

Working Paper 213

How Tanzania's Levy on Mobile Money Affects Small Businesses

Stefanie Pfeil, Luciana Nyaoke
Murimi, Marius Siebert, and
Fabrizio Santoro

November 2024

ICTD Working Paper 213

How Tanzania's Levy on Mobile Money Affects Small Businesses

Stefanie Pfeil, Luciana Nyaoke Murimi, Marius Siebert and Fabrizio Santoro

November 2024

How Tanzania's Levy on Mobile Money Affects Small Businesses

Stefanie Pfeil, Luciana Nyaoke Murimi, Marius Siebert and Fabrizio Santoro

ICTD Working Paper 213

First published by the Institute of Development Studies in November 2024

© Institute of Development Studies 2024

ISBN: 978-1-80470-253-6

DOI: [10.19088/ICTD.2024.110](https://doi.org/10.19088/ICTD.2024.110)



This is an Open Access paper distributed under the terms of the Creative Commons Attribution 4.0 International license (CC BY), which permits unrestricted use, distribution, and reproduction in any medium, provided the original authors and source are credited and any modifications or adaptations are indicated. <http://creativecommons.org/licenses/by/4.0/legalcode>

Available from:

The International Centre for Tax and Development at the Institute of Development Studies, Brighton BN1 9RE, UK

Tel: +44 (0) 1273 606261 Fax: +44 (0) 1273 621202

E-mail: info@ictd.ac.uk

Web: ictd.ac/publication

X: twitter.com/ICTDTax

Facebook: facebook.com/ICTDTax

LinkedIn: linkedin.com/company/ICTDTax

IDS is a charitable company limited by guarantee and registered in England

Charity Registration Number 306371

Charitable Company Number 877338

How Tanzania's Levy on Mobile Money Affects Small Businesses

Stefanie Pfeil, Luciana Nyaoke Murimi, Marius Siebert and Fabrizio Santoro

Summary

Mobile money has changed the financial system in many African countries, where it is seen as a convenient alternative to traditional financial services. It is a dominant force in emerging markets, and much of the progress gained in financial inclusion in sub-Saharan Africa is related to the growth of mobile money. Mobile money is used by both the formal and informal sectors. It offers an opportunity for governments to broaden the tax base, and to reach parts of the population that could not previously be reached.

In July 2021, during the COVID-19 pandemic, the Tanzanian Government introduced a new levy on electronic mobile money transactions (e-levy). The e-levy was initially between TSh10 and TSh10,000, and increased the cost of mobile money transfers and withdrawals. It was in addition to the existing 18 per cent value added tax (VAT) and 10 per cent excise duty, and was called a 'patriotic levy' to finance development projects. It was followed by public outcry, and concern about setbacks to financial inclusion.

This paper focuses on micro and small enterprises (MSEs) who are members of savings and credit cooperative societies (SACCOS). We look at their knowledge and perceptions of the e-levy, and its impact on their loan repayments from its introduction in July 2021, through subsequent adjustments, and up to its partial withdrawal in July 2023.

The paper is based on the combination of a unique database of loan repayments by 1,571 MSEs in 11 SACCOS, and 601 structured phone interviews with MSEs. The results show that: (1) the amount of MSE loan repayments increased, but the total number of transactions decreased; (2) there is little knowledge about the e-levy; those with more knowledge about the e-levy are more negative about it; (3) the general perception of mobile money is positive; that of the e-levy is negative, due to factors like knowledge, access to information through smartphones, and sector-relevant knowledge.

Keywords: taxation; e-levy; mobile money; SACCOS; MSEs; Tanzania.

Stefanie Pfeil is the Deputy Country Director for German Sparkassenstiftung for International Cooperation (DSIK) in Uganda, and is based in both Kenya and Uganda.¹ Her main expertise lies in digital finance.

Luciana Nyaoke Murimi is research and digitalisation advisor for DSIK in Tanzania, and supports project-related research and digitalisation activities.

Marius Siebert is Deputy Country Director for DSIK in Tanzania. He has extensive experience in spearheading innovative initiatives to enhance financial access and efficiency.

Fabrizio Santoro is a Research Fellow at the Institute of Development Studies, and Research Lead for the second component of ICTD's DIGITAX Research Programme. His main research interests relate to governance, public finance, and taxation, with a strong focus on impact evaluation methodologies and statistical analysis. He has a PhD in Economics from the University of Sussex.

¹ DSIK is a non-government organisation (NGO) working on microfinance, dedicated to sustainable financial inclusion for poverty alleviation.

Contents

Summary	3
Acknowledgements	7
Acronyms	7
1 Introduction	8
2 Context of the e-levy in Tanzania, and its intersection with microfinance	13
2.1 Mobile money taxes in Africa – public response and economic impact	13
2.2 The e-levy in Tanzania	14
2.3 The role of the microfinance sector and MSEs	16
3 Data and methodology	19
3.1 SACCOS database	19
3.2 Phone survey	20
3.3 Empirical framework	22
3.4 Limitations	23
4 Impact of the e-levy in Tanzania	25
4.1 Loan repayment patterns	25
4.2 Impact of the e-levy on MSE repayment behaviour	27
4.3 Knowledge about the e-levy	31
4.4 Perceptions of the e-levy	34
5 Discussion of results and policy implications	41
Appendices	44
Appendix 1 Overview of Tanzanian mobile money fees	44
Appendix 2 Levy charges from July 2021	46
Appendix 3 Additional tables	50
References	57
Figures	
Figure 4.1 Loan disbursement and repayment methods	25
Figure 4.2 Factors influencing MSE mobile money loan repayments	27
Figure 4.3 Factors correlating with medium to high knowledge about the e-levy	32
Figure 4.4 Agreement with, and fairness of, the e-levy	35
Figure 4.5 MSEs' perceptions of mobile money	40

Tables

Table 4.1	Effect of the e-levy before and after introduction	28
Table 4.2	Total amount repaid and total number of transactions, before and after levy introduction	30
Table 4.3	Influence of gender and age on impact of the e-levy	31
Table 4.4	Correlation between e-levy knowledge and perceptions about the e-levy	33
Table 4.5	Influence of knowledge on perceptions of mobile money	34
Table 4.6	Factors correlating with perceptions of the e-levy	37
Table 4.7	Loan repayment perceptions of MSEs using mobile money	38
Table 4.8	Mobile money loan repayment and e-levy perceptions	39
Table A1.1	Design and development of mobile money levies, Tanzania	44
Table A2.1	Chargeable rate for Electronic Mobile Money Transfer and Withdrawal Transactions Levy, July 2021	46
Table A2.2	Chargeable rate for Electronic Mobile Money Transfer and Withdrawal Transactions Levy, September 2021	47
Table A2.3	Chargeable rate for Electronic Money Transactions Levy, July 2022	48
Table A2.4	Chargeable rate for Electronic Money Transactions Levy, October 2022	48
Table A2.5	Chargeable rate for Electronic Money Cash Withdraw Transactions Levy, July 2023	49
Table A3.1	Survey questions	50
Table A3.2	Descriptive statistics of the survey sample	54
Table A3.3	General tax perceptions and tax knowledge	54
Table A3.4	Mean differences by loan repayment method	56

Acknowledgements

This project is a collaboration between DSIK and ICTD. We are grateful to the Savings and Credit Cooperative Union League of Tanzania (SCCULT) and Tanzania Cooperative Development Commission (TCDC) for approving this research project. Special thanks to Emanuel Walwa and Bashir Iddi for their support in collecting data on savings and credit cooperative societies, and to the numerous enumerators for their efforts in conducting phone interviews.

Acronyms

CBS	Core banking system
DFS	Digital financial services
DID	Difference-in-differences
DSIK	German Sparkassenstiftung for International Cooperation
E-levy	Electronic transfer levy (also called mobile money tax)
ERP	Enterprise resource planning
GDP	Gross domestic product
ICT	Information and communication technology
MFI	Microfinance institution
MIS	Management information systems
MNO	Mobile network operator
MSE	Micro and small enterprise
NGO	Non-governmental organisation
OLS	Ordinary least squares
OTC	Over-the-counter
P2B	Person-to-business
P2Bank	Person-to-bank
P2G	Person-to-government
P2P	Person-to-person
PIT	Personal income tax
PSM	Propensity score matching
SACCOS	Savings and credit cooperative society/ies
SCCULT	Savings and Credit Cooperative Union League of Tanzania
SSA	Sub-Saharan Africa
TCDC	Tanzania Cooperative Development Commission
TRA	Tanzania Revenue Authority
TSh	Tanzania Shilling
USSD	Unstructured supplementary service data
VAT	Value added tax

1. Introduction

Low-income countries in Africa recently started imposing taxes on mobile money and digital services as a strategy to augment tax revenue; these have especially targeted the informal sector (Matheson and Petit 2021; Diouf and Niesten 2023). This follows the rapid rise of mobile payment solutions in developing countries, which have become one of the preferred means of payment, even within the informal sector (Nakaweesi 2023). Taxation of mobile money thus appears to tax authorities to be an attractive and accessible source to broaden the revenue base (Fuchs, Musuku and Symington 2017). In Tanzania a levy on electronic mobile money transactions (e-levy) was introduced in July 2021, in addition to the existing 18 per cent VAT and 10 per cent excise duty (Penteriani and Fichers 2023). The formulation of these levies does not consistently adhere to the principles of best practice, which emphasise broad-based taxation over sector-specific approaches – aiming to mitigate tax inequalities and distortions that could affect particular industries (Clifford 2020).

The introduction of mobile money has increased financial and digital inclusion, as well as financial deepening, and is believed to promote social and economic development all over Africa (Van Alstyne, Parker and Choudary 2016; Rogers and Pedros 2017; Nyonzo 2022). It fosters economic empowerment, and thus directly contributes to sustainable development goals (Lopez 2019). Marginalised groups often do not have access to the traditional financial services offered by commercial banks, due to a lack of financial power or their remote location (Mastercard Foundation n.d.). Mobile money payment systems help to bridge this gap in costly banking infrastructure, and correct market failures of formal financial service distribution channels in a simple way (Kipkemboi and Bahia 2019). Through unified and easy access, network effects through SIM card penetration, and physical transaction points, as well as the data-driven business model of mobile money operators, mobile money payment systems deliver economic empowerment, efficiency, and convenience (Cobb, Wry and Zhao 2016; Aron 2018; Agarwal and Assenova 2023). In 2022 there were 763 million registered mobile money accounts in sub-Saharan Africa (SSA), an increase of 17 per cent between 2021 and 2022. In the same period these made 45 billion transactions (+21 per cent) with a total value of US\$832 billion (+22 per cent), and supported millions of jobs in the region (Raithatha *et al.* 2023).

Increasing revenue mobilisation to address the region's extensive development needs has long been a priority in SSA (Aslan *et al.* 2022). Many developing countries have a large informal sector, which makes it difficult for governments to mobilise domestic revenue. The COVID-19 global pandemic exacerbated the burden on many emerging and developing nations, and strained government treasuries (ATAF 2020; Nyonzo 2022). As a result, governments had to find new

revenue streams to service the high debt of many African countries (Mpofu 2022). As there is more dependence on and use of digital financial services (DFS), governments are tempted to increase taxes on them. This leads to sector-specific taxation, which has historically been prevalent in the mobile industry across most SSA countries, and is a significant proportion of its overall tax contribution (Bermeo 2023). In 2021 the mobile sector in 18 sub-Saharan African countries paid an estimated US\$9 billion in taxes and fees – on average 30 per cent of mobile sector revenue (GSMA 2021). However, a substantial portion of mobile money users belong to marginalised sections of society, and this exacerbates the negative repercussions on financial inclusion and broader developmental objectives (Clifford 2020). These institutional barriers prevent millions of people and small businesses from having access to financial services and economic life.

The use of mobile money by marginalised groups is deeply intertwined with savings and credit cooperative societies (SACCOS), which are important for financial inclusion in many low-income countries in Africa. Large sections of the population, particularly those with lower income, lower education levels, women, older individuals, and rural dwellers, lack access to traditional banking services. This means that alternative financial institutions like SACCOS play a vital role in extending financial services to underserved communities. In this context, micro and small enterprises (MSEs), which often rely on SACCOS for financial access, have significant importance. As they had limited access to formal financial services previously, MSEs have increasingly turned to SACCOS and mobile money as a way to bridge the gap (Mmari 2019). The success of mobile money in Tanzania has prompted SACCOS to offer mobile money services, expanding financial access for MSEs, and contributing to their economic empowerment and growth. Given the crucial role of SACCOS in extending financial services to underserved communities, studying the impact of mobile money taxation on this sector gives insights into the effectiveness of financial policies in promoting inclusive growth. In addition, examining the relationship between the use of mobile money and MSEs in the SACCOS sector offers valuable insights into the evolving financial behaviour and needs of small-scale entrepreneurs. This can inform strategies to enhance their access to formal financial services, and support their economic empowerment.

The e-levy in Tanzania was introduced in July 2021. With the official justification of financing unfinished state development projects, it was called a patriotic levy (Government of Tanzania 2021a; *The Citizen* 2021). The levy ranged from TSh10 to TSh10,000 (US\$0.00421 to US\$4.21) on electronic transactions,² with a threshold of TSh999 (US\$0.42) at its implementation (Mirondo and Lamtey 2021; GSMA 2021). The percentage increase in average transaction fees depends on the value of a transaction. It ranges from 3 per cent at its lowest for cash-out

² Exchange rate in July 2021 was approximately US\$0.00042 = TSh1 (Oanda n.d.).

transactions, up to 369 per cent at its highest for on-net person-to-person (P2P) transactions. Smaller transactions up to TSh15,000 show a lower average increase in transaction costs than higher transactions of TSh15,000 and above (Penteriani and Fichers 2023). The introduction of the e-levy was followed by a public outcry – there were fears about the impact on low-income households and the financial inclusion of marginalised groups. As a result several adjustments were made to the e-levy, until it was partially abolished in July 2023 (Lamtey 2023). The Tanzanian e-levy is particularly interesting as it was introduced at the peak of the COVID-19 pandemic, and for its justification and design. Nyonzo (2022) states that solidarity taxes are mainly introduced after emergencies or to reduce social inequality after an unexpected event, targeting the rich to support the poor or more affected population. Considering the COVID-19 pandemic, he suggests that the decision to allocate e-levy revenue for the construction of classrooms, despite the ongoing state of emergency, reflects poor planning rather than a response to the crisis.

This paper assesses the influence of the e-levy in Tanzania on financial inclusion, with a specific emphasis on MSEs – a crucial source of employment for the marginalised in the Tanzanian labour market. Given their typically limited financial resources, MSEs stand to gain significantly from mobile money services and their integration into SACCOS. The research focuses on various demographic factors, including age, gender, income, education level, location (urban/rural), and individuals' knowledge and perceptions of the e-levy.

A database of loan repayments by 1,571 MSEs was compiled from the core banking system (CBS) of 11 SACCOS operating in different regions of the country (urban and rural); these included demographic information. The database was divided into a treatment group (transaction data subject to the e-levy), and a control group (transaction data not affected by the e-levy). These were based on the type of account receiving mobile money at the SACCOS – whether it was mobile money or cash, as the latter was exempt from the e-levy. Following this, 601 structured telephone interviews explored MSEs' understanding and perceptions of the e-levy. The data collected from SACCOS was analysed using a difference-in-differences (DID) regression analysis, and survey data using correlational ordinary least squares (OLS) regressions.

We have three key findings. First, MSEs repaid more in monthly and total loans through mobile money to SACCOS than before the levy; the total number of repayment transactions decreased. This observation lacks quantitative validation and needs further investigation, as the data does not allow further conclusions to be drawn about the possible influence of the COVID-19 pandemic or the loan default rates, and in some cases can only explain one of the two phenomena. One explanation may be a shift towards larger and more essential loans due to financial expenses and less profit during the COVID-19 pandemic, with MSEs avoiding smaller loans. In addition, while the inherent advantages, accessibility,

and convenience offered by mobile money services might outweigh the disadvantages of higher transaction costs due to the levy, MSEs may opt to make fewer, larger payments to minimise the impact of the e-levy on multiple transactions. The prevailing economic conditions of MSEs could have contributed to this phenomenon. Robust profitability may offer a degree of resilience against higher operating expenses, or closing the business to visit a distant SACCOS could lead to higher losses or decreased customer satisfaction. Other explanations refer to personal preferences for using digital financial services, as well as limited alternatives.

