

Research Application Summary

Pig value chain in Uganda: Considering smallholders' functional upgrading prospects

Mugonya, J.,^{1*} Kalule, S.W.,¹ Ndyomugenyi, K.E.²

¹Department of Rural Development and Agribusiness, Faculty of Agriculture and Environment,
Gulu University, P. O. Box 166, Gulu Uganda

²Department of Animal Production and Range Management, Faculty of Agriculture and Environment,
Gulu University, P. O. Box 166, Gulu Uganda

*Corresponding author: mugonyajohn@gmail.com

Abstract

Pig production and marketing have the potential to accelerate Uganda's economic development through the improvement of the family welfare of smallholder farmers and provision of employment. However, this potential is undermined by systemic market barriers which include limited access to market information, poor market linkages, and inadequate access to inputs and extension services. These challenges notwithstanding, pork consumption has been on the rise in recent decades and Uganda has the highest pork consumption per capita in Sub-Saharan Africa. There have been notable efforts by the Government and development partners to curb constraints in the pig value chain; nonetheless, these interventions are yet to deliver the target development objective. The value chain is still undeveloped with poorly organized informal markets in which most farmers sell live pigs to local butchers or to town-based traders. Farmers hardly engage in slaughtering or processing of pig products or make any off-farm efforts of searching for the best markets. As a result, they are reduced to 'price takers' being taken advantage of by middlemen who pay very low prices for the pigs, recline the live weight of animals and sometimes do not pay on time. Value chain functional upgrading has been suggested to be a remedy that would enable farmers to not only capture more value but also spread risks. This review, therefore, sought to evaluate the existing knowledge on pig value chain functional upgrading in Uganda and draw conclusions with a potential to shape policy, civil society advocacy and future research directions. It was established that some farmers are already engaged in pig value chain functional upgrading and demonstrated good attitude towards for improving the pig value chain. The study recommends that farmers engage more in the functional upgrading of the pig value chain so as to realize reduced production costs per unit of output which in turn results in improved farm profitability.

Keywords: Market information, market linkages, middlemen, pig production, pork consumption, Sub-Saharan Africa, Uganda

Resume

La production et la commercialisation de porcs ont le potentiel d'accélérer le développement économique de l'Ouganda grâce à l'amélioration du bien-être familial des petits agriculteurs

et à la création d'emplois. Cependant, ce potentiel est miné par les barrières systémiques du marché qui incluent un accès limité aux informations sur le marché, des liens commerciaux médiocres et un accès inadéquat aux intrants et aux services de vulgarisation. Malgré ces défis, la consommation de porc a augmenté au cours des dernières décennies et l'Ouganda a la plus forte consommation de porc par habitant en Afrique subsaharienne. Des efforts notables ont été déployés par le gouvernement et les partenaires de développement pour réduire les contraintes dans la chaîne de valeur du porc ; néanmoins, ces interventions n'ont pas encore atteint l'objectif de développement visé. La chaîne de valeur est encore peu développée avec des marchés informels mal organisés dans lesquels la plupart des agriculteurs vendent des porcs vivants aux bouchers locaux ou aux commerçants des villes. Les agriculteurs se livrent à peine à l'abattage ou à la transformation des produits porcins ou font des efforts hors de la ferme pour rechercher les meilleurs marchés. En conséquence, ils sont réduits aux «décideurs de prix» qui gagnent davantage à travers des intermédiaires qui paient des prix très bas pour les porcs, augmentent le poids vif des animaux et parfois ne paient pas à temps. La mise à niveau fonctionnelle de la chaîne de valeur a été suggérée comme un remède qui permettrait aux agriculteurs non seulement de capter plus de valeur, mais également de répartir les risques. Cet examen visait donc à évaluer les connaissances existantes sur la mise à niveau fonctionnelle de la chaîne de valeur porcine en Ouganda et à tirer des conclusions susceptibles de façonner la politique, le plaidoyer de la société civile et les futures orientations de la recherche. Il a été établi que certains éleveurs sont déjà engagés dans la mise à niveau fonctionnelle de la chaîne de valeur porcine et ont fait preuve d'une bonne attitude envers l'amélioration de la chaîne de valeur porcine. L'étude recommande que les éleveurs s'engagent davantage dans la mise à niveau fonctionnelle de la chaîne de valeur porcine afin de réduire les coûts de production par unité de production, ce qui se traduit par une amélioration de la rentabilité de l'exploitation.

