

Participatory inclusiveness in the Potato Value Chain in South-Western Uganda

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Abstract

Smallholder farmers play a major role in the agricultural value chains (AVCs) of developing countries Uganda inclusive, and this has been of great concern to policy makers, development partners, research, and extension workers. The study underscores the evidence of participatory inclusiveness on the potato value chain (PVC) in South-Western (SW) Uganda. The study on which the paper is based adopted a cross-sectional mixed method research (MMR) design whereby both quantitative and qualitative data were collected using a Survey Research Questionnaire (SRQ) and a semi-structured interview (SSI) grid respectively. The population sample of 375 respondents to the SRQs and 79 participants to the SSIs was sourced from four Districts of Kisoro, Rubanda, Kabale and Rukiga in SW Uganda. The study was guided by the Relational Risk Theory (RRT) and the Theory of Incentives (TI) in examining participatory inclusiveness. The concept of participatory inclusiveness was studied along the independent variables (IVs) of collaboration, innovation, support opportunities, and combined participatory inclusiveness and dependent variables (DVs) of actor influencers (AIs) chain influencers (CIs) and environmental influencers (EIs). The Statistical Package for Social Sciences (SPSS) software was used to analyse quantitative data while thematic analysis helped to examine qualitative data. Generally, results from the descriptive statistical analysis and regression analysis through the Ordinary Least of Squares (OLS) model, showed that participatory inclusiveness was evident and affected by the PVC actors' ability to access new knowledge, existing governance policies, and availability of extension services. The study recommends that individual actors in the PVC should have access to new and appropriate knowledge, chain leaders should enact and pursue good governance policies and the Government of Uganda (GoU) should empower and deploy its extension workers with the appropriate skills, competences, expertise, and necessary tools and equipment to effectively assist PVC actors, especially the small-holders. Development partners like Non-Governmental Organisations (NGOs) need to facilitate effective dissemination of information and influence policies and regulations relevant to PVC.

Keywords – Inclusiveness, SW Uganda, Potato Value Chain, Smallholder Farmers

Introduction

Agricultural development programmes in developing countries have for many years focused on smallholder farmers (Hassan et al., 2021; Ros-Tonen et al., 2019). Smallholder farmers are persons that hold less than 2 hectares of land; the group is heterogeneous consisting of the youth, and adult farmers, who normally habit rural areas. Despite smallholder farmers' dismal benefits from agricultural chains, they constitute the majority of agricultural commodity producers (Kodua et al., 2018). Smallholders' inclusiveness in agricultural value chains (AVCs)

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can be examined through various approaches. Extant literature proposes several strategies and approaches that smallholders can utilise to participate in the AVCs (Ros-Tonen et al., 2019). For example, in response to changes in the Agri-food sector over the past two decades, smallholders' participation on value chains (VCs) has emerged as a strategy for poverty alleviation (Gereffi & Fernandez-Stark, 2016). Generally, governments consider VCs as a way to enhance farmers' access to markets, inputs and credits and to improve productivity and efficiency. It is assumed that value chains can have positive effects on livelihoods, food security, climate resilience and gender equality (Haggblade et al., 2012).

While most earlier work on value chains centred on improving competitiveness of different supply channels, recent efforts have focused on increasing opportunities for the poor by intentionally including them in the value chain (Yongabo & Go-ktepe-Hulten, 2021). This is more critical when big enterprises along the AVC such as exporters and supermarket chains have the necessary resources to effortlessly penetrate rural economies, and distort their scale and structure (Burkitbayeva & Swinnen, 2018). Also, some governments offer commercial incentives such as tax holidays to motivate large-scale agribusiness investments which tend to generate value-chain structures and distributional outcomes that are not inherently pro smallholder farmers (Burkitbayeva & Swinnen, 2018). Such interventions do not only delineate the ability of smallholders to benefit from their products but, also become a deterrent to their inclusiveness and abilities to scale up the value chain ladder.

Therefore, there is need for an inclusive approach that takes into account competitiveness and equity (Likoko & Kini, 2017) so as to realise sustainable higher income earnings for the smallholders and vulnerable groups and ensure their participation in the VC (IFAD, 2015). In addition, these are discussed along mitigating factors such as access to knowledge, individual capabilities, government regulations and governance policies, availability of extension services, access to finance and the effect of government programs. The focus on smallholder inclusiveness in the PVC aligns with the United Nations (UN) 2030 Agenda for Sustainable Development (UN, 2015; (Ghosh & Rajan, 2019). In particular, the study is linked to Sustainable Development Goals (SDGs) 1 (no poverty), 2 (zero hunger), 5 (gender equality), 8 (decent work and economic growth), 10 (reduce inequality), and 17 (partnerships for the goals).

In response to challenges within the AVCs, new efforts have been undertaken to make them more inclusive and pro-poor than before (FAO, 2017). The study delves into the exploration of such efforts within the PVC in SW Uganda by examining the degree to which actors perceive the benefits of the collaborations made (Kampstra & Ashayeri, 2006), ability to undertake new innovations (Devaux et al., 2018), and support opportunities (Bellemare, 2010) available to them to undertake their businesses equitably and profitably. These are analysed in light of actor attributes, chain attributes and the environment in which activities of the value chain occur. The dependent variable of actor attributes includes indicators of economic gain, capability, human capital, access to knowledge and social acceptability. Indicators of the DV of chain attributes comprise governance, access to finance, information flow and age of business while those of the environment are government policies, government programs, infrastructure and, research and extension services. The choice of the independent and dependent variables emanates from global studies that have been conducted on participatory inclusiveness within the AVC.

