



INFLUENCE OF DIGITAL COMMUNICATION TECHNOLOGY UTILISATION ON FARMERS' MARKETING EFFICIENCY

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ABSTRACT

The review set out to scrutinise the rising influence of digital communication technology on marketing efficiency of farmers under a dichotomize scenario. As digital momentum progresses, one of its core upsides is expected to emerge in form of steady to radical shift in farmers' marketing efficiency. While significant body of literature have offered encouraging projection, we proceeded to avoid over generalization, to understand precise direction of digital impact on marketing outcome of smallholders and commercial farmers as well as accompany trend. We posit that, the existing intervening elements or determinants of marketing efficiency is about to change in the unfolding digital age. We expressed, that factors such as traceability, participation in Global Value Chain, ease and safety of transaction will indicate efficiency or otherwise of farmers marketing as digitization becomes mainstream. Adopting a systematic review methodology, we synthesized evidence that beyond the general optimism, smallholder farmers are far removed from optimizing digital advantage in their marketing. We unravel a major divide, as commercial farmers tend to wield noticeable edge, reaping digital benefit in marketing while smallholders struggle persists. Electronic commodity exchange, digital marketplace and ability to integrate ancillary services is ramping up commercial farmers potential marketing efficiency. Conversely, we noticed available marketing digital solutions for smallholders are mostly stand alone and works in isolation. Dearth of appreciable digital skills and basic infrastructure were found limiting in smallholder case. We conclude by advancing policy suggestion to scale farmers digital readiness through cooperative and calls for wider collaboration between government and development partners to accelerate delivery of end-to-end digital technology for the marketing benefit of smallholders as a means to closing emerging divide.

Keywords: Commercial, Communication, Digital, Efficiency and Technology

INTRODUCTION

Digital Communication Technology represents a bold solution with long-term promise to transform agriculture and its product market. Transformation potential for agricultural marketing is highlighted by sheer ability of digital technology to foster targeted solution for combating key drivers of market failure in the value-chain (World Bank, 2016). Akhmadi (2018) affirmed, digital technology cast positive influence on agricultural marketing observably, by unlocking information barriers for market actors. Since agricultural marketing is a series of connected, sometimes complex interaction ensuing from the farm-gate to final consumer, digital technology has a strong relevance in promoting efficiency across the activity spectrum. Progress in the development of digital technology suited for agricultural marketing is evolving and transitioning into a backbone tool accelerating efficiency and manageability (Alekhina *et al.*, 2019). Perhaps, the digital technology potential is capable of magnifying market outcome for farmers when considered beyond the simplistic view of marketing efficiency. While marketing efficiency is mostly accounted for, by cost component of marketing activities in relation to eventual product retail



price, the ability of digital technology to hasten transit time for product and price discovery, enable traceability and eliminate perishability (a cost on farmers side) strengthens its potential influence on marketing efficiency even further.

Literature is rife with evidence-based illustration and findings, underlining the key transformative influence of digital technology on agriculture in general and marketing in particular. Trendov *et al.* (2019) posited that agriculture and food value chain are poised to experience massive change in the coming decade riding on the impact of digital technology. Mobile phones for example, was implicated as a core enabler in reducing price dispersion across African agricultural market (Aker and Fafchamps, 2015). Esoko, a mobile-enabled market information system triggered a 10 percent gain in farmers selling price across Ghana (Courtois and Subervie, 2014). Increasing number of smallholder farmers have also secured broader market access stimulated by mobile money technology supporting seamless transaction without the rigour of traditional financial system (Abate *et al.*, 2023). Moreover, the study by Usman *et al.* (2023) offered appreciable insight of agricultural digitalization in Nigeria and concluded, it has helped in reducing intermediaries and empower farmers to expand their market reach. Newman *et al.* (2018), reported on the revolutionary influence of Kudu digital solution for agricultural marketing in Uganda. Kudu offers a robust electronic market platform solution bridging the geographical gaps for farmers and employs algorithm to link farmers to most profitable deal available. On their own part, Ravi *et al.* (2023) concluded that market-oriented digital tools represent one of the most effective means through which farmers connect with customers. They also serve as core enabler in transforming the existing traditional agricultural market system.