Mots clés: information sur le marché, liens avec le marché, intermédiaires, production porcine, consommation de porc, Afrique subsaharienne, Ouganda

Introduction

Pig rearing is an important economic activity worldwide. Reportedly, the production and consumption of pig products such as pork have been on the rise in recent decades (Thornton, 2010). Pork production increased by a factor of 3.5 from 24.7 to 86.6 million metric tonnes between the year 1961 to 2002 in response to a comparable increase in demand (Speedy, 2003; Hartog, 2004; Ngapo *et al.*, 2004), and this trend is unlikely to change in the near future. For instance, the Food and Agriculture Organisation of the United Nations (FAO) along with the International Food Policy Research Institute (IFPRI) and the International Livestock Research Institute (ILRI) projected an increase in meat production and consumption from 233 to 300 million metric tonnes between the year 2000 and 2020 (Delgado *et al.*, 1999). Such projection statistics coupled with the fact that pork exports are said to be 4 times more profitable compared to the export of grains (Hartog, 2004), shade a bright future on the narrative of the market outcomes for pig and pork marketing.

The importance of pig production and consumption is not any different in Sub-Saharan Africa (SSA), and specifically, Uganda as a country. While emphasizing the importance

of pigs, IFPRI pig production report showed that Uganda ranked third in SSA producing 12% of the region's pig meat following South Africa and Nigeria (Guo, 2015). That aside, at an annual consumption rate of 3.4kg per person, Uganda has the highest per capita pork consumption in SSA (Ballantyne, 2012).

Unquestionably, pork is a good source of high-quality proteins and so responding to both the nutritional and food security needs in many households (Eliakunda and Milan, 2017). Furthermore, Tatwangire (2013) and Mulindwa (2016) contended that pig production could accelerate economic development by improving the livelihoods of smallholder farmers and provision of employment, especially through marketing activities. Moreover, many smallholder farmers have a desire to rear pigs due to their unique characteristics. These include i) faster growth rates; ii) ability to be kept on a small piece of land; iii) high rate of multiplication; iv) ability to be fed on many different crops and animal products and by-products; v) high feed conversion efficiency; and vi) early maturity and short generation interval (Muhanguzi *et al.*, 2012; Ndyomugenyi and Kyasimire, 2016).

The massive opportunities and benefits that pig rearing offers to smallholder farmers and to the economy notwithstanding; production and marketing in Uganda is still limited by inadequate pork processing facilities and practices; parasites and diseases; derisory access to market information; inadequate access to inputs, extension services, financial services and insurance; poor market linkages; absence of institutional frameworks for marketing and low levels of export of pigs and pig products (Ouma *et al.*, 2013; Tatwangire, 2013; Birungi *et al.*, 2015; Mulindwa, 2016).

A significant number of studies have been carried out in Uganda about pig production and marketing, for example, the International Livestock Research Institute (ILRI) highlighted opportunities such as employment creation and limitations which included high feed costs in the pig value chain (Ouma *et al.*, 2017). There are also breeding studies done by Makerere University to improve pig breeds kept by Ugandan farmers (Mutetiika *et al.*, 2010; Noce *et al.*, 2015) and feed conservation technologies research done by the International Potato Center (CIP) to ensure reliable utilization of feed resources throughout the production year (Asindu *et al.*, 2017; CIP, 2017). Additionally, Tatwangire (2013) and Mulindwa (2016) articulated that the Government of Uganda has been supplying piglets to farmers through the several development interventions such as National Agricultural Advisory Services (NAADS) and Bona-bagaggawale programs. These efforts have been supplemented by the activities of Non-Government Organizations (NGOs), for example, World Vision and Food for the Hungry (FHU). However, these interventions have not resulted into well-developed pig value chain which deprives the smallholder farmers of opportunities of reaping better returns.

