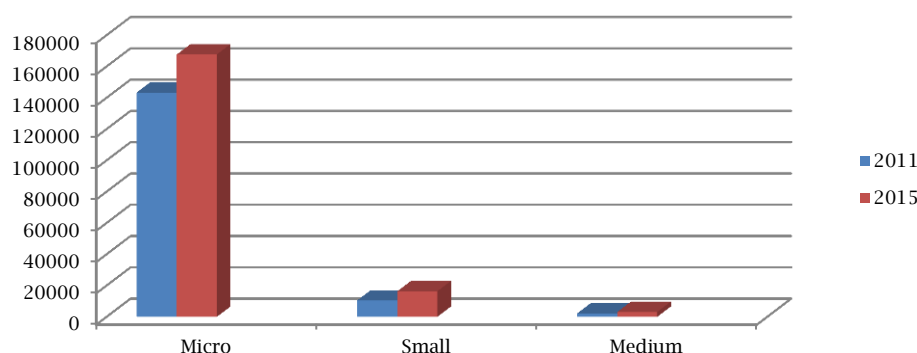
In Scotland, over 94% of businesses are micro-enterprises that provide more than a quarter of private-sector jobs, reflecting the important role that small businesses play in supporting the Scottish economy (Ahammed et al., 2019). However, the study indicated several obstacles facing the optimal application of accounting practices, such as cost, qualification of employees, and time-wasting, the study encouraged the government and non-government organizations (NGOs) to provide training for micro-enterprises in the fields of accounting and finance (Ahammed et al., 2019). In Malaysia, Ramli et al. (2017) investigated the extent of implementation of bookkeeping and accounting records for decision making by micro-enterprises, the study found that the vast majority of micro-enterprises do not use systematic accounting records due to the lack of qualified practitioners in accounting, the study recommended providing necessary training for workers in micro-enterprises and enforce mandatory bookkeeping.

Dinka (2019) pointed out that SMEs do not comply with IFRS when preparing financial reports in Ethiopia, which reduces their reliability and comparability. Dinka (2019) recommended emphasizing the role of supervisory bodies in ensuring the proper application of accounting records by small and medium-sized companies. In Ghana, Musah (2017) concluded that the use of accounting records by SMEs has a positive impact on decision-making and improving the efficiency and effectiveness of production processes, however, on the other hand, Boame, Solace, and Issaka (2014) pointed out that main obstacles to proper implementation of bookkeeping in Ghana's SMEs were the lack of trained accountants along with negligence and deliberate fraud.

3. MICRO ENTERPRISES IN JORDAN

The Arab Monetary Fund (AMF) sponsored a study on the role of small and medium-sized enterprises in the Arab countries and emphasized the vital role they play in supporting the Jordanian economy (Abdel-Moniem, Talha, & Ismael, 2019). The study revealed that the contribution of MSMEs to employment ranged between 40% to 60%, and their contribution to the value of exports and investments was about 30%.

The same study also showed that micro-enterprises increased during the period 2011-2015 by 17%, while the number of small and medium enterprises increased by about 56% and 38%, respectively, during the same period. Figure 1 shows the size of micro-enterprises in Jordan compared to the size of small and medium-sized enterprises. It is clear to us from the figure that the number of micro-enterprises has the largest share, representing about 90%.

Figure 1. Number of MSMEs in Jordan during 2011–2015

Source: Abdel-Moniem, Talha, and Ismael (2019, p. 39).

The criteria used to categorize and define MSMEs vary. The Arab countries depend on their classification of MSMEs on three criteria that are 1) the number of employees, 2) the capital, and 3) the annual gross sales. Jordan uses only the number of employees and the annual gross sales as criteria for defining MSMEs. In Jordan, the Council of Ministers decided, based on the recommendation of the Economic Development Committee, to adopt a standard classification of micro, small and medium enterprises. Based on the adopted criteria, the project is considered a micro-enterprise if the number of its employees does not exceed four

and the value of its sales does not exceed 100,000 Jordanian dinars (JOD) for the industrial activity, 120,000 JOD for the commercial activity, and 200,000 JOD for the service activity (The Jordanian Council of Ministers, 2019).

A profile of MSMEs in Tafila city (Jordan)

According to the Jordanian Department of Statistics, the vast majority of the enterprises in Tafila Governorate meet the definition of micro-enterprise. Table 1 shows that 97% of entities operating in Tafila Governorate have employees of 1–4.

