NEW FINANCIAL TECHNOLOGIES AND 4TH INDUSTRIAL REVOLUTION IN THE THIRD WORLD (THE EXAMPLE OF CUSTOMER CARE OF M-PESA, KENYA)

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A well-functioning financial sector in developing countries is extremely important for economic development. This requires local institutions, which originally were often state-controlled, but gradually non-state actors conquered the financial market. Recently the growing importance of alternative forms of finance in many African countries has become remarkable. Although often created by donors, their role changed when financial inclusion, economic liberalisation and decentralization became more important. Microfinance institutions started to compete with banks by also offering a broad range of services (loans, savings, transfers, accounts, insurance). This is a frugal innovation (less regulated financial institutions compete with regulated ones at a lower cost). Meanwhile, mobile payment revolution has been taking place in Africa and other developing regions. This article analyzes these developments and suggests that these new financial technologies contribute substantially to the 4th industrial revolution in the third world countries. Financial resources that become more available replaces development initiatives and allows developing countries finance industrial and agricultural revolutions with local money. We will deal in detail with one example – the role of M-Pesa in helping people to be 'financially included' and trying to learn from their experience with customer satisfaction for other countries.

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Keywords: forms of financing; customer satisfaction; frugal innovation; Kenya.

Introduction. Thin financial markets and no access to agricultural credits

Financial markets in developing countries are often thin and small entrepreneurs and farmers find it difficult to gain access to financial services as such. However, the financial sector plays a pivotal role in economic progress of these countries. Yet, the majority of the world's poor remain unbanked and numerous micro/medium-sized enterprises lack access to affordable financial services. Recognizing this market potential and societal need in its services, different organizations increasingly target these potential clients with new financial products and services and with new service delivery mechanisms.

Local banks are often the key prerequisite for disbursing loans, receiving remittances and foreign direct investments as well as supplying other financial services to local entrepreneurs and farmers. Developing countries need to have repayment mechanisms in place for (soft) loans received as bilateral aid or from multilateral organizations. These requirements became the boost factor for the development of local institutions, which originally were often state-controlled, but gradually non-state actors conquered this market segment. Once these banks got involved in financial transactions and had their machinery in place, they also developed other financial activities, such as channelling foreign direct investment, remittances, issuing international bonds and covering agricultural risks through the futures. Now new forms of finance have come up, which will be discussed after defining inclusive financing, a concept promoted by the United Nations (Ighobor, 2017). Then we will zoom into one important example, the role of M-Pesa helping people to be “financially included” and trying to learn from this experience for other countries.

Well-functioning financial sector needed in developing countries

A well-functioning financial sector in developing countries is extremely important for economic development. Financial sector plays the pivotal role in the economic progress of developing countries. Yet, the majority of the world's poor remain unbanked and numerous micro/medium-sized enterprises lack access to affordable and suitable financial services. The World Bank estimates that 2.4 billion people lived below \$2 per day in 2010 (www.worldbank.org). Lack of financial resources hampers the development of their economic and social potential. See, for instance, Sorrel and Cabrera (2015: 170): “an individual’s propensity to participate in the life of their community can be adversely affected by their lack of financial resources”, or as in (Banerjee and Duflo, 2012: ix): “it means living in a world whose institutions are not built for you”.

Many development projects have been implemented to improve the prospects of people at the bottom of the socioeconomic pyramid: from large state-oriented trickle down approaches – to bottom-up field level financial inclusion stimuli. Collica (2001: 11) reckons that “microfinance programmes are one of the most important interventions to reduce poverty”. Microfinance is about providing financial services to “low-income individuals” and “micro enterprises”, as described by, for instance, CGAP. Major donors and development organisations invest large amounts in this approach, including funding from large international financial institutions, such as the World Bank.

Social significance of microfinance makes it interesting to assess how it covers frugal innovations, described by Herstatt and Tiwari (2012: 245) as “low-cost innovations targeted at economically weaker sections of the society, seeking to align business with social welfare”. However, these authors also described the impact of frugal innovations as “results on the ground have been rather sobering as firms have generally worried that good quality, low price may cannibalize into their regular product”. As described by (Agarwal, 2015: 692), microfinance can be considered a frugal innovation as it adapts financial services to the lower end of the market. Considering this background, we plan to analyze how one of the recognised frugal microfinance innovations actually reaches the lower end of this market.

