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Livelihood capital access and sustainable livelihood outcomes of park adjacent communities in Uganda

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Abstract

Purpose – The paper aims at investigating the association between dimensions of livelihood capital access including financial, human, physical, natural, social, cultural, institutional capital access and sustainable livelihood outcomes – improved well-being. The study aims at establishing whether livelihood capital access enhances the livelihoods of national park adjacent communities in Uganda.

Design/methodology/approach – The study employed a quantitative approach and cross-sectional research design. A theoretically driven model was tested on data from 364 respondents from Uganda Community Tourism Association (UCOTA). Structural Equation Modelling (SEM) was used to test relationships between the study variables.

Findings – The results indicate that among the seven distinct forms of capital access, financial, human, physical and social capital are the most crucial. Accessing financial, human, physical and social capital has been shown to significantly enhance the livelihoods of communities residing adjacent to national parks.

Originality/value – This study adds to the body of sustainable livelihoods literature by highlighting how access to livelihood capital impacts the sustainable livelihoods. The research suggests prioritizing the improvement of access to financial, human, physical and social resources, with a particular emphasis on integrating livelihood capital access into livelihood and tourism policies.

Keywords Livelihood capital access, Sustainable livelihood outcome, Park adjacent communities

Paper type Research paper

1. Introduction

Achieving world peace and sustainable development hinges on eradicating hunger and poverty, a focal point of the United Nations' 2030 Agenda. The World Bank underscores the importance of sustainable livelihoods for rural households in effective rural development strategies (World Bank, 2022). Understanding the specific characteristics of rural poor communities is crucial for crafting targeted interventions. In particular, communities adjacent to national parks have become a critical focus in development economics, as highlighted by Mavah *et al.* (2018). Despite this, there remains a scarcity of comprehensive studies on these communities in least developed countries like Uganda, where populations often face extreme poverty. Residents near national parks in Uganda, like other African nations, endure significant hardships such as limited land ownership, reliance on unskilled labor, poor housing conditions and low incomes

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(Kolinski & Milich, 2021). For instance, the Batwa, an indigenous community near Bwindi Impenetrable National Park, rely on sporadic cultural performances, informal assistance and occasional manual labor, with an average daily household income as low as US $0.26 (Patterson *et al.*, 2017). This study employs integrated livelihood analysis to identify and address the root causes of fragility in these communities, proposing holistic solutions. Such insights are crucial for developing effective strategies to improve the livelihoods of Uganda's park-adjacent communities, with broader implications for Africa and beyond.

According to Scoones (2013), livelihoods are sustainable when they can withstand shocks, enhance capabilities, provide opportunities for future generations and recover from adversity—a concept underscored in the literature. The tangible importance of sustainable livelihoods analysis is evident in its influence on governmental policies, multilateral initiatives and the strategies of non-governmental organizations, all of which contribute to a notable shift towards empowering impoverished households as agents of poverty reduction. This approach complements structural analyses and aligns closely with the objective of Sustainable Development Goal 1 to eradicate poverty. To that end, Africa has emerged as a crucial arena for critically evaluating the applicability of Western theories in non-Western contexts (Ciambotti, Zaccone, & Pedrini, 2022). This paper aims to position Uganda—a biodiversity hotspot in Africa—as invaluable research setting for scholars in livelihood studies. Our objective is twofold: to challenge existing theories and to develop new ones within this unique context.

Scoones (2013) outlines five essential factors for livelihood analysis: vulnerability context, livelihood capital, livelihood strategies, institutions and processes and livelihood outcomes. This study focuses on two factors: sustainable livelihood outcomes and livelihood capital. First, *sustainable livelihood outcomes* refer to the benefits individuals gain from their livelihood activities, including increased income, enhanced well-being, improved food security, reduced vulnerability, sustainable natural resource management and restored human dignity (Jackson, 2021). The study emphasizes improved well-being as a critical outcome, as supported by literature. Second, *livelihood capitals* are the resource base households or communities rely on, categorized into natural, financial, human, social and physical (Scoones, 1998). Access to these capitals is crucial for escaping poverty and achieving sustainable livelihoods (Mumuni & Oladele, 2016). Many communities near national parks in developing countries face challenges in accessing these capitals, particularly natural, financial, physical and social capitals, limiting their ability to engage in profitable economic activities necessary for sustainable livelihoods (Murugani & Thamaga-Chitja, 2018).

Despite widespread acknowledgement of the importance of access to livelihood capital in bolstering sustainable livelihoods, ongoing debates persist due to conflicting evidence regarding which specific forms of capital are indispensable across diverse contexts. For instance, Wang, Dai, Ou, and Ma (2021) underscored the critical role of human and physical capital access as prerequisites for achieving sustainable livelihoods. Conversely, Lan *et al.* (2021) highlighted the interdependent nature of natural, physical and financial capital access in enhancing livelihood sustainability among pastoralist households. Stone and Nyaupane (2018) emphasized that the abundant access to natural capital, upon which nature-based tourism depends, is crucial for sustainable livelihoods. Moreover, individual studies have explored the impact of specific types of livelihood capital independently: Olopade, Okodua, Oladosun, and Asaleye (2019) focused on human capital access and livelihoods in OPEC countries, while Nawrotzki, Hunter, and Dickinson (2012) examined the role of natural capital access in Madagascar and Zhang, Zhou, and Lei (2017) investigated the contribution of social capital access to poverty reduction in China. A comprehensive examination of livelihood capital access is imperative to uncover the nuanced dynamics within the sustainable livelihoods paradigm. Early capital frameworks distinguished between several forms of livelihood capital access, namely: financial, social, human, natural and physical capital access (Scoones, 2013) yet latter frameworks incorporated cultural and institutional capital access to this list (Emery & Flora, 2020). Moreover, most studies overlook the impact of additional

forms of capital access, such as cultural and institutional capital access, on livelihood enhancement. This study aims to address this research gap by examining the impact of seven forms of livelihood capital access (financial, human, physical, natural, social, cultural, institutional capital access) on sustainable livelihood outcomes of national park adjacent communities in Uganda.