Second, the overall understanding of the e-levy among survey respondents is poor. Interestingly, increased awareness correlates with a more critical view of the e-levy. Being the owner of an MSE correlates significantly negatively with knowledge, while higher education and existence of a bank account correlates positively.³

Third, increased familiarity with the intricacies of the e-levy appears to correlate with a less favourable view of its implications. In addition, prevailing sentiments regarding the e-levy tend to skew predominantly negatively. Access to smartphone-enabled information dissemination and sector-specific expertise, bookkeeping, and TRA registration increase this adverse perception. There are slightly positive correlations with being older and female. Owning a bank account also has a positive effect on perceptions of the e-levy. MSEs repaying loans using mobile money have a significant perception that the e-levy will affect their ability to repay, increasing the difficulty of making loan repayments through mobile money. However, this perception did not align with the analysed repayment data from SACCOS, as highlighted in the first point above. This underscores the multifaceted nature of factors shaping these aspects.

The taxation of mobile money is a recent development, resulting in limited empirical research on its effects and optimal organisational frameworks. Consequently, it remains the subject of discussion in both public and academic debates. Mobile money offers a valuable opportunity for governments to broaden the tax base, while critics argue that it could potentially burden marginalised sections of the population, leading to less financial inclusion and posing a threat to broader development objectives. A summary of recent studies on mobile money taxation is given by Hearson *et al.* (2024), and discussed at length in Section 2. A key finding from this nascent literature is that users' understanding of mobile money taxes influences their reaction to these taxes. Their knowledge is frequently incomplete, and influenced by factors such as literacy, access to information, and political affiliation. Research in Ghana finds that users have varied and often partial understanding of the e-levy, despite public information campaigns (Abounabhan *et al.* 2024). Perceptions of, and responses to, the tax

³ In this context, bank account means a bank account at a SACCOS.

are shaped not only by knowledge, but also by subjective factors such as political affiliation. In Kenya, citizens justified their tax avoidance strategies concerning mobile money by citing the state's failure to uphold its part of the social contract (Magale and Schmidt 2024). Beyond academia, this paper also targets policy-makers, regulators, and industry actors. It seeks to add to the ongoing policy debate on mobile money taxation by offering practical insights into the impact and design of these taxes. It also aims to support the development of best practice in tax design by regulators and policy-makers.

The rest of the paper is set out as follows. Section 2 looks into the detailed context of the study, providing an overview of the e-levy policy in Tanzania, and the roles and linkages to the microfinance sector and MSEs. In Section 3 we outline the data sources and empirical framework used in our analysis. Section 4 presents the diverse array of findings derived from our study. Finally, Section 5 provides the conclusion, offering policy insights and recommendations based on our research findings.

2. Context of the e-levy in Tanzania, and its intersection with microfinance

There is limited evidence of the tangible impact of taxes on mobile money, or the ideal structure of a well-designed, fair, and transparent tax policy in this domain (Ndung'u 2019; Mader *et al.* 2022). Experts warn of negative effects on financial inclusion, development goals, national economic agendas, and inequalities, while only having a non-significant effect on a broadened tax base and revenue (UNCDF 2018; Lopez 2019; Ndung'u 2019). Opponents of the e-levy in Tanzania fear that this taxation could have a negative impact on marginalised groups. Mobile money is a critical enabler of financial access for them, and they would be particularly affected by rising costs. The e-levy can impose a tax burden on those who are living at subsistence level (Lahey 2018), with individuals forced to 'return to cash transactions' (Ndung'u 2019: 1). Moreover, the sector-specific taxation of mobile money implies that a sector that has experienced relatively high taxation over many years is now facing additional levies, above standard rates, and reduced profitability (Rogers and Pedros 2017; Rota-Graziosi and Sawadogo 2020).

2.1 Mobile money taxes in Africa – public response and economic impact

These concerns align with Uganda's experience, where a 1 per cent tax on mobile money payments in July 2018, in addition to a 10 per cent excise duty, led to a 24 per cent drop in the value of transactions. The Ugandan Government reduced the tax to 0.5 per cent on withdrawals, and increased excise duty to 15 per cent, after public outcry – including debates, court petitions, and the social media hashtag #ThisTaxMustGo (Whitehead 2019; Clifford, 2020; Lees and Akol 2021). A UNCDF (2021) survey reveals that marginalised groups especially felt the burden of the e-levy.

Ghana intended to introduce a 1.75 per cent e-levy on electronic transfers in May 2022 (Oni and Gasparri 2022; Esselaar 2023). The e-levy was linked to the national transformation agenda 'Ghana Beyond Aid'. It aimed to tax the informal sector, and mobilise revenue to foster economic recovery, entrepreneurship, youth employment, and infrastructure, without additional aid from international donors like the International Monetary Fund (Aidoo 2022; Wales and Niesten 2022). The government reduced the rate to 1.5 per cent, and then 1 per cent after a public outcry (Ghana Revenue Authority 2023; Ackah and Opoku 2021). Post-impact studies show that there is increased public awareness of the e-levy after its introduction in Ghana, but a significant gap in knowledge about it, resulting in

changes in the use of mobile money that deviate from sound economic reasoning (Abounabhan *et al.* 2024).

Rwanda introduced a different strategy during COVID-19, mostly driven by the private sector. The leading telecommunications company, MTN, had previously levied a fee of 1 per cent on payments to merchants through its MoMoPay service and for sending mobile money through personal accounts. It suspended these for 18 months in March 2020 to promote contactless payments (IMF n.d.; Bernad *et al.* 2023). The result was a significant increase in mobile money payments, with the number of transactions increasing from 100 million in December 2019 to over 200 million in December 2020. The total value of transactions increased from around FRw500,000 in December 2019 to over FRw2.5 million in December 2020 (National Bank of Rwanda 2018; Kipkemboi, Muthiora and Farooq 2021). In a more micro study based on survey data, Bernad *et al.* (2023) show that MoMoPay payments rose and cash use declined, both by around 20 per cent. However, once fees were reintroduced at half their pre-pandemic levels in September 2021, cash usage recovered by 10 per cent, and digital payments reduced by 5 per cent. This experience shows how exemptions – whether on fees, or comparable tax – can encourage mobile money usage, but temporary measures may only have temporary effects (Hearson *et al.* 2024).

Kenya has imposed a 10 per cent excise duty on mobile money fees since 2013, which increased to 12 per cent in 2018. Despite a decline in the growth of payments affected by the excise duty, it has not significantly impacted the amount and number of transactions (Diouf, Carerras and Santoro 2023). The current excise duty is around 15 per cent, and will increase to 20 per cent in the next finance bill (Muiruri 2024).

The mobile money phenomenon is well known in Tanzania. The Tanzania Communications Regulatory Authority (TCRA) registered 18.1 million mobile money subscribers in December 2016. At the end of 2018 23.3 million subscribers were registered, 32.2 million in 2020, and 41 million in 2022 (TCRA 2018; TCRA 2020; TCRA 2022). The country had around 52.9 million accounts registered at the end of 2023, with a growth of 2.9 per cent between September and December 2023 (TCRA 2024). These numbers highlight the importance of mobile money for local economies – for productivity, availability of jobs, and economic growth (Lopez 2019).

2.2 The e-levy in Tanzania

On 1 July 2021, the Tanzanian Government introduced a levy targeting mobile money transactions in the Finance Act 2021. The levy ranged from TSh10 to TSh10,000, with a threshold of TSh999 imposed on mobile money transfers and withdrawal transactions. This was in addition to the existing 10 per cent excise duty on fees, and 18 per cent VAT on fees and excise duty (Ministry of Finance

and Planning 2021a). The average share of government taxes in overall transaction fees surged from 23 per cent to 60 per cent (GSMA 2021; Kombaha 2023; Penteriani and Fichers 2023). A GSMA publication shows that when the e-levy was introduced transaction fees for mobile money in Tanzania were already slightly above the East African average. After its introduction fees were nearly three times as high (Penteriani and Fichers 2023).

It was called a patriotic levy or solidarity tax to finance and accelerate unfinished government development projects. These included improving road networks and water services, constructing classrooms, and establishing health care centres (Ministry of Finance and Planning 2021b; Mirondo and Lamtey 2021; Nyonzo 2022). Most people expressed concern over the e-levy on mobile money (Sauti za Wananchi 2022). Opponents called it too expensive, and a burden on poor Tanzanians (Makoye 2021; Mshomba 2021). They argued that this could result in a return to a cash-based system, and undermine the progress made in achieving financial inclusion (Ranjan 2021; Mensah and Bhalla 2022). Nyonzo (2022) states that solidarity taxes are mostly introduced after emergencies or to reduce social inequality after an unexpected event, targeting the rich to support the poor or more affected population. Although COVID-19 can certainly be categorised as an emergency, he attributes the lack of classrooms to poor planning rather than COVID-19.

Statistics produced after the levy seem to confirm these concerns. The total number of peer-to-peer (P2P) transactions experienced a significant decline of 38 per cent between June 2021 and August 2021, and cash-out transactions fell by 25 per cent. The total value of transactions also dropped – by around 60 per cent for P2P transactions, and 30 per cent for cash-out transactions. Although there was some improvement following subsequent adjustments to the e-levy, it took 13 months for the total number of P2P transactions to recover to their previous level, and the total number of cash-out transactions has yet to fully recover. Both are increasing more slowly. The value of P2P transactions dropped from TSh1.25 trillion to TSh500 billion from June 2021 to August 2021, and cash-out transactions from TSh2.5 trillion to around TSh1.7 trillion. Neither had recovered as at March 2023 (Penteriani and Fichers 2023).

The Tanzanian Government announced several adjustments to the e-levy after the public outcry. The first was in August 2021, with revised rates ranging from TSh10 to TSh7,000 (Government of Tanzania 2021b). At the same time, the application base was extended to include bank and financial institution transactions performed via mobile phone (Kombaha 2023). Other types of bank and financial institution transactions, such as over-the-counter (OTC), ATM transactions, and transactions conducted on devices other than mobile phones (e.g. personal computers), were still excluded from the e-levy.

In July 2022 the rate was further reduced to range from TSh10 to TSh4,000 (Government of Tanzania 2022a). This amendment extended the application

base to include electronic banking transactions, presumably seeking to level the field between banks and mobile money operators. Bank transfers, OTCs, ATM transactions, and internet banking were now subject to the e-levy. In October 2022, after significant lobbying from the banking sector, the government repealed the amendment, effectively eliminating the e-levy on electronic transactions between banks and mobile wallets, as well as bank-to-bank transfers. The rates were reduced, ranging from TSh10 to TSh2,000 (Government of Tanzania 2022b). In the most recent update (February 2024) the e-levy was abolished on mobile money transfers, and kept on withdrawal (cash-out) transactions at a rate ranging between TSh10 and TSh2,000 (Government of Tanzania 2023). As a result, the mobile money transaction e-levy now only applies to withdrawal transactions.

In 2022, the government generated approximately TSh252 billion in revenue through the e-levy. However, this figure was tempered by a decline in the use of mobile money services, leading to an indirect loss of revenue from other taxes. In consequence, 'the direct contribution of the mobile sector to tax revenue has reduced by 36 million TZS' (Penteriani and Fichers 2023: 15).

2.3 The role of the microfinance sector and MSEs

Large parts of the Tanzanian population, especially those with a low income, lower educational level, women, older people, and those in rural areas do not have access to the financial sector through commercial banks, due to their location and their lack of financial power. As a result, SACCOS have tried to fill the gap.

SACCOS are member-owned financial institutions that operate on the principles of voluntary membership and shared interests. SACCOS typically serve individuals with a common bond, such as living in the same area, belonging to the same community group, or working in the same profession (Websacco 2019).

There are two main types of SACCOS:

1. **Employment-based.** These cooperatives are formed by individuals working for the same employer or within the same industry. Members pool their savings and provide each other with access to affordable loans and other financial services, fostering financial stability and growth within the employment sector. In Tanzania, as at 31 December 2022, 997,000 of the 1.8 million SACCOS members nationwide were part of employment-based SACCOS (TCDC 2023).
2. **Community-based.** These are established by individuals living in the same geographical area or who are part of the same community organisation, such as a church or local association. Community-based SACCOS focus on fostering economic development and mutual support within the community,

providing members with financial services tailored to their specific needs (Websacco 2019).

SACCOS are funded by membership subscription, and only offer services to their members. SACCOS are run by a voluntary board of directors that is elected from their members. Profits are used to reduce loan interest, increase saving interest, or develop new products/services (Websacco 2019). SACCOS are widespread in Tanzania. As of 2022, there were 801 licensed SACCOS. These had a combined membership of 1.8 million and employed 15,321 individuals (TCDC 2023).

In this context MSEs, as members of SACCOS, have an important role. There are few large enterprises, especially in rural areas, and MSEs have a crucial function as they create new job opportunities. With 5.2 million people in Tanzania working in this sector, it significantly contributes to income generation for families and communities. At the same time, MSEs lack access to the financial sector and suitable financial services and products (Financial Inclusion National Council 2017). While formerly many MSEs were reliant on informal financial services, mobile money gave MSEs access to formal financial services (Lopez 2020). Access to the financial market is easier for medium-sized and larger enterprises. Our research questions focus on MSEs, which tend to be unattractive to commercial banks due to their lack of size and financial strength. Especially in rural areas, they only have access to formal financial services through SACCOS, microfinance institutions (MFIs), and mobile money. The Tanzanian Government classify micro-enterprises as having 1 to 4 employees and capital investment in machinery of up to TSh5 million, and small enterprises as having 5 to 49 employees and capital investment up to TSh200 million (Ministry of Trade and Industry 2012).

The success of mobile money in Tanzania has led SACCOS to supplement their financial services with mobile money. Some of the larger SACCOS supported by DSIK in Tanzania have started to use mobile money as a channel to facilitate transactions for their members. Loan repayments initiated from a member's mobile wallet are technically offered in four different ways:

1. Private mobile money account to SACCOS bank account ('send to bank'): subject to government e-levy up to October 2022.
2. Private mobile money account to SACCOS business account (Lipa na M-PESA; P2B): not subject to government e-levy.
3. Private mobile money account to private mobile money account of a SACCOS manager or loan officer ('send money'; P2P): subject to government tax e-levy. This is an informal channel, used to avoid costs for business accounts.
4. Mobile money agent cash out transaction ('cash-out' and agent): subject to government e-levy.⁴

⁴ In the study, all SACCOS analysed that accepted mobile money repayments had their own mobile money agents on their premises. Their preferred method for mobile money repayment was through cash-out

The introduction of the e-levy in July 2021 and subsequent amendments have had an impact on the transaction costs of MSEs making use of the 'send to bank', and 'cash-out' through agent functionality, the standard methods of mobile money loan repayments used by Tanzanian SACCOS. We found the latter method in all the SACCOS we evaluated.

transactions via their own mobile money agents. This process, similar to a standard mobile money withdrawal, is specifically conducted through the SACCOS' agents. Instead of providing cash in exchange for the amount withdrawn, the SACCOS' agent uses the amount received to settle the loan repayment. This repayment method is subject to a levy. For the SACCOS, this arrangement provides an additional benefit – it facilitates convenient loan repayments while boosting transactions for their mobile money agents, creating an additional revenue stream.

3. Data and methodology

In order to evaluate the impact of the e-levy on MSEs, we selected a sampling process with both quantitative and qualitative methodologies to gain an in-depth and comprehensive understanding of the interdisciplinary nature of the topic (Yegidis and Weinbach 2008). We first collected quantitative loan data at the SACCOS level, then carried out a qualitative phone survey, and followed this with field trips for verification. The datasets collected first were split into two groups – a treatment group, with transaction data subject to the e-levy in Tanzania, and a control group, with data not subject to the e-levy. The groups were determined by the type of SACCOS account receiving mobile money – by whether it was mobile money or cash, as the latter was naturally exempt from the e-levy.