In consideration to collaboration as a critical factor in inclusiveness, a study conducted in Indonesia's cocoa industry revealed that inclusiveness through process upgrading resulted in improved yields, quality of farmer's welfare, and that increased collaborations between stakeholders augmented this process through improved access to information and finance (de Boer, et al., 2019; Tran et al., 2023). A study by Chamberlain et al. (2019) on inclusive businesses in the South African agriculture sector discovered that ownership, voice, risk and

rewards were central to the effective realisation of inclusiveness for the smallholders/low-income communities. The importance of stakeholder interaction and government policies as important factors in providing the preconditions for innovation performance in agriculture in Rwanda, are discussed by Yongabo et al. (2021). An empirical study by Ros-Tonen et al. (2019) examines the conceptualization of small-holder value chain integration. A study by Bonabana et al., (2013) on performance of potato markets, reveals that farmers' participation in AVCs is often disadvantaged by limited access to information, services, appropriate technology and capital. These factors restrict their capacity to effectively participate in the marketing of their produce and realise better prices (Devaux et al., 2009).

However, little research exists on participatory inclusiveness in the PVC in Uganda generally and the SW part of the country specifically, where different factors influence the activities at each node of the chain. Available research that has been undertaken examines issues of seed quality (Aheisibwe et al., 2015), potato production according to gender (Etiang et al., 2019), determinants of profit (Kyomugisha et al., 2017), investment opportunities and challenges (Mbowa & Mwesigye, 2016), and inclusion of farmer communities in VC development (Mugisha et al., 2023), which studies focused on empowering farmers in seed multiplication, postharvest, value addition and market linkages. The results of this study will inform interventions guided by the country's National Agriculture Policy (NAP) on the transformation of subsistence agriculture into commercial agriculture (MAAIF, 2016). The study is specifically undertaken to provide answers to the research questions: How do collaborations affect participatory inclusiveness on the PVC in SW Uganda? How does innovation impact the realisation of participatory inclusiveness on the PVC in SW Uganda? How do support opportunities affect participatory inclusiveness on the PVC in SW Uganda? How do combined inclusiveness impact the realisation of participatory inclusiveness on the PVC in SW Uganda?

Conceptualization of Key Concepts

Agricultural Value Chain

Value chains, in the agricultural sector stretch from the procurement and use of the inputs deployed, to the actual production of the commodity; including all things involved in its supply and distribution to the ultimate consumption level (Ros-Tonen et al., 2019). VCs are considered as avenues for enhancing farmers' access to markets and inputs, and platforms that can allow them access affordable and timely financial credit to improve productivity and efficiency (Etiang et al., 2019). Value chain analysis is critical in underscoring the interactions among the different actors in the production and exchange activities at the micro and macro levels. It has also been largely credited with determination of policies that smallholder farmers can apply to increase their yields and gains from their produce (de Boer et al., 2019). The presence of transparent collaborative efforts and investments at the various stages of the chain are essential for building trust and form the bedrock for efficiency (Cleave & Arku, 2014).

Participatory Inclusiveness

The principle of participatory inclusiveness in the AVC refers to "the level of participation of the low-income beneficiaries in the value creation process" (Chamberlain & Anseeuw, 2019, p.601). Consequently, participatory inclusiveness within the wider realm of national development, embraces parameters of poverty reduction, socio-economic participation of marginal classes, regional balance, reduction of inequality, and empowerment (Chadda, 2024). It stretches beyond the assurance of broad-based access to collaborations, innovations and support opportunities, and instead pursues democratic participation for all actors (Chadda, 2024). Within the agricultural sector, participatory inclusiveness involves the active involvement of small-holder farmers with respect to gender (men, women), age (youth) and to the benefits they receive from the collaborations they make, the flexibility of systems and processes to allow them undertake innovations, and the availability of support opportunities to

enable them add value and grow. However, the realisation of these factors is influenced by actor, chain and environmental factors within the VC. The desire for participatory inclusiveness in the AVCs has led to the development of complex business partnerships, which tend to amalgamate several standard instruments into unique business models (Chamberlain & Anseeuw, 2017).

Such models have helped to create inclusive businesses whose main goal is to ensure that low-income communities, farmers and/or individuals can benefit from the value chain (UNDP, 2008). Inclusive businesses embrace shared value principles, align their goals to possible social impact to the community, and pursue responsible environmental, social, and governance standards. They are the basis for elevating the poor to higher nodes of the value chain by exposing and enabling them to take advantage of available information and knowledge from some of the actors, chain linkages and factors in the chain environment (IFAD, 2015).