Table 1. Number of entities operating in Tafila Governorate by employee category, 2018

Employee category						Total entities
1–4	5–9	10–19	20–49	50–99	100–249	
1883	43	10	5	1	0	1942
96.96%	2.2%	0.52%	0.26%	0.05%	0%	100%

Source: Jordan Department of Statistics (2018).

Table 2 reveals that 95% of the enterprises operate as sole proprietorships and also shows that 99% of entities' annual revenues in Tafila Governorate are less than 90,000 JOD (about \$126,900). It is noted from the table the absence of limited liability companies and the lack of public shareholding companies, which indicates the lack of interest of the private sector to invest in remote

governorates such as Tafila. This confirms the importance of the state's support for remote governorates by providing appropriate infrastructure, tax incentives, establishing industrial cities, and supporting social security contributions for workers in small projects to encourage the private sector to invest in such remote areas.

Table 2. Number of entities according to the annual revenues category in Jordanian dinar for Tafila Governorate in 2018 (1 JOD = 1.41 USD)

Legal status	Annual revenues category (JOD)					Total entities
	Less than 45,000	45,000–90,000	90,001–135,000	135,001–180,000	More than 180,000	
Sole proprietorship	1756	74	13	1	0	1844
Partnership	57	6	3	0	0	66
Limited liabilities	0	0	0	0	0	0
Non-profit	24	0	0	0	0	24
Others	6	1	1	0	0	8
Total	1843	81	17	1	0	1942

Source: Jordan Department of Statistics (2018).

Regarding accounting bookkeeping, Table 3 shows the numbers of enterprises that maintain/do not maintain regular accounting records in Tafila Governorate. The table reveals that 97.7% of micro-enterprises in Tafila do not maintain regular accounting. This indicates the lack of interest of

small business owners in using accounting records, perhaps due to a lack of awareness of their importance, the lack of qualified personnel to keep accounting records, or because they consider it an unnecessary extra cost.

Table 3. Statistics on the number of enterprises that use accounting records at Tafila Governorate, 2018

<i>Maintaining regular accounting records</i>		
<i>Use</i>	<i>Do not use</i>	<i>Total entities</i>
45	1897	1942
2.3%	97.7%	100%

Source: Jordan Department of Statistics (2018).

With regard to the sectoral analysis, Table 4 shows that most of the establishments in Tafila Governorate are classified as Internal Trade enterprises with a percentage of 63.5%, followed by the services sector with a percentage of 24%, and the industrial sector with a percentage of 12%. It is noticed that commercial establishments dominate the rest of the sectors and that there is a weakness in investment in the industrial sector.

Table 4. Number of enterprises categorized by economic sector at Tafila Governorate, 2018

<i>Economic sector</i>						
<i>Industry</i>	<i>Construction</i>	<i>Internal trade</i>	<i>Transportation</i>	<i>Services</i>	<i>Financial, banks & insurance</i>	<i>Total entities</i>
233	3	1234	6	466	0	1942
12%	0.15%	63.5	0.3%	24%	0%	100%

Source: Jordan Department of Statistics (2018).

4. METHODOLOGY

Adopting a quantitative approach and designing a questionnaire based on the relevant literature may achieve the objectives of this study as well as the generalizability of the study findings. However, to gain deeper perceptions and closer insights and to ensure the design of an adequate, appropriate and comprehensive questionnaire that would allow to better answer the research questions, an exploratory mixed method was employed. The nature of the phenomenon discussed in this research is descriptive in nature and was undertaken in two phases. An exploratory mixed-method is effective for identifying both potential barriers and testing potential catalysts that affect the adoption of accounting applications in micro-enterprises. In this two-phase exploratory method, qualitative data collection and analysis are conducted in the first phase to help understand and gather in-depth information about the dimensions of the study, in addition to aiding in the design of the quantitative instrument. The second phase is quantitative data collection and analysis which is built on the outcomes of the first phase to test the proposed solutions of the study, thus, increasing the generalizability of the study results (Creswell & Clark, 2017; Schoonenboom & Johnson, 2017; Dawadi, Shrestha, & Giri, 2021). Furthermore, triangulation aims to produce sound results and allows for a comprehensive and more in-depth understanding of the phenomenon under study, and contributes to compensating for the potential weaknesses of each approach separately, thus, increasing the credibility of the findings and conclusions (Bryman, 2016).