Convincing institutions and individuals to participate in a research project is difficult in Tanzania, especially when it comes to personal financial information. There is little trust due to concern about fraud, and suspicion of hidden agendas and conflicting interests. Therefore, we worked closely with our partner organisation, the Savings and Credit Cooperative Union League of Tanzania (SCCULT), the apex organisation for SACCOS in Tanzania mainland. SCCULT has the role of advocator, lobbyist, and representative of the interests of Tanzanian SACCOS (SCCULT n.d.). Leveraging SCCULT's well-established relationships within the SACCOS sector, and with the support of the Tanzania Cooperative Development Commission (TCDC) as the regulatory body, we were able to navigate trust barriers and effectively conduct our research. Research data was collected in the regions of Dar Es Salaam, Kilimanjaro, and Mwanza between August 2023 and December 2023. The assessment period and the base for data collection was January 2021 to August 2023.

3.1 SACCOS database

To gather quantitative loan repayment data from MSEs we involved SACCOS, as their financial service providers. There is no centralised database for the SACCOS sector, and individual SACCOS maintain their own data. Therefore, we leveraged existing networks with TCDC and SCCULT to access data stored in the core banking system (CBS) of these SACCOS. Only the larger and more established SACCOS, which maintain a CBS and have integrated mobile money services, were selected for inclusion in the study. SACCOS having no, or an inadequate, CBS, and no mobile money connection, do not have the required data availability and quality.

The criteria for selection of SACCOS were agreed in close cooperation with SCCULT and TCDC. In addition, a CBS needed to have been in operation for at least two years. We approached more than 35 SACCOS. Eleven of these, in the

regions of Dar Es Salam, Kilimanjaro, and Mwanza, agreed to collaborate in the project, to build a unique database with MSE loan data. The low number shows that SACCOS were hesitant to allow access to their information systems, due to the sensitive nature of the information required – despite our having good work relations. A total of 1,571 data sets were collected; 651 were assigned to the treatment group, and 920 to the control group. In addition to loan repayment information, further demographic parameters, like location, age, and gender, were collected. The loan repayment method was the key determinant in categorising datasets as either treatment or control. Repayment modes that are not affected by the e-levy included cash, salary deductions, bank deposits via bank or bank agent, and standing order bank transfers. Repayments via mobile money are only subject to the e-levy in specific cases – depending on the type of account receiving mobile money used by the SACCOS. Personal accounts are subject to the e-levy, whereas business or merchant accounts are exempt. Since all the SACCOS analysed use the cash-out variant via their own mobile money agents, which is subject to the e-levy, there was no need for further distinction between receiving account types. Any MSE transaction via mobile money was categorised as the treatment group, and other methods were categorised as the control group.

Data was mainly collected by generating MS Excel reports from the CBS. In some cases additional extracts from other programmes had to be used, including data from Excel spreadsheets, enterprise resource planning (ERP) systems, or other management information systems (MIS) if specific data was not available in the CBS. There were variations in systems between different SACCOS. While some CBSs allowed data extraction in Excel format, others were limited to PDFs. There were also differences in the capacity for bulk data extraction. Some systems allowed the extraction of multiple member datasets simultaneously, while others restricted the process to one dataset at a time. Other challenges included the manual effort involved in data cleaning after processing, the low e-literacy level of the loan officers in the SACCOS, and outdated contact data in the systems. These led to a large, manual, time-consuming effort for the project team in the field, and made data collection challenging.

3.2 Phone survey

The phone survey was the second phase of the data collection process. The objective was to validate loan information provided in the SACCOS database, while also gathering additional insights into the socio-demographics, business performance, tax knowledge, and general tax attitude of the participants. Using SurveyCTO, a semi-standardised questionnaire was designed and implemented between 23 November 2023 and 14 December 2023.

The phone survey, which lasted about an hour, was divided into ten sections:

1. **General information** captured the enumerator's identity and established the dataset ID, while also securing consent from participants.
2. **Socio-demographics** collected demographic data, such as gender, age, location, and educational background.
3. **Personal questions** assessed ownership/access to mobile phones, computers, social media, personal identification documents, and bank accounts, as well as the respondent's level of financial literacy.
4. **Business-related** looked into aspects of MSEs, including business duration, sector, registration status, book-keeping practices, and turnover.
5. **Payment-related** explored payment methods and turnover through the different payment methods, such as cash, mobile money, and bank transfers.
6. **Mobile money-related** questions investigated usage and reasons behind mobile money adoption among MSEs, including their transaction behaviour and perceptions of mobile money.
7. **Finance-related** questions looked into the MSE owner's SACCOS membership, loan history, and loan repayment methods.
8. **General tax attitude** assessed respondents' attitudes towards the tax system, transparency, and accountability, as well as their TRA registration.
9. **Tax-related** questions focused on the MSE's tax management practices, knowledge of mobile money taxation, and the respondents' perceptions of mobile money levies.
10. **Verification** ensured data accuracy by re-entering the dataset ID for cross-verification. A definition of key terms used in this section is provided in Appendix Table A3.1.

A total of 601 respondents were interviewed in the survey – 304 were allocated to the treatment group and 297 to the control group, randomly selected from the SACCOS database master file within their respective groups to obtain a balanced sample size. The individuals in the survey were on average 43 years old, mirroring the typical mature age demographic observed within the SACCOS sector in Tanzania. Nearly half the respondents – 49 per cent – were female, and 42 per cent reported having attained higher education. Of the 601 MSEs 85 per cent were owners, 2 per cent chief executive officers or general managers, 1 per cent business partners, and 12 per cent other. For use of technology, 72 per cent owned smartphones; access to computers was lower, at 27 per cent. Internet access was even less common, with only 17 per cent of respondents reporting access. Although the high percentage of smartphone ownership compared to low internet access seems contradictory, the explanation can be found in the cost of data bundles and internet service, as well as network coverage and changing infrastructure. Financial inclusion was notable, with 83 per cent reporting having a bank account; 85 per cent were business owners; 44 per cent operated within the trade sector; and 63 per cent were registered with the Tanzania Revenue Authority (TRA). Geographically, 72 per cent of the sample was located in urban areas, with varying representation across different zones, including the coastal

(17 per cent), lake (52 per cent), and southern (27 per cent) zones. The central zone had minimal representation (3 per cent). The descriptive statistics of the sample is presented in Appendix Table A3.2.

Initially the survey had a low response rate with, on average, one response received for every three numbers dialled. This was primarily attributed to participants' unavailability, and, in some instances, to inaccurate phone numbers. To address these challenges, we expanded the datasets by including more participants who were not initially selected for interviews, and conducted further data collection from additional SACCOS to expand the database.

3.3 Empirical framework

To generate causal estimates of the impact of the e-levy introduction over time, we leverage the implementation of the levy in July 2021, which affected SACCOS members repaying loans via mobile money. For the first estimation we rely on the wealth of information contained in the SACCOS database, as explained in Section 3.1. Our approach relies on a generalised difference-in-differences (DID) framework. This allows us to compare changes in outcomes over time between SACCOS who offer repayment solutions that are affected by the e-levy, and those that do not, thereby isolating the causal effect of the tax introduction. We use the specification below (Roth *et al.* 2023):

$$Y_{it} = \beta_0 + \beta_1 * Treat_i + \beta_2 * Post_t + \beta_3 * Treat_i * Post_t + \epsilon_{it} \quad (1)$$

In this equation, Y_{it} represents the loan repayment of taxpayer i in time t . Specifically, we examine outcomes such as monthly repayment for each repayment period (both in TSh and logs), total repayment across all periods, and total number of repayments made. The last two are measured by combining all repayments before and after implementation of the e-levy. $Treat_i$ equals 1 if the MSE i using mobile money to repay its loan indicating that it is affected by the e-levy, and 0 otherwise. $Post$ indicates whether the repayment occurred after introduction of the levy in July 2021. The interaction term $Treat \times Post$ captures the DID coefficient of interest, denoted as β_3 . This analysis measures the average effect across all periods after the levy was introduced, from July 2021 to August 2023. To enhance statistical precision we include time-invariant controls, such as gender, location, and the age of the SACCOS member or MSE representative. The error term ϵ is clustered at the MSE level.

As a second estimation, we rely on the more granular information collected through phone surveys (Section 3.2). We use this to run several regressions to explore correlations between key factors and outcomes of interest. While we do not make any causal claim, this correlational evidence helps to understand the impact of the e-levy better. The following multivariate OLS regression equation describes our approach:

$$Y_i = f(\beta' \text{ Background}; \gamma' \text{ Tax}; \delta' \text{ DFS}) \quad (2)$$

where Y_i is the dependent variable, as derived from the survey tool. The dependent variable varies throughout the analysis. First, we regress the likelihood to repaying loans through mobile money (see Section 4.1). Second, we consider an indicator for medium to high knowledge about the e-levy – having a score for knowledge about the e-levy above the median in the survey (see Section 4.3). We regress a range of perceptions around the e-levy,⁵ and on mobile money more broadly,⁶ on the same indicator for medium to high knowledge, to explore correlations between these items (see Section 4.3). Third, we regress the same perceptions around the e-levy on our set of explanatory factors in Section 4.4. Later, we also explore correlations between perceptions of the e-levy, including perceived impact on the ability to repay loans – a key indicator for repaying through mobile money, and hence subject to the e-levy.

We group explanatory factors into three groups. First, a set of background features of the respondent, both at the individual (gender, age, higher education, geographical zone, owning a smartphone), and business level (monthly sales in US\$, being in the trading sector, using internet in the business, having a bank account for the business). Second, a set of tax-related characteristics, such as being registered for tax with the revenue authority, and keeping books of accounts for tax. Third, more DFS-related features, such as accepting digital payments when transacting with customers, and, in some specifications, the medium to high knowledge around the e-levy described above. The corresponding OLS coefficients indicating the relevance of each factor are given by β' , γ' and δ' .

3.4 Limitations

This research specifically focused on large SACCOS, providing valuable insights into a sector where there is often little data. The findings capture trends and perceptions within this specific sector, and shed light on the impact of the e-levy. It is important to note that these findings reflect the loan repayments of MSEs, and are thus a very specific case. They may not reflect the broader impact on, and trends and perceptions of, the public and other sectors.

⁵ Such as agreeing with the introduction of the levy, perceived fairness of the e-levy, perceived transparency on how e-levy revenue is used, agreeing with the e-levy policy change, perceived feasibility of the e-levy meeting policy goals, whether the e-levy influenced SACCOS repayment levels, and whether the tax affected SACCOS default rates negatively.

⁶ These include the perception that mobile money improved financial inclusion, reduced cash reliance, enhanced the economy, perceived level of fairness of mobile money fees, whether clients prefer mobile money payments, perceived level of difficulty in opening a mobile money account, and whether assistance and support for clients from mobile money providers are sufficient.

Availability of data poses a significant challenge within the SACCOS sector, as most SACCOS still rely on manual systems. According to the SACCOS annual report for 2022, only 10.13 per cent of SACCOS utilise information and communication technology (ICT) systems (TCDC 2023). Since the use of ICT systems is a primary criterion for accessing SACCOS data, together with the requirement for these systems to have been operational for at least two years, our database was further limited. As a result, our dataset includes information from 11 SACCOS that are eligible to participate in our survey, located across three regions: Mwanza, Kilimanjaro, and Dar es Salaam. Not all regions are equally represented in the sample.

Furthermore, only very limited amounts of data could be collected from the period before the e-levy. Discrepancies between the treatment and control groups, regarding age, location, gender distribution, education level, income, and religious beliefs, may influence the outcome. It was difficult to anticipate the direction of bias in mobile money reporting in our data, especially in the qualitative data. During phone interviews there were different statements on loan specifications, indicating unintentional bias in responses. This may be attributed to the length of the period, from January 2021 to August 2023, the occurrence of multiple loans during this timeframe, and a general reluctance to disclose personal sensitive financial information.

Anticipation of the e-levy may have already changed consumer behaviour. Some field trips to verify answers from telephone interviews by analysing business documents had to be cancelled due to insufficient documentation being held by MSEs. When these documents exist, they typically cover only a few weeks.

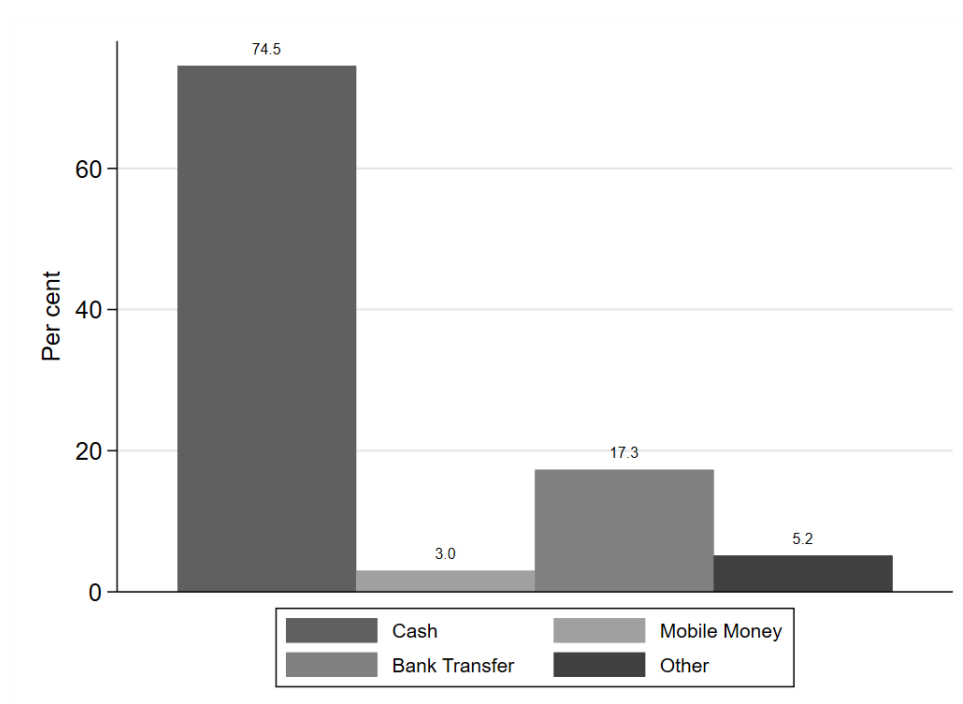
4. Impact of the e-levy in Tanzania

4.1 Loan repayment patterns

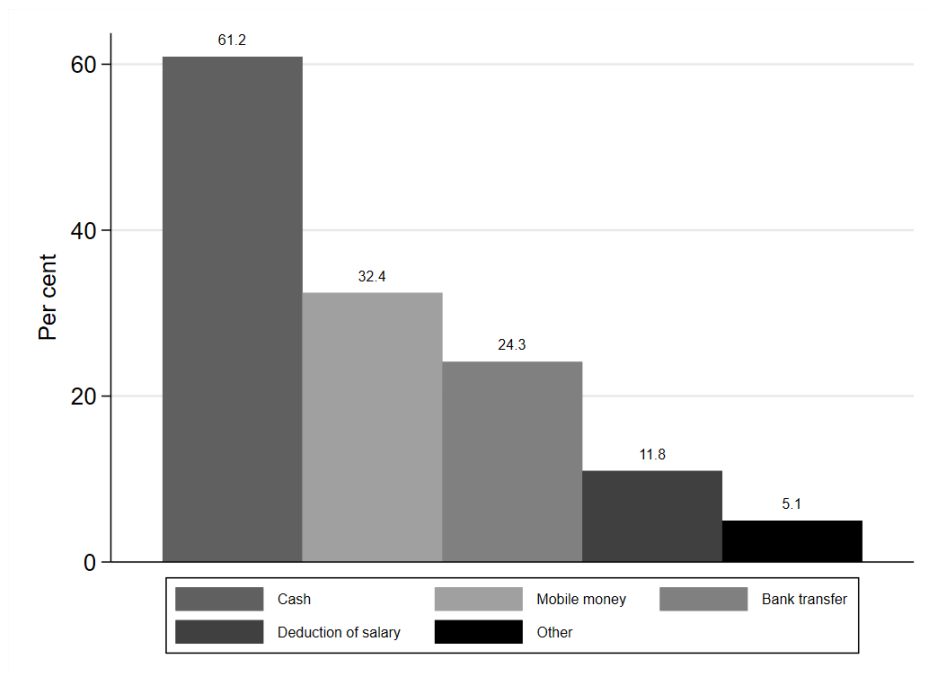
Before looking at the analysis of repayment behaviour and influence of the e-levy, it is necessary to understand the mechanisms through which payments are made in the SACCOS sector. Figure 4.1 shows that cash remains a prominent method for both disbursing and repaying loans, and there is a significant gap in the integration of digital financial services within the cooperative sector. According to our survey 74.5 per cent of loans were disbursed in cash, 17.3 per cent through bank transfers, and only 3 per cent via mobile money. It is important to note that mobile money connections used by SACCOS are external, while the bank accounts are directly held by SACCOS. This dynamic may contribute to the preference for cash withdrawals and bank transfers.