According to the Food and Agricultural Organisation (FAO), inclusive business models (IBMs) integrate smallholders into markets with collaborations for the poor and business communities while enabling them to move out of poverty (FAO, 2015). The IBM environments provide the poor in the VC with market inclusion where they can access better prices, learn ways of adding value, and ensure a reliable market for their produce (Ménard & Vellema, 2020). Inclusive business also embraces issues of the environment and integrates the social needs of the community by promoting inclusive and sustainable economic growth, employment and decent work for all (SDG #8) (UN, 2015). A study to determine the welfare effects of inclusiveness to vegetable producers in China showed that collaborations among chain actors had positive effects on the yield, profit and quality certification of producers (Liang et al., 2021). Conversely, cooperation can generate positive spill-over effects on VCAs and non-chain actors' incomes and, create inclusive communities characterised by sustainable development (Michalek et al., 2018). Participatory inclusiveness behaviours of PVC actors such as seed potato, traders, processors, ware potato and consumers, and non-PVC actors such as government, service providers, and other stakeholders can stimulate and ensure efficient operations and predictable markets for all in the PVC (Darko-Koomson et al., 2020).

Theoretical Framework

The study on which the manuscript is based is guided by two theories; the Relational Risk Theory (RRT) and the Theory of Incentives (ToI). The RRT is used because of the complexity of the concept of participatory inclusiveness in the AVC, which revolves around complex and dynamic partnerships between smallholders/low-income communities and commercial stakeholders (Chamberlain & Anseeuw, 2019). According to the RRT, trade partners will most likely fail to cooperate with smallholder farmers in good faith, and instead operate opportunistically to ensure that their interests are met (Yang et al., 2015). The RRT allows for the interpretation of risk situations and helps to suggest new ways to approach risk management, risk governance, and risk communication. However, it is considered rather complex, limited in its performance and may be costly.

On the other hand, the ToI facilitates the understanding of participatory inclusiveness by assessing the possibility and nature of returns that are associated with the division of tasks and their delegation by the principal to the agent (Laffont & Martimort, 2002). The ToI portrays the importance of external rewards as critical motivating factors for stakeholders to achieve goals. It fronts that people are motivated by the external rewards they hope to achieve by successfully undertaking a given task. However, the theory ignores the contribution of internal motivators such as people's emotions and the role of supervisors in ensuring that particular tasks are completed successfully. Some critics argue that this may tantamount to discrimination and can lead to possible conflicts and fraud (Laffont et al, 2013).

Methodology

Description of the Study Area

The study was conducted in Kabale, Kisoro, Rubanda and Rukiga Districts in SW Uganda. The districts had a combined population of 863,000 of which 604,000 (70%) engaged in potato farming (UBOS 2014; 2022). Kabale District (-1° 14' 60.00" S and 30° 00' 0.00" E) has a mountainous landscape with a population of 285,097 people (UBOS, 2022). It is bordered by the Districts of Rukungiri to the North, Rukiga to the North-East, Rubanda to the West, Kanungu to the North-West and the Republic of Rwanda to the East and South (ACODE, 2019). The increasing demand for farmland over the past several decades led to fragmented landholdings on the hillsides and conversion of wetlands into agricultural lands. Approximately 6% (111 km²) of the total land area of the district are wetlands, all of which are located in valleys. The district is largely agrarian with crops grown including potatoes, cereals, beans, coffee, vegetables and matooke (ACODE, 2019).

Kisoro district (-1°17'06.0"S and 29°41'06.0"E) also has a mountainous landscape with a population of 431,175 inhabitants (UBOS, 2022). It is located in SW Uganda and shares part of Bwindi National Park, which is a habitat for the African mountain gorilla. Kisoro is bordered by the districts of Kanungu to the North, Kabale to the East, the Republic of Rwanda to the South, and the Democratic Republic of Congo to the West. The local economy is private sector-led and dominated by enterprises in tourism and trade in agricultural produce (ACODE, 2019).

Rubanda district is bordered by the Districts of Kisoro to the West, Rukungiri and Kanungu to the North, Kabale to the East and the Republic of Rwanda to the South. It has interlocking and heavily cultivated hills and valleys supporting a population of 245,684 people. The district has a land area of 660.2 square kilometers with altitudes between 1,219-2,347 meters above sea level ([https://www. Rubanda.go.ug](https://www.Rubanda.go.ug)). The district is largely agrarian with crops that include potatoes, cereals, and beans.

Rukiga district is bordered by the districts of Ntungamo to the East, Kabale to the South-West, Rubanda to the North-West, Rukungiri to the North and the Republic of Rwanda to the South-East ([https://www. Rukiga.go.ug](https://www.Rukiga.go.ug)). With a population of 132,029 (UBOS, 2022), Rukiga is largely agrarian with the growing of potatoes, cereals, matooke and beans (ACODE, 2019).

Research Design

The research to explore participatory inclusiveness in the PVC in SW Uganda was conducted using a cross-sectional mixed methods' (MMR) design to collect and analyse quantitative and qualitative data (Hesse-Biber & Johnson, 2015). The approach was preferred over other designs because it was considered the most-appropriate to collect and analyse rather large sums of data (Bryman & Bell, 2015) and provide a holistic understanding of the research phenomena. The design was also considered the best to provide accurate data from the population that was majorly rural and, therefore, required physical personal interpretation of the questions to ensure the efficacy of the responses (Bazeley, 2018). Additionally, the use of the cross-sectional MMR design was less expensive, provided easier management and quick responses and was versatile enough to enable the exploration of relationships of multiple variables (Punch, 2014).

