

**THE EVOLUTION OF CARTOGRAPHIC VISUALIZATION IN CONJUNCTION WITH  
GEOGRAPHIC INFORMATION SCIENCE**

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The development of the digital production techniques were rapidly improved around 1980-1990 due to the requirements of information technology. Both hardware and software components were essential in the development of the technology, but the first milestone of this process was the release of personal computers.

In the cartographic visualization, the GIS technologies were invented in the 1970s. However, for a very long time the development focused on the input part and on the analysis. The need for real map production features (to produce paper maps which conform to cartographic traditions) in GIS software environment was raised after most of the paper maps were converted into digital ones. On the other hand, the non-GIS based map production could easily use the development of the desktop publishing technologies about ten years earlier.

Nowadays the GIS-based map production offers visualization methods which do not have the antecedents in the traditional cartography. Such kinds of contemporary cartographic visualization techniques looked very trendy, but the efficiency of representation was not seriously tested. The interpretation of unusual visualization techniques can be misleading and less efficient than it was expected by the software developers. The traditional visualization techniques of thematic cartography can be successfully combined with the recent IT methods: mobile phones, tablets etc.

**MOBILE MONEY TRANSFER DIGITAL ECONOMY IN GAINING COMPETITIVE  
ADVANTAGE OVER MFIS IN RWANDAN CONTEXT: AS A CASE STUDY OF SACCOS IN  
RWANDA**

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**Abstract**

The Government of Rwanda has adopted a very ambitious financial sector development plan which is at the implementation stage. This has made the administration to create at least one SACCO at every administrative level hence known as "umurenge". This plan is captured in the vision 2020 under the Economic Development and Poverty Reduction Strategy (EDPRS). It is realized that micro financial institutions MFIs is an important sector in mobilising savings and availability of credit at reasonable rates and other financial services for investment to the rural majority. However, despite all these effort by Government, the level of domestic savings remains very low and the financial exclusion highly alarming. MFIs is a strategy to eradicate poverty amongst the vulnerable youth and women. Mobile money is a tool to allow individuals to transact using cell phone technology.

The study will explore how Digital Economy has gained competitive advantage over SACCOS/ MFIs. The study is motivated by the acceptance and embracing of technology (ICT) amongst low income earners giving it competitive advantage and encouraging e-commerce services in Rwanda. A qualitative analysis will be undertaken, and an in depth examination of the variables using business models to establish a relationship in the Rwandan context.

**Key Word:** Mobile money, Digital Economy, Umurenge, e-commerce.