In this study, qualitative interviews were conducted seeking participants' viewpoints on the most important obstacles that prevent and limit the use of electronic accounting applications in micro-enterprises, in addition to identifying their views on the most important suggestions and mechanisms that would reduce these obstacles. In the second phase, a questionnaire was designed depending on the findings of the interviews as well as a review of relevant studies. The quantitative phase aims to test the measures put forward to encourage the adoption of electronic accounting applications. The quantitative phase also helps generalize the results of the study because the data were collected from a large sample.

4.1. Population and sampling

The study population consists of workers in micro-enterprises in Tafila Governorate. The study population also includes the owners of these enterprises if they work and manage them. Based on Tables 1, 2, 3 and 4 the study population is 1883. The study population consists of (tailor shops, groceries, libraries, mini-market, restaurants, cafe shops, butchery, distributors and sellers of gas cylinders, home stuff shops, carpenters, dentists, physicians, photographers, dairy and natural organic products, satellite technician, mobile device shops & maintenance).

All the enterprises that filled out the questionnaire had less than four employees and their annual revenues ranged between 20,000-90,000 JOD, and therefore they meet the definition of micro-enterprises. A simple random sample was selected consisting of 320 workers in micro-enterprises in Tafila Governorate; 285 questionnaires were collected, 17 questionnaires were disregarded because they were not properly completed, therefore, 268 valid questionnaires were used for statistical analysis, representing 83.75% of the total distributed questionnaires. It was taken into account when distributing the questionnaires to cover the different geographical areas in Tafila Governorate. On the other hand, 16 in-depth interviews were conducted with workers in micro-enterprises.

With regard to demographic indicators, the educational background of the sample members was as follows: 1) no formal education: 4.85%, 2) school-less than general secondary education: 17.54%; 3) formal general secondary education: 14.55%; 4) community college: 35.08%; 5) Bachelor degree: 27.23%, and 6) Master degree: 0.75%. With regard to gender, the number of male participants reached 245 representing 91.5% while the number of female participants was 23, representing 8.5%. With regard to university degrees, the total number of participants holding diplomas, Bachelor's, and Master's degrees reached 169. As for the accounting and business majors, the number of holders of scientific degrees in finance, accounting, business, and economics reached 48, representing 28.5%.

4.2. Data collection: Survey & interviews

The survey instruments were distributed in two ways, paper form and electronic form which was designed via Google forms. The researchers visited the respondents at their workplaces and were given the option to fill out the questionnaires in two ways: the first is paper questionnaires, and the second is by sending the electronic link of the e-questionnaire in the way they see fit (e-mail, messenger application, WhatsApp application). Respondents were informed to fill out and submit the e-questionnaire at their convenience. It is worth noting that about 22% of the respondents preferred to fill out the questionnaire on paper, and 78% of the respondents preferred the electronic method. Two-thirds of the electronic questionnaires were submitted via WhatsApp and one-third through the Messenger application). The researchers believe that the use of these two methods has contributed to an increase in the response rate, taking into account the different qualifications, cultural backgrounds, and ages of the respondents.

To ensure the credibility of the study findings, the first part of the questionnaire included a definition of what is meant by the use of electronic accounting applications. It has been defined as follows: "the use of electronic accounting applications through electronic devices (mobile phones, tablets, laptops, and PCs) to 1) record and prepare financial accounts and reports and 2) communicate and make financial transfers with customers, suppliers, banks and other stakeholders". The questionnaires were designed and written in Arabic because it is the native language of the respondents. The questionnaire was refereed and pilot tested to ensure that it is free from complex jargon, thus ensuring that the questionnaires are filled out smoothly by the respondents. The researchers left their mobile numbers and emails in case the respondents had inquiries. There were only 4 questions asked by the respondents and they were clarified by the mobile phone.

16 in-depth interviews were conducted with employers and micro-enterprise workers at their discretion. Similarly, the geographical distribution in Tafila Governorate was taken into consideration. Arrangements were made for the interviews by visiting these enterprises at their workplaces and by telephone. Finally, the duration of the interviews ranged between 36 and 54 minutes.