Sample size and sampling techniques

The sample size was calculated as 384 by using the Krejcie and Morgan's formula for a finite population (Krejcie & Morgan, 1970). However, because of various reasons, only 375 respondents took part in the study. The failure of 9 (2.3%) of the respondents to participate in the study was occasioned by reasons including sickness, absenteeism and relocation of the would-be respondents to other places. The researcher was confident that failure to incorporate

data and information from no-show respondents to the SRQs was not significant enough to affect the reliability and validity of the results obtained.

The Krejcie and Morgan formula for determining sample size

$$s = X^2 NP (1-P) \div d^2 (N-1) + X^2 P(1-P)$$

where s = required sample

X = the table value of chi-square for 1 degree of freedom at the desired confidence level

N = the population size

P = the population proportion (assumed to be .50)

d = the degree of accuracy expressed as a proportion (.05)

The study used a stratified random sampling technique, whose adoption was based on the need to ensure that each sub-group within the study population received proper representation within the sample (Hesse-Biber & Johnson, 2015). The SW region was purposely selected for the study, given that the region produces 87% of the potatoes in the country. The four districts were used because they produced about 74% of the potato in the country (UBOS, 2022). Within the study districts, the most active sub-counties in the potato production and trade were also purposively selected. These were Kamuganguzi in Kabale district, Bukimbiri in Kisoro district, Muko in Rubanda district; and Bukinda in Rukiga district. Relevant authorities and leaders in the selected sub-counties were asked for guidance in the process of preparing the sampling frames for the different categories of respondents that informed this study. For the potato farmer node, the sampling frame was a list of households and their heads obtained from the sub-country headquarters. the sampling frame for the other chain actors was generated from common knowledge of the authorities and leaders of the sub-counties as well as from MAAIF. All items on the sampling frame were assigned unique identifiers, which were used in the final random process of selecting the individual respondents of the study.

In order to triangulate information from the PVC actors, the researcher interviewed service providers and regulatory authorities. Using expert sampling method 79 Key Informants were interviewed of which 14 were agro-inputs dealers, 13 financial service providers (both commercial banks and SACCOs), 5 disseminators of market information (mainly FM radios), 13 from relevant NGOs, and 4 from umbrella organizations (UNFA, UCA and UNSPA). Under the regulatory authorities/enabling environment, the researcher interviewed 20 Government officials (4 sub county level Extension Officers, 4 District Agricultural Officers, 4 District Commercial officers, 4 District Chairperson, 2 Production Department Heads, and 2 Officers from MAAIF, 3 staffs from the zonal research station KaZARDI) and 4 Market Masters.

Data Collection

The study used a SRQ to collect quantitative data from 375 respondents and an SSI to collect qualitative data from 79 participants. The respondents to the SRQ provided answers to descriptive questions by themselves or through the help of the Research Assistants (RAs). Care was taken to ensure that respondents' views were not adulterated or influenced by the RAs in any way. The SRQ technique helped to collect quantitative data on the IVs of collaboration, innovation and support opportunities and DVs of action influencers, chain influencers and environmental influencers. The SSI helped to collect information from the participants on the same variables.

Data analysis

Quantitative data collected using the questionnaire was entered into MS Excel and edited to assure its efficacy by dealing with inconsistencies and oddities. The data were then fed into the

Statistical Package for Social Sciences (SPSS) software for analysis. Results were presented in form of descriptive statistics using tables and regression analysis. The study used the OLS model to determine the coefficients of linear regression equations. The OLS helped to determine the indicators and influencers of participatory inclusiveness in the PVC in SW Uganda.

Results and Discussions

Respondents' characteristics and participatory inclusiveness

Study results in table 1 showed that females were the majority in the PVC. This was mainly because the biggest number of respondents were from the ware potato producer (WPP) where women tend to dominate. The WPP had a lot to do with food security in homes and was thus highly associated with women, while the other PVC nodes were more commercialized; an attribute that normally attracts more males (Waiswa & Akullo, 2021). Results also reveal that the most active age in the PVC (50.7%) was between 35 and 55 years of age. This was indicative of an age range where both social and financial stability were expected and, therefore, the ability to participate more in the PVC. Furthermore, majority of the respondents were married (86.9%) indicating social stability and, to an extent, the sustainability of the PVC activities. Also, most of the respondents (55.7%) had at least attended a primary school level of education, even though, in reality, most actors at the WPP node had no formal education. Such revelations were reflective of the complexity of AIs, CIs and EIs and related activities within the PVC in SW Uganda.

Table 1: Respondents' social characteristics

Attribute	Frequency	Percent
Sex		
Female	195	52.0%
Male	180	48.0%
Age		
<35	101	26.9%
36-55	190	50.7%
>55	84	22.4%
Marital Status		
Never Married	21	5.6%
Married	326	86.9%
Separated/Widowed	28	7.5%
Education Level		
No Formal Education	32	8.5%
Primary	209	55.7%
Secondary	91	24.3%
Tertiary	43	11.5%

Further analysis showed that the respondents' age was positively related and significant to the IV of collaboration ($p \leq 0.05$) but not so for the other variables (Table 2). Whereas in most studies the youths tended to be more collaborative than their older counterparts, results from this study revealed a positive and significant relationship with age, indicating the importance of collaboration and the need for experience to effect it successfully. The respondents' characteristic of sex was positively related but not significant to the IVs of collaboration, support opportunities and combined inclusiveness. Results further revealed that the respondents' characteristic of marital status was significant and positively associated with the IV of innovation ($p \leq 0.05$). This was indicative of the fact that couples tended to have more responsibilities and, therefore had to devise innovative means to successfully handle them. The respondents' education levels were not positively related or significant to any of the IVs. Yet,

for some studies, the more educated the population, the more likely they could be collaborative, innovative and open to support opportunities (Yangabo & Go'ktepe-Hulten, 2021).