The pig value chain is still generally undeveloped with poorly organized informal markets. Largely, rural-based farmers sell live pigs to local butchers or to other town-based traders for subsequent slaughter in urban markets (Ouma *et al.*, 2013; Tatwangire, 2013). Many segments of the value chain are not well exploited by the farmers so as to reap optimum returns from pig rearing (Tatwangire, 2013). As a result, farmers are reduced to only 'price takers,' being taken advantage of by middlemen who purportedly pay low prices for the pigs, recline the live weight of animals and sometimes do not pay on time (Muhanguzi

et al., 2012; Kamaghe *et al.*, 2014). Various scholars have suggested that to remedy this problem, farmers need to upgrade their production activities so as to not only capture more value through generating new revenues and profits but also spread risks (Chenais *et al.*, 2015; Umair *et al.*, 2017). Choksy *et al.* (2017) while referring to the plight of small-scale producers in developing countries asserted that the stiff competition they face pushes profit yielding activities outside the production function. Therefore, in order to enhance their competitive position, they need to engage in functional upgrading as this would improve business linkages, associations, and partnerships (Makosa, 2015).

The major objective of this paper, therefore, is to assess the existing knowledge on pig value chain functional upgrading in Northern Uganda and draw conclusions that contribute to improved performance of the pig value chain.

Study Description

This study is based on a combination of two methods: 1) a preliminary assessment of the pig value chain; and 2) desk review of existing literature on research and documentation of the pig value chain. The preliminary assessment involved a farm visit to 10 pig farmers in Koro Sub-county in Omoro district in northern Uganda to establish whether farmers adequately participated in the functional upgrading of the pig value chain. Figure 1 below shows a visit to one of the farmers. The reason for focusing on the pig value chain functional upgrading is that it is necessary to ascertain the factors responsible for the low competitiveness of pig production in the study area. Yet, if farmers engaged in functional upgrading together with appropriate strategies for market information acquisition and utilization, they would be able to achieve the much-desired competitiveness. This could either be through cost reduction or increased value earned per unit of output.



Figure 1. One pig farmer visited in Koro Sub County

Key among the documents assembled for the analysis included journal articles obtained from the internet. Other documents utilized in the study included reports disseminated by organizations involved research concerning pigs such as FAO, CIP, ILRI and IFPRI, unpublished articles, reports, policy briefs and information guides. Summaries, synthesis and organization of thoughts in this study followed largely the value chain functional upgrading as articulated in Porter (1985). We also visited some pig farmers in Omoro district in northern Uganda to ascertain whether indeed pig value chain functional upgrading existed among the farmers. This paper thus presents the findings and conclusions of a desk research which collected, considered and analyzed articles related to the pig value chain development in Uganda.

Results and Discussion

Preliminary results show that some pig farmers in the study area participated in functional upgrading activities. Two of the visited farmers were found to be involved in raising and selling weaners. Another six farmers reported participating in raising piglets as well as fattening pigs up to market size and then slaughter. Lastly, two pig farmers reported that they were operating pork joints alongside keeping pigs. These kinds of findings suggest that pig farmers in Northern Uganda are already on the journey of functional upgrading. In this case, functional Upgrading refers to the shift to new functions or increase in the number of activities performed by pig farmers as articulated by a host of scholars, for instance, Bolwig *et al.* (2008), Mitchell *et al.* (2009), Hulsén *et al.* (2014) and Makosa (2015). It has been argued that functional upgrading alters the input-output mix resulting in improved utilization of production capacity and increased efficiency to yield better returns for the resource-poor value chain actors (Hulsén *et al.*, 2014). A narration of personal experience by one female farmer revealed a similar trend. Indeed, this farmer demonstrated how her attitude changed in pig production because of the realization that taking on more activities in the value chain yielded better returns:

“I started with 2 piglets; they both got pregnant and farrowed a total of 12 piglets, which I fattened and waited for buyers. I was frustrated when the traders were offering less than what it costed to raise the pigs, I decided to slaughter the pigs and sell pork myself. I get an attractive profit, with sales of over 20 kg of pork per day, I now have to source for more pigs from other peer farmers to meet the ever increasing demand for the product. Along with pork I sell soft drinks, local gin (waragi), and cassava which have enhanced my income. This business has enabled me to pay school fees for my children and feed my family. The business has the potential to yield Ushs 500,000/= in profits per month if I could only inject in more capital ...”, Female farmer, Koro, June 2018

