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RESEARCH ARTICLE

AN ASSESSMENT OF THE IMPACT OF MOBILE FINANCIAL SERVICES ON FINANCIAL INCLUSION AND ECONOMIC DEVELOPMENT IN ZAMBIA

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ABSTRACT

With the flagship success of m-Pesa in East Africa financial services via mobile devices has become an important tool to facilitate the financial inclusion of the previously unbanked population in Zambia particularly. Attempts to provide a landscape of academic research findings at the intersection of mobile financial services, financial inclusion, and development have been rather scant. To determine the key issues and gaps in the current academic research, this study conducts a systematic review of 21 academic research papers and 4 government and non-government documents *vis-à-vis* the nexus of mobile financial services, financial inclusion, and development. The results show that the extant literature addresses three major clusters of topics: delivery, environmental factors, and the impact of mobile financial services. Still in the nascent stage of research, the topics covered in the literature indicate a bias towards institutional and individual preconditions for the implementation of mobile financial services, rather than actual supply and demand by users, and its impact on society. The choice of research method also shows limited variety and depth. This study contributes towards understanding the existing research on mobile financial services for financial inclusion in Zambia and findings will help succor the research gaps for future study.

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INTRODUCTION

Financial inclusion, or the provision of financial services at affordable costs to the disadvantaged and low-income segments of society, is currently considered to be one of the major enablers of economic development (Demirgüç-Kunt &Clapper, 2012; World Bank, 2017). However, approximately two billion adults internationally have no access to the financial services delivered by formal financial institutions (World Bank, 2014, 2017). At the World Bank Group-IMF meetings in 2015, global multi-stakeholders across the public and private sectors pledged their commitment to the promotion of financial inclusion and announced a new global development goal of achieving Universal Financial Access by 2020 (UFA, 2020). Notably, mobile devices have become an important tool to promote financial inclusion for the previously unbanked population in developing countries (Kanobe, Alexander, & Bwalya, 2017). Owing to their unique features such as mobility, always-on availability, and personalised small devices, mobile phones have rapidly diffused not only in developed countries but also in most developing countries to overcome geographical and socio-economic barriers.

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However, while the number of mobile-based financial services (MFS) is increasing, many of them are far from reaching a stage of sustainable value and profit, as they fail to offset the cost of setting up infrastructure and maintenance (Evans & Pirchio, 2014). According to the FinScope Zambia 2015 survey, almost 40 percent of adult population is formally financially included or over 3.5 million people. The report indicates that the levels of formal financial inclusion have gradually increased in Zambia—from 23 percent of Zambian adults in 2009, to 38 percent in 2015.In the context of proliferating MFS initiatives and their frequent failures, mobile-based financial inclusion has become a topic of scholarly interest over the last decade. Despite a growing body of literature on MFS initiatives, there have been scant attempts to provide a systematic overview of research findings focusing on the interplay of mobile financial services, financial inclusion, and development. Given the complex nature of MFS as a convergence of mobile and financial services, MFS as a topic of research warrants investigation on a broad range of issues surrounding the seamless connection and coordination of these different sectors. Banks have been at the pinnacle of MFS. For instance, in 2017 alone, 3 of the major banks launched mobile banking applications which allow their clients to have 24 hour access to cashless money transfer services. In total 12 out of four 19 commercial banks have fully functional

mobile banking applications, which is quite commendable. Having a mobile banking application is one thing, having one that works efficiently and effectively is another story. Discussions, blogs and social media comments by clients of certain banks leave much to be desired. Commentators argue that applications only work during "office hours" which almost defeats their purpose of existence. Furthermore, research is necessary to illuminate the unique context of developing countries, where MFS is emphasised as a means to financial inclusion. In this regard, by conducting a systematic review of extant academic literature, this study aims to provide a rigorous mapping of the existing knowledge and empirical evidence from academic research, focusing on the nexus of MFS, financial inclusion, and development. This study's objectives are not only to fill the research gap but also contribute to the evidence-based policy-making and practices on inclusive MFS by contouring the broad landscape of current knowledge, as well as suggests the key factors which affect the successful integration of MFS, financial inclusion, and development. With these objectives in mind, this study asks the following: (1) what are the key factors affecting MFS as a means to provide inclusive financial services in Zambia, and (2) what are the current research gaps in the literature addressing MFS and financial inclusion in Zambia?The rest of the paper is organised as follows. In Section 2 (literature review) an exploration of the interconnection between MFS, financial inclusion, and development is made. Section 3 (methodology) explains the research methods and approaches used in the paper, followed by the detailed results of the analysis in Section 4 (findings). Key factors and research gaps are tackled in Section 5 (discussion) and (conclusion) is made with suggestions for future research in Section 6.