5. RESULTS & DISCUSSIONS

5.1. Qualitative results & discussions

This section presents the most important themes obtained by analyzing the transcripts of 16 semi-structured interviews with owners and workers in micro-enterprises in different areas of the Tafila Governorate. Thematic analysis is one of the most common methods of analyzing qualitative research because it is a powerful and flexible method at the same time. "Thematic analysis is an appropriate method of analysis for seeking to understand experiences, thoughts, or behaviors across a data set... [it] involves a six-step process: familiarizing yourself with the data, generating initial codes,

searching for themes, reviewing themes, defining and naming themes, and producing the report" (Kiger & Varpio, 2020, p. 1). In this study, responses and opinions were transcribed on paper, then classified, sorted, and summarized to reach the most common ideas and themes given by the respondents (Braun & Clarke, 2013; Kiger & Varpio, 2020).

The analysis of the views resulted in the following themes concerning the obstacles to implementing electronic accounting applications by owners and workers in micro-enterprises:

1. Extra costs, unnecessary additional costs.
2. Lack of qualified staff to operate accounting applications.
3. Lack of interest and awareness in e-business and order delivery services.
4. Common belief that the register machine they use is an accounting system.
5. A common belief that there is no need to have accounting applications for micro-enterprises.
6. Costs of hiring qualified staff compared to having a part-time one.

It is worth noting that the researchers expected the emergence of the first two themes, based on previous relevant studies. It was expected that there would be obstacles such as the additional cost and the need for qualified staff to use accounting applications. However, these in-depth interviews added other dimensions that the researchers were not aware of.

All respondents agreed that the cost and the need for scientifically qualified personnel to deal with accounting applications are among the most important obstacles. Some of their views regarding these two elements.

Participant C: "I do not have the necessary knowledge in accounting, finance and administrative matters".

Participant K: "The use of accounting applications requires qualified workers and therefore additional expenses".

Participant L: "I can't afford to spend money on employee training".

There is confusion among some respondents between accounting and the use of the register machine. Some of the interviewees recounted their experience using a register machine (as an accounting system) in showing total daily sales and total sales tax owed.

Participant O: "We apply accounting through the use of a register machine that records sales and extracts daily reports".

The interviews revealed that some participants did not know what is meant by the accounting system or application; some responses were in the form of "what is it", "what is it used for" and "what is the added value of its use?".

Participant N: "What is the need for a small bakery to use accounting applications".

Participant G: "I do not think that small shops need to use accounting systems. These applications are intended for large stores that have a large staff and can absorb the additional costs".

Many participants also associate the use of electronic accounting systems with the presence of PCs, which they considered unnecessary additional costs on the project; although these accounting applications can be used through their mobile phones.

Participant A: *“The use of accounting systems requires computers to work on, and this means additional costs”.*

Interview data excerpts also reveal that some entrepreneurs seek the services of accountants when they want to apply for a loan or when they have the opportunity to obtain a grant from one of the granting organizations because carefully prepared accounting data is a condition for grants or obtaining loans. When they were asked why they did not hire a full-time accountant to follow up on the accounting reports, the answer was that the loan or the grant was barely enough for the basic equipment of the project and that it was not feasible to hire a full-time accountant and pay them monthly salaries. Meaning that if we need an accountant, we will benefit from their services on a temporary contract, not on a full-time basis.

Participant G: *“We use accountants to prepare reports and financial statements according to the stipulated rules to help obtain a loan or a grant... Most of the micro-enterprises are not able to permanently appoint accountants, and the need for their services may not always be urgent or necessary”.*

It is also worth noting that with the beginning of the COVID-19 pandemic and the lockdown that surprised students in the middle of the second semester of (2020), many students had left many of their teaching summaries and materials in their hostels. A bookstore owner took advantage of social media and electronic payment methods to help students by providing them with educational materials remotely during the COVID-19 pandemic. This indicates the importance of micro-enterprises willingness to deal with modern technology and e-commerce.

Participant N (the bookstore owner) stated: *“I have communicated with students through social media and provided them with the materials they needed, and the payment was made electronically during the lockdown period due to the COVID-19 pandemic.”*

On the other hand, the interviews revealed a set of main themes and recommendations related to encouraging owners and workers in micro-enterprises to use electronic accounting applications. Most of these ideas were in the opposite direction to the obstacles mentioned above such as 1) providing free versions of electronic accounting applications (that is, to allow them to be downloaded and used for free); 2) free training on the use of these applications; 3) free training on the principles of accounting and financial management. These recommendations suggested by the interviewees are supported by the results of the survey in Table 6. The results of the survey emphasized the importance of the social responsibility of local universities in qualifying workers in micro-enterprises on the principles of accounting, banking, financial management, and how to use accounting applications at free prices.