Extant literature on developing the pig value chain suggests that functional upgrading improves the well being of farmers. For instance, Tatwangire (2013) argued that upgrading allows for the active participation of smallholder farmers in bulking operations of live pigs as they wait for large-scale traders from urban centers or the farmers themselves to transport the pigs to slaughterhouses in urban markets, either way, making a bigger profit. Based on the findings of this study and available literature, it can be argued that pig value chain functional upgrading is important for achieving better competitiveness. The only question

that arises is what competitive strategies can pig farmers employ in order to have lasting functional upgrading? Elsewhere, some studies have suggested that horizontal coordination among farmers could shorten the value chain by excluding some intermediaries and ensure redistribution of functions among fewer partners in a transaction relationship (Mitchell *et al.*, 2009; Tatwangire, 2013). In Uganda, however, pig farmers are weakly organized which hinders their efforts to upgrade and take up different market exchanges at different nodes of the value chain. As a result, these producers fail to tap into the advantages of collective marketing and high bargaining power (Tatwangire, 2014).

Conclusion

Based on the literature review, it is evident that pig production and marketing are on the rise within Uganda and so is the demand which makes the activity one of great economic importance. It has been established that pig value chain functional upgrading is important for farmers to realize improved competitiveness. Some farmers in Northern Uganda are already engaged in pig value chain functional upgrading. This study has also demonstrated that pig value chain functional upgrading does not only lead to improved profitability of the farmers but also their well being as a whole. Farmers who participate in the functional upgrading of the pig value chain exhibit good attitude and willingness to continue with this process. Accordingly, this study has raised the question as to what competitive strategies can further contribute to pig value chain functional upgrading.

It is recommended that farmers engage more in the functional upgrading of the pig value chain so as to realize reduced production costs per unit of output which in turn results in improved farm profitability. In these kinds of efforts, what farmers ought to do is to devise strategies of cutting down feed costs, possibly, through making use of local feed materials, taking on practices that lead to quick weight gain and subsequently, engage in more activities along the value chain. For further research, it is important to examine the role of competitive strategies and information acquisition and utilization in the pig value chain functional upgrading.

Acknowledgment

The authors acknowledge the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) and the MasterCard Foundation (MCF) for supporting this study. This paper is a contribution to the Sixth African Higher Education Week and RUFORUM Biennial Conference held 22-26 October 2018 in Nairobi, Kenya.

References

- Asindu, M., Elepu, G., Ouma, E., Kyalo, G., Lule, P. and Naziri, D. 2017. Sweet potato wastes in major pig producing districts in Uganda: An opportunity for investment in silage technologies. *Livestock Research for Rural Development* 29 (11): 1-6.
- Ballantyne, P. 2012. Smallholder pigs value chain project to increase rural incomes in Uganda. ILRI.
- Birungi, R., Ouma, E., Dorresteijn, D, B., Kawuma, B. and Smith, J. 2015. Pig marketing and