Literature Review

Mobile devices and development: There is a plethora of research that examines the positive impact of information and communication technology (ICT) on development (World Bank, 2012; Kpodar & Andrianaivo, 2011; Cecchini & Scott, 2003). In recent years, with the explosive diffusion of mobile services globally, mobile devices are increasingly considered to be an effective enabler of development (Kpodar & Andrianaivo, 2011). On top of the economic benefits of mobile proliferation in developing countries (Waverman, Meschi, & Fuss, 2005), existing literature suggests two main characteristics ofmobile devices linked with development.

First, "mobility" grants users of a mobile device the ability to access services regardless of their physical location, while reducing the cost of communication and transportation (Sarker & Wells, 2003). It connects individuals to other individuals and provides personalised channels of communication, knowledge, and innovative services at the convenience of the users, reaching beyond geographical barriers. Second, the inherent "flexibility" allows mobile devices to operate various types of applications (Beddall-Hill, Jabbar, & Al Shehri, 2011) applicable to various industry sectors such as agriculture, manufacturing, and logistics (Qiang, Kuek, Dymond, Esselaar, & Unit, 2011), as well as labour market efficiency (Aker, 2010). Considering these two characteristics, it has been suggested that mobile devices bring about positive effects on development by increasing information access points and expanding the scope of service applications and fields.

Financial inclusion and development: The term "financial inclusion" has gained importance since the early 2000s as research findings suggest that financial exclusion increases the risk of poverty (Shiimi, 2010). In this paper, financial inclusion is defined as a delivery of useful and affordable financial services at affordable costs to disadvantaged and low-income people in a sustainable way (Muzigiti and Schmidt, 2013; World Bank, 2017).Financial inclusion could affect economic development positively at the household, firm, and national levels. Increased financial access through effective financial inclusion programmes can facilitate a greater level of investment by households to improve their assets, which is associated with productivity and can increase household income in the future (DFID, 2004). In addition, improved financial inclusion, or more specifically, increased access to credit, may affect economic growth by facilitating the entry of new firms (Klapper, Laeven, & Rajan, 2004) who would otherwise be constrained by their lack of inherited wealth, and limited networking with well-off incumbents. At the national level, an inclusive financial system makes available more resources for investment, especially for the promotion of small and medium enterprises (SMEs). It can also create employment opportunities, ensure economic and financial stability by reducing vulnerability, and contribute towards poverty reduction (Morduch & Haley, 2002). Nevertheless, such benefits of financial access are only limited to the developed world, as most developing countries experience a deficiency of access to financial services. According to the World Bank (2012), the provision of financial accounts differs enormously between high-income and developing economies. The poor who live in the rural areas of developing countries tend to have lesser access to financial services due to the lack of infrastructure and poor economic conditions (Santa Maria, 2016).

Mobile phones and financial inclusion: Mobile financial services (MFS) usually indicate the use of a mobile phone to access financial services. In recent years, MFS have been recognised as an innovative and effective means to achieve financial inclusion by providing new financial services to excluded people (Sihvonen, 2006). Previous literature identifies the typology of MFS and the different ecosystems within which they operate. Indeed, MFS encompass various financial services such as mobile banking, mobile payment, mobile money transfer, and mobile international remittance services. Mobile banking is a service that provides customers with a channel to interact with a bank via a mobile device (Barnes & Corbitt, 2003). Mobile payment, on the other hand, involves the use of a mobile device to make payments for goods or services either at the point of sale or remotely (KPMG, 2011), and it is increasingly being used in Zambia. Mobile money transfer, as in the case of Airtel Money owned by Airtel, MTN Money owned by MTN, ZamKwacha owned by ZAMTEL and Tenga Mobile Walletowned by Atlas Mara have become popular in Zambia where users have reduced access to bank accounts but have a high demand for sending and receiving money amongst themselves. Growing use of mobile phones has opened up mobile money services, because mobile money services operate through cell phone services and the Internet. Using mobile money one can withdraw and deposit cash, pay money to others, pay utility bills such as electricity bills, say (ZESCO) and keep money stored for later use. Zambia has begun to reach financially excluded families as cell networks expand, providing mobile money services.

For mobile phone users especially in remote parts of Zambia, mobile money is the easiest way to use financial services. In Zambia, a significant number of poor and low-income customers can now transfer funds, pay bills, and store value using mobile phones. A wide range of retail agents transform customers' cash into electronically stored value and back into cash as and when needed. While mobile money is expanding possibilities for the financially excluded and underserved to access financial services, it also raises important regulatory issues for policymakers. Regulators want to ensure these services are delivered responsibly. With growth in technology comes new responsibility. Mobile money services must be secure, safe, affordable, and easy to use. Regulators are there to help this happen.Zambia has over 77% mobile phone users and a rapidly expanding system of cell phone towers; opportunities are ripe to increase financial inclusion in Zambia using mobile money. Regulations are in place for mobile money and its customers, and both regulators and policymakers are actively working to deepen the market and create new opportunities to shift from cash to Digital Financial Services (DFS), especially mobile money. Zambia's National Financial Inclusion Strategy (NFIS) 2017-2022 demonstrates government's active commitment to the growth of mobile money services, stressing accessibility of delivery channels, as well as diversity, innovation and customer-centricity of products.