The subsequent sections of the paper are structured as follows: Section 2 provides a review of the literature and formulates hypotheses. Section 3 outlines the research methodology. Section 4 presents the findings, while Section 5 offers a discussion of the results. The concluding section provides insights into conclusions drawn and identifies avenues for future research.

2. Literature review and hypothesis development

2.1 Study setting – national park adjacent communities

Establishing national parks is a critical strategy for conserving biodiversity, preserving natural habitats and ensuring species diversity (Yu, Zhang, Wang, Wang, & Zhang, 2020). These protected areas not only offer recreational and educational opportunities but also support the sustainable livelihoods of nearby communities (Wittmayer & Büscher, 2010). Termed national park adjacent communities, those living within a 5km radius are vital stakeholders in this balance between conservation and livelihoods (MacKenzie *et al.*, 2017). However, the establishment of national parks in Uganda in 1952 displaced indigenous communities reliant on these areas for their livelihoods (Petursson & Vedeld, 2017), leading to severe poverty and deprivation of basic necessities such as food, shelter, education and healthcare. Displaced communities often resorted to subsistence agriculture, despite its limited returns, as their main survival strategy. This oversight in Uganda's park creation marginalized local people by restricting their resource access. Effective conservation in national parks must thus prioritize not only stringent protection but also improving the well-being and livelihoods of adjacent community residents (Yu *et al.*, 2020).

2.2 Theoretical underpinning

Drawing from the Sustainable Livelihood Framework (SLF) literature, originally proposed by Scoones (1998), this study contextualizes livelihoods within a comprehensive framework used to understand poverty and propose effective interventions. According to Scoones (1998), the SLF focuses on analyzing how individuals and households utilize various resources and capabilities, influenced by institutions and policies, to make livelihood decisions in specific environmental contexts. The SLF identifies five key resources essential for livelihoods: natural, social, human, physical and financial capitals (Biggs *et al.*, 2015). Additionally, the Sustainable Livelihoods Framework for Tourism (SLFT) includes institutional capital, while scholars like Shen, Hughey, and Simmons (2008) and Tao, Wall, and Wismer (2010) advocate for integrating cultural capital. Therefore, this paper examines seven capitals crucial for livelihoods: financial, human, social, natural, physical, cultural and institutional. The SLF assesses livelihood outcomes to evaluate sustainability. In addition, the SLF identifies sustainable livelihood outcomes as increased job opportunities, poverty reduction, improved well-being and capabilities, livelihood adaptation, reduced vulnerability, enhanced resilience and sustainable natural resource management. Kasim (2019) emphasizes well-being as crucial, linking it to poverty across economic and social dimensions. White and Ellison (2007) also highlight well-being's facets: material, social, psychological and subjective perceptions of livelihoods. According to Chhetri, Larsen, and Smith-Hall (2015), in predominantly rural environments, household wellbeing is frequently associated with various community-specific measures but inequalities in livelihood capital access serve as clear markers of well-being disparities among community members. Farrington (2015) argues that achieving desired livelihood outcomes relies on accessing and utilizing livelihood capitals making it an

important determinant of livelihoods outcomes. For instance, Gautam and Andersen (2016) found that well-being is not necessarily linked to diversification alone, but rather to the household's access to capital from which they derive income. Similarly, Baffoe and Matsuda (2018) argue that access to livelihood capital is essential for achieving positive sustainable livelihood outcomes, aiding in navigating challenges. Therefore, this study anticipates that park adjacent community members with access to livelihood capital will achieve enhanced sustainable livelihood outcomes, particularly improved well-being.

2.3 Livelihood capital access and sustainable livelihood outcome (improved well-being)

This section presents literature review of livelihood capital and its impact on sustainable livelihood outcome (improved well-being) from which the hypotheses are developed.

2.3.1 Sustainable livelihood outcome (improved well-being). Attfield, Hattingh, and Matshabaphala (2004) define sustainable livelihood outcomes as ensuring lasting preservation and enhancement of income and food resources, meeting fundamental human needs and securing future livelihood prospects. These outcomes support sustainable environmental, social and economic development. Shen *et al.* (2008) assess these outcomes through economic, social and environmental perspectives, aligning them with conditions favorable to sustainable development and reflecting individuals' achievements and aspirations. This study adopts a people-centered approach, emphasizing a well-being framework proposed by Scoones (1998). It allows individuals to prioritize criteria like security, happiness and empowerment, alongside measurable factors such as income, in evaluating sustainable livelihood outcomes.

Well-being is defined as having the psychological, social and physical resources necessary to confront various challenges (Dodge, Daly, Huyton, & Sanders, 2012). It is crucial in sustainable livelihoods due to its close ties with poverty and its economic and social dimensions, which serve as poverty indicators (Kasim, 2019). According to Kimengsi, Mukong, and Balgah (2020), well-being encompasses aspects like income, consumption, nutrition, health, security and environmental sustainability. White and Ellison (2007) underscore well-being as a vital indicator of sustainable livelihoods, focusing on material, social and psychological dimensions, along with individuals' subjective perceptions. The concept of well-being provides a nuanced understanding beyond mere economic measures. This study adopts a well-being approach to prioritize the perspectives and experiences of park adjacent communities. Therefore, sustainable livelihood is conceptualized here as improved well-being, evaluating indicators such as self-esteem, security, happiness, stress management and empowerment (Dodge *et al.*, 2012).

