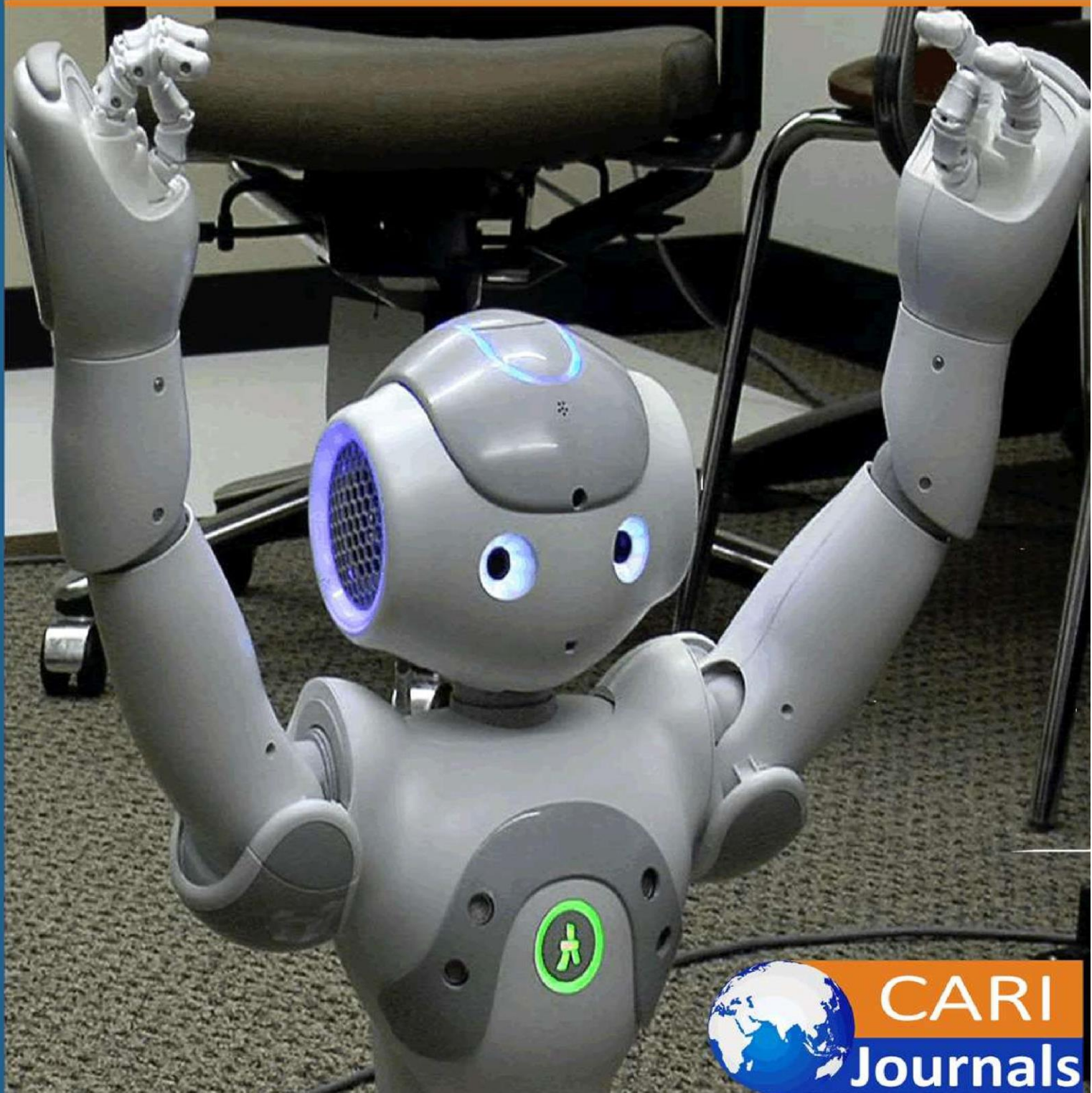



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(IJCE) Assessing Digital Solutions Adoption in Small and Medium-
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Assessing Digital Solutions Adoption in Small and Medium-Sized Enterprises in DRC

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Abstract

Purpose: This study assesses the adoption of digital solutions in small and medium-sized enterprises (SMEs) in the Democratic Republic of Congo.

Methodology: A Kobocollect survey was conducted in 13 cities across the DRC over a one-month period, collecting data from 459 SMEs. The sample comprised 18.53% of individual SMEs led by women, 60.13% owned by men, and 21.35% led by associations.

