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Enhancing Livestock Marketing by Small-Holder Livestock Farmers through Software-as-a-Service (SaaS) Framework in Tanzania

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Abstract

Tanzania's livestock sub-sector lacks systematic market information systems, in which livestock keepers and traders can easily find customers for their animals. Likewise, the buyers of livestock or products cannot easily find sellers without intermediaries. Information flow between sellers and buyers remains obscure. The intermediaries at the expense of livestock keepers and buyers normally exploit this information gap. To overcome this challenge, a digital tool in the form of a mobile phone application was conceived where livestock keepers could post product details (prices, quantities being sold, sellers locations). The buyers on the other end could query the system and identify sellers' prices, quantities, and locations. This article presents findings on the possibility of adopting digital tools for addressing the stated challenges. A cross sectional survey was conducted in Morogoro District in Tanzania to: assess the type of mobile phone being owned by the livestock keepers, traders, and buyers; understand their experience in using digital tools to do business, and evaluate their willingness to pay for the digital services if available. The 213 respondents, including livestock keepers, traders and buyers, were interviewed in June-July, 2023. Majority of respondents (68%) owned smartphones, 26% owned featured phones, and the remaining 6% owned other types of phones (e.g., tablets). The majority of users (83%) had no experience in using any digital tools in selling or buying livestock. As for respondents' willingness to pay for the market information system services, the majority (53%) were willing to pay while 47% were not. The significant usage of smartphones by livestock keepers, traders, and consumers suggests that there is a possibility of adopting digital tools in marketing of livestock and associated products. The provider may start with a free tier since a number of those unwilling to pay suggests their low purchasing power. We conclude that introducing digital platforms for market information systems is important in enhancing transparency, efficiency, and profit margins for livestock keepers. These findings may help software developers especially in the livestock sub-sector to explore the feasibility of building digital platforms for providing market information in Tanzania and other similar environments.

Keywords: livestock business, systematic market information, intermediaries, expenses, SaaS

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Introduction

Software-as-a-service (SaaS) is a cloud computing service delivery model or framework, which enables users to use cloud-based applications. The third party companies, i.e., application service providers manage and own the applications. Besides, SaaS is compelling value proposition for customers who are keen to avoid tying high capital expenditure that characterizes implementation of on premise business applications. (Aluodo, 2022; Majengo and Mbise, 2022). Small livestock farmers can grow their farming business through SaaS framework while implementing the market segmentation proposed by Moloto (2024). The market segmentation helps the farmers to identify "buyer groups" that then become the target of the company's marketing plans; likewise, the buyers can easily identify their target suppliers of their products they need. In Tanzania, livestock farmers face a challenge of accessing market information. The challenge is exacerbated with, among other constraints, the lack of information services, a lack of awareness of the market information services, and a lack of means and facilities by which information can be easily accessible (Kikoti and Rwiza, 2024). Intermediaries who make the livestock keepers to sell their products at disadvantaged prices exploit the lack of awareness. The application of digital tools including mobile phones owned by livestock keepers, traders and customers, simply the livestock business stakeholders, could facilitate in addressing the challenge. Therefore, the aim of the research in hand is to: assess the mobile phone types owned by the livestock keepers, traders, and buyers; comprehend their experience in using digital tools to do business, and evaluate their willingness to pay for the digital services if available. The findings of the study facilitate the formulation of the feasible and viable market information services, means and facilities by which information can be easily accessible while supportingg Tanzania development policies, Africa agenda 2063, and Sustainable Development Goals.

Methodology

The research area was Morogoro municipal, which is found Morogoro District. The estimated population of Morogoro Municipal is approximate to 440,109 with the growth rate of 3.85% (Pori *et al.,* 2022). A total number of people in the municipal, dealing with livestock businesses were not readily available. The municipal has 29 wards and it is the central business district with urban and peri-urban areas. Small and medium scales livestock keeping and commercialising are undertaken in the area. For study purpose, the sixteen wards found in the municipal were selected randomly; the 213 respondents were purposively chosen based on being involved in livestock keeping and commercialisation of the livestock and associated products. Therefore, a cross sectional survey was conducted in the selected wards, among others matters, to assess the type of mobile phone being owned by the livestock keepers, traders, and buyers; understand their experience in using digital tools to do business, and evaluate their willingness to pay for the digital services if available. Information gathering was done using structured questionnaires, physical observations, and personal interviews in June-July, 2023.