2.3.2 Livelihood capital access. Livelihood capital access encompasses access to financial, natural, physical, social, human, institutional and cultural resources (Aquino, Lück, & Schänzel, 2022). Financial capital access involves access to savings, credit, remittances and wages (Pour, Barati, Azadi, & Scheffran, 2018). Natural capital access refers to access to ecological resources like arable land and woodlands (Thulstrup, 2015). Physical capital access includes infrastructure, buildings, technology and equipment access (Donohue & Biggs, 2015). Social capital access pertains to social resources such as networks and relationships (Tanner *et al.*, 2015). Human capital access involves skills, knowledge, health and physical capabilities access essential for livelihoods (Scoones, 1998). Institutional capital access entails access to markets, equitable tourism benefits and participation in policymaking (Shen *et al.*, 2008). Cultural capital access includes access to information, ideas and norms crucial for cultural expression (Hua, Yan, & Zhang, 2017). Limited access to these capitals exacerbates poverty, highlighting the need to enhance access for poverty alleviation. Strengthening access to livelihood capitals is essential for achieving sustainable livelihood outcomes. The proposed seven dimensions of livelihood capitals are rooted in Western society, suggesting they may not universally apply and could overlook temporal changes and institutional factors. Exploring how these dimensions interact in an African biodiversity hotspot is crucial for sustainable development, fostering coexistence

between national parks and communities and impacting household livelihoods. Scholars debate whether access to livelihood capitals enhances sustainable outcomes for communities near national parks (Stone and Nyaupane, 2018). Questions about changes in livelihood outcomes, their nature and underlying mechanisms are underexplored (Movono & Becken, 2018). This paper aims to broaden research on sustainable livelihoods by analyzing access to livelihood capitals and their influence on outcomes.

2.4 Hypothesis development

2.4.1 Financial capital access and sustainable livelihood outcome (improved well-being). A study by Ibrahim (2023) found that access to financial resources improves access to healthcare facilities thereby enhancing overall household well-being. Similarly, Kamaruddin and Baharuddin (2015) in Malaysia highlighted that increased income improves household livelihoods and well-being. Patnaik and Narayanan (2015) also emphasized the importance of financial capital, including liquid assets, in enhancing household livelihoods and ensuring well-being. Enhanced financial capital access (savings, credit and other financial assistance) determines an individual's capacity to manage risks and meet basic needs (He & Ahmed, 2022). These studies indicate that financial capital access is crucial for securing sustainable livelihoods and promoting well-being. Given the diverse contexts of these studies, further research is needed in other settings to confirm the role of financial asset access in enhancing well-being. Consequently, this study hypothesizes that:

H1. Financial capital access is positively related to sustainable livelihood outcome (improved well-being) of park adjacent communities in Uganda.

2.4.2 Natural capital and sustainable livelihood outcome (improved well-being). Natural capital access in communities adjacent to national parks supports livelihoods through resources such as wild foods, bush meat and medicinal plants. However, recent studies highlight that tourism developments often restrict community access to these resources, leading to evictions and displacement (Neelakantan, DeFries, Sterling, & Naeem, 2020). Engelbrecht (2009) found that natural capital had a significant positive impact on improved well-being based on regression analyses. Guerry *et al.* (2015) similarly supported the hypothesis that areas with greater natural capital tend to have improved livelihoods and lower poverty rates. Enhanced access to natural capital would increase yields for subsistence and commercial purposes, boost household incomes and improve the well-being of communities near national parks (He & Ahmed, 2022). Thus, we hypothesize that:

H2. Natural capital access is positively related to sustainable livelihood outcome (improved well-being of national park adjacent communities in Uganda).

2.4.3 Physical capital access and sustainable livelihood outcome (improved well-being). Physical capital encompasses essential public amenities, livestock, appliances, housing, tools and goods (Liu & Xu, 2016). While its absence doesn't directly cause poverty, it limits livelihood opportunities by constraining income potential. Scarce access to physical capital, such as irrigation systems and transportation infrastructure, hinders livelihood development. For instance, poor roads impede access to healthcare and markets, affecting educational services. Physical capital is often unaffordable for marginalized communities (Kollmair & Gamper, 2002). Investing in infrastructure, like transport and utilities, is crucial to enhancing livelihoods. Bailey, McCleery, and Barnes (2019) found that better access to transportation, water and electricity correlates positively with sustainable livelihoods. Netshipale *et al.* (2020) noted that households with adequate physical capital in agriculture achieve higher sustainable livelihoods. Enhancing physical capital access would boost production capacity, increase income and sustain livelihoods (He & Ahmed, 2022). Given this context, we hypothesize that:

H3. Physical capital access is positively related to sustainable livelihood outcome (improved well-being) of park adjacent communities in Uganda.

2.4.4 Social capital and sustainable livelihood outcome (improved well-being). Leitch, McMullan, and Harrison (2013) argue that social capital, derived from interpersonal relationships in networks, represents intangible yet critical societal benefits. It fosters trust and collaboration essential for achieving livelihood goals. Limited social capital impedes productivity and control over financial, natural and physical assets (Scoones, 1998). Rani, Quddoos, Yaseen, Tabassum, and Asif (2021) show that high levels of social capital (trust, safety, civic participation, reciprocity, social support) correlate with greater happiness. İzmen and Üçdoğruk Gürel (2020) find that social ties with neighbors significantly enhance well-being and living conditions. Social capital access provides emotional support, material aid, services, information and new connections, all vital for well-being (Rahman, Simmons, Shone, & Ratna, 2022). Based on these studies, we hypothesize that:

H4. Social capital access is positively related to sustainable livelihood outcome (improved well-being) of national park adjacent communities in Uganda.