Figure 4.1 Loan disbursement and repayment methods

i. Survey question: 'Which payment method was used to disburse the loan?'



ii. Survey question: 'What is the repayment method to repay the loan?'⁷



Source: Authors' own from survey data.
 Note: The analysis refers to that specific loan, not all loans MSEs received. The sample size for the figures is N = 601.

Cash continues to dominate repayments, being 61 per cent of transactions. There is also a significant percentage of mobile repayments (32 per cent), followed by bank transfers (24 per cent), and salary deductions (12 per cent). This indicates that while the adoption of mobile money at customer level is more advanced and accepted, the majority still prefer or rely on cash for repayment.

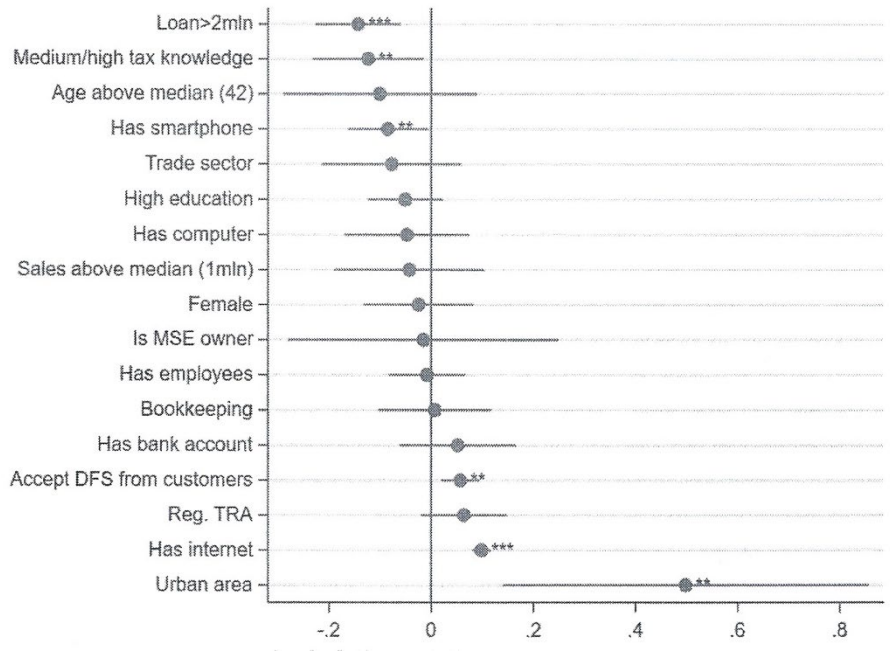
Figure 4.2 gives the profile of MSEs who use mobile money for repaying their loan.⁸ The results indicate that MSEs in urban areas, equipped with internet access, and willing to accept DFS from customers, are significantly more likely to use mobile money to repay their loan. A larger loan, more knowledge about tax, and smartphone ownership have a negative impact on the use of mobile money to repay a loan. This shows that these MSEs prefer to use other repayment methods – mainly cash or bank transfers. Other demographic or economic parameters do not seem to have an impact on the repayment method. This shows that urban areas, good infrastructure, and familiarity with DFS play a crucial role in MSEs' financial behaviour. Age and gender do not show any

⁷ Interviewed MSEs were able to give multiple answers to this question. Their answers are only partly reflected in the data, and suggest that MSEs with more than one loan probably remember them incorrectly.

⁸ We also show simple mean differences by loan repayment method in Appendix Table A3.4, including a t-test for the significance of those differences.

statistical significance. This highlights the importance of digital inclusion initiatives in facilitating mobile money adoption.

Figure 4.2 Factors influencing MSE mobile money loan repayments



Source: Authors' own from survey data.

Note: Data is derived from the survey question: 'What is/was the repayment method to repay the loan?' when the answer was mobile money. The sample size for the figure is N = 601. *p < 0.10, **p < 0.05, ***p < 0.01.

4.2 Impact of the e-levy on MSE repayment behaviour

To measure causal impacts of the e-levy on repayment behaviour of MSEs, we first look at outcomes at the monthly level – for each repayment period.

As illustrated in Table 4.1, derived from regression (1), our findings indicate a surprising positive effect of the e-levy on the amount repaid through mobile money. Columns 1 and 2, when amounts in TSh are used as outcomes, show that after implementation of the levy MSEs repaying in mobile money – those affected by the e-levy – are repaying more each month than MSEs repaying in cash. Especially when controls are added in col. 2, MSEs affected by the e-levy repay on average TSh77,000 more than MSEs repaying in cash. When logs are used in col. 3-4, to adjust for any skewed distribution in raw TSh amounts, the results remain positive and highly statistically significant. This is an unexpected finding, as we hypothesised that the e-levy would lead to a decrease in repayment amounts. This evidence is also contrary to findings of other studies,

and the low popularity of the e-levy. Penteriani and Fichers (2023), for example, show a significant drop in the use of mobile money – both for the total number of transactions, and especially the total amount transacted. The anticipated negative trend in demand elasticity expected in Tanzania contrasts with the observed increase in amounts repaid, suggesting that the positive impact of mobile money may outweigh the negative effects of the e-levy in this specific case.

Table 4.1 Effect of the e-levy before and after introduction

	(1)	(2)	(3)	(4)
	Monthly repayment amount (TSh)	Monthly repayment amount (TSh)	Monthly repayment amount (logs)	Monthly repayment amount (logs)
MoMo*Post	48,236.51*	77,497.72***	1.74***	2.53***
	(27,207.14)	(26,578.86)	(0.13)	(0.11)
MoMo	42,793.83*	-40,000	1.15***	-1.63***
	(25,909.57)	(26,187.39)	(0.13)	(0.10)
Post period	-29,000***	-4,556.50	-1.53***	-0.62***
	(10,494.59)	(10,220.67)	(0.12)	(0.09)
Controls	No	Yes	No	Yes
Control mean	150,000	150,000	8.602	8.602
R-sq.	0.007	0.020	0.171	0.435
Observations	18,990	18,990	18,990	18,990

Source: Authors' own from survey data.

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The outcome variable is a continuous variable for the total amount repaid in TSh before and after the levy was introduced. The DID coefficient of interest is the interaction between the mobile money indicator variable and Post indicator for outcomes after introduction of the levy. See Section 3 for more details.

Further studies are necessary to explore the underlying reasons for this unexpected trend, and possible implications for broader applicability. Other potential factors influencing mobile money usage should be considered in our analysis. These factors may encompass variables such as proximity of SACCOS for cash payments, impact of COVID-19 restrictions, and weather conditions that make mobile payment more convenient. Additionally, improvements in economic conditions or higher demand for MSE products and services may help MSEs generate additional profits, which could offset costs associated with transactions. Many MSEs are sole proprietorships, and the extra profit may mitigate expenses incurred from conducting banking transactions during regular business hours, such as having to close their shop early.

After considering control variables, the results also indicate that the relationships may be more intricate than originally presumed. The significant and positive coefficient of the interaction term between mobile money usage and the post-

implementation period variables suggests that the combined impact of mobile money usage and the post-levy period on loan repayment behaviour is different to the individual effect of mobile money alone and the post-levy period alone. This implies that there could be complex interaction effects between these variables that cannot be fully understood by analysing them in isolation. Additional analysis would be required to pinpoint the specific mechanisms underlying this interaction effect. It is also necessary to consider a limitation of the study – lack of data collected for the period before the e-levy was introduced.

As a second set of results, we show aggregate outcomes comparing all pre- and post-implementation periods, combining all corresponding monthly repayments in Table 4.2 (also see Section 3.3). We first show total amounts repaid in the post-implementation period, both in TSh (col. 1-2) and logs (col. 3-4). We then consider as outcomes the total number of repayments made in the post-implementation period (col. 5-6). Again surprisingly, the introduction of the e-levy appears to exert a positive influence on mobile money usage. As shown in Table 4.2, columns 1 to 4, there has been an increase in the total amount of loans repaid conducted via mobile money. This is shown by the positive interaction effect between mobile money usage and the post-e-levy period on the outcome variable. However, while both mobile money usage and introduction of the e-levy individually contribute strongly positively to the total amount of loans repaid via mobile money, their combined effect appears to enhance the outcome variable less than their individual effects. This suggests that, while the combined effect of mobile money usage and implementation of the e-levy may increase the use of mobile money, their individual effects are stronger. Additional research is needed, as our current dataset does not provide sufficient information to draw definitive conclusions. Incorporating additional data for the pre-levy period would enhance the comprehensiveness of the analysis, and provide a more robust basis for understanding the dynamics at play.

The total number of transactions declined following introduction of the e-levy, highlighting the intricate nature of these relationships (see columns 5-6). Although the use of mobile money independently yields positive outcomes, the e-levy's introduction alone does not have a negative impact. When considered together, there appears to be a negative effect on the total number of mobile transactions after introduction of the levy. This suggests that, while the inherent advantages, accessibility, and convenience offered by mobile money services might outweigh the disadvantages of higher transaction costs due to the levy, MSEs may opt to make fewer, larger payments to minimise the impact of the e-levy on multiple transactions. This underscores the need for further exploration to understand nuanced interactions between mobile money usage and policy interventions such as the e-levy.

Table 4.2 Total amount repaid and total number of transactions, before and after levy introduction

	(1)	(2)	(3)	(4)	(5)	(6)
	Total repayment amount (TSh)	Total repayment amount (TSh)	Total repayment amount (logs)	Total repayment amount (logs)	Total repayments number	Total repayments number
MoMo*Post	3.9e+05 (2.9e+05)	5.3e+05* (3.0e+05)	1.62*** (0.29)	1.93*** (0.24)	-2.20*** (0.49)	-2.26*** (0.49)
MoMo	5.7e+05*** (2.0e+05)	-3.3e+05 (2.3e+05)	1.42*** (0.26)	-1.04*** (0.21)	1.88*** (0.37)	0.91** (0.42)
Post period	1.0e+06*** (1.3e+05)	1.5e+06*** (1.4e+05)	-0.63*** (0.24)	0.52** (0.21)	7.75*** (0.25)	8.25*** (0.29)
Controls	No	Yes	No	Yes	No	Yes
Control mean	1.47e+06	1.47e+06	11.014	11.014	9.765	9.765
R-sq.	0.031	0.061	0.172	0.434	0.198	0.211
N	1,941	1,941	1,941	1,941	1,941	1,941

Source: Authors' own from survey data.

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The outcome variable is a continuous variable for the total amount repaid in TSh and total number of repayments before and after the levy was introduced. The DID coefficient of interest is the interaction between the mobile money indicator variable and Post indicator for outcomes after introduction of the levy. See Section 3 for more details.

Table 4.3 illustrates the interacting role of demographic characteristics, such as age in col. 1-2 and gender in col. 3-4, on the outcome variables. Being older appears to have a strongly negative impact. Contrary to expectations, the results indicate that older individuals are more negatively affected by the e-levy than those who are younger. Despite the assumption that being older may be associated with more established financial habits, networks, and resources, the data suggests otherwise. Older individuals react negatively after introduction of the tax, repaying lower amounts than younger individuals. This unexpected finding challenges the notion that being older confers resilience against economic shocks and immediate policy changes. The reasons for this could include older individuals being less adaptable or having limited understanding, with greater risk aversion. Further analysis is needed to understand underlying factors contributing to this unexpected trend.

Table 4.3 Influence of gender and age on impact of the e-levy

	(1) TSh	(2) Logs	(3) TSh	(4) Logs
MoMo*Post*Older than 40	-9.8e+04*** (15931.21)	-1.06*** (0.08)		
Older than 40	75891.46*** (7971.59)	1.36*** (0.07)		
MoMo*Post*Female			-8039.79 (16436.18)	0.12 (0.08)
Female			-7699.60 (7959.24)	-0.09 (0.07)
MoMo*Post	1.1e+05*** (23789.81)	2.46*** (0.14)	49465.71* (29814.38)	1.57*** (0.14)
MoMo	20825.51 (19287.75)	1.09*** (0.13)	42779.75* (25900.72)	1.15*** (0.13)
Post period	-3.0e+04*** (10981.90)	-1.59*** (0.12)	-2.7e+04** (10512.64)	-1.42*** (0.12)
Control Mean	8.602	8.602	8.602	8.602
R-sq.	0.011	0.212	0.007	0.162
N	17,679	17,679	18,632	18,632

Source: Authors' own from survey data.

Note: Standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01. The outcome variable is a continuous variable for the total amount repaid in TSh considering gender and age before and after the levy was introduced. The DID coefficient of interest is the interaction between the mobile money indicator variable and Post indicator for outcomes after introduction of the levy. See Section 3 for more details.

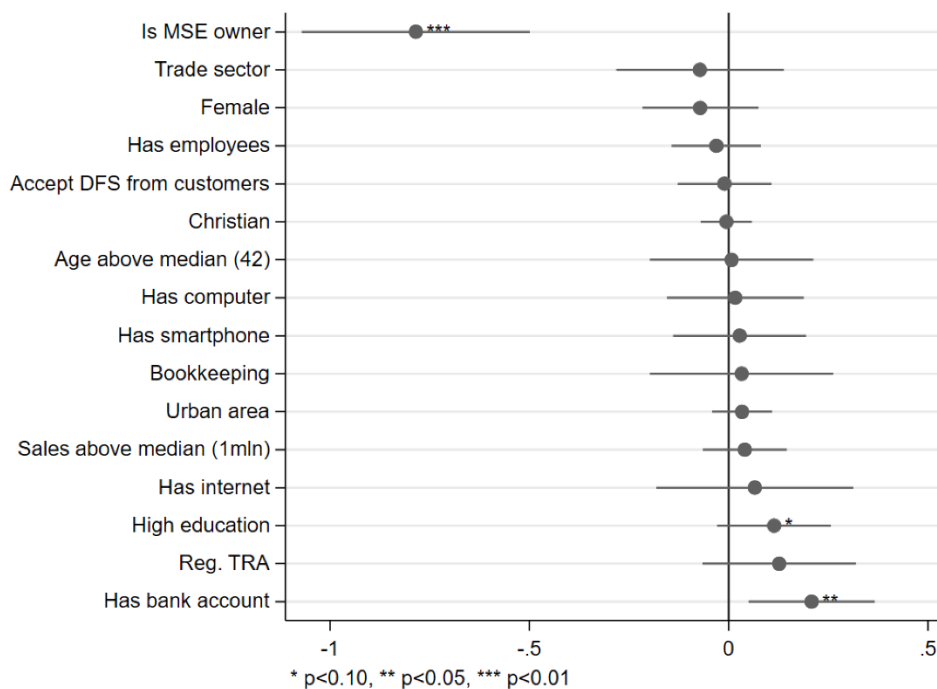
4.3 Knowledge about the e-levy

Overall knowledge about the e-levy is very low. Appendix Table A3.3 shows that around 43 per cent of participating MSEs accurately identified the year and month in which the e-levy was implemented. A higher percentage of respondents, 54 per cent, know which mobile money transactions are affected by the e-levy. Only 8 per cent of respondents know the date of the e-levy adjustment (month/year), and less than 1 per cent of respondents are aware of the rate at implementation for TSh1,000. Respondents provided an average of 1.2 correct answers to the 4 mobile money knowledge questions asked.⁹ These findings highlight a significant knowledge gap regarding mobile money taxation in Tanzania. Despite widespread public outcry respondents lack awareness of subsequent revisions, and struggle to accurately determine the e-levy rate applied to their mobile money transactions. This highlights the importance of improving awareness and understanding of the e-levy among MSEs.