Table 2: Respondents' social characteristics and inclusiveness on the PVC

Variables	Collaboration	Innovation	Support Opportunities	Combined
Age	0.00380**(0.00185)	-0.00016(0.00196)	-0.00197(0.00213)	-0.00197(0.00216)
Sex	0.0464 (0.0469)	-0.0443 (0.0463)	0.0559 (0.0504)	0.0305(0.0511)
Marital status	-0.0489(0.0605)	0.150**(0.0638)	0.0334(0.0693)	0.0935(0.0704)
Education	-0.0537(0.0436)	-0.044(0.046)	-0.0689(0.05)	-0.00489255

NB: Standard errors in parentheses, * $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.1$**

Factors and influencers of participatory inclusiveness in the PVC

Collaboration and participatory inclusiveness

Study results showed that 12.6% of participatory inclusiveness in the PVC in SW Uganda could be attributed to the inclusiveness variable of collaboration (Table 3). Majorly, the results revealed that collaboration was positively and significantly related to the AI of access to new knowledge (coeff = 0.190, $p \leq 0.05$) and EI of government policies (coeff = 0.118, $p \leq 0.05$). Yet the EI of research and extension services (coeff = -0.176, $p \leq 0.01$) returned significant but not positive relationship with collaboration.

The results on the AI of access to new knowledge ($p \leq 0.05$) from the questionnaire tended to align with those from the interviews where some participants revealed that access to new knowledge would encourage them to make favourable negotiations and beneficial networks, enable them to access new and better markets and pursue innovations. This would empower individuals to bring fresh perspectives, diverse ideas, and advanced skills into the PVC mix, leading to more creative solutions, improved decision-making, and a greater ability to tackle complex problems effectively when working with others. These results correlate with the relations risk theory in terms of the desire for smallholder farmers to acquire knowledge that can help them negotiate favourable terms of collaboration (Yang et al., 2015). They are reflective of the ultimate need for smallholder farmers to enter partnerships that are considerate of their special circumstances and can make them feel part of the cooperation (Jansen, et al., 2020). In line with the RRT, the results further reveal the extent to which smallholder farmers in the PVC in SW Uganda must have endured marginalisation because of their social identity (Shore & Chung, 2022), and how knowledge empowerment would help them mitigate this challenge. The results are also in synch with extant literature, which shows that people's access to new knowledge increases participatory inclusiveness by allowing them to engage and collaborate with others from an informed perspective (Trabucchi & Buganza, 2020).

Table 3: Participatory inclusiveness and influencing factors

Variable / indicators	Collaborations	Innovation	Support opportunities	Combined inclusiveness
AI – Economic gain	0.000930* (0.000515)	0.000572 (0.000543)	0.00124** (0.000590)	0.000962 (0.000599)
AI – Capability	-0.0874* (0.0517)	0.114** (0.0546)	0.00372 (0.0593)	0.0674 (0.0602)
AI – Human capital	0.0334 (0.0476)	-0.0612 (0.0503)	0.0467 (0.0549)	-0.00119 (0.0557)
AI – Access to new knowledge	0.190** (0.0787)	-0.296*** (0.0831)	0.365*** (0.0903)	0.346*** (0.0917)
AI – Social acceptability	-0.0274 (0.0505)	-0.0359 (0.0533)	-0.0205 (0.0580)	-0.0687 (0.0589)
CI – Governance	-0.0595 (0.0442)	0.0408 (0.0466)	-0.110** (0.0510)	-0.110** (0.0518)
CI – Access to finance	0.0328 (0.0466)	0.154*** (0.0492)	0.0692 (0.0537)	0.0614 (0.0545)
CI – Information flow	-0.0134 (0.0516)	-0.0658 (0.0544)	-0.0448 (0.0592)	-0.0779 (0.0601)
CI – Duration in business	-0.00191 (0.00240)	0.000339 (0.00254)	0.00293 (0.00277)	0.00363 (0.00282)
EI – Government policies	0.118** (0.0524)	-0.128** (0.0553)	0.0792 (0.0601)	-0.0128 (0.0610)
EI – Research & extension services	-0.176*** (0.0404)	-0.0877** (0.0426)	-0.0377 (0.0463)	-0.122*** (0.0470)
EI – Infrastructure constraints	0.00727 (0.0643)	0.00970 (0.0678)	0.108 (0.0737)	0.0952 (0.0748)
EI – Government programs	-0.0416 (0.0272)	0.105*** (0.0287)	0.0447 (0.0312)	0.0468 (0.0317)
Constant	0.595*** (0.137)	0.823*** (0.144)	0.232 (0.157)	0.0715 (0.159)
Observations	375	375	375	375
R-squared	0.126	0.128	0.115	0.146

NB: Standard errors in parentheses, *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.1$