2.4.5 Human capital access and sustainable livelihood outcome (improved well-being). Su, Wall, and Xu (2016) found that participation in tourism necessitates specific skills and knowledge for host community members. They observed a positive link between human capital and sustainable livelihood outcomes. Residents acquired new abilities such as Mandarin Chinese proficiency, online promotion skills and tourism services like cooking and guiding, leading to increased income for family support. Lower educational attainment is associated with diminished livelihoods. Human capital access impacts household income and sources, while physical fitness is crucial for wealth generation and well-being (He & Ahmed, 2022). Therefore, we hypothesize that;

H5. Human capital access is positively related to sustainable livelihood outcome (improved well-being) of national park adjacent communities in Uganda.

2.4.6 Cultural capital access and sustainable livelihood outcome (improved well-being). Cultural elements such as lifestyles, spiritual beliefs and culinary traditions significantly shape visitors' experiences of landscapes, architecture and local cuisine (MacDonald & Jolliffe, 2003). Folk tales, festivals, dances and customs enrich tourists' encounters, enhancing satisfaction. Mitchell and Shannon (2018) propose leveraging cultural capital access to boost tourism enterprises like craft shops and restaurants, thereby increasing employment and livelihoods. Ma, Wang, Dai, and Ou (2021) emphasize that integrating traditional culture into rural tourism enhances community well-being. Horn and Tahi (2009) argue that cultural knowledge drives tourism product innovation, stimulating economic growth. Access to cultural capital through activities such as dance, storytelling and music attracts tourists and generates income crucial for improving the well-being of households near parks (Rahman *et al.*, 2022). Based on these insights, we hypothesize that:

H6. Cultural capital access is positively related to sustainable livelihood outcome (improved well-being) of national park adjacent communities in Uganda.

2.4.7 Institutional capital access and sustainable livelihood outcome (improved well-being). In contrast to other forms of capital, institutional capital in local communities directly addresses barriers that impact livelihoods (Shahbaz *et al.*, 2010). For instance, Uganda Wildlife Authority introduced a tourism revenue-sharing policy to compensate communities near national parks for conservation and tourism effects. This policy allocates 20% of park entry fees to fund local projects such as schools and health centers. However, its effectiveness is questioned due to issues like unequal distribution of benefits and insufficient compensation (Adiyia *et al.*, 2017). A recent study by Wubayehu (2020) demonstrates a positive link between institutional capital access and sustainable livelihood outcomes, improving well-being. Access to institutional capital enables community participation in decision-making about their livelihoods and material benefits from tourism revenue sharing, thereby enhancing well-being (Wubayehu, 2020; Yu *et al.*, 2020). This research affirms that

institutional capital positively influences sustainable livelihood outcomes. Therefore, we hypothesize that:

H7. Institutional capital access is positively related to sustainable livelihood outcome (improved well-being) of national park adjacent communities in Uganda.

3. Methodology

3.1 Design, population and sample

The study employed a positivist research philosophy and quantitative approach, focusing on members of the Uganda Community Tourism Association (UCOTA) as its target population. UCOTA, a nonprofit organization, comprises members residing near major national parks, game reserves and central forest reserves in Uganda. The research focused on the western region of Uganda due to its significant presence of national parks (including Bwindi, Queen Elizabeth and Kibaale Forest) and human settlements. From a population of 2,121 UCOTA registered members in the region, the study selected a sample of 364 respondents. This sample size aligns with guidelines from Hair *et al.* (2014), Yamane (1973) and the Raosoft calculator, which recommend a minimum sample size of 300 for studies involving up to seven constructs. The study utilized simple random sampling, as described by Saunders and Townsend (2016), where respondents were randomly selected using unique numbers until the desired sample size of 364 was reached. Data collection involved a questionnaire with closed-ended items developed from extensive literature review and anchored on a 5-point Likert scale. Recognizing potential respondent illiteracy, the questionnaires were administered orally and face-to-face by research assistants. The study achieved a 100% response rate, with all 364 respondents providing usable questionnaires.

3.2 Demographic characteristics

From Table 1, majority of the respondents (59.2%) were female indicating were (185) compared to males (179), with the majority belonging to the 25–29 age bracket. Most respondents earned less than 100,000 Ugx translating to 3,000 Ugx per day (1$ = 3,700) and majority earned income from running their own businesses (190) as compared to other income sources. Majority respondents (150) had basic education (primary education). According to the World Bank (2022), extreme poverty is defined as the number of people living on less than $1.90 per day. The demographic composition of the respondents confirmed anecdotal information that communities adjacent to national parks were impoverished (living below $1.90 a day) and had limited education.

3.3 Questionnaire and variables measurement

Financial capital access included savings, credit, remittances, pensions, wages and investments, based on studies by Ibrahim, Hassan, Kamaruddin, and Anuar (2017), MacCallum (2014) and Ha-Mim, Hossain, Rahaman, and Mallick (2020). Natural capital access encompassed land, forest products, wildlife and environmental services, informed by Epanda *et al.* (2020), Gautam and Andersen (2016), among others. Physical capital access referred to infrastructure such as roads, buildings, water supply and technology, sourced from Masud, Kari, Yahaya, and Al-Amin (2016), Ibrahim *et al.* (2017) and Ha-Mim *et al.* (2020). Social capital access included networks, memberships and trust within groups, drawn from Yusoff *et al.* (2016). Human capital access covered skills, knowledge, health and nutrition essential for livelihoods, based on Ibrahim *et al.* (2017), Yusoff *et al.* (2016) and Tran and Vo (2020). Institutional capital access focused on participation in tourism markets, benefit sharing and policy-making, derived from Shen *et al.* (2008) and Gautam and Andersen (2016). Cultural capital access included knowledge, beliefs, norms and customs, sourced from Ma *et al.* (2021) and Ahebwa, Aporu, and Nyakaana (2016). Sustainable livelihood outcomes,