Findings: The results show that only 15.03% of respondents consider ICT and digitization to be a new topic, while 75.16% of companies' systems are not digitized. However, 68.85% of respondents are willing to integrate new technology into their business control systems by digitizing their accounting systems, with no significant difference observed across income ranges (p-value=0.107). Digital literacy of users is identified as a key factor influencing the adoption of digital solutions, which is facilitated by adapted solutions that meet SMEs' specific needs. Capacity building and system trustworthiness are also found to be important factors influencing adoption. Furthermore, belonging to a specific income range is found to influence the adoption of daily reporting systems and market pricing (p-value=0.107 and p-value=0.06363, respectively).

Unique Contribution to Theory, Policy and Practice: The study highlights the importance of investing in SME digitization and the need for adapted solutions that meet management needs and price qualifications.

Keywords: *SME, Business, Integration, Digitization, Data, ICT, Congo*

1. Introduction :

SMEs are key players in the economy and the wider ecosystem of firms. Enabling them to adapt and thrive in a more open environment and participate more actively in digital transformation is essential for boosting economic growth and delivering more inclusive globalization (OECD, 7-8 June 2017).

Boosting SME potential for participating in and reaping the benefits of a globalized and digital economy depends to a great degree on conducive framework conditions and healthy competition (OECD, 7-8 June 2017).

Limited market access remains a critical constraint to their growth and competitiveness whereas Information and Communication Technology (ICT) presents enormous opportunities for improved market access (Kiveu & Ofafa, 2013). Digital infrastructure is in part incomplete, costly, and poorly performing (Bukht & Heeks, 2018). Digital business ecosystems require a number of specialized complementary contributions, in addition to depending on many of the same supporting capabilities of other types of enterprises (Moore, 2017). Modern ecosystems are mainly founded on the basis of informational flows being generated as a result of intellectual labor (Barykin, et al., 2020).

Of course, to build a competitive market, you must commit time, effort and money, especially when you intend to use a personal computer as part of your trading system (Jurik, 1999). Typical performance measurement helps businesses in periodically setting SMEs goals, and then provides feedback to managers on progress towards short-term and long-term goals (Anyieni, 2013).

2. Literature review

SMEs play a key role in national economies around the world, generating employment and value added and contributing to innovation (OECD, 7-8 June 2017), they are catalysts in socio-economic development (Anyieni, 2013).

However, given their characteristics, several constraints hinder their computerization; these constraints are even more accentuated in developing countries. SME managers are confronted with a lack of technical competence, high hardware and software infrastructure costs, lack of organizational support, lack of government support, and other adoption challenges (Kalumendo, 2015)

Limited access to market information makes SMEs less aware of opportunities in the market, although ICT can improve market access by facilitating communication with customers, competitive positioning, enable information acquisition and production of quality products, generation of market information, reduction in logistic costs, facilitating access to global markets, facilitating market research, networking, market transactions and market identification (Kiveu & Ofafa, 2013).

Our findings show that SMEs play a very important role of SMEs in many countries' economic growth. However, integrating ICT in SMEs is facing many barriers as not only the infrastructure is costly, but also there is lack of technical competence.

For the time being, the global economy relies on producing high-technology goods and services within an information society. Moreover, in the information society environment, successful enterprises will have to produce high-technology goods and services (Mutula & Brakel, 2006)

Most SMEs across the world are increasingly adopting various ICTs to enhance their e-readiness status to identify, acquire, organise, disseminate and apply information for informed decision making (Mutula & Brakel, 2006). This is explained by the fact that there is a strong positive relationship between ICT acceptance and SME growth, and a moderate positive relationship between ICT usage and SME growth (Nyandoro, 2016). However, security and privacy have to be considered as It is often necessary to publish personal information for research purposes (Xiao, 2006)

When discussing barriers that hinder ICT implementation, many managers do not have the tools or time to measure the benefits of the systems they introduce (Agwu, et al., 2016).

3. Conceptual framework of the study:

As in many business fields, customers have become very demanding to the point that they only ask for individualized products and services (Janthong, et al., 2009), tech investors should make sure IT initiatives have a real business need, create value for the enterprise (i.e. new or better business capabilities, reduction of risk and/or optimization of resources) and do not negatively impact the business (Guldentops, 2014)

Based on studies conducted on similar topics, the scope of our research is limited to assessing the opportunities and need for ICT adoption throughout Congolese SMEs if as the ICT investors would love to adapt to the needs of business holders.

4. Hypothesis:

This research is based on hypothesis as follows:

Congolese SMEs are not digitized and this is a market that should be caught by ICT investors.