Results further revealed that the EI of government policies ($p \leq 0.05$) had profound effect on the realisation of participatory inclusiveness through collaboration. The nature and implementation of government policies impacted the extent to which PVC actors could assert for their roles and ensure visible representation in spheres of influence. Moreover, the extent to which actors perceived themselves as inclusive and active participants in the VC depends on their understanding and acceptance of available government policies and how these affect their inclusion in VC activities, programs and governance (Jansen et al., 2020). Policies and governance rules were better embraced and implemented when they aligned to the individual needs and could help them feel inclusive (Shore & Chung, 2022). Notably, actors at the lower end of the chain and those with marginalised social identity needed acknowledgement, equitable and valued treatment (Koomson, 2024). This was in line with the ToI which opined that rewards in all forms were catalysts for people to excel at their tasks (Laffont & Martimort, 2002). The results further aligned with the participants' views, which revealed that appropriate government regulations helped smallholder farmers to undertake their businesses ethically and mitigated the risks of being fined for failure to adhere expected regulations.

The significance of the relationship between extension services and collaboration emanated from benefits that PVC actors received from the intervention of extension workers whose roles directly affected the extent to which their businesses could succeed or fail (Bellemare, 2010).

Extension services enabled beneficiaries to acquire innovative and modern ways of undertaking their tasks and consequently building capacity to negotiate, cooperate, collaborate and engage with notable stakeholders from an advantageous position (Yongabo & Go-ktepe-Hulten, 2021). Such empowerment was critical in aiding lowly PVC actors to be considered for critical engagements with others in a more respectable manner. Mutual respect among PVC actors and sharing of new knowledge were essential for fostering participatory inclusiveness. The results were in consonance with participants' observations that government's intervention in form of research and extension services was critical to the formation of formal farmer groups and local, regional and national platforms for better collaboration, growth and sustainable development.

On the other hand, while the results showed that the AI of human capacity, CI of access to finance and EI of infrastructure were positively related with collaboration, such relationships were not significant. Results further revealed that the AIs of capability and social acceptability, the CIs of governance, information flow and duration in business, and the EI of government programs were neither positively related nor significant to the indicator of innovation in the realisation of participatory inclusiveness in the PVC in SW Uganda.

Innovation and participatory inclusiveness

The results indicated that 12.8% of participatory inclusiveness in the PVC in SW Uganda could be attributed to the indicator of innovation and its influencers (Table 3). This was majorly reflected in the AI of access to finance (coeff = 0.154, $p \leq 0.01$), EI of government programs (coeff = 0.105, $p \leq 0.01$), and CI of capability (coeff = 0.114, $p \leq 0.05$), which were positive and significantly-related to the innovation. As an indicator of participatory inclusiveness, innovation was also propped by the AI of access to new knowledge (coeff = -0.296, $p \leq 0.01$), EIs of research and extension services (coeff = -0.0877, $p \leq 0.05$) and government policies (coeff = -0.128, $p \leq 0.05$). Results further revealed that the AI of duration in business, CI of governance and EI of infrastructure were positively related to innovation. However, the AIs of social acceptability and human capital, CI of information flow and EI of government policies, were neither positively related nor significantly-related to innovation as an indicator of participatory inclusiveness in the PVC in SW Uganda.

The results tended to align with literature, which indicated that access to finance and capabilities were essential to the pursuance of innovation by PVC actors through all stages of the chain (Devaux et al., 2018). Innovation was required by farmers in times of planting and harvesting mostly due to the changing climatic environments (Liang et al., 2021). Innovation was also critical at the commercial nodes of the PVC due to internal weaknesses of the business structures and functions, and the external complex and dynamic market forces (Kiomugisha et al., 2017). Such complexities and the dynamism that engulfed them were reflected in the RRT which debates that by entering into meaningful cooperative arrangements, the less-advantaged players could overcome challenges to growth by tapping into expertise of their more developed peers. The results also invoked the ToI, which considers the attainment of exceptional rewards from a particular arrangement as critical catalysts of focused development and growth (Somoye & Eyupoglu, 2020).

The significance of the PVC actors to access affordable, ample and timely finance was acknowledged by the results as being critical to their ability to innovate and improve their offering through value addition. Without reliable financing most actors in the PVC were less likely to embark on business growth and sustainable innovations that could ensure sustainable development of their businesses (Yongabo & Go-ktepe-Hulten, 2021). The issue of finance accessibility was exacerbated by high interest rates, and expensive collateral requirements that made it difficult for PVC actors, notably the smallholder farmers, to implement innovative strategies (Nizam et al., 2020). The challenge of lack of access to finance combined with some

government's inability to resolve the problem to make the potato business in Uganda very challenging. The government's incessant change in agricultural policies and introduction of new programs has meant that PVC actors were usually unable to pursue innovative measures and embrace new technologies for new and profitable ventures (Abdul Bahri et al., 2018; Law et al., 2018).

The realisation that capability was significantly associated with innovation as an indicator of participatory inclusiveness construed to the understanding that individual skills and organizational capabilities contributed highly to the adaptability and responsiveness of PVC actors. With hindsight that women formed the bulk of the actors at the lower end of the PVC in SW Uganda, the highlight of capabilities as a critical element for innovation signalled their need to adapt to novel ways of undertaking their business such as embracement of new technologies (Etiang et al., 2019). Some studies have indicated that when PVC actors have access to relevant knowledge, they are empowered with new skills to embrace newer and better technologies (ADB, 2015). Moreover, it is argued that PVC actors with flexible minds are more likely to ensure the flow of quality goods, enhance the proficiency of business, improve market access and lead to all-round economic growth (Uduji and Okolo-Obasi, 2023).