5.2. Quantitative results & discussions

To answer the second (RQ2) and third (RQ3) research questions, the necessary statistical analysis of the quantitative data was carried out based on

the statistical program SPSS Statistics 23. The statistical methods used are:

- Descriptive statistics measures such as frequencies and percentages to describe the demographic characteristics of a research sample. Means and standard deviations to determine the extent of the concentration of the participants' answers.

- One-sample t-test to determine 1) the most important measures that encourage the adoption and use of EAAs in micro-enterprises and 2) to investigate the role of using EAAs in increasing the level of financial inclusion.

- Cronbach alpha reliability coefficient to indicate the extent of internal consistency of the statements that make up the scales adopted by the study. Table 5 shows a high level of Cronbach alpha coefficient, which indicates that the survey instrument has high reliability.

Table 5. Cronbach alpha reliability coefficient

<i>Dimension</i>	<i>Number of statements</i>	<i>Cronbach alpha</i>
Encouraging the adoption and use of EAAs in micro-enterprises	20	0.921
The role of using EAAs in increasing the level of financial inclusion	6	0.894
The entire instrument	26	0.952

Table 6 presents the means and standard deviations with respect to most of the proposed measures to encourage the adoption and use of EAAs in micro-enterprises. The last column displays the ranks for the participants' answers. According to the 5-point Likert scale, the length of the rank is 1.33 calculated as: $(5 - 1)/3$. Therefore, the low rank is up to 2.33 $(1 + 1.33)$, while the medium $(2.34 - 3.67)$, and the high rank is $(3.68 - 5)$.

Table 6 shows that the general mean regarding the most important measures that encourage the adoption and use of EAAs in micro-enterprises is 3.70 with a standard deviation of 0.7540. This high general mean indicates respondents' agreement on the importance of these proposed methods in encouraging their adoption of EAAs.

The table also revealed that the means of all the measures proposed to encourage the adoption of EAAs varied between the low to high levels (2.30–4.50). Statement (17) which states that *“Providing continuous technical support for micro-enterprises by maintaining open channels of communication with local universities, contributes to encouraging the use of electronic accounting applications”* gained the highest rank. This indicates that workers and employers of micro-enterprises are very keen on obtaining technical and guidance support subsequent to the training courses by maintaining a continuous channel of communication with educational institutions. A plausible explanation for this is the confidence in the outcomes of educational courses held by local universities. This also indicates that they may encounter practical situations that go beyond their limited knowledge in financial and accounting matters; therefore, they believe they may need an open channel of ongoing support and guidance to implement EAAs properly.

Table 6. Means and standard deviations regarding the most important measures that encourage the adoption and use of EAAs in micro-enterprises

N	Statements	Mean	SD	Rank
1	Understanding and studying the basics of accounting helps increase interest in using accounting applications	4.00	0.926	High
2	The universities in your region qualify workers in micro-enterprises in the fields of business, banking, and financial accounting at free prices.	2.32	1.160	Low
3	Conducting free courses of "accounting for non-accountants" by local universities encourages workers to use electronic accounting applications.	4.25	0.990	High
4	Qualifying workers in budgeting and decision-making skills, by local universities at free prices, encourages the adoption of EAAs.	3.82	1.086	High
5	Conducting free courses in banking transactions and reconciliation contributes to building the capacity in using accounting and banking applications.	3.90	0.980	High
6	Conducting free courses in computing income and sales tax and tax returns contributes to encouraging the use of accounting and e-tax applications.	3.74	1.442	High
7	The use of a comprehensive EAA (which is suitable for many types of establishments) is better than using specialized sub-systems (sub-systems for groceries, libraries, pharmacies, etc.)	2.30	1.350	Low
8	Developing free and light versions of EAAs contributes to encouraging their use.	3.88	1.442	High
9	The similarity of accounting transactions in the sub-systems of electronic accounting applications facilitates their use.	3.70	1.401	High
10	The use of electronic accounting applications helps to generate accurate financial reports necessary for making timely decisions, such as those related to costs and product pricing.	4.22	1.062	High
11	The use of electronic accounting applications helps in determining sales revenue, sales tax, and income tax accurately.	3.74	1.237	High
12	The use of EAAs helps in the accuracy and speed of calculating and transferring employee benefits: such as social security deductions, income tax, and health insurance to the concerned authorities.	3.60	1.222	Medium
13	The existence of governance instructions that include incentives for enterprises committed to effective communication with related authorities through electronic applications helps encourage their use.	4.08	1.088	High
14	Obtaining a university degree in the fields of accounting, finance, or management is a must to succeed in managing enterprises through the use of electronic accounting applications.	3.31	1.353	Medium
15	Participation in financial accounting courses contributes to the success in managing enterprises financially, regardless of the educational background.	4.04	1.141	High
16	The limited resources of micro-enterprises are an important factor in the lack of their dependence on modern technology.	3.41	1.220	Medium
17	Providing continuous technical support for micro-enterprises by maintaining open channels of communication with local universities, contributes to encouraging the use of electronic accounting applications.	4.50	0.926	High
18	Investing field training for accounting students in visiting small enterprises contributes to simplifying and sustaining the use of accounting applications.	4.02	1.022	High
19	The use of EAAs encourages interest in employing maps and cloud accounting (implementing the accounting cycle and storing data online) in engaging and interacting with customers.	3.69	1.189	High
20	Conducting seminars and distributing brochures about the importance and the simplicity of using EAAs contributes to encouraging their adoption.	3.47	1.235	Medium
	Average	3.70	0.754	High