Hypothetically, SMEs that are not digitized are ready to adopt Digital solutions for data-driven decisions. This gives an idea of a possible investment in Data Solutions as the market is ready to welcome and adopt new systems.

Although enterprises dream of integrating data solutions, a set of basic functions would promote the adoption of DS suggested to SMEs.

Digital literacy is a factor that would influence new Data Solution adoption

5. Research Methodology:

Our research methodology covers designing the questionnaire, scoping the research sample, collecting sample data from pilot cities, readapting the questionnaire and enlarging the research field to other towns.

Our data is categorical and ordinal. Descriptive statistics allowed us describe analyse and test, based on variable choice, the readiness for Congolese SMEs to integrate Digital Business Solutions and evaluate the risks that might hinder this implementation.

The analysis of categorical data to a subclass of problems that can be handled by weighted regression. The authors feel that this unification is worthwhile because of the simplicity with which models and hypotheses can be formulated and tested (Grizzle, et al., 1969)

We thus used a non-parametric Chi-square test to evaluate the dependence between our variables because Non-parametric tests are dealt without being based on population distribution or population parameters (Turhan, 2020). In this research we use Descriptive statistics are used to summarize data in an organized manner by describing the relationship between variables in a sample or population.

6. Methodology:

There is no standard definition of what is an SME. Different countries, nongovernmental organizations, and scholars define in different way (Tomé, et al., 2017). Our definition and sample choice of SME was done in accordance with the Congolese regulation of Small and mid-sized businesses relays on law N°06/004 OF 27 FEBRUARY 2006 on the tax regime applicable to small and medium-sized enterprises in terms of tax on professional income and tax on domestic turnover (ACP, 2020).

The survey was designed as a questionnaire deployed on Kobo Collect and deployed it to be used by 13 surveyors in 13 different cities (Bukavu, Butembo, Gbadolite, Goma, Kalemie, Kindu, Kinshasa, Kisangani, Lubumbashi, Mbandaka, Mbuji-Mayi, Tshikapa and Watsa/Durba). This questionnaire assesses the existence of a digitized system, readiness to digitize the business, obstacles that hinder ICT adoption, as well as options and aptitudes for preferred ICT solutions.

While the Congolese Agency of Press confirms gives statistics of 9000 formal versus 3.4 million informal SMEs (ACP, 2020), we calculated our sample on basis of 4 million SMEs and one question identified the SME as formal or informal requesting their Registration ID.

Given our population size (4 millions), our desired degree of precision (5%),our desired confidence level (95%), and the expected fraction of the attribute existing in the population (50%), we used Cochran's formula (Adhikari, 2021)

Two cities were concerned by our pilot data: Durba and Butembo, on a total of 69 SMEs sample. This study allowed us to readapt the questionnaire before we deploy surveyors in 11 other cities to collect.

Data were collected on demographic variables are processed and stated in percentage through the descriptive analysis (Miraz & Habib, 2016). In a bivariate analysis, we evaluated the monthly profit range incidents segregated by the need for a digital data management system and inferred the opportunity.

7. Results and discussion:

It aimed to understand the flow of the supply chain and evaluate enterprises' digital literacy capacity of business holders as well as their capacity and readiness to digitize their business.

The research was conducted on 459 SMEs managers classing them into three types of management: SMEs managed by women (18.53%), SMEs managed by men (60.13%) and Association-led SMEs (21.35%).

➤ *IMS integration status*

As a result, 75.16% of interviewed companies' systems are not digitized and 68.85% are ready to integrate new technology into their business control system by digitizing their accounting system. This survey confirms the hypothesis that there is a difference between SMEs' readiness to adopt Digital solutions and their current digitization status ($p\text{-value} = 0.04529$) and thus the choice to accept new solutions is linked to the existing management system (Figure 1).