Similarly, the evidence that inclusiveness in the PVC was impacted upon by governance policies affects the extent to which they help to grow or hinder the success of various actors. When such policies are not flexible enough to cater for the needs of the various stakeholders in the PVC, there is high probability that they will not be respected and accepted. Effective governance is attained when it is flexible enough to allow the growth of new methods while taking into consideration the expectations of the various PVC actors (Ménard, 2018). This aligns to the ToI which debates that good performance should be rewarded so that actors can have the impetus to perform even better in the future. Views from the participants to the interviews indicated that PVC actors were concerned about policies that governed them and argued that their embracement and adherence to prevailing governance policies could be more achieved if they were formulated with their active participation.

Equally, the PVC actors' presentation of the value of extension workers to ensuring innovation was noted. Extension workers provide producers and farmers with the necessary tools, skills, knowledge and expertise to ensure that their potato crop grows and yields profitable harvests through value addition. However, for this to materialise, there was need for both parties to be innovative in the ways such innovations were imparted and utilised. Whereas PVC actors require to have flexible minds to acquire new knowledge and skills that they may not necessarily be comfortable with, the extension workers require to be inventive in their methods of instruction and, use appropriate tools and systems that are aligned to the needs of the PVC actors (de Boer et al., 2019). Views from the participants to the interviews seemed to suggest that currently, extension services were not beneficial to them because they were either implemented late or the experts lacked the requisite skills to effectively relay them or both.

Support opportunities and participatory inclusiveness

The results of statistical analysis revealed that 11.5% of participatory inclusiveness in the PVC in SW Uganda could be attributed to the factors within the indicator of availability of support opportunities (Table 3). The main influencers of support opportunities included the AIs of access to new knowledge (coeff = 0.365, $p \leq 0.01$) and economic gain (coeff = 0.00124, $p \leq 0.05$) which reflected positive and significant relationships. The results further showed that the EI of governance regulations (coeff = -0.110, $p \leq 0.05$) was significant but not positively related to the indicator of support opportunities. The AIs of capability and human capital, CIs of duration in business and access to finance and EIs of government policies, infrastructural constraints and government programs reflected positive but insignificant relationships with support

opportunities. Yet, the results exposed that the AI of social acceptability and EI of research and extension services were neither positive nor significantly related to the participatory inclusiveness indicator of support opportunities in the PVC.

The results reveal the essentiality of access to new knowledge to the PVC actors' ability to take advantage of support opportunities (Mbowa & Mwesigye, 2016). Access to new knowledge allowed the PVC actors to amass critical appreciation of the issues at hand, evaluate available opportunities and the threats occasioned by both the external and internal environment to the business (Aheisibwe et al., 2015). Specifically, knowledgeable actors in the PVC were considered more likely to embrace new technologies, evaluate existing governance regulations and management structures, and recommend and push for better dispensations (Ménard, 2018). Such initiatives were essential for ensuring mutual respect, clarity of purpose, sustainable growth, and profitability. In line with the RRT, PVC actors' ability to access new knowledge enabled them take advantage of such knowledge to adopt new technologies, bargain for better markets and seek for partners that were critical to the advancement of their individual business and the chain activities. This was particularly beneficial to the lower cadres in the PVC who, would otherwise find it hard to know, appreciate and take advantage of existing opportunities in the chain (Etiang et al., 2019).

The positive and significant relationship between the AI of economic gain and the indicator of support opportunities reflected its critical role in the realisation of benefits that PVC actors could reap from the supportive activities and prospects within the chain (IFAD, 2015). The economic gains that actors benefit from others in the chain can help them to uplift their business activities to the levels of independence while still cooperating with others to learn and grow. Notably, economic gain positively benefits actors at the lower end of the PVC and disadvantaged groups because their involvement is normally unitary, unlike actors in the upper echelons who usually have other means of livelihood (Koomson, 2024). Economic gain for individuals and business is further appreciated because it is a catalyst to the integration of PVC actors' diverse interests toward participatory inclusiveness through social development of communities (Melkote & Steeves, 2015). The AI of economic gain resonates with both the RRT and ToI in terms of the PVC actors' ability to identify, appreciate and take advantage of existing and new support opportunities. This is likely to lead to more economic gains and create a desired sense for PVC actors to even perform better. The significance of the CI of governance to support opportunities could be reengineered to ensure that equitable economies for the lower node actors were not only assured but their upgrade to higher nodes was affirmatively considered (Koomson, 2024).

Combined inclusiveness

The results indicated that 14.6% of participatory inclusiveness in the PVC in SW Uganda could be attributed to the influencers combined inclusiveness (Table 2). This was majorly attributed to the AI of access to new knowledge (coeff = 0.346, $p \leq 0.01$), the CI of governance (coeff = -0.110, $p \leq 0.05$) and the EI of research and extension services (coeff = 0.122, $p \leq 0.05$), which reflected significant relationships with combined participatory inclusiveness. Results further showed that the AIs of duration in business and capability, CI of access to finance and EIs of infrastructural constraints and government programs were significant but not positively related to participatory combined inclusiveness. Yet, the AIs of social acceptability and human capital and EI of government policies were neither significant nor positively related to combined participatory inclusiveness in the PVC in SW Uganda.