⁹ Have you heard from any implemented changes in the levy? When was the levy implemented (mm-yyyy)? When was the levy adjusted for the first time (MM/YYYY)? What was the tax rate at implementation in TSh for a transfer of TSh1,000?

As shown in Figure 4.3, a medium to high knowledge about the e-levy correlates with higher education levels, as well as having a bank account. Similarly, knowledge is positively correlated with access to the internet, and having a smartphone or computer. This was expected, as higher education and digital inclusion are generally associated with greater access to a wide range of information sources. Access to a bank account highlights a greater level of financial inclusion and familiarity with the financial system, and could be related with greater awareness, finance-related networks, and more direct exchange with financial institutions. Furthermore, the analysis shows a notable negative correlation between knowledge of the e-levy and MSE ownership. Being part of the trade sector correlates negatively; however, it does not show any significant correlation with knowledge about mobile money taxation. Similarly, further demographic parameters, such as gender, age, and income, along with parameters related to digital inclusion, did not exhibit significant correlations.

Figure 4.3 Factors correlating with medium to high knowledge about the e-levy



Source: Authors' own from survey data.

Note: Data derived from survey question 'When was the levy implemented (mm-yyyy)?' The outcome is a 0-1 indicator variable for knowledge about the levy. Coefficients are extracted from the multivariate OLS regression, as described in Section 3. The sample size for this figure is N = 601.

As shown in Table 4.4, having medium to high knowledge about the levy has a highly significant negative correlation with agreement with its introduction.

However, MSEs with greater knowledge tend to believe that policy goals can be achieved through the e-levy. It must be noted that overall knowledge about the e-levy was poor, raising questions about how aware respondents were of the e-levy's intentions. They were also more inclined to agree that the e-levy would influence repayment capabilities and strategies, but disagreed that it would negatively impact SACCOS' loan default rates. This suggests that, while the e-levy may affect repayment channels and methods, respondents did not perceive it as a direct cause of loan defaults. Furthermore, MSEs that are better informed may have a more nuanced understanding of the e-levy's potential effects and its alignment with policy objectives.

Table 4.4 Correlation between e-levy knowledge and perceptions about the e-levy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Agree introduction e-levy	Fair e-levy	Satisfied with pol. change	Transparent e-levy	Achieve policy goals	Influenced SACCOS repayment	Influence defaults negatively
Medium/high tax knowledge	-0.17**	0.00	-0.10	0.12	0.13*	0.17***	-0.04***
	(0.05)	(0.03)	(0.05)	(0.08)	(0.05)	(0.04)	(0.01)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Y	2.50	2.19	2.52	2.21	0.61	0.38	0.14
R-sq.	0.056	0.038	0.041	0.074	0.129	0.244	0.055
N	601	601	601	601	601	601	601

Source: Authors' own from survey data.

Note: Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. The outcome variable is an indicator variable for how MSEs perceive this specific aspect of the levy. The main regressor is knowledge level about the levy. See Section 3 for more details.

Table 4.5 shows a significantly negative correlation between medium and high knowledge about the e-levy and perception of its positive economic impact. Additionally, there is a moderately negative correlation regarding the perception that mobile money-related fees are reasonable. This indicates that individuals with more knowledge about the e-levy are less likely to believe in its economic benefits. This potentially questions its effectiveness in stimulating economic growth and development. It shows concern about additional costs associated with mobile money transactions due to the e-levy, which may disproportionately affect individuals who rely on mobile money for financial transactions. A moderately positive correlation with customer preference to pay with mobile money suggests that individuals with medium and high knowledge about the e-levy are more inclined to use mobile money for transactions, despite concern about fees. This is probably promoted through higher education, but may also be due to convenience, accessibility, familiarity with mobile money platforms, or economic

related reasons, like higher living standards and affordability, and the ability to handle additional costs. These may outweigh concern about transaction costs for informed individuals.

Table 4.5 Influence of knowledge on perceptions of mobile money

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Improved fin. Incl.	Reduced cash	Enhanced economy	Reasonable fees	Clients prefer MoMo payments	Difficult process account	Suff. Support service
Medium/high tax knowledge	-0.02	-0.19**	-0.16***	-0.21*	0.12*	0.15	-0.18
	(0.01)	(0.06)	(0.02)	(0.08)	(0.05)	(0.09)	(0.09)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Y	3.53	3.75	3.53	2.55	3.19	2.63	3.71
R-sq.	0.095	0.101	0.083	0.044	0.137	0.054	0.095
N	601	601	601	601	601	601	601

Source: Authors' own from survey data.

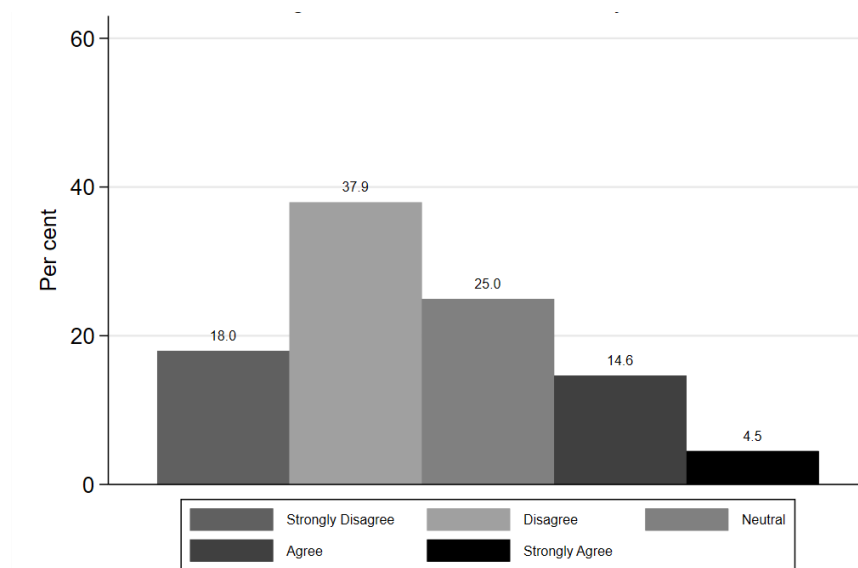
Note: Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. The outcome variable is an indicator variable for how MSEs perceive this specific aspect of the levy. The main regressor is knowledge level about the levy. See Section 3 for more details.

4.4 Perceptions of the e-levy

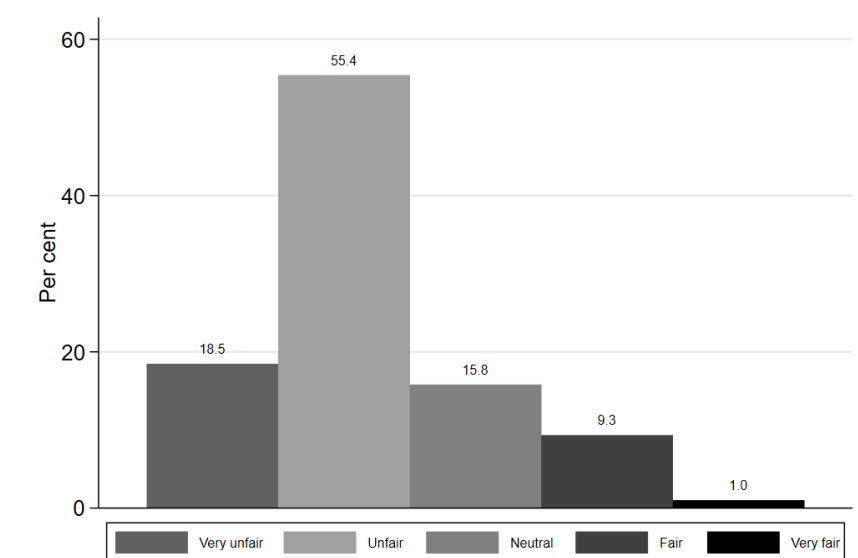
Figure 4.4(i) shows that there is little agreement with the e-levy. Only 19.1 per cent of respondents agreed with implementation of the e-levy in Tanzania. Only 10.3 per cent of our sample consider it to be fair. The respondents' perception of the e-levy appeared to align with their general perception of taxation (see Appendix Table A3.3). Only 16.8 per cent are satisfied with the tax system, and 15 per cent consider the tax system fair. These findings emphasise potential concern about the perceived fairness of taxation policies, and reveal challenges relating to transparency in use of revenue, fairness, support, and public trust among respondents. They may also indicate a level of insecurity among MSEs, potentially stemming from a low level of knowledge about the e-levy. It is essential to recognise the subjective nature of this perception.

Figure 4.4 Agreement with, and fairness of, the e-levy

i. Survey question: 'How much do you agree with the introduction of the mobile money tax levy?'



ii. Survey question: 'How fair do you think the levy is?'



Source: Authors' own from survey data.
 Note: The sample size for the figures is N = 601.

As shown in Table 4.6, women tend to perceive that the e-levy is fair, and are more satisfied with subsequent policy changes. This indicates potential gender disparities in perceptions in certain areas. Older people tend to agree more with

the introduction of the e-levy, while MSEs from urban areas agree less with its introduction, fairness, and transparency, and show less satisfaction with the policy changes. This suggests generational and geographical differences in perceptions of taxation and governance. MSEs from urban areas agree less with the e-levy, and consider it unfair. MSEs using DFS or bank accounts tend to see a positive correlation with loan defaults through the e-levy, and SACCOS' repayment policies and strategies. Smartphone ownership correlates negatively with agreement with the introduction, policy changes, satisfaction, and transparency of the e-levy, potentially attributed to enhanced access to information facilitating understanding of the e-levy. However, the transparency aspect needs further examination. MSEs from the trade sector have a strongly negative perception about transparency of the e-levy, and in the e-levy's effectiveness in achieving policy goals. This may stem from apprehension about increased costs, or inconvenience associated with mobile transactions. Interestingly, MSEs registered with TRA strongly believe in the policy achievements, indicating regulatory compliance and engagement with tax authorities may influence perceptions of tax policy effectiveness and outcomes. This emphasises the role of institutional trust and compliance in shaping attitudes towards taxation, and highlights challenges from having a large informal economy.

Table 4.6 Factors correlating with perceptions of the e-levy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Agree introduction e-levy	Fair e-levy	Satisfied with policy change	Transparent e-levy	Achieve policy goals	Influenced SACCOS repayment	Influenced defaults negatively
Female	-0.01	0.07*	0.09*	0.09	0	0.02	-0.02
	(-0.02)	(-0.03)	(-0.04)	(-0.05)	(-0.04)	(-0.04)	(-0.04)
Age above median (42)	0.08***	0	0.04	0.04	-0.02	0.02	-0.03
	(-0.02)	(-0.03)	(-0.05)	(-0.03)	(-0.04)	(-0.05)	(-0.02)
Has smartphone	-0.16**	-0.16**	-0.22**	-0.13	-0.02	0.05*	0.01
	(-0.05)	(-0.06)	(-0.06)	(-0.07)	(-0.04)	(-0.02)	(-0.04)
Has bank account	0.02	-0.06	-0.12	0.1	0	0.05**	0.05**
	(-0.09)	(-0.05)	(-0.12)	(-0.12)	(-0.07)	(-0.02)	(-0.01)
Accept DFS from customers	0.01	-0.07	0.05	-0.03	-0.06*	0.07*	0.07*
	(-0.02)	(-0.04)	(-0.04)	(-0.06)	(-0.02)	(-0.03)	(-0.03)
Is MSE owner	0.11	-0.15	-0.1	-0.3	0.04	-0.52***	0.08**
	(-0.19)	(-0.12)	(-0.06)	(-0.23)	(-0.08)	(-0.07)	(-0.02)
Trade sector	-0.11	-0.14	-0.09	-0.16***	-0.18***	-0.03	-0.05
	(-0.16)	(-0.09)	(-0.08)	(-0.03)	(-0.01)	(-0.03)	(-0.02)
Reg. TRA	0.13	0.08	0.07	-0.08	0.19***	0.01	0
	(-0.1)	(-0.12)	(-0.14)	(-0.06)	(-0.03)	(-0.02)	(0)
Urban area	-0.41***	-0.18***	-0.14**	-0.36***	-0.07	-0.02	0.05
	(-0.05)	(-0.04)	(-0.04)	(-0.01)	(-0.04)	(-0.05)	(-0.03)
Mean of Y	2.5	2.19	2.52	2.21	0.61	0.38	0.14
R-sq.	0.056	0.038	0.041	0.074	0.129	0.244	0.055
N	601	601	601	601	601	601	601

Source: Authors' own from survey data. Note: Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. The outcome variable is an indicator variables for MSEs with specific characteristics perceive this specific aspect of the levy. The main regressor is knowledge level about the levy. See Section 3 for more details.

We now consider, more specifically, the relation between repaying loans via mobile money, affected by the e-levy, and the same perceptions as above. First, in Table 4.7 we show that MSEs repaying loans using mobile money have a significant perception that the e-levy will affect their ability to repay. This also correlates positively with the perception of increased difficulty in making loan repayments through mobile money. The data does not allow us to analyse loan default rates. However, these results indicate operational challenges of MSEs, or at least their concerns, regarding potential constraints on their financial capabilities and an increased risk of defaults, due to the additional cost implications associated with the e-levy.

Table 4.7 Loan repayment perceptions of MSEs using mobile money

	(1)	(2)
	E-levy affected ability to repay	Issues repay with chosen method
MoMo loan repayment	0.10**	0.09*
	(0.03)	(0.03)
Controls	Yes	Yes
Mean of Y	0.14	0.13
R-sq.	0.074	0.079
N	574	574

Source: Authors' own from survey data.

Note: Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. The outcome variable is an indicator variable for how MSEs perceive this specific aspect of the levy. The main regressor is use of mobile money for loan repayments. See Section 3 for more details.

As a second set of results, Table 4.8 shows that MSEs utilising mobile money for loan repayment are less inclined to perceive the e-levy as transparent. This suggests that concern about transparency of the e-levy may be more salient for MSEs using mobile money. They are more likely to anticipate a negative impact of the e-levy on loan default rates, reflecting apprehension about an added financial burden. This perception could adversely affect their willingness to take part in financial transactions or access credit, influencing their financial stability and business operations. Consequently, they are also less optimistic about the e-levy's potential to achieve policy goals.