Regulator coordination will help improve appropriate guidance that covers all aspects of risk and protects you as consumers. Mobile money-related regulatory authorities – the Bank of Zambia (BoZ), Zambia Information and Communications Technology Authority (ZICTA), Competition and Consumer Protection Commission (CCPC) and Financial Intelligence Centre (FIC) are concerned about the welfare of customers and mobile money operators. These regulators work together by agreement to make the market safe and secure. Zambia has already enacted several regulations which cover DFS, particularly mobile money.A cluster of regulations and acts being enforced by these institutions cover such issues as:

- Know Your Customer (KYC) requirements
- transaction limits
- transparency and fair treatment of customers
- quality of service offered by mobile money operators and mobile network operators
- guidance on unclaimed e-money

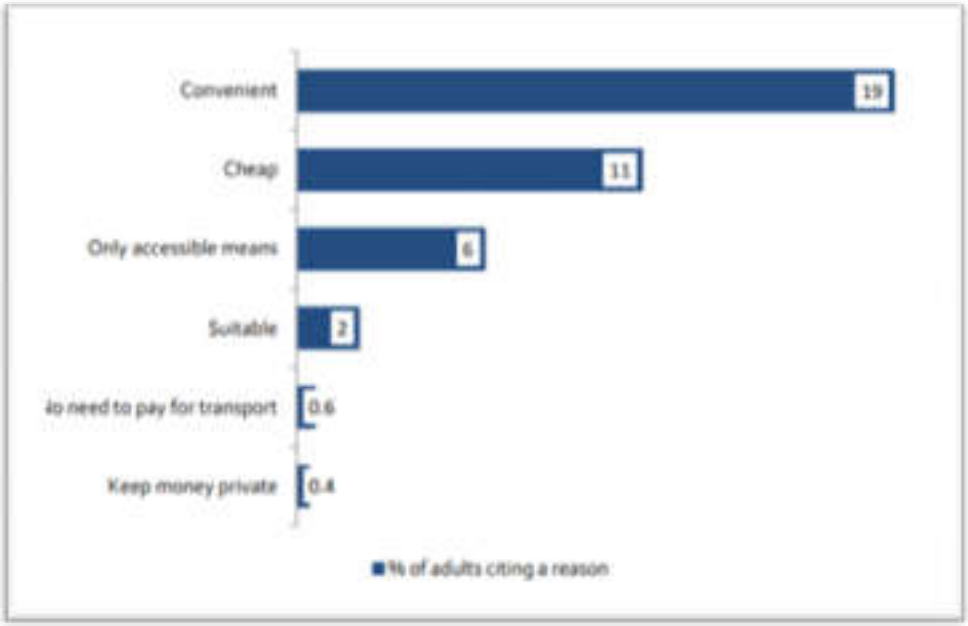
These regulations are regularly updated whenever they can no longer accommodate the rapidly changing market demands. For example, transaction limits for mobile money have been adjusted periodically, with the latest made in October 2016 (adjusted from K5, 000 to K15, 000) to pin them to corresponding KYC requirements. The Financial Intelligence Centre (FIC) Act, 2010 has also facilitated introduction of tiered KYC and alternatives to government identity cards that have enhanced transactions among the rural population and other low-income groups. The 3use of letters from civic leaders as a means for identification has opened access to financial services by the rural population who are more vulnerable in this regard. Although more work still needs to be done to update regulations due to the rapid evolution of mobile money services and DFS, Zambia has gone a long way in providing an enabling environment for the growth of mobile money.

FSDZ continues to work with public and private partners to promote the growth and usage of DFS in Zambia. In sum, previous literature reports the integration of mobile technology and financial services in developing countries generally and in Zambia in particular, and addresses their structure and workings in practice. However, while the three keywords of MFS, financial inclusion, and development have been frequently studied in combination, there has been a limited attempt to explore the intersection of all three topics. Given the complexity arising from the integration of mobile technology and financial services which may be the result of relatively weaker institutional and technological capacities in developing countries, it is important to identify the key issues from a broader landscape encompassing the three topics. This will allow us to understand the current status of our knowledge, research overlaps, and gaps, and evaluate the emerging research agenda surrounding the three keywords. While Donner and Tellez (2008) and Duncombe and Boateng (2009) offer an integrated view of all three topics, their findings cover only the initial development of MFS and are not updated. Shaikh and Karjaluoto (2015), on the other hand, focus on mobile banking and offer a limited scope for our purpose of canvassing a variety of MFS, including, for example, mobile payment. To fill this gap, we review the existing research at the intersection of MFS, financial inclusion, and development; identify the missing analytical links connecting the three concepts; and draw out implications for future studies.