Recognizing this market potential and societal need, different organizations increasingly target their potential clients with frugal innovations, developing new financial products and services and with new service delivery mechanisms. Therefore, we want to assess to what extent one example of mobile telephone banking, the M-Pesa system in Kenya started by Safaricom (40% owned by Vodafone) can be treated as an example of a frugal innovation?

By the mid of 2015, Safaricom operated 89,000 agents, of which 10% directly reported to the company, while the others are independent businesses with several outlets. Some agents only handle Safaricom’s products, but they usually provide other services as well. Obviously, using other firms to handle customers greatly increases Safaricom’s outreach, but at the same time this format also diminishes control and the possibilities to get direct customer feedback. Regarding this aspect (Ledgerwood, 2006: 40) mentions that “mobile banking solutions are hard to build because they require strong multiparty orchestration, in principle spanning several regulatory domains, and the proposition is severely weakened if any one element of the solution is not properly primed”.

Inclusive financial sector

We are concerned about the development of the inclusive finance sector and about the contribution of the new forms of financing into it. Finance can be treated as inclusive if it advances the economic and social position of the most deprived members of the society. It is not just about loans, but also about other financial services, such as a having bank account, being able to save money, to pay bills and buy insurance etc.

Box 1. Research questions to provide insights on inclusive financing:

- 1) What is the role of inclusive innovations that have been implemented in the financial sectors?
- 2) What is the role of agency in the development and implementation of such inclusive innovations?
- 3) Does the institutional context stimulate, facilitate or hamper the development and implementation of such inclusive innovations?
- 4) To what extent does the “inclusiveness” of inclusive innovations promote the economic and social position of the deprived members of the society?
- 5) What is the form of interaction between the agency (the initiative of actors) and the structure (regulation, number and type of financial intermediaries)? And also, what is the theoretical basis for the analysis of financial sector inclusiveness, with special attention to the position of poor people and women?

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How do new approaches to financing lead to the inclusion of strategic actors in financing at the national, sectoral and micro levels? The central question here is to what extent the growth of the financial sector has been inclusive for the lower end of the market, thus leading to the local economic development? How can the deprived actors such as women entrepreneurs, small farmers, minorities, youth, poor households and small enterprises be reach is still an issue which is little understood. We have asked in our research how financial inclusion actors interact to achieve the inclusive development through financial sector deepening. Interesting topics for further research concerning inclusive finance are listed in Box 1, for example.

Alternatives or new sources of financing

In many countries today we can observe the growing importance of microfinance institutions' functioning. Although these are often created by donors, their role changed when financial inclusion, economic liberalisation and decentralization became more important (as part of the so-called Washington consensus). Microfinance institutions started to compete with banks by also offering a broad range of services (loans, savings, transfers, accounts, insurance). This is considered a frugal innovation which mean less regulated financial institutions compete with regulated ones at a lower cost (Knorringa and Leliveld, eds., 2018).

Meanwhile a mobile payment revolution has been taking place in Africa and other developing regions (World Bank, 2012). It started as a donor funded platform as a replacement for small bank payments. As this technology was not hampered by regulations in Kenya, M-Pesa has now become the major transaction platform in the country. Their approach is expanding to other financial services such as credits and savings and hampers those financial institutions that are unable to use this type of technology. M-Pesa allows people who have no bank account to save and transfer money easily.

The use of simple hand-held technology allowed M-Pesa reach out to distant clients that were previously only handled by local microbanks and cooperatives. The effect from this development might well be the demise of such structures. The currently used financial technology such as mobile payments also competes with the existing financial institutions that are not able to implement these new technologies. The examples of these new forms of finance include agency banking, mobile payments, e-banking, automated credit scoring and micro-insurance (see Table 1).

Table 1. Alternative sources of financing for the poor people
(coauthors' compilation)

Examples of more traditional sources of financing for poor people	Telephone- and Internet-based ones
Microfinancing	Mobile payment systems such as M-Pesa
Agency banking	E-banking
Insurances for poor people	Internet banking
Nigeria ID with biometric data that can be used to pay for goods & services	Phone-based micro-insurances – for crops, life, funerals, healthcare, third-party risks etc.