Results and Discussion

Findings on assessing the type of mobile phone owned by the livestock keepers, traders, and buyers (Figure 1) showed that majority (68%) owned smartphones, 26% owned feature phones, and the remaining 6% owned basic phone and other types of phones (e.g., tablets). The results contradict what James (2020) reported where the owners of smartphone were 13% in Tanzania. The contradiction may be due to many reasons including the rapid adoption of smartphone, which have more functionalities for internet interaction. The ownership and usage of smartphones by livestock keepers, traders, and consumers put forward a likelihood of adopting digital tools in marketing of livestock and associated products. The result of understanding respondents' experience in using digital tools to do business, revealed that 83% phone users had no experience in using any digital tools (use of social media) in selling or buying livestockand associated products as shown in Figure 2.

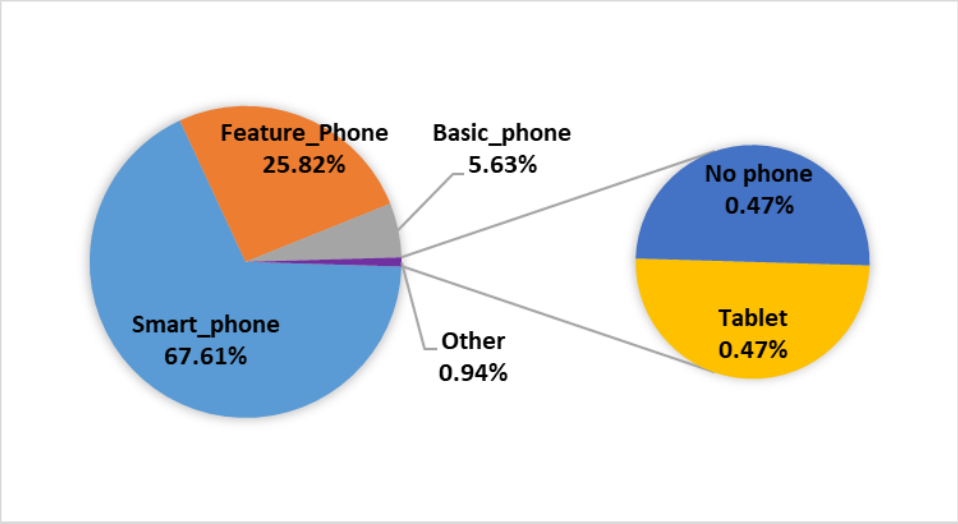

Figure 1: Percentage of respondents owning various types of phone

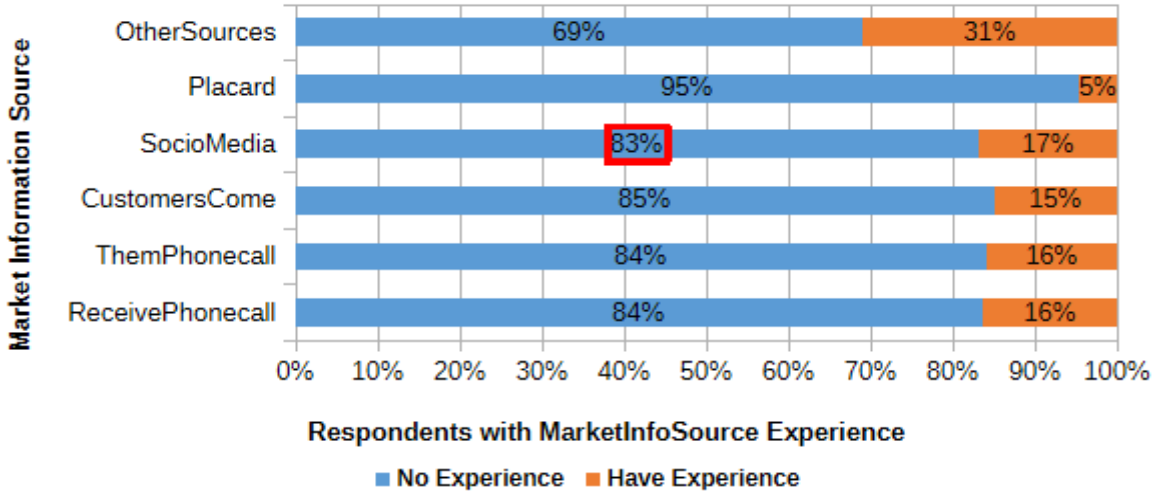

Figure 2: Percentage of respondents with experience to use various market information sources

For the case of evaluating willingness of respondents to pay for the digital services if available, results showed that (53%) were willing to pay while 47% were not (Figure 3). Further inquiry, for those who were willing to pay, showed that approximately 73% were willing to pay between TZS 1,000/- and TZS 30,000/- per month (Figure 4). The results are similar to that of Hidrobo *et al.*, (2022) on willingness to pay for nutritional digital services in Ghana. The provider of digital tool service may start with a free tier to include even those who are not willing to pay. Unwillingness to pay may be due to the respondents' low purchasing power.