However, the reality that underscores the potential of digital technology in driving marketing efficiency, so far, is laced with mixed outlook. Over 2 decades since mass adoption of mobile phone and boom in digital technology products, agricultural market failure persists. Besides, most of the celebrated and anticipated game-changing digital technology may have failed to scale or achieve viability. Abate *et al.* (2023) contended, there is paucity of systematic evidence to support a widespread claim of favourable impact of digital innovation on agricultural marketing. It was noted that some of the celebrated innovation previously reported are mostly small in coverage or a mere pilot scale. There are also emerging body of evidence which may effectively suggest a rising innovation and digital divide considering the actual beneficiaries of digital technology on marketing efficiency. This article, therefore, take a systematic probe into the dimension of impact of digital technology on farmers marketing efficiency. It is evident that a disaggregated examination of supposed beneficiaries of market-oriented digital technology will offer more reliable insight and a precise indication of who the winner is.

MATERIALS AND METHODS

The review took a systematic path to synthesize body of evidence from literature to unpack the ensuing dimensionality around the subject matter. To achieve this, we relied heavily on established and verified databases of research literature including, Scopus, Google Scholar and Web of Science while specific search terms featuring digital marketing, farmers digital tools utilization, smallholder outcome of digital marketing etc. Then, we adopted a systematic sequence of evidence sorting to retain and reject relevant and less suitable literature. We state the review focus first, set our inclusion and exclusion clause for literature of interest and extract materials considered relevant from databases. We then concluded by scrutinizing the extracted literature for evidences and thereafter, consider available findings and employed them as a reliable basis of



submission in this review. This approach has been adopted in previous review such as Murray *et al.* (2022) and Corbet *et al.* (2019).

Digital Era and the Shifting Measure of Marketing Efficiency

Agricultural marketing efficiency is undergoing a broader transition and definition as emerging factors are becoming its key determinants in the current information age. Duric (2020), while appraising key market-oriented digital technology such as blockchain, highlighted elements of efficient and inclusive market to include information symmetry, transaction cost and financial inclusion for actors. Furthermore, the recent trend captured in literature in the light of digital transformation in agricultural marketing indicates 3 broad elements may become hugely relevant to farmers marketing efficiency assessment. These include, participation in Global Value-chain (GVC), traceability, safety and ease of transaction. Farmers' marketing efficiency in the information age is determined in a major version by farmers participation in the Global Value-chain as a clear indication of inclusiveness. Despite digital innovation spanning over 2 decades, large companies dominate the GVC (Ducic, 2020). Studies (Davis, 2006; Minten, 2012) have indicated the potential of Modern Supply Chain (MSC) to connect farmers with processors and accelerate value-addition and export opportunity with direct impact on farmers income.

Smallholder VS Commercial Agro-enterprise: Where Lies the Digital Marketing Efficiency Skewness?

Farmers' marketing efficiency is clearly being shaped by digital technology utilization and the outcome continue to evolve. While there has been report of early gains (Abdulai *et al.* 2023), a promising future but uncertainty and divides are lurking ahead. The reality of smallholder farmers indicates, digital marketing benefit and other outcome remains scarcely realized. Abdulahi *et al.* (2023) noted that smallholder engagement with digitalization is manifestly poor in services and tools. Mobile phone continues to lead the available option of digital tools and enabler for smallholders, poor access to smart phone and similar smart tools persist and obstruct smallholder digital potential and benefit. Even, as digital promises are becoming increasingly noticeable, smallholder farmers appeared far removed from attaining a demonstrable digital momentum and outcome. The use-case of digital marketing technology is reportedly unstable and erratic. Substantial number of digital solutions are failing to transit in to commercial (Abdulai, 2022; Birner *et al.*, 2021) viability. This is attributed in part, to dissemination of digital solution in Africa which is often led through pro-poor approach devoid of strategic long-term commercial goal and scale. (Ghana North) sustenance and survivability challenge in the case of interventionist approach (promoting smallholder digital technology) beyond the support period and illustrates the underline hurdle to smallholder marketing efficiency in digital age. Digital marketing advantage of smallholder continue to face significant headwind, obstructing the realization of core marketing efficiency.