Table 1. Demographic profile of respondents

Variable	Category	Frequency	Percentage %
Gender	Male	179	49.2
	Female	185	50.8
	Total	*364*	*100*
Age	18–24	32	8.8
	25–29	68	18.7
	30–34	66	18.1
	35–39	38	10.4
	40–44	41	11.3
	45–49	37	10.2
	50–54	36	9.9
	55–59	45	12.4
	60 and above	1	0.3
	Total	*364*	*100*
Income	Less than 100,000	195	53.6
	100,001–200,000	104	28.6
	200,001–300,000	31	8.5
	300,001–400,000	15	4.1
	400,001 and above	7	1.9
	Prefer not to say	12	3.3
	Total	*364*	*100*
Income source	Salary	36	9.9
	Wage	92	25.3
	Income from own business	190	52.2
	Pension	2	0.5
	Cash transfer from relatives	5	1.4
	Donations	16	4.4
	Others	23	6.3
	Total	*364*	*100*
Education level	Postgraduate degree	5	1.4
	Bachelor's degree	10	2.7
	Diploma	32	8.8
	A'level/technical education	29	8.0
	O'level	71	19.5
	Primary education	150	41.2
	No formal schooling	67	18.4
	Total	*364*	*100*

Source(s): Primary data

specifically improved well-being, were defined as individuals having the resources to overcome challenges, following Pontin, Schwannauer, Tai, and Kinderman (2013).

4. Results

4.1 Factor structure of livelihood capital access and sustainable livelihood outcome – improved wellbeing

The factor structure of the items measuring livelihood capital access *access* and sustainable livelihood outcome – improved wellbeing was assessed to establish items to be included in structural equation modelling analysis. Table 2 presents the complete list of factor loadings for all items used to assess the independent and dependent variables. Of the 39 items measuring livelihood capital access, 12 items (LVFC1, LVFC2, LVNC1, LVPC5, LVSC1, LVSC3, LVSC4, LVSC5, LVSC6, LVHC1, LVHC2 and LVCC1) did not load sufficiently. Except for three items SLWB1, SLWB2 and SLWB6, the 12 items measuring improved well-being loaded as expected (>0.04) and were all included in the model for structural modelling analysis.

Table 2. Factor structure – livelihood capital access and sustainable livelihood outcome – improved well being

Codes	Items	Factor loadings
Financial capital access (LVFC)		
LVFC3	I have access to saving schemes (e.g. SAACOS) in the national park adjacent community where I live/work	*0.541*
LVFC4	I have the necessary collateral to access credit from financial institutions in the national park adjacent community where I live/work	*0.968*
LVFC5	I can easily access a loan from a financial institution in the national park adjacent community where I live/work	*0.649*
Natural capital access (LVNC)		
LVNC2	I have access to forest products (fibres, firewood or medicinal plants) in the national park adjacent community where I live/work	*0.798*
LVNC3	I can hunt wild game in the national park adjacent community where I live/work	*0.481*
LVNC4	I can access wild foods (honey or fruits) in the national park adjacent community where I live/work	*0.746*
LVNC5	I receive payment for adopting land-use practices (e.g. reforestation, afforestation, protecting habitats)	*0.443*
Physical capital access (LVPC)		
LVPC1	There is a road to reach/access different facilities (e.g. hospitals, schools, bus stations, markets) in the national park adjacent community where I live/work	*0.990*
LVPC2	I have access to adequate means of transport in and around the national park adjacent community where I live/work	*0.946*
LVPC3	In the national park adjacent community where I live/work, I have access to a safe house/structure/building to stay in	*0.413*
LVPC4	I have access to safe and clean water in the national park adjacent community where I live/work	*0.607*
LVPC6	I have access to adequate means of communication in the national park adjacent community where I live/work	*0.462*
Social capital access (LVSC)		
LVSC2	Members of the national park adjacent community where I live/work will help me in case I have a problem	*0.447*
LVSC7	I trust people living in the national park adjacent community where I live/work	*0.507*
LVSC8	I can easily approach community leaders to provide help to the national park adjacent community where I live/work	*0.727*
LVSC9	I can easily approach government leaders to provide help to the national park adjacent community where I live/work	*0.849*
Human capital access (LVHC)		
LVHC3	I have the qualifications necessary to perform my job	*0.632*
LVHC4	I can easily access work opportunities because I am in good health	*0.989*
LVHC5	I am able to perform my job-related tasks because I am in good physical health	*0.949*
LVHC6	I have access to nutritious food that enables me to perform job-related activities	*0.446*
Cultural capital access (LVCC)		
LVCC2	I have access to knowledge of the cultural beliefs that interest tourists in the national park adjacent community where I live/work	*0.647*
LVCC3	I have opportunities to exhibit my cultural heritage to tourists in the park adjacent community where I live/work	*0.479*
LVCC5	I have access to knowledge of customs that are part of the tourism product in the national park adjacent community where I live	*0.505*
Institutional capital access (LVIC)		
LVIC1	I have access to tourist markets to sell my goods or services	*0.466*
LVIC2	I participate in making policies pertaining to the livelihoods of community members in the national park adjacent community where I live/work	*0.964*

(*continued*)