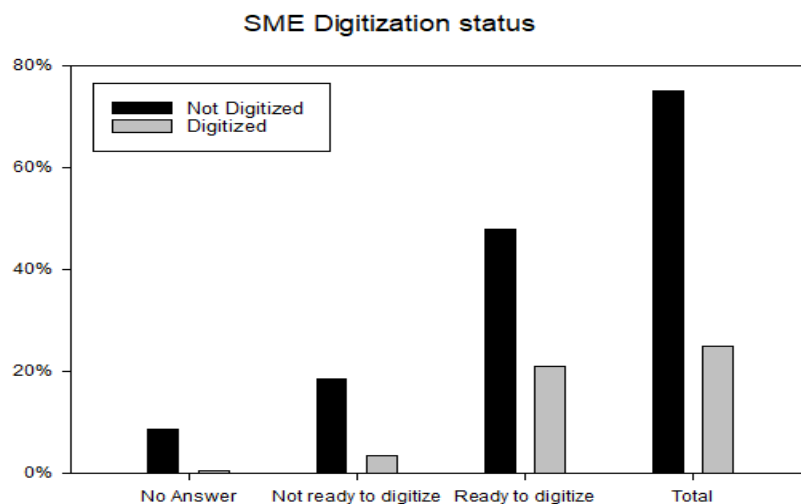


Figure 1. SMEs digitization status

➤ *Basic functions in the Data Solutions*

Our result show that there is a common need, basic functions that would make it possible for a single solution for most of SMEs (Figure 2).

The basic capacity needed for satisfying accounting software is: a daily report, a cash flow report, and a business expenses report.

19.61% have an income comprised of between 100 and 200 USD, 22.22% between 201 and 500, while 18.08% earn between 501 USD and 10000 USD and 14.81% above 1000. We could not conclude that belonging to an income range influences the adoption of a Daily reporting system as a function (p -value= 0.107) on the software. This case applies to market pricing also (p -value= 0.06363). This means there is no major difference in needs according to the range SMEs belong to and daily reporting or market pricing.

However, the need for cash flow reporting; expenses; Suppliers' price as well as supply map reporting are associated with the income ranges ($p=0.002241$, $p=0.04351$, $p= 0.001729$ and $p=0.001236$).

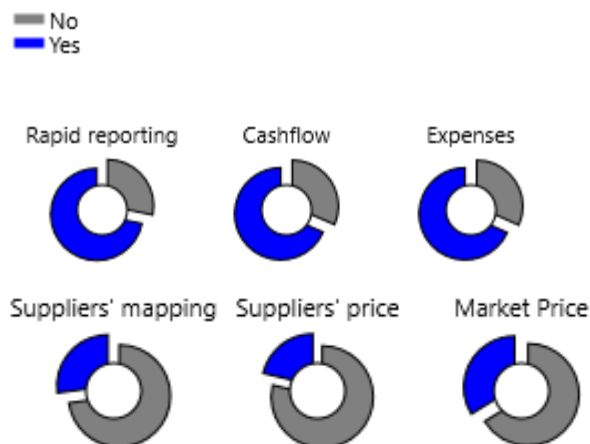


Figure 2. Basic functions needed by SMEs

We should then conclude that the basic functions of the software don't differ as the income range changes. These basic functions would be mainly based on income, expenses, and business cost mapping (suppliers map and pricing: Figure 2, and influence of income: Figure 3).

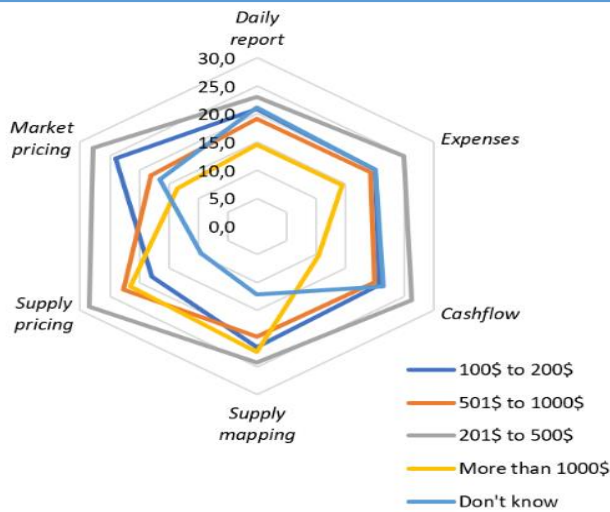


Figure 3. Influence of income range

➤ **Considering readiness to integrate Digital solutions:**

68,85% of interviewees were ready to integrate digital solutions in their business. Less SMEs need a personalized system expressed in the “Other functions” variable.