Drivers of Mobile Money Usage: Studies report that mobile money adoption is driven by perceived usefulness, perceived ease of use, and cost (Tobbin, 2012; Upadhyay and Jahanyan, 2016; Nyirenda and Chikumba, 2013), among other factors. To identify the most important drivers of mobile money account ownership, reasons cited based on the surveyed areas where the reasons are cited with those cited in most ares ranked first are cited. As shown in Figure 1, convenience and cost are ranked first with mobile money users in locations citing this as a reason for owning a mobile money account. Mobile money is the only accessible way of obtaining financial services in six locaions. Suitability of mobile money to the needs of individuals' needs is also part of the drivers with adults in five countries citing this as a reason. The least important factors are avoiding paying for transport and keeping money private as these are cited as reasons for using mobile money only in two countries. In general, people use mobile money for its convenience, cost and suitability, and in fact, for some it is the only way available to conduct financial transactions.

METHODOLOGY

Systematic review: This study adopts a systematic review, a type of literature review method aimed at providing a complete and exhaustive summary of current literature regarding the research question, by collecting relevant articles from databases. Given the purpose of this study, to identify the key issues and research gaps encompassing the three keywords of MFS, financial inclusion, and Zambia, a systematic review offers the advantage of making a thorough examination of extant research. By summarising and synthesising the knowledge from prior studies systemically (Okoli, 2015), a systematic review helps us map out a landscape of factors affecting mobile financial inclusion in developing countries, and identify gaps from a broader perspective.



Source: Fin Scorp Surveys

Figure 1. Reasons for Using Mobile Money

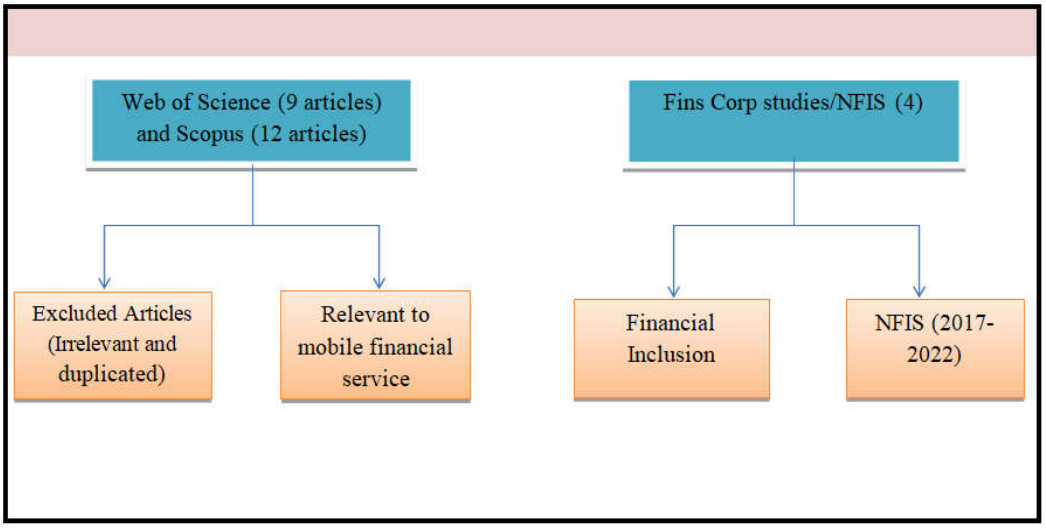
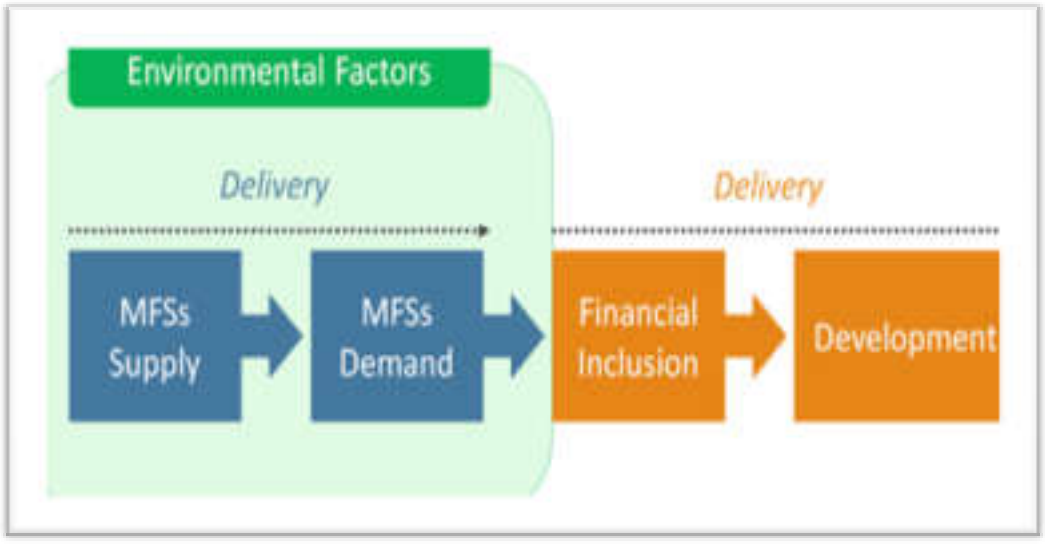