The primary driver of farmers noticeable disadvantage is their backfoot status on digital investment. Smallholders oft-times fall short of justifiable scale to enable modest digital investment. Beyond the scale, smallholders are confronted with digital divide or exclusion fueling what researchers have tagged "digital poverty trap" on the back of paucity of access to digital technology and skills (Quimba *et al.*, 2020; Schroeder *et al.*, 2021; Trendov *et al.*, 2019). Smallholder families across rural communities are mostly faced with poor market access and infrastructural deficit and therefore prevented from significant economic opportunity and wealth required to obtain digital capability (Berbier, 2022). Accordingly, Nugroho *et al.* (2020) affirmed



that education level among smallholder farmers remain low and as such, denied them of substantial benefit of technological advancement.

Furthermore, fragmented supporting infrastructure and access to alternative market complicates digital market efficiency of smallholders. Warehouses and access road for example, catalyzes the use-case of digital technology of farmers, serving as enabler for distant buyers who have connected digitally to reach them. However, under the scenario where these infrastructures are lacking, smallholders face significant barriers regardless of their digital opportunity. Whereas, the commercial players are usually more decisive and tenacious on digital opportunities that enable their market advantage. They appear to wield significant technology edge in conceiving and devising the architecture of their specific digital need and for specific purpose. In this scenario, the solutions are mostly built bottom-up as against the top-down case in which service provider merely observe and build a solution perceived to be helpful and useful to smallholders. A case in point is the AFEX commodity exchange in Nigeria, a revolutionary agro-commodity digital trading platform built and led by commercial entity within the agribusiness space. The advantage of this approach is clearly exceptional on account of its end-to-end digital capability layered on robust logistic/storage infrastructure that facilitate initiation and closing of transaction with a click of few buttons. There are other couples of commercial farming enterprise with ownership of digital market place/market space and network of sales outlets dotted across consumers hotspot. It follows that, the existing digital technology utilization may have had a greater outcome in terms of market reach and access for commercial farmers.

CONCLUSION AND RECOMMENDATIONS

Digital Communication Technology Utilization (DCTU) holds significant verifiable promise to redefine agricultural marketing and scale up its efficiency. However, the promise of potential transformation may return insufficient if the progress towards convergence in market advantage between smallholders and commercial farming enterprise is stalled. We have found a trend signifying rapid evolution of diverse digital solution to enhance farmers marketing control but mostly in a disaggregated and stand-alone version. This may constitute a fundamental barrier especially to smallholder marketing efficiency as marketing hurdles may continue on account of isolated solutions. For instance, even when farmers have access to price information via available digital technology, the potential advantage of such awareness comes to zero if he lacks access to alternative, high price market on account of logistic bottleneck. Also, the digital skill deficit confronting smallholders is a major disadvantage and a threat to their ability to leverage digital tools for market competitiveness. Transformative digital marketing solution will most likely thrive in an environment of seamless incorporation where physical supporting asset such as ware houses and digital solution co- exist to forge efficient aggregation and dispatch of commodity to the end-users. Unfortunately, smallholder farmers are often disconnected from such backbone infrastructures and ancillary services.

While the future enabling benefit of digital technology on farmers marketing efficiency is plausible, the current trajectory suggests an uneven benefit may accrue to smallholder farmers. The divide in marketing advantage may exacerbate in the medium-term and culminate in a definite closure of emerging market opportunity against the resource poor. Therefore, a radical shift in digital solution architecture and policy setup becomes urgently necessary. Dealing with scale disadvantage of smallholder farmers calls for revitalization of cooperatives to amass sizeable farmers capacity and prepare ground for digital solution delivery at scale. Solution providers need to transit towards interconnectivity of existing solutions to evolve an integrated platform that



deliver comprehensive market support to the most disadvantaged farmers. It is also noteworthy that, cooperative approach may serve the bridging purpose of deconstructing the downside of ICT skill gap through group learning and peer-support and ultimately undo the tough barriers by skill ramp up. A divided and uneven exploitation of digital dividend will be harmful to the viability of smallholder farmers while the digital superiority of the commercial farmers may narrow their path to marketing independence, hence, digital tech firms and government must collaborate for better outcome.

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