Statements (2) and (7) gained low ranks. With regard to statements (2), respondents indicate that local universities do not offer free courses for workers in micro-enterprises in the fields of business, banking, and financial accounting. Taking into consideration the limited resources and income of micro-enterprises on the one hand, and the absence of a culture of using accounting and banking applications, on the other hand, it is imperative for the government and local universities to provide free educational courses for micro-enterprises. While statement (7) states that "*The use of a comprehensive electronic accounting application (which is suitable for many types of establishments) is better than using specialized sub-systems (sub-systems for groceries, libraries, pharmacies, etc.)*" gained the lowest rank. This may also be considered a clear indication that workers and employers in micro-enterprises are looking for simplicity in the use of electronic accounting applications. They believe that having specialized applications in libraries, for example, is better than using comprehensive applications for all types of enterprises.

To further validate the results and the general mean of Table 6, a one-sample t-test was made as shown in Table 7.

Table 7. Results of t-test

t-value	df	Sig. (2-tailed)	Mean difference
16.032	267	0.000	0.73843

Table 7 shows that t-value = 16.032 with a significant value of 0.000 which is less than 0.05. This indicates respondents' approval of the proposed measures in encouraging the adoption and use of EAAs in micro-enterprises.

Table 8 below shows the role and contribution of using EAAs in expanding financial inclusion. As mentioned earlier, financial inclusion is "*the state wherein individuals and businesses have convenient access to and use affordable and suitable financial products and services — payments, savings, credit, transactions and insurance — that meet their needs, help to improve their lives, and delivered in a responsible and sustainable way*" (CBJ, 2018, p. 6).

Table 8. Means and standard deviations regarding the role for using electronic accounting applications by micro-enterprises in increasing the level of financial inclusion

N	Statements	Mean	SD	Rank
1	The use of electronic accounting applications contributes to increasing the use of electronic banking applications.	4.03	1.356	High
2	The use of electronic accounting applications encourages financing institutions to grant your enterprise the necessary funding.	4.07	1.355	High
3	The use of electronic accounting applications facilitates the process of electronic transfer of money with customers and creditors.	4.20	1.210	High
4	The use of electronic accounting applications helps in preparing and equipping establishments for E-marketing and E-commerce.	3.77	1.180	High
5	The use of electronic accounting applications helps enterprises to maintain their business continuity even in cases of lockdown due to COVID-19.	3.52	1.311	Med
6	The use of electronic accounting applications facilitates the verification of the accuracy of cash balances and the sequence of financial transactions in bank accounts.	3.84	1.312	High
	Average	3.91	0.948	High

Table 8 shows the general mean of the sample's responses regarding the role of using EAAs in increasing the level of financial inclusion is 3.91 with a standard deviation of 0.948. The table also showed that the means of the survey statements ranged between 3.52 and 4.20 and most of them achieved high levels. This indicates that the increased adoption and use of EAAs in micro-enterprises contributes to expanding the base of financial inclusion.

Table 8 also showed that statement (3) which states that "*The use of electronic accounting applications facilitates the process of electronic transfer of money with customers and creditors*" ranked the first. This indicates that respondents consider that the use of EAAs helps in preparing and equipping enterprises for e-commerce, as the most important pillar of it is the receipt and transfer of money electronically. This necessarily requires micro-enterprises to open bank accounts, download banking applications and learn modern methods of transferring and receiving money, which in turn helps in expanding the concept of financial inclusion.