Table 2. Continued

Codes	Items	Factor loadings
LVIC3	I am involved in making decisions about tourism operations in the national park adjacent community where I live/work	*0.978*
LVIC4	I access benefits from the tourism revenue sharing scheme allocated to the national park adjacent community where I live/work	*0.559*
Sustainable livelihood outcome (improved well-being)		
SLWB3	I feel hopeful about the future	*0.555*
SLWB4	I feel safe from violence at home	*0.676*
SLWB5	I feel safe from violence in the park adjacent community where I live/work	*0.652*
SLWB7	I have access to adequate means of communication in the national park adjacent community where I live/work	*0.546*
SLWB8	I feel able to live my life the way I want	*0.599*
SLWB9	I enjoy my personal life	*0.790*
SLWB10	I am happy with the quality of my sleep	*0.732*
SLWB11	I am happy with the state of my physical health	*0.831*
SLWB12	I have no problem with my mental health	*0.629*
SLWB13	I contribute to and have some control over community life	*0.541*
SLWB14	I am happy with my friendships and personal relationships	*0.817*
SLWB15	I am able to ask someone for help in case I have a problem	*0.773*

Source(s): Primary data

4.2 Confirmatory factor analysis (CFA)

CFA assessed the model's efficacy using SPSS 22.0 and IBM AMOS Statistics 27.0. The study confirmed retention of five constructs from the initial EFA: financial capital access (FCASS), physical capital access (PCASS), social capital access (SCASS), human capital access (HCASS) and cultural capital access (CULCA). Four items (LVPC3, LVSC7, LVHC3, LVHC6) were excluded due to non-significant regression weights. Institutional capital access and natural capital access indicators were also excluded due to non-significant relationships. Sustainable livelihood outcomes (specifically improved well-being) items were mostly retained, except for SLWB3, SLWB8, SLWB9 and SLWB13. Goodness-of-fit indices (Chi-square/df < 3, IFI, TLI, CFI >0.90, RMSEA <0.08) indicated satisfactory model fit. Overall, the model demonstrated acceptable fit, aligning with established guidelines for model evaluation.

The measurement model was assessed for internal consistency reliability, convergent validity and discriminant validity. Internal consistency, evaluated through composite reliability (CR), indicated all constructs met the threshold of 0.7 or higher, confirming the reliability of the scales. Factor loadings for all items exceeded 0.5, demonstrating adequate convergent validity, with Average Variance Extracted (AVE) values ranging from 0.569 to 0.599. Discriminant validity was also confirmed as the square roots of AVE were greater than the inter-correlation values between constructs (Table 3). Overall, the study's constructs exhibited satisfactory reliability and validity.

Figure 1 illustrates the authors' conceptual framework, depicting the interrelationships among the variables after EFA and CFA, along with the directional hypotheses formulated for the study.

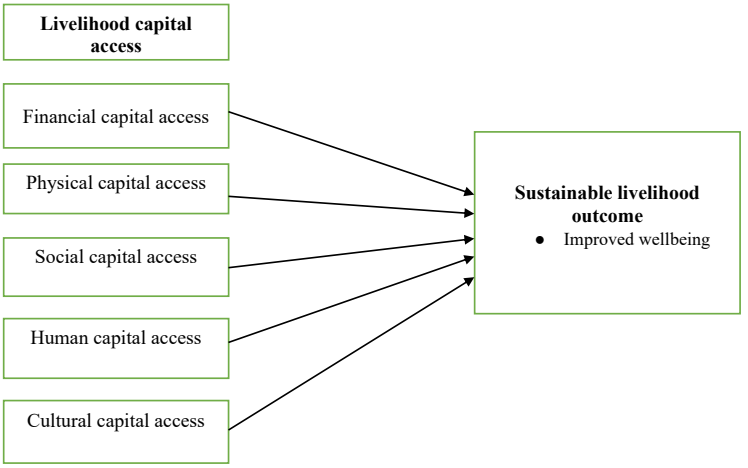
4.3 Structural model specification

After formulating the hypothesized model comprising latent variables, adjustments were implemented to refine the model, as outlined in the confirmatory factor analysis (CFA) sections of this chapter. Table 4 displays the definitive manifest variables selected for inclusion in the structural equation modeling (SEM) analysis.

Table 3. CFA, validity and reliability results

Variable	Factor	Item code	Item loadings	Cronbach's alpha	Composite reliability (CR)	Average variance extracted	Discriminant validity $\sqrt{AVE}$
Livelihood capital access	*Financial capital access*	LVFC3	0.50	0.969	0.975	0.599	0.774
		LVFC4	0.85				
		LVFC5	0.86				
	Physical capital access	LVPC1	0.70				
		LVPC2	0.69				
		LVPC4	0.72				
		LVPC6	0.77				
	Social capital access	LVSC2	0.55				
		LVSC8	0.81				
		LVSC9	0.84				
	Human capital access	LVHC4	0.94				
		LVHC5	0.95				
	Cultural capital access	LVCC2	0.75				
		LVCC3	0.73				
		LVCC5	0.62				
Sustainable livelihood outcome	*Improved well-being*	SLWB4	0.69	0.777	0.854	0.569	0.754
		SLWB5	0.67				
		SLWB7	0.56				
		SLWB10	0.68				
		SLWB11	0.77				
		SLWB12	0.65				
		SLWB14	0.73				
		SLWB15	0.71				