Table 4.8 Mobile money loan repayment and e-levy perceptions

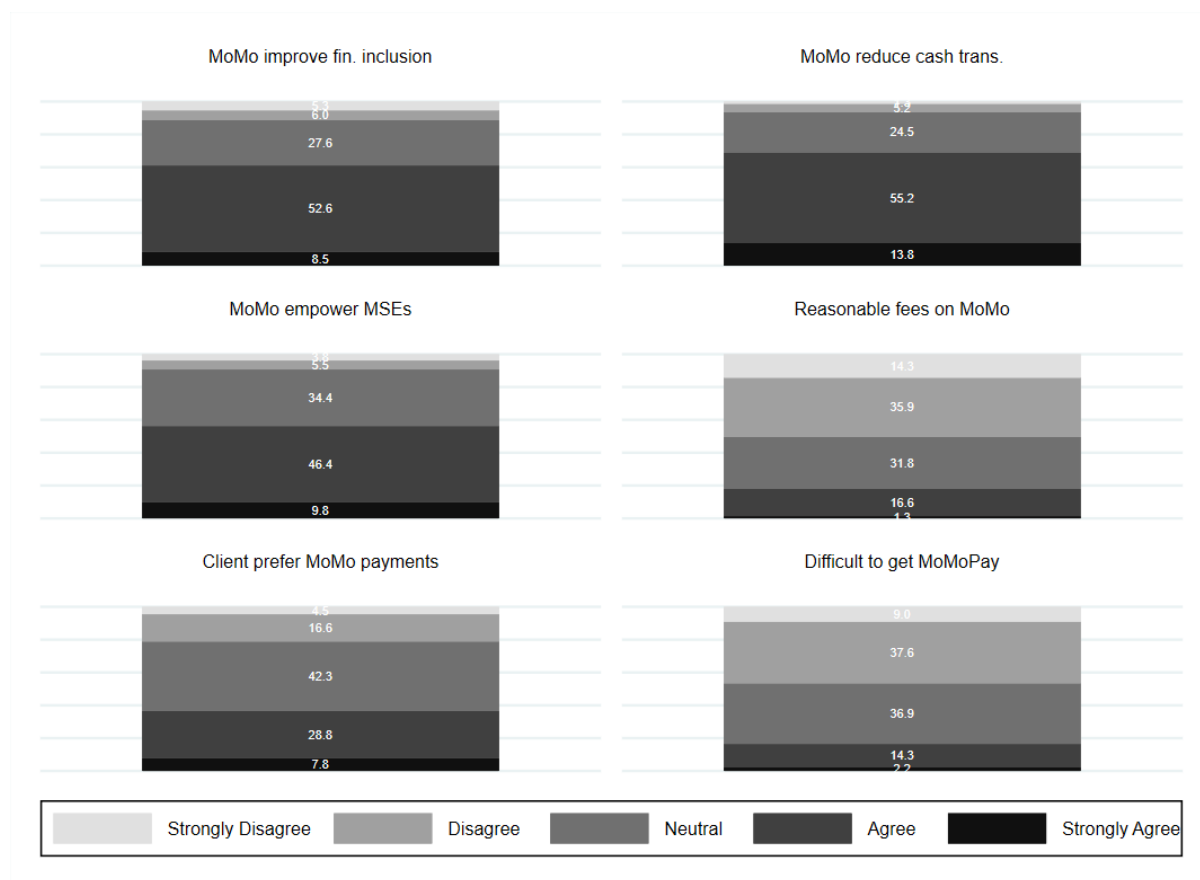
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Agree introduction e-levy	Fair e-levy	Satisfied with policy change	Transparent e-levy	Achieve policy goals	Influenced SACCOS repayment	Influenced defaults negatively
MoMo loan repayment	0.03	0.14	0.05	-0.10***	-0.06*	-0.01	0.07***
	(0.14)	(0.09)	(0.07)	(0.01)	(0.02)	(0.05)	(0.01)
Big loan	0.07	0.01	-0.05	0.08	-0.03	0.02	-0.00
	(0.05)	(0.11)	(0.09)	(0.13)	(0.04)	(0.04)	(0.01)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Y	2.50	2.18	2.52	2.22	0.60	0.39	0.14
R-sq.	0.054	0.061	0.049	0.079	0.122	0.221	0.063
N	574	574	574	574	574	574	574

Source: Authors' own from survey data.

Note: Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. The outcome variable is an indicator variable for how MSEs perceive this specific aspect of the levy. The main regressor is use of mobile money for loan repayments. See Section 3 for more details.

Finally, perceptions on mobile money remain positive, as shown in Figure 4.5 – 61.1 per cent of respondents acknowledge mobile money as a facilitator for enhancing financial inclusion. A notable majority (69 per cent) confirm that mobile money payments contribute to a reduction in cash transactions, while 56.2 per cent say that mobile money empowers MSEs. Despite this, MSEs show less satisfaction with the costs associated with using mobile money, which aligns with expected parameters concerning cost implications. Only 17.9 per cent of respondents find the fees associated with mobile money as reasonable, and 36.6 per cent show a preference for payment by mobile money by their clientele, showing relatively limited DFS adoption at customer level in the MSE sector. In addition, 16.5 per cent of MSE respondents find it difficult to obtain mobile money accounts, potentially due to MSEs being in mainly remote locations.

Figure 4.5 MSEs' perceptions of mobile money



Source: Authors' own from survey data.

Note: Data is derived from the following survey questions: 'How much do you agree with the following statements: (1) Mobile money has significantly improved financial inclusion in Tanzania; (2) Mobile money has contributed to a reduction in cash transactions and increased digital payments in Tanzania; (3) Mobile money has played a crucial role in enhancing economic empowerment among Tanzanian MSEs and entrepreneurs; (4) The fees associated with mobile money transactions in Tanzania are reasonable; (5) Clients prefer shopping at businesses that offer mobile money payments; (6) The process of getting a mobile money account for business is difficult'.

5. Discussion of results and policy implications

The findings from this paper indicate that the introduction of the e-levy, along with subsequent changes to its structure, did not have a significant negative impact on loan repayments. Despite initial expectations of a detrimental effect, the data shows that overall loan repayment amounts actually experienced growth, even though there was a decrease in the number of transactions. This suggests that the e-levy did not adversely affect loan repayment behaviour of MSEs, as initially anticipated. This unexpected finding has positive implications for policy-makers, suggesting a more complex interplay of factors influencing loan repayment behaviour beyond the e-levy itself.

Further studies for policy-makers could support understanding of the underlying reasons and interrelationship between tax design and its impact on SACCOS and MSEs, as our data only provides a limited picture. This includes, in particular, the interaction of economic factors – for example, that increased profits might offset the negative economic impact of the e-levy, and strengthen financial resilience. Avoiding losses from, or customers being dissatisfied with, having to close businesses, as well as the role of payment preferences, digital literacy, and lack of alternative solutions, especially in rural areas with limited banking infrastructure, might influence repayment behaviour. The nature of mobile money might also play a pivotal role, as its accessibility makes mobile money usage convenient and efficient.

Therefore, it would be helpful for policy-makers to have a comprehensive examination of these aspects individually – to understand their role, make informed decisions, and implement targeted interventions to support MSEs in the evolving economic and regulatory landscape.

We found evidence that there is a significant lack of knowledge about the e-levy, with increased awareness correlating with a more negative perception of the e-levy. For policy-makers, our findings underscore the need to address the significant lack of knowledge about the e-levy. The correlation between increased awareness and a more negative perception of the e-levy highlights the importance of comprehensive awareness and education campaigns. These campaigns could be tailored to tackle the specific needs and challenges faced by MSE owners, who often know less about the e-levy. In addition, bridging the information gap between different demographic groups is important to ensure equitable access to accurate and relevant information about the e-levy. Providing targeted support and resources to MSEs with less education and financial literacy would help them to better understand the e-levy's implications. Additionally, it would be beneficial to foster dialogue and collaboration among policy-makers,

financial institutions, and MSE owners to addressing concerns and misconceptions about the e-levy. This would ultimately lead to more informed decision-making and policy formulation.

Closely intertwined with knowledge about the e-levy are perceptions of it. These tend to be unfavourable, with concern raised about transparency and fairness in its implementation. This is not surprising, as more knowledge and access to information, facilitated by smartphones and sector-specific expertise, contribute to this negative viewpoint. These insights suggest an intricate interplay of diverse factors influencing repayment behaviour, knowledge acquisition, and perceptions regarding the e-levy's implementation within the MSE sector. These offer invaluable insights into the ramifications of taxation policies on financial practices at grassroots level.

Addressing these intricacies demands a multifaceted approach, with policy-makers heeding crucial implications for policy design and communication strategies. Ensuring transparency and clarity when communicating information about the e-levy is essential. Education campaigns that prioritise comprehensiveness, easily understandable insights into the e-levy's objectives, execution, and anticipated impacts will support this process. A clear communication from policy-makers can mitigate negative perceptions and enhance receptivity among MSEs. Policy-makers who actively engage MSEs and other stakeholders throughout the educational endeavour, fostering dialogue, soliciting feedback, and integrating MSEs' insights into policy design, are likely to be more successful. This participatory approach not only tailors tax policies to the specific needs and concerns of MSEs, but also promotes a sense of ownership and trust among stakeholders. This potentially fosters a more positive perception of taxation policies. Furthermore, clarifying the benefits and opportunities MSEs can get through the e-levy within tax design can promote a more favourable outlook. By emphasising the potential advantages of the e-levy policy-makers can offset negative sentiments, and gain support from MSEs.

Our study shows the potential influence of demographic factors, such as gender, age, and geographical location, on MSEs' knowledge and perception of taxes. This reveals the intricate interplay of various factors shaping the impact and awareness of, and attitudes to, taxation. Policy-makers should consider these demographic differences when designing and implementing tax policies, as well as when disseminating information about tax regulations. Further evaluation is warranted to fully understand the implications of these demographic variables on tax-related perceptions and behaviour among MSEs.

Integrating these insights into policy formulation and communication strategies will help policy-makers seeking to navigate the complex landscape of taxation policies. By fostering transparency, engaging stakeholders, and emphasising the benefits of taxation measures, policy-makers can encourage greater acceptance

and understanding among MSEs, thereby facilitating more effective policy implementation, and fostering economic resilience.

In conclusion, our study highlights unexpected trends in loan repayment behaviour of MSEs after implementation of the e-levy. It suggests a less detrimental impact than initially anticipated. However, policy-makers should address lack of knowledge about the e-levy and negative perceptions of it among MSEs. Tailored awareness campaigns and transparent communication strategies can help to bridge the information gap and promote understanding. In the design of policy it is important to pay attention to demographic factors, like gender, age, and location, to ensure an equitable outcome. By integrating these insights into policy-making, policy-makers can increase acceptance by and support from MSEs, ultimately leading to economic resilience and inclusive growth.

Appendices

Appendix 1 Overview of Tanzanian mobile money fees

Table A1.1 Design and development of mobile money levies, Tanzania

Date	Legal Document	Change
July 2013	Finance Act, 2013	<p>Introduction of excise duty on money transfers through banks, financial institutions, or telcos at the rate of 0.15% of the amount transferred for the amount exceeding TSh30,000.</p> <p>Exception Exempt from this duty were money transfers between banks and financial institutions, governments, diplomats, and diplomatic missions. Later revoked by the Finance Act 2014.</p>
July 2014	Finance Act, 2014	<p>Introduction of excise duty at the rate of 10% on charges or fees payable by a person to a financial institution for services provided by such an institution or a telecommunication service provider for money transfer service.</p> <p>Prior to this amendment, mobile network operators (MNOs) solely imposed excise tax on their transfer fees, while excluding it from the more substantial cash-out fees. With this significant amendment, the excise duty had been extended to encompass both the MNOs' transfer and cash-out fees.</p>
July 2021 (published 30 June 2021)	The Finance Act, 2021	<p>The National Payment Systems Act of 2015 was amended to incorporate a levy on electronic mobile money transfer and withdrawal transactions, at a rate ranging from TSh10 to TSh10,000.</p> <p>The levy was imposed in addition to the existing 18% VAT and excise duty of 10% on mobile money transfer and cash-out fees.</p> <p>Merchant, business, and government payment transactions were exempt from the levy.</p>
September 2021 (published 31 August 2021)	The National Payment Systems (Electronic Mobile Money Transfer and Withdrawal Transactions Levy) (Amendment) Regulations, 2021	<p>The government levy on mobile money transfer and withdrawal transactions was revised, and the new rate was set between TSh10 and TSh7,000.</p> <p>The amendment further specified the electronic money transactions subject to the levy. These included:</p> <ol style="list-style-type: none"> Transfer from the user's mobile money account to another mobile account User's mobile money account to bank account Bank account to bank account <p>The application base was extended to include bank and financial institution transactions performed via mobile phone. Other types of bank and financial institution transactions, such as over-the-counter (OTC), ATM transactions, and transactions conducted through devices other than mobile phones (e.g. personal computers). remained excluded from the levy.</p>
July 2022	The National	The government levy on mobile money transfer and cash-out transactions was further reduced to between TSh10 and TSh4,000

(Published 1 July 2022)	Payment Systems (Electronic Money Transaction Levy) Regulations, 2022	<p>Electronic money transactions subject to the levy included:</p> <ul style="list-style-type: none"> • Transfer from a user's mobile money account to a user's mobile money account • A user's mobile money account to a user's bank account • A user's bank account to a user's bank account • A user's bank account to a user's mobile money account <p>This amendment further extended the application base to include electronic banking transactions, presumably seeking to level the playing field between banks and telcos.</p> <p>Bank transfers, over-the-counter transactions, ATM transactions, and Internet banking were now subject to the levy.</p>
October 2022 (published 5 October 2022)	The National Payment Systems (Electronic Money Transactions Levy) (Amendment) Regulations, 2022	<p>The government levy on mobile money transfers and cash-out transactions was further reduced to between TSh10 and TSh2,000.</p> <p>The government further repealed the amendment that previously encompassed all electronic transactions, effectively eliminating the levy on electronic transactions between banks and mobile wallets, as well as bank-to-bank transfers.</p>
July 2023	National Payment Systems (Electronic Money Cash Withdraw Transaction Levy) Regulations, 2023	<p>The government levy on mobile money transfers was removed. The levy on withdrawal (cash-out) transactions was retained at a rate between TSh10 and TSh2,000.</p> <p>Mobile money transaction levy was now limited to withdrawal transactions only.</p>

Source: Authors' own from survey data.

Appendix 2 Levy charges from July 2021

Table A2.1 Chargeable rate for Electronic Mobile Money Transfer and Withdrawal Transactions Levy, July 2021

S/N	Electronic mobile money transfer and withdrawal amount in TSh	Rate in TSh
1	1 to 999	-
2	1,000 to 1,999	10
3	2,000 to 2,999	16
4	3,000 to 3,999	27
5	4,000 to 4,999	56
6	5,000 to 6,999	100
7	7,000 to 9,999	125
8	10,000 to 14,999	320
9	15,000 to 19,999	610
10	20,000 to 29,999	960
11	30,000 to 39,999	1,100
12	40,000 to 49,999	1,500
13	50,000 to 99,999	2,050
14	100,000 to 199,999	2,530
15	200,000 to 299,999	2,940
16	300,000 to 399,999	3,500
17	400,000 to 499,999	4,100
18	500,000 to 599,999	5,200
19	600,000 to 699,999	6,400
20	700,000 to 799,999	7,100
21	800,000 to 899,999	7,520
22	900,000 to 1,000,000	8,900
23	1,000,001 to 3,000,000	9,400
24	3,000,001 and above	10,000

Source: National Payment Systems (Electronic Mobile Money Transfer and Withdrawal Transactions Levy) Regulations, 2021.

Table A2.2 Chargeable rate for Electronic Mobile Money Transfer and Withdrawal Transactions Levy, September 2021

S/N	Electronic mobile money transfer and withdrawal amount in TSh	Rate in TSh
1	1 to 999	0
2	1,000 to 1,999	10
3	2,000 to 2,999	11
4	3,000 to 3,999	19
5	4,000 to 4,999	39
6	5,000 to 6,999	70
7	7,000 to 9,999	88
8	10,000 to 14,999	224
9	15,000 to 19,999	427
10	20,000 to 29,999	672
11	30,000 to 39,999	770
12	40,000 to 49,999	1,050
13	50,000 to 99,999	1,435
14	100,000 to 199,999	1,771
15	200,000 to 299,999	2,058
16	300,000 to 399,999	2,450
17	400,000 to 499,999	2,870
18	500,000 to 599,999	3,640
19	600,000 to 699,999	4,480
20	700,000 to 799,999	4,970
21	800,000 to 899,999	5,264
22	900,000 to 1,000,000	6,230
23	1,000,001 to 3,000,000	6,580
24	3,000,001 and above	7,000

Source: National Payment Systems (Electronic Mobile Money Transfer and Withdrawal Transactions Levy) (Amendment) Regulations, 2021.

Table A2.3 Chargeable rate for Electronic Money Transactions Levy, July 2022

S/N	Electronic mobile money transfer and withdrawal amount in TSh	Rate in TSh
1	100 to 2,999	10
2	3,000 to 3,999	15
3	4,000 to 4,999	30
4	5,000 to 6,999	60
5	7,000 to 9,999	70
6	10,000 to 14,999	128
7	15,000 to 19,999	243
8	20,000 to 29,999	383
9	30,000 to 39,999	439
10	40,000 to 49,999	599
11	50,000 to 99,999	818
12	100,000 to 199,999	1,009
13	200,000 to 299,999	1,173
14	300,000 to 399,999	1,397
15	400,000 to 499,999	1,636
16	500,000 to 599,999	2,075
17	600,000 to 699,999	2,554
18	700,000 to 799,999	2,833
19	800,000 to 899,999	3,000
20	900,000 to 1,000,000	3,551
21	1,000,001 to 3,000,000	3,751
22	3,000,001 and above	4,000

Source: National Payment Systems (Electronic Money Transaction Levy) Regulations, 2022.