Statement (5) "*The use of EAAs helps enterprises to maintain their business continuity even in cases of lockdown due to the COVID-19*" gained a medium level. This reflects that they are moderately aware of the importance of using EAAs in enhancing business continuity and sustainability. Perhaps the explanation for this is that the field study was conducted in the Tafilah Governorate (which is considered a remote governorate in southern Jordan and less developed like many governorates). Thus, this gives an indication that the less developed governorate may not be ready for business continuity likewise developed governorates in cases of lockdown. This interpretation is also supported by interviews that indicated a lack of interest and awareness of online purchase and delivery services in Tafilah Governorate, unlike many other governorates where delivery vehicles operate extensively.

A one-sample t-test was made to substantiate the general mean of Table 8 as shown in Table 9 below.

Table 9. Results of t-test

t-value	df	Sig. (2-tailed)	Mean difference
15.644	267	0.000	0.90609

Table 9 indicates that t-value = 15.644 with a significant value of 0.000 which is less than 0.05. This indicates that the adoption and use of EAAs by micro-enterprises contributes to expanding the base of financial inclusion.

6. CONCLUSION

This study aimed to investigate the obstacles that limit the use of EAAs in micro-enterprises in Tafilah Governorate in Jordan, in addition to investigating solutions posited to encourage the adoption of EAAs. In-depth interviews with owners and workers in micro-enterprises revealed several results regarding the obstacles, the most important of which are: the unwillingness to bear more costs associated with the use of EAAs and the need for qualified staff to operate accounting applications. In addition, other factors have emerged, such as a lack of interest and awareness of the importance of e-marketing and e-commerce; this was represented in 1) the belief that micro-enterprises do not need to use accounting applications; 2) the lack of interest in electronic trading and delivery of orders through delivery firms; 3) the belief that the use of the register machine replaces accounting systems.

These results are consistent with Al-Smirat (2009; 2013). The first study (Al-Smirat, 2009) dealt with the financial and administrative problems facing small projects in the southern region of Jordan and showed that owners and workers in small enterprises lack accounting expertise and skills in project planning and forecasting future financial flows, accordingly the study recommended qualifying workers in small projects. The other study (Al-Smirat, 2013) indicated that most small enterprises do not maintain accounting records. One of the interesting findings of Al-Smirat (2013) is the insufficient interest from the government in supporting small projects financially and technically, especially in cities and villages that are outside the scope of the capital, Amman, and the main cities. The results are also consistent with Issa (2017), who emphasized the need to educate workers in small enterprises about the importance of acquiring information technology skills and develop regular training programs to build their capabilities in the use of electronic financial and banking applications.

The results of this study are also in line with the Jordanian national strategy for financial

inclusion, as one of its goals: “Promoting financial education in schools, financial capabilities for target groups (women, refugees, micro and SME clients), and financial awareness and literacy for the public” (CBJ, 2018, p. 10). In fact, spreading financial and banking literacy for small enterprises is among the priorities of the Central Bank of Jordan, the Arab Monetary Fund, Arab central banks in addition to many regulatory bodies (CBJ, 2018, 2021; World Bank Group, Central Bank of Egypt, & Arab Monetary Fund, 2015; CBJ & SANAD, 2017).

This study emphasizes the importance of corporate social responsibility and universities alike. For systems and software developers, they are highly encouraged to create publicly available electronic accounting applications as open-source software (OSS). In this regard, this study suggests that system developers should consider creating free “light versions” of applications that suit most of the common types of micro-enterprises such as groceries, libraries, pharmacies, etc. Then any enterprise plans to expand can get the advanced or “premium” version at an affordable price. Here it is worth noting that some interviews indicated that developing downloadable programs for free on mobiles helps encourage the use of accounting applications.

The lack of programs for capacity building, as noted by the Arab Monetary Fund (Ismael, 2017), also emphasizes the social responsibility of local universities in enhancing financial literacy for micro and small enterprises. Giving free courses on the basics of accounting, banking, finance, and their electronic applications is a vital requirement for local universities to promote financial inclusion as well. The survey results showed that obtaining a university qualification is not a prerequisite for success in project management. Rather, professional project management can be achieved through specialized programs and training.