Figure 2. Procedure for Systematic Review



Source: Zoo, H and Kim, M (2018)

Figure 3. Conceptual Model of Mobile Financial Services

Figure 3. Information Communication Technology for Development

Furthermore, in the field of international development, the systematic literature review has been suggested as "the most reliable and comprehensive statement about what works" when it comes to international development policy and practice, facilitating evidence-based policies for development (Mallett, Hagen-Zanker, Slater, & Duvendack, 2012).We combine the three-stage procedure of Tranfield, Denyer, and Smart (2003) and the guide by Siddaway (2014) to conduct the review in the following sequence: (1) preparation: scoping, planning; (2) execution: searching, screening, eligibility, and synthesis; and (3) reporting: results.

In the preparation stage, three key concepts were identified, namely "mobile financial services", "financial inclusion", and "development", and created search terms for the three concepts to extract relevant papers. For "mobile financial services," alternative search terms include the various financial services enabled by a mobile device, such as "mobile money", "mobile payment", "mobile transaction", "mobile wallet", and "mobile banking". In order to include the alternative terms of "mobile financial services", we used the search term "mobile," which covers all types of MFS. For "development", both "development in Zambia" and "development" were included. Therefore, search term "develop" in order to include "development" and "development in Zambia".

Lastly, the term "financial inclusion" is interchangeably used with terms such as "access to finance", "financial access," and "increased financial services", which led to the use of the above four terms including "financial inclusion". Next, the following exclusion criteria was identified: articles not written in English, articles not published in a peer-reviewed journal, articles in which the terms "financial inclusion" or "mobile money" are not treated as a major theme or just treated as a marginal topic, and articles not geographically covering "developing countries" or mid- or low-income countries in Asia, Africa, Middle East, or Latin America. In the execution stage, the article search was conducted using two major electronic databases: Web of Science and Scopus. The article search used the following four combinations of search keywords: The search of Web of Science and Scopus resulted in 9 articles and 12 articles, respectively. Next, the duplicated articles and those that fell under the exclusion criteria were eliminated. Then, abstract reviews were conducted so as to extract the articles focusing on all the themes of "financial inclusion", "mobile financial services", and "development". As a result, the remaining few but relevant articles and publications were selected for the full-text review (Figure 2).

FINDINGS AND RESULTS

In this section, this paper classifies the literature by the research themes discussed in the selected articles and then examines key issues related to each of the themes (Figure 3) below:

Process of delivering mobile financial services to the impact clusters: Articles were categorized according to the conceptual model which describes the process of MFS delivery, and in turn contributes to development. In the studied literature, this process is usually examined in three clusters: delivery, environmental factors, and impact. The first cluster is MFS delivery, consisting of the dual aspects of supply and demand. The second cluster refers to those environmental factors which significantly influence both supply and demand sides when delivering MFS. The last cluster addresses the impact of MFS on development. Such a classification helps us to identify recurring themes and the salient points of the arguments that emerge from actual MFS operations. In the "delivery" cluster, three themes, comprising agent networks, inter-operability, and intentions, emerged as important issues on the supply side, whereas two issues, namely perceptions and usage patterns, were considered as significant factors on the demand side. Furthermore, in the "environmental" cluster, the issues of regulation, socio-cultural factors, and demographics were raised. Regarding the cluster of "impact", an exploration of the impact of financial inclusion and development. This exercise contributes to the understanding of the academic landscape of key issues surrounding MFS, financial inclusion, and development, as well as highlighting the key factors to be considered in each of the implementation stages of MFS in practice.

Issues on delivery: Service providers (eg, mobile carriers or banks) face various issues surrounding the delivery process of MFS to users. On the supply side, the articles focused heavily on *agent* networks, inter-operability, and intentions. On the demand side, the selected articles delved into two other major topics, namely perceptions and usage patterns.