Table A2.4 Chargeable rate for Electronic Money Transactions Levy, October 2022

S/N	Electronic mobile money transfer and withdrawal amount in TSh	Rate in TSh
1	100 to 2,999	10
2	3,000 to 3,999	14
3	4,000 to 4,999	27
4	5,000 to 6,999	54
5	7,000 to 9,999	56
6	10,000 to 14,999	102
7	15,000 to 19,999	195
8	20,000 to 29,999	306
9	30,000 to 39,999	351
10	40,000 to 49,999	419
11	50,000 to 99,999	573
12	100,000 to 199,999	707
13	200,000 to 299,999	821
14	300,000 to 399,999	838
15	400,000 to 499,999	982
16	500,000 to 599,999	1,245
17	600,000 to 699,999	1,532
18	700,000 to 799,999	1,700
19	800,000 to 899,999	1,750
20	900,000 to 1,000,000	1,776
21	1,000,001 to 3,000,000	1,875
22	3,000,001 and above	2,000

Source: National Payment Systems (Electronic Money Transactions Levy) (Amendment) Regulations, 2022.

Table A2.5 Chargeable rate for Electronic Money Cash Withdraw Transactions Levy, July 2023

S/N	Electronic mobile money transfer and withdrawal amount in TSh	Rate in TSh
1	100 to 2,999	10
2	3,000 to 3,999	14
3	4,000 to 4,999	27
4	5,000 to 6,999	54
5	7,000 to 9,999	56
6	10,000 to 14,999	102
7	15,000 to 19,999	195
8	20,000 to 29,999	306
9	30,000 to 39,999	351
10	40,000 to 49,999	419
11	50,000 to 99,999	573
12	100,000 to 199,999	707
13	200,000 to 299,999	821
14	300,000 to 399,999	838
15	400,000 to 499,999	982
16	500,000 to 599,999	1,245
17	600,000 to 699,999	1,532
18	700,000 to 799,999	1,700
19	800,000 to 899,999	1,750
20	900,000 to 1,000,000	1,776
21	1,000,001 to 3,000,000	1,875
22	3,000,001 and above	2,000

Source: National Payment Systems (Electronic Money Cash Withdraw Transactions Levy) (Amendment) Regulations, 2023.

Appendix 3 Additional tables

Table A3.1 Survey questions

Variable/key terms	Definition	Question asked to collect information
SACCOS membership	Being a shareholder in a Savings and Credit Cooperative Society (SACCOS); allowing one access to savings and credit facilities, as well as benefits such as dividends and financial services	How many years have you been member of this SACCOS? What was the purpose to become a member of this SACCOS? 1. Build savings 2. Access to loans 3. Access to insurances 4. Save location for money 5. Access to savings groups 6. Access to financial education 7. Other How has your membership in the SACCOS helped you financially or professionally? Have you been a member of any other SACCOS now or in the past? 1 Yes 0 No
Loan	Borrow money from SACCOS	What was the purpose of the loan? What was the amount of the loan in TSh? What is the duration of the loan in month? What was the lending scheme? 1 Reducing balance 2 Flat rate 3 I don't know What is/was the interest rate per year in %? How was your loan repayments schedule? 1 Monthly 2 Weekly 3 Daily
Loan disbursement method	The method or process by which a loan amount is released to the borrower by the SACCOS	Which payment method was used to disburse the loan? 1 Cash 2 Mobile money 3 Bank transfer Other
Loan repayment method	The method or process by which a borrower returns borrowed funds to the SACCOS according to the terms and conditions outlined in the loan agreement	What is/was the repayment method to repay the loan? 1 Cash in 2 Mobile money 3 Bank transfer 4 Deduction of salary 5 Other
Knowledge of the e-levy	The respondents' understanding and awareness of the e-levy (mobile money levy)	The Tanzanian government introduced a levy on mobile money transactions. Did you hear about this? 1 Yes 0 No Have you heard of any implemented changes in the levy? 1 Yes 0 No When was the levy implemented (MM-YYYY)? When was the levy adjusted for the first time (MM/YYYY)? What was the tax rate at implementation in TSh for the transfer of TSh1,000? Which of these transactions were affected by the e-levy? 1. Private payments 2. Mobile money to bank

		<p>3. Business payments</p> <p>4. Merchant payments</p> <p>5. Government payments</p> <p>6. Don't know</p>
Perception of the e-levy	Attitudes, opinions and interpretations held by the respondents regarding the e-levy (mobile money levy)	<p>On a scale of 1 to 5, how much do you agree with the introduction of the mobile money tax levy?</p> <p>1 means strongly disagree; 5 means strongly agree.</p> <p>On a scale of 1-5, how fair do you think the levy is?</p> <p>1 means very unfair ; 5 means very fair.</p> <p>On a scale of 1 to 5, how satisfied are you with the policy changes?</p> <p>1 means very dissatisfied ; 5 means very satisfied</p> <p>On a scale of 1 to 5, how transparent do you think the usage of revenue from the levy is?</p> <p>1 means not transparent at all ; 5 means completely transparent</p> <p>What do you think the purposes of the levy were?</p> <p>Do you think the levy can achieve these purposes?</p> <p>1 Yes</p> <p>0 No</p> <p>Who do you think is affected the most by the levy?</p> <p>1 MSEs</p> <p>2 Large businesses</p> <p>3 Individual people</p> <p>4 Mobile money operators</p> <p>Other</p> <p>5 What exemption threshold in TSh do you think is reasonable?</p> <p>Do you believe the mobile money levy has influenced the SACCOS' loan repayment policies or strategies?</p> <p>1 Yes</p> <p>0 No</p> <p>Do you believe the mobile money levy has influenced the SACCOS' loan default rate negatively?</p> <p>1 Yes</p> <p>0 No</p>
Age	Age of the respondent	How old are you?
Gender	Gender of the respondent	<p>What is your gender?</p> <p>1 Female</p> <p>2 Male</p>
Education	The level of education of the respondent. Those with tertiary education (post-secondary) are considered to have attained a high level of education	<p>What is your highest educational degree?</p> <p>1 Primary school education</p> <p>2 Secondary school education</p> <p>3 College certificate</p> <p>4 College diploma</p> <p>5 University graduated (Bachelor degree)</p> <p>6 University post-graduated (Master's degree)</p> <p>7 University PhD</p> <p>8 Attended school, but no educational degree</p> <p>9 Not attended school</p>
Has smartphone	The respondent owns a smartphone	<p>Do you own your own mobile phone?</p> <p>1 Yes</p> <p>0 No</p> <p>What type of phone do you own?</p> <p>1 Feature phone</p> <p>2 Smartphone</p>
Has computer	The respondent owns a computer	<p>Do you own a computer?</p> <p>1 Yes</p> <p>0 No</p>
Has internet	The respondent accesses and uses the internet for their business	<p>Do you use internet for your business?</p> <p>1 Yes</p> <p>0 No</p>
Has bank account	The respondent possesses or holds an account with a bank	<p>Do you have a bank account?</p> <p>1 Yes</p> <p>0 No</p>

Trade sector	Segment or economic sector in which the respondent trades.	What is the main sector of activity of your business? 1 Agriculture 2 Manufacturing 3 Mining 4 Commerce (B2B/B2C) 5 Services
Registration with TRA	The Tanzania Revenue Authority (TRA) oversees taxation and revenue collection in Tanzania. The respondent's registration status was determined by whether they possessed a Taxpayer Identification Number (TIN), which is issued upon registration with the TRA.	Do you have a Taxpayer Identification Number? 1 Yes 0 No
Bookkeeping	Systematic recording, organising, and tracking of financial transactions and activities of the MSE	Does your business keep any kind of books of accounts? Yes No
Payment methods	The channels or methods used by the MSE to make payments for goods, services, or financial transactions. Note, mobile money – personal account transactions were affected by the e-levy. 1 Cash 2 Mobile money - personal account 3 Mobile money - business account 4 Bank transfer 5 Card payment 6 Cheque 7 Other	Which types of payments do you accept from your customers (B2B/B2P)? Which types of payment do you use to pay your employees? Which types of payment do you use to pay your suppliers?
Payment method preference	Used to estimate perceptions and respondents' preferences of the various payment methods or channels. The possible responses are: 1 Very comfortable 2 Somewhat comfortable 3 Somewhat uncomfortable 4 Very uncomfortable	How comfortable do you feel using cash as a payment method? How comfortable do you feel using your personal mobile money account as a business-related payment method? How comfortable do you feel using your business mobile money account as a payment method? How comfortable do you feel using bank transfers as a payment method? How comfortable do you feel using cards as a payment method? How comfortable do you feel using checks as a payment method?
Perception of mobile money	Attitudes, opinions, and interpretations held by the respondents regarding mobile money. The possible responses are: 1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly agree	On a scale from 1 to 5, how much do you agree with the following statement: Mobile money has significantly improved financial inclusion in Tanzania. 1 means strongly disagree; 5 means strongly agree On a scale from 1 to 5, how much do you agree with the following statement: Mobile money has contributed to a reduction in cash transactions and increased digital payments in Tanzania. On a scale from 1 to 5, how much do you agree with the following statement: Mobile money has played a crucial role in enhancing economic empowerment among Tanzanian MSEs and entrepreneurs. On a scale from 1 to 5, how much do you agree with the following statement: The fees associated with mobile money transactions in Tanzania are reasonable.

		<p>On a scale from 1 to 5, how much do you agree with the following statement: Clients prefer shopping at businesses that offer mobile money payments.</p> <p>On a scale from 1 to 5, how much do you agree with the following statement: The process of getting a mobile money account for business is difficult.</p> <p>On a scale from 1 to 5, how much do you agree with the following statement: mobile money providers in Tanzania offer sufficient customer support services.</p>
<p>General tax attitude</p>	<p>The overall attitude and opinions held by the respondents regarding taxation and tax policies</p>	<p>On a scale of 1 to 5, how satisfied are you with the current tax system in Tanzania? 1 means very dissatisfied; 5 means very satisfied</p> <p>On a scale of 1 to 5 how fair do you think the tax system is? 1 means very unfair; 5 means very fair</p> <p>On a scale from 1 to 5, how satisfied are you with the transparency and accountability of tax collection and utilisation by the government? 1 means very dissatisfied; 5 means very satisfied</p> <p>On a scale from 1 to 5, how satisfied are you with the provision of public services? 1 means very dissatisfied; 5 means very satisfied</p> <p>Compared to 3 years ago, do you think that the tax system is more or less fair? 1 means very unfair; 5 means very fair</p> <p>On a scale from 1 to 5, how justified is the following statement: Under-declare income so to pay less tax. 0 means never justified ; 5 means always justified</p> <p>On a scale to 1-5, how much would you trust a proposal of the national government that if you paid more taxes, they would provide you with better services. How much would you trust them that these better services would actually materialise? 1 means no trust at all ; 5 means complete trust</p>

Source: Authors' own.

Table A3.2 Descriptive statistics of the survey sample

Variable	Obs	Mean	Std. dev.	Min	Max
Female	601	0.49	0.50	0.00	1.00
Age	601	43.85	10.87	23.00	84.00
High education	601	0.42	0.49	0.00	1.00
Christian	601	0.77	0.42	0.00	1.00
Has smartphone	601	0.72	0.45	0.00	1.00
Has computer	601	0.27	0.44	0.00	1.00
Has bank account	601	0.83	0.38	0.00	1.00
Is owner	601	0.85	0.36	0.00	1.00
Trade sector	601	0.44	0.50	0.00	1.00
Registered TRA	601	0.63	0.48	0.00	1.00
Has books of account	601	0.75	0.44	0.00	1.00
Has internet	601	0.17	0.37	0.00	1.00
Has employees	601	0.52	0.50	0.00	1.00
Monthly sales 2023 US\$	365	1,431.49	4,617.67	2.38	47,697.79
Urban area	575	0.72	0.45	0.00	1.00
Central zone	601	0.03	0.17	0.00	1.00
Coastal zone	601	0.17	0.38	0.00	1.00
Lake zone	601	0.52	0.50	0.00	1.00
Southern zone	601	0.27	0.45	0.00	1.00

Source: Authors' own from survey data.

Table A3.3 General tax perceptions and tax knowledge

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Satisf. tax system	Fair tax system	Fairer now	Transparent tax system	Informed on tax system	Satisf. pub. serv.	Justify evasion	Trust Govt	Refuse to pay taxes
Medium/high tax knowledge	0.14**	0.06	0.16***	-0.02*	-0.08	-0.07	0.32**	0.21*	0.01
	(0.04)	(0.08)	(0.02)	(0.01)	(0.05)	(0.12)	(0.10)	(0.08)	(0.01)
Female	0.01	-0.05**	0.04	0.22***	-0.06**	0.18***	-0.23***	-0.03	0.02
	(0.05)	(0.01)	(0.07)	(0.03)	(0.01)	(0.04)	(0.05)	(0.19)	(0.02)
Age above median (42)	0.03	0.07	0.12**	0.22***	0.02	0.07	0.00	0.11	0.03*
	(0.02)	(0.05)	(0.03)	(0.04)	(0.05)	(0.04)	(0.10)	(0.13)	(0.01)
High education	-0.33***	-0.27***	-0.24*	-0.26**	0.05**	-0.12	0.10	-0.06	0.05
	(0.03)	(0.04)	(0.10)	(0.09)	(0.02)	(0.09)	(0.10)	(0.10)	(0.07)
Christian	-0.00	-0.00	-0.04	-0.03	-0.05	-0.10*	0.13**	-0.02	0.06**
	(0.13)	(0.08)	(0.05)	(0.10)	(0.02)	(0.04)	(0.03)	(0.04)	(0.01)
Has smartphone	-0.15	-0.08	-0.14	-0.15	-0.06	-0.08	0.22	0.06	-0.01
	(0.13)	(0.10)	(0.12)	(0.08)	(0.04)	(0.08)	(0.12)	(0.08)	(0.02)
Has computer	0.24***	0.08	0.13	0.13	0.01	0.09	-0.24**	-0.25***	-0.02
	(0.05)	(0.08)	(0.17)	(0.06)	(0.02)	(0.18)	(0.06)	(0.04)	(0.04)

Has bank account	-0.05	0.00	0.00	-0.03	-0.01	-0.05	-0.06	0.14	0.02
	(0.12)	(0.09)	(0.08)	(0.13)	(0.04)	(0.18)	(0.13)	(0.09)	(0.02)
Accept DFS from customers	-0.15	-0.06	-0.05	-0.00	0.01	-0.03	-0.02	-0.13**	-0.03
	(0.08)	(0.06)	(0.07)	(0.09)	(0.03)	(0.07)	(0.04)	(0.03)	(0.03)
Is MSE owner	-0.09**	-0.25**	-0.07	-0.06	-0.12	0.12**	-0.22*	-0.07	0.10**
	(0.03)	(0.08)	(0.06)	(0.09)	(0.06)	(0.03)	(0.09)	(0.09)	(0.03)
Trade sector	-0.08	-0.04	0.11***	-0.01	0.05	-0.08**	-0.01	-0.11*	0.07
	(0.07)	(0.09)	(0.01)	(0.04)	(0.03)	(0.03)	(0.14)	(0.04)	(0.04)
Reg. TRA	0.05	-0.02	-0.06	0.07	0.17***	0.06	0.37***	0.36***	-0.08
	(0.06)	(0.02)	(0.11)	(0.06)	(0.04)	(0.05)	(0.06)	(0.08)	(0.06)
Bookkeeping	0.12*	0.14	0.19**	0.13*	0.12*	0.09	0.05	0.00	0.02
	(0.05)	(0.07)	(0.05)	(0.05)	(0.05)	(0.06)	(0.09)	(0.16)	(0.05)
Has internet	0.01	-0.04	-0.06	-0.07	0.14***	-0.09**	-0.47**	-0.12	-0.01
	(0.03)	(0.05)	(0.09)	(0.05)	(0.02)	(0.03)	(0.14)	(0.10)	(0.05)
Has employees	-0.00	0.03	0.15*	0.13	0.02	0.17	-0.22*	-0.24	0.05**
	(0.05)	(0.07)	(0.05)	(0.09)	(0.07)	(0.10)	(0.09)	(0.13)	(0.02)
Sales above median (1mln)	0.08	0.10	-0.00	-0.03	-0.09	-0.01	0.12	-0.01	-0.01
	(0.10)	(0.05)	(0.04)	(0.10)	(0.05)	(0.12)	(0.13)	(0.12)	(0.04)
Urban area	-0.22*	-0.14	-0.26	-0.26**	-0.00	-0.10	0.25*	-0.28***	0.01
	(0.08)	(0.08)	(0.13)	(0.06)	(0.08)	(0.08)	(0.10)	(0.04)	(0.02)
Mean of Y	2.47	2.38	2.48	2.63	0.37	2.91	2.64	2.82	0.13
R-sq.	0.056	0.040	0.053	0.083	0.130	0.037	0.090	0.072	0.054
N	601	601	601	601	601	601	601	601	601

Source: Authors' own from survey data.