The results confirmed the understanding that the ability of PVC actors to access new knowledge was critical to participatory inclusiveness because it determined the extent to which they could attain competences and capabilities to become important players in the chain by contributing to

its success. When PVC actors have access to the appropriate knowledge, they are empowered to positively contribute and become active participants in the value chain (Cleave & Arku, 2014). Empowered actors can engage in equitable collaborations with internal and external entities to ensure the success of their businesses within the ambit of their chain. They can also seek for and engage in innovative programs that can increase their existing knowledge and allow them to add value and profitability to their products (Kodua et al., 2018). These results aligned to the RRT which fronted that knowledge was essential for parties to engage in equitable co-operations, alliances and collaborations.

Similarly, the importance of research extension services to the realisation of participatory inclusiveness was enshrined in the PVC actors' ability to add value to the individual actors through skills, technical knowledge and expertise. Through their tailor-made projects and programs, efforts of extension services could help PVC actors to establish new methods of doing their businesses and improve on their returns through the value added and competitiveness created (Hassan et al., 2021). For instance, extension services have been known to help farmers improve their yields through understanding planting seasons, increasing the fertility of the soils by applying appropriate fertilisers and safeguarding their harvests through better storage mechanisms (Bellemare, 2010). The realisation aligns to the ToI which suggests that rewards for a task well-completed tends to ignite more effort for better and improved performance. The results also reflect the views of participants to the interview where the efforts of extension workers were rewarded with PVC actors' resolve to work at their fields hard and in a manner that echoed good business practice.

The importance of governance policies to the realisation of combined participatory inclusiveness related to the presence of good policies as catalysts to creating conducive and enabling environments that could engender good business practice. Good governance helps all stakeholders to mind and manage their respective mandates while creating respect for each other and growth of the various entities (Ni & Sun, 2018). By pursuing good governance, PVC actors are not only able to make long-term strategic plans but can also enter into sustainable collaborations, undertake meaningful projects and programs and, generally conduct business with less complexity, ambiguity and unpredictability.

Conclusion and recommendations

Findings established that the realisation of collaborations for PVC actors, the innovation of business operations, availability of support opportunities and a combination of other indicators were responsible for participatory inclusiveness in the PVC in SW Uganda. These indicators hinged on a variety of individual, organisational and external factors that included individuals' capabilities, access to new knowledge, and accessibility to reliable and affordable finance. Whereas the indicator of innovation could be considered the most influential single indicator with 12.8% of participatory inclusiveness attributed to it, results showed that there were many other factors that combined with (14.6%) to explain participatory inclusiveness in the PVC in SW Uganda. Specifically, the results from the SRQs established that the participatory inclusiveness was majorly influenced by access to knowledge across all the four indicators. It was also observable in the AI of capability, CIs of access to finance and EIs of government policies, programs and extension services, which also reflected as critical influencers for combined inclusiveness.

On the other hand, government policies, availability or lack of agricultural extension workers, and interference of some of the government programs were the external factors that impacted the realisation of participatory inclusiveness in PVC in SW Uganda. Good policies and regulations are a critical cornerstone for sustainable development, which when combined with availability of extension services can enable the actors undertake ventures that can benefit them, other value chain actors and the sector at large. Moreover, by accessing credible, appropriate

and new knowledge, the PVC actors are then able to realise collaborations, appreciate the need for innovation and embrace support opportunities. The results were not surprising given the nature of the PVC actors that were characterised by people of low-income, little education and most of whom were women. The need to access and acquire new knowledge was based on the understanding that actors would have normally been discriminated against because of their lack of knowledge.

The same results established that the AIs of economic gain, human capital and social acceptability, the CIs of information flow and duration in business and, the EI of infrastructure were neither positive or significantly-related to participatory inclusiveness in the PVC in SW Uganda. However, this does not necessarily delineate their importance in the realisation of participatory inclusiveness in the PVC in SW Uganda. For instance, infrastructure is critical for the movement of goods from the farms to the stores and markets. Economic gain is critical to the PVC actors' ability to innovate, realise extra funds to reinvest in the business and attract better markets. Also, information flow and capable and competent human resources are essential for ensuring that new knowledge is not only sought but also effectively integrated in the day-to-day activities and used for the sustainable growth of the chain.

It is therefore, recommended that government extension workers endeavour to ensure that PVC actors have access to credible and new knowledge that is appropriate to their specific needs and in the language that they understand. Policy makers in the sub sector should enact production and trade policies that are in synch with the expectations and needs of the PVC actors with emphasis and ensuring their participation in the policy-formulation processes. The Government of Uganda through the Ministry of Agriculture should ensure that the most knowledgeable and skilled support/extension workers in the potato sub sector are prepared and sent to the areas of most need. These should be empowered with the requisite tools and equipment to ensure that their interventions have lasting impact by adding value to their current endeavours and promoting sustainable growth and development of the PVC actors and their respective enterprises. The government and other development partners should also endeavour to carefully build on previous programmes to avoid the waste that will usually result from incomplete work. The GoU needs to facilitate the involvement of the private sector to ensure sustainability of the chain.

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