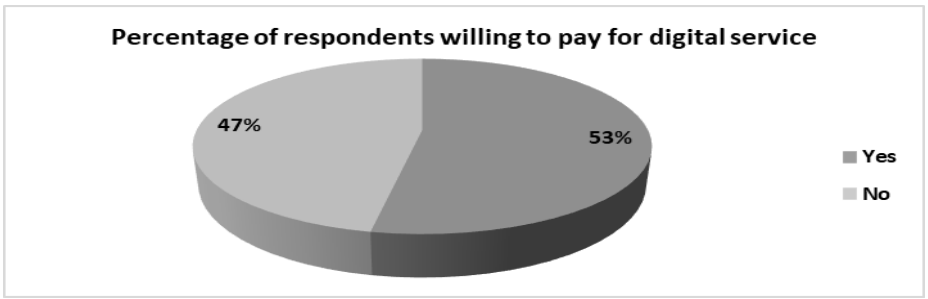

Figure 3: Respondents willingness to pay for digital services if available

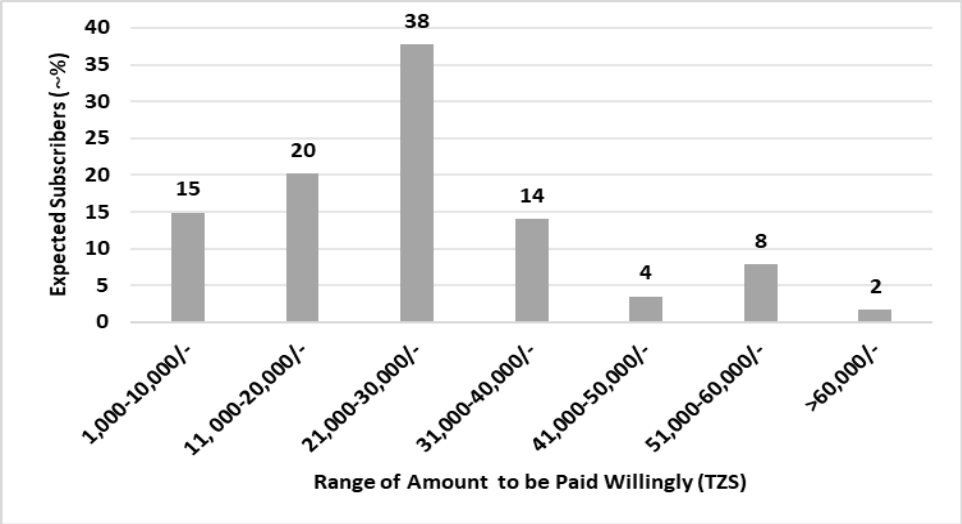

Figure 4: Expected subscribers and range of willing to pay [*Note USD$_{2023}$ 1.00 = TZS 2,327.97*]

Conclusions and Outlook

This research showed that majority of the livestock business stakeholders own smartphones compared to other types of phones. Furthermore, a large number of the stakeholders have no experience in using digital tools to do business. Moreover, simple majority of the above-mentioned stakeholders are willing to pay for digital tool services. Besides, the majority of the expected subscribers of the service are ready to pay not more than TZS 30,000/- (USD$_{2023}$ 13.00) per month. The large number of smartphone users and appreciable willingness to pay for the services indicate the possibility adoption of the digital tool services if available.The provider of the service may start with a free tier since the small number of those willing to pay highly for the service suggests the stakeholders low purchasing power. We conclude that introducing digital platforms for market information systems is important in enhancing transparency, efficiency, and profit margins for livestock keepers and other stakeholders. Therefore, findings facilitate software developers in the livestock sub-sector to scrutinise the feasibility and viability of building digital platforms for providing market information in Tanzania and other similar environments.

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