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The outcome variable is an indicator variables for MSEs with specific characteristics perceive this specific aspect of the tax system. The main regressor is knowledge and perception of the general tax system. See Section 3 for more details.

Table A3.4 Mean differences by loan repayment method

	Cash		Mobile		Difference
	Mean	Obs	Mean	Obs	
Female	0.50	270	0.50	304	-0.00
Age	45.02	270	42.56	304	2.47***
High education	0.47	270	0.38	304	0.10**
Christian	0.79	270	0.77	304	0.02
Has smartphone	0.74	270	0.70	304	0.05
Has computer	0.27	270	0.27	304	0.01
Has bank account	0.84	270	0.81	304	0.03
Accept DFS from customers	0.31	270	0.38	304	-0.08*
Is MSE owner	0.85	270	0.84	304	0.01
Trade sector	0.46	270	0.44	304	0.03
Reg. TRA	0.61	270	0.63	304	-0.01
Bookkeeping	0.75	270	0.74	304	0.01
Has internet	0.14	270	0.20	304	-0.07**
Has employees	0.51	270	0.52	304	-0.02
Sales 2023 US\$	1,283.73	153	1,597.13	194	-313.40
Urban area	0.48	251	0.90	300	-0.41***
Loan TSh2 million	0.49	253	0.39	304	0.10**
<i>N</i>	574				

Source: Authors' own from survey data.

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

References

- Ackah, C. and Opoku, K. (2021) '[Debating the electronic transaction levy: our reasoned opinion](#)', *The BFT Online*, 3 December (accessed 3 March 2024)
- Abounabhan, M.; Diouf, A.; Santoro, F.; Sakyi-Nyarko, C. and Scarpini, C. (2024) '[Mobile Money Taxes. Knowledge, Perceptions and Politics. The Case of Ghana](#)', ICTD Working Paper 183, Brighton: Institute of Development Studies, DOI: [10.19088/ICTD.2024.008](#) (accessed 28 March 2024)
- Aidoo, R. (2022) '[Will Ghana's new e-levy help the economy recover from the pandemic?](#)', *The Washington Post*, 10 August (accessed 3 March 2024)
- Agarwal, A. and Assenova, V.A. (2023) '[Mobile Money as a Stepping Stone to Financial Inclusion: How Digital Multisided Platforms Fill Institutional Voids](#)', *Organization Science*, 6 December
- Aron, J. (2018) 'Mobile Money and the Economy: A Review of the Evidence', *The World Bank Research Observer* 33(2): 135-188
- Aslan, A.; Delepierre, S.; Gupta, R. and Rawlings, H. (2022) '[Revenue Mobilization in Sub-Saharan Africa during the Pandemic](#)', International Monetary Fund African Department (accessed 3 March 2024)
- ATAF (2020) '[Taxing the digital economy: COVID-19 heightens need to expand resource mobilisation base](#)', 4th High-Level Tax Policy Dialogue, African Tax Administration Forum, 25 August (accessed 3 March 2024]
- Bermeo, E. (2023) '[Re-evaluating the taxation of mobile money](#)', Global dev blog, 3 May (accessed 23 June 2024)
- Bernad, L.; Nsengiyumva, Y.; Byinshi, B.; Hakizimana, N. and Santoro, F. (2023) '[Digital Merchant Payments as a Medium of Tax Compliance](#)', ICTD Working Paper 159, Brighton: Institute of Development Studies, DOI: [10.19088/ICTD.2023.011](#)
- Clifford, K. (2020) '[The causes and consequences of mobile money taxation: An examination of mobile money transaction taxes in sub-Saharan Africa](#)', GSMA, (accessed 3 March 2024)
- Cobb, J.; Wry, T. and Zhao, E.-Y. (2016) '[Funding Financial Inclusion: Institutional Logics and the Contextual Contingency of Funding for Microfinance Organizations](#)', *Academy of Management Journal* 59(6): 2103–2131

- Diouf, A. and Niesten, H. (2023) [ICTD's new web portal on taxation of digital financial services in Africa](#), ICTD Blog (accessed 3 March 2024)
- Diouf, A.; Carreras, M. and Santoro, S. (2023) [Taxing Mobile Money in Kenya: Impact on Financial Inclusion](#), ICTD Working Paper 168, Brighton: Institute of Development Studies, DOI: [10.19088/ICTD.2023.030](#) (accessed 24 March 2024)
- Esselaar, S. (2023) '[Impact of Ghana's mobile levy](#)', Research ICT Solutions (accessed 3 March 2024)
- Financial Inclusion National Council (2017) [National Financial Inclusion Framework 2018-2022: A Public - Private Stakeholder Initiative](#), NFIF, (accessed 3 March 2024)
- Fuchs, M.; Musuku, T.B. and Symington, D. (2017) *Mobile Money Taxation: Policy Issues and Considerations for Pakistan and Tanzania*, Washington DC: World Bank Group and Oxford Policy Management
- Ghana Revenue Authority (2023) [Electronic Transfer Levy \(Amendment\) Act, 2022 \(Act 1089\)](#), (accessed 3 March 2024)
- Gonzalez-Vega, C. (2003) [Deepening Rural Financial Markets: Macroeconomic, Policy and Political Dimensions](#), The Ohio State University, (accessed 3 March 2024)
- Government of Tanzania (2023) [National Payment Systems \(Electronic Mobile Money Transfer and Withdrawal Transaction Levy\), No. 26](#), Office of the Attorney General (accessed 3 March 2024)
- Government of Tanzania (2022a) [National Payment Systems \(Electronic Mobile Money Transfer and Withdrawal Transaction Levy\), No. 25](#) (accessed 3 March 2024)
- Government of Tanzania (2022b) [National Payment Systems \(Electronic Mobile Money Transfer and Withdrawal Transaction Levy\), No. 39](#) (accessed 3 March 2024)
- Government of Tanzania (2021a) [The Finance Act, 2021, No. 3](#) (accessed 20 June 2024)
- Government of Tanzania (2021b) [The National Payment Systems Act \(Electronic Mobile Money Transfer and Withdrawal Transaction Levy\), No. 27](#), NCBA Group (accessed 3 March 2024)
- GSMA (2021) [Tanzania Mobile Money Levy Impact Analysis: Period from 1st July until 31st December 2021](#), GSMA (accessed 3 March 2024)

Hearson *et al.* (2024) [Taxing Mobile Money in Africa: Risk and Reward](#), ICTD Policy Brief 10, Brighton: Institute of Development Studies, DOI: [10.19088/ICTD.2024.071](#)

IMF (n.d.) [Policy Tracker: Rwanda](#), International Monetary Fund (accessed 3 March 2024)

Kipkemboi, K. and Bahia, K. (2019) [The impact of mobile money on monetary and financial stability in Sub-Saharan Africa](#), GSMA (accessed 3 March 2024)

Kipkemboi, K.; Muthiora, B. and Farooq, S. (2021) [The Impact of COVID-19 Regulatory Measures on Mobile Money Services](#), GSMA accessed 3 March 2024

Kombaha, B. (2023) 'Mobile levy controversy: What lessons have we learnt as a nation?', *The Citizen*, 23 February (accessed 3 March 2024)

Lahey, K. (2018) [Gender, Taxation and Equality in Developing Countries: Issues and Policy Recommendations](#), UN Discussion Paper, New York: UN Women (accessed 3 March 2024)

Lamtey, G. (2023) '[Government proposes removal of mobile money transaction levy](#)', *The Citizen*, 16 June (accessed 3 March 2024)

Lees, A. and Akol, D. (2021) [There and Back Again: The Making of Uganda's Mobile Money Tax](#), ICTD Working Paper 123, Brighton: Institute of Development Studies (accessed 3 March 2024)

Lopez, M. (2020) [Mobile Money: Driving formalisation and building the resilience of MSEs](#), GSMA (accessed 3 March 2024)

Lopez, M. (2019) [Harnessing the Power of Mobile Money to Achieve the Sustainable Development Goals](#), GSMA (accessed 3 March 2024)

Mader, P.; Duvendack, M.; Lees, A.; Larquemin, A. and Macdonald, K. (2022) [Enablers, Barriers and Impacts of Digital Financial Services: Insights from an Evidence Gap Map and Implications for Taxation](#), ICTD Working Paper 142, Brighton: Institute of Development Studies, DOI: [10.19088/ICTD.2022.008](#)

Magale, E. and Schmidt M. (2024) [Tax Awareness and Fiscal Workarounds in Contemporary Kenya: Reactions Towards New Taxation Laws, and the Need to Renew the Social Contract](#), ICTD Working Paper 211, Brighton: Institute of Development Studies, DOI: [10.19088/ICTD.2024.104](#)

Makoye, K. (2021) '[Tanzania reviews controversial 'patriotic' tax](#)', *Anadolu Agency* (accessed 3 March 2024)

- Mastercard Foundation (n.d.) [Expanding Access to Financial Services in Africa](#) (accessed 3 March 2024)
- Matheson, T. and Petit, P. (2021) 'Taxing Telecommunications in Developing Countries', *International Tax and Public Finance* 28(1): 248-280
- Mensah, K. and Bhalla, N. (2022) '[Africa's mobile money taxes risk driving poor out of digital economy](#)', *Thomson Reuters Foundation News*, 25 May (accessed 3 March 2024)
- Ministry of Finance and Planning (2021a) [Speech of Government Budget for the Year 2021-2022](#), Ministry of Finance and Planning (accessed 20 September 2024)
- Ministry of Finance and Planning (2021b) [Hotuba ya Waziri wa Fedha na Mipango, Mheshimiwa Dkt. Mwigulu Lameck Nchemba, Makadirio ya Mapato na Matumizi kwa Mwaka 2021/22](#), Ministry of Finance and Planning (accessed 3 March 2024)
- Ministry of Trade and Industry (2012) [National Baseline Survey Report: Micro Small and Medium Enterprises in Tanzania](#), FSD Tanzania (accessed 3 March 2024)
- Mirondo, R. and Lamtey, G. (2021) '[Mobile money levies prompt uproar](#)', *The Citizen*, 16 July (accessed 3 March 2024)
- Mmari, G.A. (2019) '[Success of Savings and Credit Co-Operative Societies in Tanzania: The Case of Dodoma City](#)', *International Journal of Economics, Commerce and Management*, 7(4):802-813
- Mpofu, F.Y. (2022) 'Industry 4.0 in Financial Services: Mobile Money Taxes, Revenue Mobilisation, Financial Inclusion, and the Realisation of Sustainable Development Goals (SDGs) in Africa', *Sustainability* 14(14): 8667 (accessed 23 June 2024)
- Mshomba, R. (2021) '[Tax on mobile money transactions: The end does not justify the means](#)', *The Citizen*, 20 July (accessed 3 March 2024)
- Muiruri, K. (2024) '[M-Pesa users spared higher taxes on Treasury U-Turn](#)', *Nation Africa*, 14 June (accessed 20 June 2024)
- Nakaweesi, D. (2023) '[Informal sector dominate mobile money payments](#)', *Monitor*, 5 December (accessed 23 June 2024)
- National Bank of Rwanda (2018) [National Payment System Strategy: Towards a cashless Rwanda | 2018-2024](#) (accessed 3 March 2024),

- Ndung'u, N.S. (2019) [Taxing mobile phone transactions: Lessons from Kenya](#), Africa Growth Initiative Policy Brief, Washington, DC: Brookings Institute (accessed 3 March 2024)
- Nyonzo, F. (2022) 'Tanzania's solidarity tax', *Review of African Political Economy* 49(174): 643-651
- Oanda (n.d.) [Currency Converter](#) (accessed 3 March 2024)
- Oni, O. and Gasparri, A. (2022) [Ghana Announces Electronic Levy: Possible Scenarios on the Progress of Digital Financial Inclusion](#), UNCDF Blog, 17 January (accessed 3 March 2024)
- Penteriani, G. and Fichers, N. (2023) [Tanzania Mobile Money Levy Impact Assessment](#), GSMA (accessed 3 March 2024)
- Raithatha, R.; Awanis, A.; Lowe, C.; Holliday, D. and Storchi, G. (2023) [The State if the Industry Report on Mobile Money 2023](#), GSMA (accessed 3 March 2024) ,
- Ranjan, H. (2021) *Impact of mobile money taxation on social sector financing in Sub-Saharan Africa*, Munich Personal RePEc Archive, MPRA Paper No. 118333
- Rogers, M. and Pedros, X. (2017) [Taxing mobile connectivity in Sub-Saharan Africa: A review of mobile sector taxation and its impact on digital inclusion](#), GSMA (accessed 3 March 2024)
- Rota-Graziosi, G. and Sawadogo F. (2020) [The tax burden on mobile network operators in Africa](#), FERDI Working paper P278 (accessed 3 March 2024)
- Roth, J.; Sant'Anna, P.H.C.; Bilinski, A. and Poe, J. (2023) 'What's trending in difference-in-differences? A synthesis of the recent econometrics literature', *Journals of Econometrics*, 235(2): 2218–2244
- Sauti za Wananchi (2022) [State of the nation 2022: Tanzanian citizens' experiences and opinions on the economy and on mobile money transaction taxes](#), Brief No. 54 (accessed 3 March 2024)
- SCCULT (n.d) [Strong SCCULT for SACCOS Welfare](#) (accessed 3 March 2024)
- TCDC (2023) [The Savings and Credit Cooperative Societies \(SACCOS\) Annual Report for 2022, The Annual Report on Operations, Performance and Supervision of SACCOS in Tanzania](#), Second Edition, 2023, Tanzania Cooperative Development Commission (accessed 3 March 2024)
- TCRA (2024) [Communications Statistics: Quarter ending December 2023](#), Tanzania Communications Regulatory Authority (accessed 3 March 2024)

- TCRA (2022) [Communications Statistics: Quarter ending December 2022](#), Tanzania Communications Regulatory Authority (accessed 20 June 2024)
- TCRA (2020) [Quarterly Communications Statistics: October - December 2020](#), Tanzania Communications Regulatory Authority (accessed 20 June 2024)
- TCRA (2018) [Quarterly Communications Statistics: October to December 2018](#), Tanzania Communications Regulatory Authority (accessed 20 June 2024)
- The Citizen* (2021) '[Editorial: Where did we go wrong regarding patriotic levy?](#)', 24 July (accessed 20 June 2024)
- UNCDF (2021) [The Impact of Mobile Money Taxation in Uganda](#) (accessed 3 March 2024)
- UNCDF (2018) [Mobile Money Taxes in Uganda](#) (accessed 3 March 2024)
- Van Alstyne, M.W.; Parker, G.G. and Choudary, S.P. (2016) 'How platforms are reshaping business pipelines, platforms, and the new rules of strategy', *Harvard Business Review* 94(4): 54–62
- Wales, C. and Niesten, H. (2022) [Uncertainty still dogs Ghana's Electronic Transfer Levy](#), ICTD Blogs, 29 April (accessed 3 March 2024)
- Websacco (2019) [Difference between SACCOs and Microfinance](#), Websacco Blog, 29 October (accessed 3 March 2024)
- Whitehead, A. (2019) [Uganda Social Media and Mobile Money Taxes Survey Report](#), Whitehead Communications Blog, 23 January (accessed 3 March 2024)
- Yegidis, B.L. and Weinbach, R.W. (2008) *Research Methods for Social Workers*, (6th ed.), Boston, MA: Pearson/Allyn and Bacon



www.ictd.ac