Source(s): Primary data



Source(s): Authors' conceptualization

Figure 1. Study model

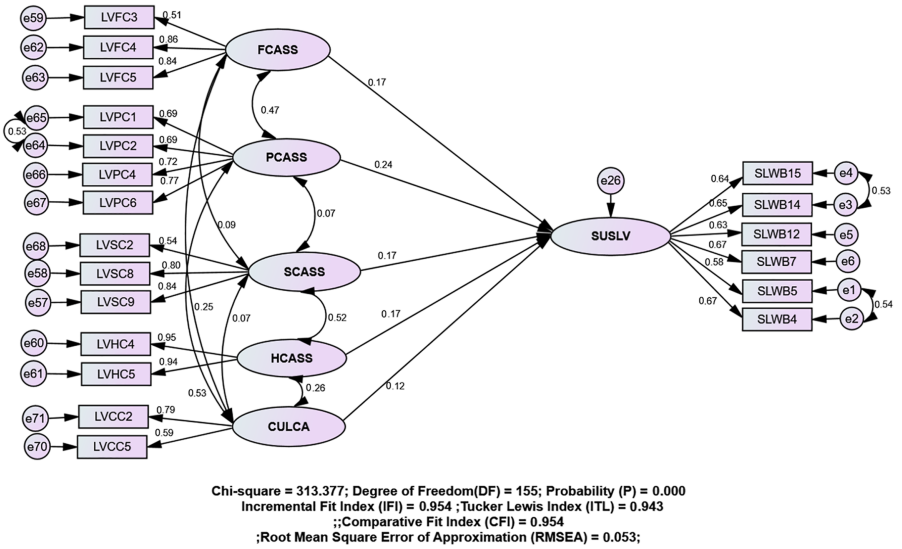
Table 4. Manifest variables used in SEM

Factor	Code	Measurement item
Financial capital access (FCASS)	LVFC3	I have access to saving schemes (e.g. SAACOS) in the national park adjacent community where I live/work
	LVFC4	I have the necessary collateral to access credit from financial institutions in the national park adjacent community where I live/work
	LVFC5	I can easily access a loan from a financial institution in the national park adjacent community where I live/work
Physical capital access (PCASS)	LVPC1	There is a road to reach/access different facilities (e.g. hospitals, schools, bus stations, markets) in the national park adjacent community where I live/work
	LVPC2	I have access to adequate means of transport in and around the national park adjacent community where I live/work
	LVPC4	I have access to safe and clean water in the national park adjacent community where I live/work
	LVPC6	I have access to adequate means of communication in the national park adjacent community where I live/work
Social capital access (SCASS)	LVSC2	Members of the national park adjacent community where I live/work will help me in case I have a problem
	LVSC8	I trust people living in the national park adjacent community where I live/work
	LVSC9	I can easily approach community leaders to provide help to the national park adjacent community where I live/work
Human capital access (HCASS)	LVHC4	I can easily access work opportunities because I am in good health
	LVHC5	I am able to perform my job-related tasks because I am in good physical health
Cultural capital access (CULCA)	LVCC2	I have access to knowledge of the cultural beliefs that interest tourists in the national park adjacent community where I live/work
	LVCC3	I have opportunities to exhibit my cultural heritage for tourists in the park adjacent community where I live/work
	LVCC5	I have access to knowledge of customs that are part of the tourism product in the national park adjacent community where I live
Sustainable livelihood outcomes (improved well-being)	SLWB4	I feel able to do the things I choose to do
	SLWB5	I contribute to and have some control over community life
	SLWB7	I am able to ask someone for help in case I have a problem
	SLWB10	I feel safe from violence at home
	SLWB11	I have no problem with my mental health
	SLWB13	I feel able to live my life the way I want
	SLWB12	I have enough money to meet my needs
	SLWB14	I enjoy my personal life
	SLWB15	I am happy with the quality of my sleep

Source(s): Primary data

Structural equation modelling was conducted using IBM AMOS Statistics 27. to assess the structural model for livelihood capital access and sustainable livelihood outcome (improved well-being) of national park-adjacent communities, the goodness-of-fit indices, namely the chi-square, IFI, TLI, CFI and RMSEA, were assessed. All the reported indices suggested a close fit considering the decision thresholds (Chi-square<3, IFI, TLI and CFI >0.90, RMSEA <0.080) suggested by Hair *et al.* (2014). The structural model results are detailed in Figure 2.

The findings from Table 5 were analyzed to assess the hypothesized relationship using the beta coefficient (β), test statistic (t) and associated p-value.



Source(s): Amos 7.0 output for this study

Figure 2. Structural model

Table 5. Standardized estimates of the model for hypothesis testing

			B	S.E	β	C.R.(t)	P	Verdict
SUSLV	←	FCASS	0.219	0.091	0.174	2.412	0.016	Supported
SUSLV	←	PCASS	0.257	0.099	0.245	2.593	0.010	Supported
SUSLV	←	SCASS	0.127	0.058	0.165	2.191	0.028	Supported
SUSLV	←	HCASS	0.108	0.048	0.173	2.264	0.024	Supported
SUSLV	←	CULCA	0.108	0.088	0.115	1.234	0.217	Not supported

Note(s): ***$p < 0.001$
Source(s): Results from AMOS 7.0 output for this study

H1, which proposed a positive relationship between access to financial capital and sustainable livelihood outcomes, particularly improved well-being, demonstrated statistical significance ($\beta = 0.174$, $t = 2.412$, $p = 0.016$). Notably, the calculated t-value exceeded the critical threshold of 1.96, and the $p < 0.05$, confirming the support for hypothesis H1. These results indicate that changes in financial capital are positively correlated with corresponding improvements in sustainable livelihood outcomes, specifically enhanced well-being, among communities living adjacent to national parks in Uganda.

H2: Table 5 indicates a significant relationship between physical capital access and sustainable livelihood outcomes (improved well-being) ($\beta = 0.245$, $t = 2.593$, $p = 0.010$). Considering the critical value and p-value, the t-value being higher than 1.96 and $p < 0.05$, hypothesis H2 was accepted. This result suggests that a change in physical capital access is correlated with the same directional change in sustainable livelihood outcomes (improved well-being) of national park-adjacent communities.