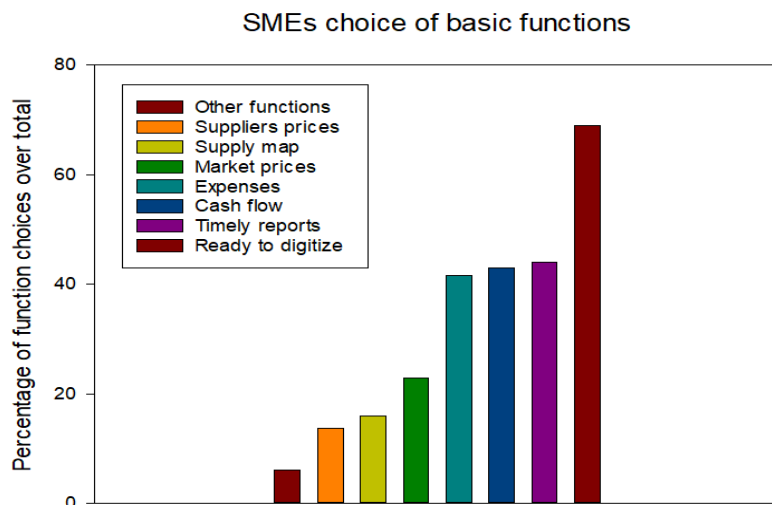


Figure 4. Choice of basic functions

Basic functions are thus common to SMEs. Other functions comprise Stock management, Compilation of data across services, Production analysis system, Distance booking and selling, and Advertisement and printing. These functions are cited by SMEs that need a customized Data Solution, Figure 4.

➤ **Formal/Informal:**

46.4% of enterprises conform to national SMEs identification procedures. Most of them have digitized their system (76%). The digital market might target more SMEs without a national identification. 53.6% of the SMEs involved in this survey still need to be identified on the National SMEs Registry.

8. Barriers that hinder ICT implementation

➤ **A new technology?**

In result to this research, we cannot conclude that ICT and Digital Data Management Systems are new in SMEs ecosystem. In fact, our result show that, only 15.03 % consider this topic to be new (Figure 5).

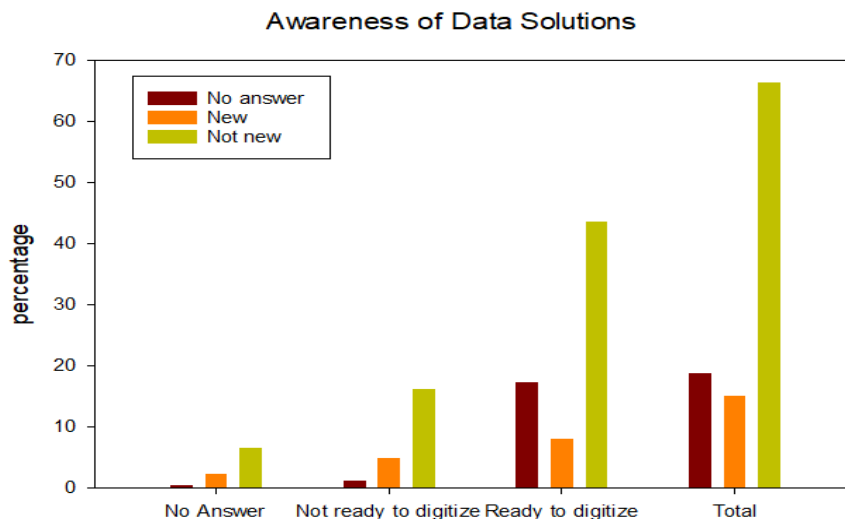


Figure 5. Awareness about Data Solutions

➤ **About Computer literacy:**

13.3% of interviewed SMEs (which is 16% of SMEs that are ready to integrate DS) are having issues with Computer literacy. This topic is no longer a barrier to Digital solutions integrations in SMEs. It is also explained by the fact that the topic not considered a new topic.

9. Conclusion:

This survey has been conducted on Small businesses to evaluate digital investment opportunities in the Republic Democratic of the Congo.

Our findings show that there is a necessity of developing basic tools as the start of digital migration. We found that a need for adapted solutions that meet customers in Developing countries' basic

common expectations. This would be a way of integrating modern ecosystems. SMEs digital solution implementation is a competitive market that transforms traditional methods using innovative and satisfying tools. Digital market is still vast in DRC as far as Congolese enterprises thrive for easy to use, low-cost and adapted solutions.

Meeting SMEs needs common and adopted tool is a way of getting reliable statistics of formal and informal activities as well as understanding, in respect of privacy, appropriation of ICT.

This research has confirmed the need for Congolese SMEs for global trading methods. Internationalization being the desire of mankind to travel as well as do business activities with other parts of the world has been existing for centuries, there is a proven need for Congolese SMEs to globalize not only pricing but also supply, market access and advertisement.

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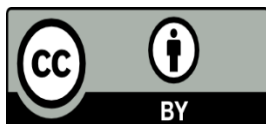
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