Conclusions: Options of frugal innovations

The authors recommend the following approaches to turn the decision at the low end of the market into a truly frugal solution. As described above, M-Pesa is considered a key frugal innovation in itself, although the field research indicates that it does not reach the lower end of the market that well as would be needed for a truly frugal approach. We can assume that this is probably due to the lack of listening while connecting to the lower end of the market. The authors of this study may have the following low-technology suggestions for M-Pesa to become a truly frugal innovation:

1. Understanding customers: mapping customer characteristics based on group characteristics will raise awareness on what drives customers and helps adapting services per segment. Consider the following customer feedback per segment.
2. Customer segmentation should include understanding the language/literacy/numeracy skills of customers. Adapt communication per particular segment accordingly; especially less empowered customers usually need better adapted services.
3. Customer and agent input: consider agents as an important source of customer feedback, not solely as service distributors. Consider including not only customers, but also agents in the product development team (for gradual improvements, breakthroughs are sometime developed without such structures). Also follow customer feedback per agent.
4. Call Centre feedback: as this Centre is often the major contact channel for customers, regularly check feedback by contacting a fraction of callers. Also follow what percentage of the initiated calls has been prematurely terminated. Consider adding Call Centre Customer satisfaction as one of your KPI.
5. Remote customer care: preferential treatment for potentially high-volume customers deters low-volume and less empowered customers that need more assistance. Consider using more Customer Care Centres in remote areas, and include service trainings for agents (especially when they deal with less empowered customers). Consider using knowledgeable customers to help less empowered clients.
6. Customer satisfaction is important when vetting agents as they are the main contact point for users. Withdraw agents when they score weak on customer service. Consider whether KYC rules are properly followed to diminish the potential for fraud. You can make it part of the agent-vetting process, for instance, through mystery shoppers.
7. Agent network: maximising the network is not necessarily in the interest of customers and agents and can lower the service level. Providing (sub)agents with more business stability is expected to enhance their service quality.
8. Performance ratios: instead of focusing on general ratios such as the overall Net Promoter Score, differentiate between customer segments and different types of customer feedback. Consider customer-facing metrics such as measuring and reducing time it takes from sign-up to first successful transaction. Consider adding regular research to follow qualitative customer opinions.
9. Product improvement: consider more self-service Call Centre menus for empowered customers to free up time for other callers. When developing services, focus on service improvements, rather than on solving issues.
10. Careers: consider if staff promotion is based on customer-focused activities or on manager preferences.

Conclusions with respect to the new financial technologies contributing to the 4th industrial revolution in the Third world

Alternative or new sources of finance are becoming more and more important and combined with the financial inclusion approach promoted by the United Nations may help millions of poor people to participate more actively in the monetary economy and contribute to its development. We focused on M-Pesa, in Kenya, but similar systems have been also developed in Liberia, Nigeria, Rwanda, Tanzania etc. (Ighobor, 2017). M-Pesa allows people even in the rural areas to transfer money to one another, pay for their purchases and services such as water and electricity.

In Kenya and Tanzania farmers pay for the seeds and necessary fertilizers or pesticides, using their M-Pesa account, thus contributing to achieving a green revolution and improved food security in this part of the world. Ighobor (2017) quotes the Global System for Mobile Communications Associations (GSMA) that lauded M-Pesa for its pioneering effort for demonstrating the potential of mobile technology to transform access to financial services at emerging markets. GSMA considers mobile payment relevant to the Sustainable Development Goals (SDGs): namely, SDG1 – because it helps to eliminate poverty, SDG5 – because they empower women, and also SDG9 – because it provides digital payments and access to credit services for newer industries. The director of the Central Bank in Kenya concludes that mobile phones are the key to financial inclusion of the poor people in this particular country, and most probably – in many other developing countries worldwide too.

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<i>Paper submitted</i>	<i>06 December 2017</i>
<i>Paper accepted for publishing</i>	<i>21 February 2018</i>
<i>Paper published online</i>	<i>30 March 2018</i>