This proposed role for universities and educational institutes is consistent with Al-Arudi's (2015) argument that networking with sources of scientific expertise and linking with universities and business incubators helps to transfer necessary skills to micro-projects. This is also in line with the JCI's recommendation regarding the importance of providing advisory and administrative services to overcome obstacles facing small projects (Hatahit, 2015). Coordination between the Chambers of Industry and Commerce and Jordanian universities ensures that educational courses reach a wider range of small enterprises because in every city there is a branch of the Chamber of Industry and Commerce and at least one university or college. Furthermore, Jordanian universities may also play a vital role in implementing the Small and Medium Enterprises Guide, which is a joint initiative between the Central Bank of Jordan and the SANAD Fund for MSME (CBJ & SANAD, 2017). This guide is designed to develop the skills of small projects in the basics of financial accounting, financial budgeting, financial management, and economic feasibility studies to enhance their chances of obtaining funds from various lending institutions.

Concerning the third research question (RQ3), this study found a positive relationship between the use of EAAs and financial inclusion. The study revealed that: 1) the adoption of accounting

applications helps to make small enterprises ready for e-marketing and e-commerce, which has become important for the sustainability of enterprises, especially in cases of closure due to the COVID-19 pandemic as an example; 2) the use of EAAs promotes the use of electronic banking applications as well, to facilitate the electronic circulation of funds with customers and suppliers; 3) the preparation of credible income and financial position statements helps small enterprises obtain necessary funds; 4) the importance of expanding financial inclusion emerged clearly during the outbreak of the COVID-19 pandemic, as the government encouraged citizens to create “electronic wallets” to support those affected by the complete and partial closure.

One of the added values of qualifying small projects on EAAs is the speed and accuracy of recording financial transactions, which allows for better decisions. Hence, governments should provide the logistical support needed to encourage small businesses to use EAAs as this increases the quality and speed of tax collection.

This study presents several policy implications that the Central Bank of Jordan, the Ministry of Digital Economy and Entrepreneurship (Jordan), local universities, and interested NGOs can benefit from the insights derived from this study:

- Emphasizing the role of the government represented by the Ministry of the Digital Economy and Entrepreneurship by developing custom-made, free, and easy-to-use accounting applications for workers in micro-enterprises. This is in agreement with the study by Bongomin et al. (2021), who found that designing mobile financial applications should be pleasurable and easy to use in order to increase their adoption by those working in small enterprises.

- Activating the social responsibility of local universities by holding free courses to build the capacities of workers in micro-enterprises in the use of accounting, financial, and banking applications, provided that different educational backgrounds and levels are taken into account when designing these training programs.

- Establishing a governance code for micro-enterprises that contains incentives for the enterprises that are most committed to applying governance instructions and are committed to using accounting and banking applications.

There are two limitations associated with this study that need to be carefully considered. The first one is that the fieldwork study was conducted in Tafila Governorate which is considered a remote and disadvantaged area in southern Jordan. Such less-developed areas are characterized by low income from commercial and service activities, weak infrastructure, and less use of technological applications (Caceres, Aguero, Caverro, & Huaroto, 2012) compared to the capital Amman and some other developed cities. The fieldwork study revealed, for example, 1) the lack of enterprises that deal with barcodes in recording financial transactions related to the goods; 2) lack of knowledge of what the accounting system is and lack of awareness of its importance; 3) poor interest in online purchases and delivery services. In more developed cities, many micro-enterprises use barcodes and computerized systems to record financial transactions, driven by the high financial,

technological, and banking culture, in addition to the presence of purchasing power and the high demand for e-purchasing, e-marketing, and delivery services.

The second limitation is the scope of this study, as its application was limited to micro-enterprises (as a reminder, the number of employees of microenterprises does not exceed four according to the definition mentioned earlier in Section 3), therefore the results of this study may not be generalized to larger enterprises, such as small and medium-sized enterprises that may have 25 and 100 employees, respectively.

Based on the above limitations, some ideas for future research can be explored by conducting

a comparative study on the current status and challenges of using EAA between developed cities and less advantaged regions, as well as a comparative study on the current status of the use of EAA among MSMEs. Moreover, the findings of this study may direct us to research the role of corporate social responsibility and local universities in supporting micro-enterprises technically and financially to ensure the sustainability of the use of EAA. Finally, this study opens the door to investigate the possibility of using social media in facilitating the task of collecting research data, taking into account the nature of the study population.

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