H3: The relationship between social capital access and sustainable livelihood outcomes (improved well-being) is significant ($\beta = 0.165$, $t = 2.191$, $p = 0.028$). Based on the t-value for the relationship greater than 1.96 and $p < 0.05$, hypothesis H3 was accepted. Consequently,

a change in social capital access is associated with the same directional change in sustainable livelihood outcomes. Therefore, social capital access positively influences sustainable livelihood outcomes (improved well-being) of national park-adjacent communities in Uganda.

H4: There is a significant relationship between human capital access and sustainable livelihoods of national park-adjacent communities in Uganda ($\beta = 0.173$, $t = 2.264$, $p = 0.024$). Considering that the t-value was greater than 1.96 (critical value) and $p < 0.05$, H4 was supported meaning that human capital access is associated with the same directional change in sustainable livelihood outcomes.

H5: The relationship between cultural capital access and sustainable livelihood outcomes (improved well-being) was not statistically significant ($\beta = 0.115$, $t = 1.234$, $p = 0.217$). Considering that t-value was below the 1.96 critical value and $p > 0.05$, hypothesis H5 was rejected. This result implies that an increase or decrease in cultural capital access does not enhance or diminish the sustainable livelihood outcomes (improved well-being) of national park adjacent community members in Uganda.

5. Discussion of findings

From the results, the influence of Independent variable livelihood capital access (financial, physical, social, human and cultural capital access.) on sustainable livelihood outcome (improved well-being) is discussed.

5.1 Financial capital access

The significant relationship between financial capital and sustainable livelihood outcomes (improved well-being) shows that if national park-adjacent community members access financial capital access, their livelihood will be enhanced. These findings indicate that enhanced access to financial capital, including credit and savings, is positively associated with improvements in sustainable livelihood outcomes—such as reduced stress, increased happiness and enhanced security—among communities residing near national parks in Uganda. This aligns with the conclusions drawn by Ibrahim (2023), Patnaik and Narayanan (2015), indicating that access to financial resources plays a significant role in improving the overall well-being of households.

5.2 Physical capital access

The relationship between physical capital access and sustainable livelihood outcomes (improved well-being) was significant, which implies that access to physical capital improves the livelihood of national park-adjacent communities. This finding suggests that greater access to physical capital such as electricity, water, communication infrastructure and improved roads enhances production capacity and raises overall income levels, thereby leading to similar positive changes in sustainable livelihood outcomes (improved well-being) for communities neighboring national parks. Interestingly, this finding contradicts the findings by Zhang *et al.* (2017), who argued that physical capital entails public goods that do not directly translate to a household's disposal income, but which instead led to household spending and consequently reduced livelihood. We appreciate that although physical capital absence doesn't directly lead to poverty, it does limit livelihoods by restricting income-generating opportunities.

5.3 Social capital access

The positive correlation between access to social capital and sustainable livelihood outcomes (improved well-being) suggests that social capital access, encompassing access to connections, shared values, networks enhances livelihood sustainability. This finding indicates that by accessing social capital, community members maintain their social identity, receive emotional support and obtain material assistance linked to sustainable livelihood outcomes—enhanced well-being. This aligns with previous research by İzmen and Üçdoğruk Gürel (2020), which

similarly found that social capital positively impacts well-being. According to Zhang *et al.* (2017), social capital acts as an informal mechanism facilitating timely access to information and resources, thereby reducing household vulnerability to poverty amidst uncertainties.

5.4 Human capital access

The significant association between human capital access and improved well-being implies that simply having access to human capital leads to sustainable livelihood outcomes for these communities. Higher levels of education and, skills are associated with increased household incomes while good health is associated with the ability to create wealth necessary to improve the well-being of national park adjacent communities. This finding contradicts conclusions drawn by Wang *et al.* (2021), underscoring that while human capital access may not improve sustainable livelihoods.

5.5 Cultural capital access

Given the results of the SEM analysis, this study highlights that sustainability of livelihoods of national park-adjacent communities is not enhanced by cultural capital access. This finding contradicts the findings of Ma *et al.* (2021) that the use of traditional culture in rural tourism helped community farmers to improve their well-being and livelihoods overall. Perhaps cultural degeneration observed in most tourist sites in Uganda could explain this finding. Scholars have highlighted the loss of traditional culture due to waning interest, the influence of Western culture and inadequate preservation of cultural artifacts. Tourism development poses risks including the disruption of established livelihoods based on cultural values, traditions and knowledge, which threatens the survival of indigenous cultures (Kagumba, 2013). Consequently, communities may no longer perceive cultural capital as a viable source of livelihood.

6. Summary and conclusions

This paper investigates the impact of livelihood capital access on sustainable livelihood outcomes among communities residing near national parks in Uganda. Conducting a survey involving 364 respondents from UCOTA, we identified that access to financial, physical, human and social capital significantly predict sustainable livelihood outcome (improved well-being). This study contributes to sustainable livelihoods theory (SLF) and contributes to livelihood literature by proposing that access to financial, physical, social and human capital can improve the livelihoods of communities adjacent to national parks in Uganda. These components of livelihood capital access represent essential resources and tools for sustainable livelihoods, offering potential inspiration for further research.

The study stresses the need to enhance financial capital access for sustainable livelihoods. UCOTA should implement microfinance programs and offer tailored financial services like small loans and savings accounts for communities near national parks. Encouraging community-based savings groups or credit unions, along with financial literacy initiatives and peer support, is crucial for promoting economic resilience and entrepreneurship. Collaboration with government and financial institutions to expand services, develop customized products and adopt digital solutions will improve banking access. Additionally, governments must prioritize infrastructure development to enhance physical capital access in park-adjacent communities. Improving local transportation networks and road capacity is essential for market access and trade facilitation. