Empowering Microfinance Processes through Hybrid Cloud Based Services

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ABSTRACT

Microfinance plays an important role in the improvement of the livelihood of people especially in developing countries. The provision of microfinance services (such as micro loans, insurance, savings and technical assistance, among others) are considered as good measures for the reduction of poverty and levels of unemployment. The expansion of microfinance services has been accompanied with unprecedented technological developments that significantly affected the operational efficiency of microfinance institutions and dictated new axioms for information sharing. This paper is concerned with the use of hybrid cloud information infrastructures to facilitate engagement with stakeholders and improve the ability of MFIs to realize their business and social goals. The proposed infrastructure adopts a holistic approach that goes beyond viewing cloud services as being limited to the use of software-as-a-service (SaaS). In addition to describing the entire hybrid cloud environment, this paper reflects on the collective use of its “private” and “public” cloud components.

Keywords: Cloud Computing, Credit Scoring, Hybrid Environments, Microfinance, Stakeholders

1. INTRODUCTION

There has been a growing emphasis on using microfinance as a tool for enhancing financial inclusion, reducing poverty and maintaining sustainable development of societies. The basic assumption is that microfinance has the potential to enhance production in different sectors such as education, environment, healthcare, agriculture and small-scale revenue generating activities. Many members of the society lack access to funds due to high transaction and monitoring costs, lengthy documentation, high defaults, collateralised lending and leakage of subsidised resources. As a result, different types of microfinance institutions (MFIs) (such as non-profit organizations, peer-to-peer lending markets, commercial banks and community banks) are becoming highly engaged in the provision of microfinance services. Despite the variety of the microfinance services provided by each institution, the list of the most widely cited services includes saving services, micro-credit, micro-insurance, money transfers and small loans and technical assistance. The
The basic aim behind the provision of such services is to assist financially-excluded, economically-active and capable members of the society to improve their financial outcomes (e.g., savings and the accumulation of assets such as furniture or a sewing machine) and non-financial ones (e.g., health, food-security, nutrition, education, women’s empowerment, housing, job creation, and social cohesion) (Eduardo, Birochi & Pozzebon, 2012; Robert & Riggins, 2012; CGAP, 2003, Robinson, 2001; Yunus, 1999; Afrane, 2002; Beck, Demirguc-Kunt, & Levine, 2004; Hietalahti & Linden, 2006; Hossain & Knight, 2008; Khandker, 2001; Odell, 2010; Wright, 2000). The main stakeholders of microfinance are clients, donors, intermediaries, insurance agencies and regulatory agencies, among others. Decision making in microfinance tend to be complicated due to the existence of multiple layers of decisions and processes, diversity of stakeholders and their concerns, difficulty of balancing dual objectives, limited adaptation capacities, and lack of reliable management information.

Over the last couple of years there has been an increasing emphasis on the use of advanced information systems in microfinance processes in pursuit of optimizing the utility matrix of stakeholders, enhancing operating efficiency and enabling competitiveness. The basic assumption is the investment in improving information availability; accessibility and sharing constitute the corner stone for the livelihood of MFIs. However, especially in developing countries, MFIs are not in a position to use powerful information systems to gain these advantages. As a result, they fail internally to improve their financial management procedures (cost management, risk reduction and resource monitoring), enhance performance (social and financial) and develop plans for the design and marketing of innovative microfinance products. On the other hand, they have been facing serious complexities with regards to the improvement of financial sustainability (i.e., fostering linkages with donors, regulatory agencies and insurance companies). Despite the paramount importance of using advanced information systems in MFIs, little has been done by them to improve the infusion and diffusion of such systems and technologies in microfinance operations. The main cited reasons for this include the lack of qualified personnel (management, staff, technicians), (Lansink et al., 2001), structural differences (i.e., MFIs are less organized than commercial banks), infrastructure issues (i.e., limited access to infrastructure (electricity, internet, mobile phones in rural areas), lack of standardized procedures and high costs, among others (Kishen et al, 2010; Saleh, 2011). To relax such complexities, MFIs tend to follow partial solutions by enhancing manual processes with the use of mobile phones by credit officers, using emails to interact with some clients and benefiting from ATMs and Point of Sale terminals in urban areas.

The developments exhibited across the landscape of microfinance and its entire industry has been accompanied with vast and dramatic technological developments (hardware, software, telecommunications etc.) that reshape the context of data storage, retrieval, processing, presentation, sharing and utilization. From organizational points of view, there has been a growing tendency among MFIs to benefit from the emerging computing paradigms such as utility and cloud computing as vehicles for (efficiently) accessing computing resources. Cloud based environments are characterized with network-based services, scalability, quality of service and the availability of various computing resources. The use of cloud-based resources (i.e., software, infrastructure, data and platforms) as services enables MFIs to access and use computational resources on utility and on-demand basis (i.e., pay-as-you-use) in a way that reduces costs and improves information availability and accessibility. Despite the benefits offered by cloud computing and its service models but little has been done by the research community to fully explore these benefits and the capacity of MFIs to apply cloud service models and augment the cloud services which are exposed as simple and user-friendly web services. The majority of the work done to elicit the applicability of cloud computing in microfinance focuses on the adoption of “partial frameworks”
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