Supply: Agent networks: Agent networks generally contribute towards sustaining the ecosystem of MFS and are a distinctive feature of MFS. The agents are the actors operating in the field, who perform the crucial function of administrating cash deposits and withdrawals into an electronic money transfer system for customers. Therefore, the agent network is regarded as a type of "infrastructure" for MFS. Agent networks can supplement accessibility to financial services and ease the problem of limited access observed in most developing countries (Sanz & De Lima, 2013). In order to overcome geographical barriers, some MFS suppliers have built broad agent networks composed of different types of agents, such as small shops, bank branches, and bill-payment counters. For that reason, it is important for suppliers to hire trustworthy agents and maintain a good relationship with them (Maurer et al., 2013; Sanz & De Lima, 2013).Yet, the literature also points out the difficulties in operating agent networks. First of all, suppliers and regulators have some difficulty in dealing with liquidity management, (floats), (Cousins & Varshney, 2014; Maurer et al., 2013). Agents are sometimes incapable of managing the necessary asset liquidity that enables them to provide a cash-in and cash-out service to customers (Donovan, 2012; Duncombe & Boateng, 2009), which may result in current customers distrusting the services.

Furthermore, human resources management can be problematic in operating these agent networks. Some studies indicate that firms and banks in developing countries find it difficult to recruit qualified employees and agents (Asongu, Anyanwu, & Tchamyou, 2017; Maurer et al., 2013; Potnis, 2014). Because most of them lack the necessary capital to have enough float, they end up only dispensing limited amount

Supply: Inter-operability: Research on MFS highlighted that it is important for firms and banks to ensure inter-operability beyond the complex business circumstances of the mobile financial industry (Maurer, 2012; Sanz & De Lima, 2013). Inter-operability of the service enables cross-platform transactions between customers, even though they have accounts with different service providers, and technical platforms such as mobile network operators, banks, networks, and agents (Cousins & Varshney, 2014). For instance, Cousins and Varshney (2014) has pointed out the importance of standardisation within the MFS as a prerequisite to inter-operability (Cousins & Varshney, 2014). However, inter-operability has not yet been properly established within the mobile financial industry in Zambia. Why wouldn't an MTN Mobile money client withdraw from Airtel Mobile Money agent? If inter-operability is not well-established in the industry, there is a risk of a dominant financial player entrenching a "monopolistic market" (Anderson, 2009; Kadušić, Bojović, & Žgalj, 2011; Maurer, 2012). A monopolistic industry could hamper circumstances in which firms can compete freely.

Supply: Intentions

The findings suggest that suppliers' intention to provide MFS is an important aspect of service delivery. Minto-Coy and McNaughton (2016) and Parvin (2013) argued that, in the context of developing countries, banks and mobile network operators generally have a positive view of offering MFS. Most banks in developing Zambia are trying to adopt mobile banking to satisfy their customers and attract potential ones. Moreover, one article shows that the strong initiative and entrepreneurship of banks and mobile network operators as service providers are closely related to the reasons why some countries have been able to successfully introduce the services (Minto-Coy & McNaughton, 2016) while others have not.

Demand: Perceptions

The majority of articles under the demand category heavily emphasise the importance of customers' perception of mobile finance services. First, awareness means whether a customer is aware of MFS (Hinson, 2011), which can be a major determinant of adoption by micro-finance customers (Ammar & Ahmed, 2016). It can also be a stepping stone to facilitate financial inclusion in developing countries (Ammar & Ahmed, 2016; Peruta, 2018). Second, perceived usefulness relates to whether customers regard MFS as relevant to their everyday activities (Osakwe & Okeke, 2016). According to Mago and Chitokwindo (2014), respondents with a low economic status in Zimbabwe answered that they were willing to adopt mobile banking, based on the perception that it seemed to be easily accessible, convenient, inexpensive, easy to use, and secure.Third, perceived risks are related to the inherent uncertainty of an innovation, which can be identified as a critical barrier to MFS (Bhuvana & Vasantha, 2017; Dzogbenuku, 2013; Kadušić et al., 2011; Mishra & Bisht, 2013; Osakwe & Okeke, 2016). For instance, potential customers would be concerned with the leakage of personal information during the use of MFS (Kadušić et al., 2011), or they may place less trust in the services of mobile network operators and their retailers than in traditional banks, which in turn may decrease their service uptake.

Demand: Usage patterns: In Zambia, transfers mainly from urban areas to rural areas is an important source of income for family members at home (Jones et al., 2014). To withdraw transers, recipients usually need to have an account with a services provider or formal financial institute. However, it can be difficult for low-income people in rural to create new bank accounts, as banks often request a higher deposit amount to open an account. In this situation, MFS in developing Zambia can meet such needs effectively, because they require a much simpler and affordable registration process, as well as offer faster and easier transactions compared with formal financial institutes. Munyegera and Matsumoto (2016) argued that the requirements for the practice of transfers have promoted the use of MFS, which has in turn increased the frequency and total value of remittances received, compared with those transfers received via formal banking institutions by households who do not use MFS.However, the current usage ofMFS is largely limited to simple money transactions.