- institutional strengthening: Uganda smallholder pig value chain capacity development training manual. Nairobi: ILRI.
- Bolwig, S., Ponte, S., du Toit, A., Riisgaard, L. and Harberg, N. 2008. Integrating poverty, gender and environmental concerns into value chain analysis. A Conceptual Framework and Lessons for Action Research. DIIS Working Paper.
- Choksy, U. S., Sinkovics, N. and Sinkovics, R. R. 2017. Exploring the relationship between upgrading and capturing profits from GVC participation for disadvantaged suppliers in developing countries. *Canadian Journal of Administrative Sciences* 386: 356–386. <https://doi.org/10.1002/cjas.1455>
- CIP. 2017. Roots, tubers, and bananas_ Next-gen pig feed for Uganda-CIP. Retrieved February 4, 2018, from file:///G:/New Volume H/pig/mugonya/Roots, tubers and bananas_ Next-gen pig feeds for Uganda-CIP.html
- Delgado, C., Rosegrant, M., Steinfeld, H., Ehui, S. and Courbois, C. 1999. Livestock to 2020. Washington: International Food Policy Research Institute.
- Eliakunda, C. and Milan, S. 2017. Smallholder Pig Marketing Systems in the Southern Highlands of Tanzania. *J Nat Sci Res* 6 (14): 87–98.
- Guo, Z. 2015. Pig Population (head, 2005). Washington DC.
- Hartog, L. D. 2004. Developments in Global Pig Production. *Advances in Pork Production* 15: 17–24.
- Hulsen, S. C. Van, Visseren-Hamakers, I. J. and Vellema, S. R. 2014. Upgrading in the timber value chain by a community forest organization in Lomerío, Lowlands Bolivia; Case study of Puesto Nuevo. Master Thesis.
- Makosa, D. 2015. Constraints and opportunities for upgrading Uganda’s rice markets: A value chain approach. *Journal of Development and Agricultural Economics* 7 (12): 386–399. <https://doi.org/10.5897/JDAE2015.0643>
- Mitchell, J., Keane, J. and Coles, C. 2009. Trading up: How a value chain approach can benefit the rural poor. London: COPLA Global: Overseas Development Institute. <https://doi.org/10.1057/9781137373755.0007>
- Muhanguzi, D., Lutwama, V. and Mwiine, F. N. 2012. Factors that influence pig production in Central Uganda - Case study of Nangabo Sub-County, Wakiso district. *Veterinary World* 5 (6): 346–351. <https://doi.org/10.5455/vetworld.2012.346-351>
- Mulindwa, C. 2016. Training guide: Pig and pigmeat marketing in Uganda. CGIAR. 20pp.
- Mutetikka, D., Nabasirye, M. and Nakimbugwe, H. 2010. Developing appropriate feeding and breeding strategies for improved smallholder pig production. pp. 1133-1137. In: Second RUFORUM Biennial Regional Conference on “Building capacity for food security in Africa”, Entebbe, Uganda, 20-24 September 2010, RUFORUM.
- Ndyomugenyi, E.K. and Kyasimire, J. 2015. Pig production in Kichwamba Sub-county, Rubirizi district, Uganda. *Livestock Research for Rural Development* 27 (10): 1-13.
- Ngapo, T. M., Dransfield, E., Martin, J. F., Magnusson, M., Bredahl, L. and Nute, G. R. 2004. Consumer perceptions: Pork and pig production. Insights from France, England, Sweden, and Denmark. *Meat Science* 66 (1): 125–134. [https://doi.org/10.1016/S0309-1740\(03\)00076-7](https://doi.org/10.1016/S0309-1740(03)00076-7)
- Noce, A., Amills, M., Manunza, A., Muwanika, V., Muhangi, D., Aliro, T. and Masembe, C. 2015. East African pigs have a complex Indian, Far Eastern, and Western ancestry. *Animal Genetics* 46 (4): 433–436. <https://doi.org/10.1111/age.12305>
- Ouma, E., Dione, M., Lule, P., Rosel, K. and Pezo, D. 2013. Characterization of smallholder

- pig production systems in Uganda: constraints and opportunities for engaging with market systems. pp. 1–15. In: International Conference of the African Association of Agricultural Economists. Tunis: African Association of Agricultural Economists.
- Ouma, E., Ochieng, J., Dione, M. and Pezo, D. 2017. Governance structures in smallholder pig value chains in Uganda: Constraints and opportunities for upgrading. *International Food and Agribusiness Management Review* 20 (3): 307–319. <https://doi.org/10.22434/IFAMR2014.0176>
- Porter, M. E. 1985. *Competitive Advantage: creating and sustaining superior performance*. The Free Press.
- Speedy, A. W. 2003. Global production and consumption of animal source foods. *American Society for Nutritional Sciences* 133 (11): 4048S–4053S.
- Tatwangire, A. 2013. Successes and failures of institutional innovations to improve access to services, input and output markets for smallholder pig production systems and value chains in Uganda. CGIAR, 65pp.
- Tatwangire, A. 2014. Uganda smallholder pigs value chain development: Situation analysis and trends. ILRI (aka ILCA and ILRAD).
- Thornton, P. K. 2010. Livestock production: recent trends, future prospects. *Philosophical Transactions of the Royal Society B: Biological Sciences* 365 (1554): 2853–2867. <https://doi.org/10.1098/rstb.2010.0134>