Issues on environmental factors

Regulation: The selected research articles suggest that regulations surrounding the emerging MFS industry should be carefully applied, as they can be a double-edged sword threatening the successful deployment of MFS. Maurer *et al.* (2013) argued that one of the main reasons behind the failures in MFS adoption is the heavily regulated financial industry. Evans and Pirchio (2014) and Sanz and De Lima (2013) also concluded that there are too many restrictions on MFS, such as agent restrictions and compulsory regulations regarding accurate customer identification, which leads to a rigid business environment. Under those conditions, companies that were initially willing to provide MFS are prohibited from providing MFS by a variety of strict financial regulations, and they may eventually lose the motivation to launch or continue the service. On the other hand, some studies contend that strict regulations must be retained to mitigate potential risks and protect the security and stability of the financial system (Makulilo, 2015; Vlcek, 2011). The authors argued that appropriate regulations should be implemented to prohibit money laundering and the financing of terrorism, which will thereby sustain a sound financial system (Anong & Kunovskaya, 2013; Cousins & Varshney, 2014). The regulatory environment is in general a decisive factor that either facilitates or hinders the adoption of MFS in developing countries (Evans & Pirchio, 2014).

Demographic factors: Firstly, the gender gap in financial inclusion is not as wide as the rural/urban gap. Although women remain modestly more financially excluded than men, there is evidence that the gap is narrowing. Financial inclusion among women increased from 34 percent in 2009 to 57 percent in 2015, while male inclusion rates rose from 41 percent to 61 percent over the same period. Yet these overall figures mask important differences in the type and quality of financial services used by different genders. Most notably, men are significantly more likely than women to use bank services,

electronic payments, and formal sources of borrowing; while women are significantly more likely than men to use informal savings groups. There is also evidence that women have lower product awareness levels and less knowledge of the location of the nearest financial service provider. This demonstrates that significant progress is yet to be made to ensure that women have equal access to and use of regulated financial products and services. Second, limited education is a major obstacle in the diffusion of MFS in developing countries (Alafeef et al., 2012; Ammar & Ahmed, 2016; Dzogbenuku, 2013; Johnson & Arnold, 2012). Not only illiteracy but "financial illiteracy" too is a critical hindrance to financial inclusion. In developing countries, people are usually excluded from the formal financial services even as there is a lack of financial education programmes to educate people (Berger & Nakata, 2013). Conversely, Hinson (2011) suggested a different view and argued that MFS would be a valuable opportunity for the poor, because mobile-based services are easier to use than the formal financial services provided by traditional financial institutions. Third, regarding gender, the findings from the selected literature are far from conclusive. Some literature works claim that gender discrimination leads to inequality in financial behaviour, which discourages or prohibits women from using the more informal MFS as well as formal financial services (Alafeef et al., 2012; Ammar & Ahmed, 2016; Johnson & Arnold, 2012; Potnis, 2014). On the contrary, Johnson and Arnold (2012) suggested that, in contrast with formal banking services, MFS endow females with increased access to finance due to the simpler registration process and less burdensome documentation requirements.

Socio-cultural factors: Socio-cultural factors seem to have positive impacts on both the supply and demand sides of the mobile financial industry. Concerning social contexts, Johnson (2016) and Maurer et al. (2013) found a positive impact by social networks, which can increase the usage of MFS due to the effects of personal networking. Moreover, the effects of word-of-mouth could be multiplied, especially in rural areas where people tend to have stronger relationships within their communities. Social networking relationships can also improve the efficiency of distribution channels, because agents' social relationships with customers facilitate the provision of MFS based on trust (Berger & Nakata, 2013; Maurer et al., 2013). Regarding cultural contexts, the articles assert that certain characteristics of local communities significantly influence the adoption of MFS (Alafeef et al., 2012; Potnis, 2014). On the supply side, organisational values and culture affect the supplier's operational transparency and their ability to face market competition. The level of protection for consumers may also influence the adoption rate (Potnis, 2014). On the demand side, however, the effect of cultural contexts on MFS adoption is still unclear and varies in different regions.

Issues on impact

Impacts on financial inclusion: Some articles show that MFS can increase pathways to financial inclusion for low-income populations in developing countries (Hinson, 2011; Maurer, 2012). These services have helped overcome infrastructural constraints and improve financial inclusion (Allen et al., 2014; Hinson, 2011; Maurer, 2012). Asongu et al. (2017) examined the use of mobile devices in African countries and showed that MFS have positive effects on financial depth and financial activity.

Yet, there is only one article that empirically examines the effect of MFS on financial inclusion, which makes it difficult to firmly assert the effect of the services. Nonetheless, our findings show that there is a paucity of research addressing how, and to what extent, MFS impact financial inclusion, and to what extent these services have improved the level of financial inclusion. In addition, many attempts to adopt MFS to improve financial inclusion in developing countries have failed to achieve the expected outcomes, except for a handful of cases in Pakistan, the Philippines and Kenya (Evans & Pirchio, 2014). Mishra and Bisht (2016) shed light on this matter. Out of the 22 countries that attempted to implement MFS, only eight countries managed to create successful MFS that have actually rooted and grown rapidly; three countries showed a slow and limited growth and, in the remaining eight countries, MFS initiatives largely failed to hold.

Impacts on development: In our selected research, the link between MFS and economic growth is discussed in relation with the increasing coverage of financial services (Kpodar & Andrianaivo 2011). For instance, Ghosh (2016) empirically examined the impact of financial inclusion on economic development by analysing data from the Middle East and North African countries. The study demonstrated that a 1% increase in the portion of the population who use mobile devices improves household income by roughly 0.3% points. On the other hand, a similar 1% increase in financial inclusion has doubled the impact on household income. Based on this analysis, Ghosh (2016) concluded that financial inclusion actually contributes to economic development in developing countries. Kikulwe, Fischer, and Qaim (2014) also empirically showed that smallholder farmers who use MFS in the rural areas of Kenya tend to have higher profits than those who do not use the services.

DISCUSSION

Research landscape: Heeks' (2014) argument of the changing focus of ICT priorities over time explains that, as time goes by, the priority of ICT in development also changes from readiness to impacts. Comparably, drawing from the result of the systematic review, we find a similar pattern of shifting foci at the nexus of MFS, financial inclusion, and development. That is, as the level of MFS initiatives gradually increases, academic attention also moves from the topic of readiness to impact. Figure 3 illustrates the allocation of the key issues identified from selected articles based on Heeks (2014, pp.627-628). In this analysis, most of the articles studied the issues related to readiness, which indicates "systemic prerequisites" such as ICT infrastructure, skills, and policies (Heeks, 2014). Subjects such as intention and regulation can be identified as necessary institutional and market precursors of MFS, while socio-cultural and demographic factors address the demand-side capacities frequently mentioned in the digital and knowledge divide. Allocation of selected articles by Heeks' theory of "changing focus of (Information Communication Technology for Development) ICT4D priorities over time". The number of articles examining issues pertaining to each domain of *availability*, *uptake*, and impacts is not as high as that of readiness. In the domain of availability, which is the process of implementation and supply of MFS, the articles mainly deal with the issues of agent network and inter-operability. However, other significant topics regarding the availability of MFS, such as product and

business design, software applications, or technological issues, have not been addressed in the extant literature. The domain of uptake in this context indicates the processes by which access to MFS is converted into actual usage. Usage pattern and perception are the issues related to the domain of uptake in the existing research. However, as mentioned previously, most of the discussions on usage patterns concern simple money transactions, while there is a lack of analysis on the process of demand-driven service innovation as a means to increase the sustainability and scalability of MFS uptake.

In addition, no current research examines actual customers' comments or behaviours regarding MFS—another group of factors affecting the sustainability of MFS usage over time. In the extant research, key issues pertaining to impacts of MFS tend to propose possible or potential impacts, rather than empirically demonstrating or discussing the actual benefits or development impact of MFS. In sum, reflecting on the result that existing articles mostly concern the stage of readiness, we argue that the research on this topic of MFS, financial inclusion, and development still remains in an early stage. Furthermore, there are many research areas in the domains of availability, uptake, and impacts that are not investigated yet.

Conclusion

Responding to the increasing importance of mobile-based financial inclusion initiatives in practice, this study analyses existing academic literature *vis-à-vis* the three themes of MFS, financial inclusion, and development to understand the current research landscape, and identify possible gaps. Using the systematic review, we classify the articles into three main clusters, ie, delivery, environmental factors, and impact, and then analyse the key issues emerging from the current articles: agent network, interoperability, intention, perception, usage pattern, regulation, socio-cultural factors, demographic, impacts on financial inclusion, and economic development. The analysis shows that current research on the theme of MFS, financial inclusion, and development is still at the nascent stage.

Applying the Heeks (2014) model, it can also be deduced that the key topics addressed in the literature tend to mostly deal with the readiness of MFS. By contrast, topics related to the later stages of the MFS value chain, including the availability, uptake, and impacts are only discussed to a limited extent. Further studies are needed to address under-explored issues such as well-organised business models, actual customer demands, and quantitative and qualitative analyses on the benefits and risks of MFS. These research gaps also suggest implications from the perspective of MFS practice. Further research on ground-level needs and actual usage patterns of potential and current customers may shed light on the development of new business models for MFS providers. This study is limited by the scope of articles that were analysed, which are mainly peer-reviewed academic papers. Finally, it can be concluded that financial inclusion is an important aspect of development. Access to finance enhances the ability of people to engage in economic activities that lead to development. The study has reinforced this hypothesis and we can conclude that by increasing financial access we can increase economic development in Zambia

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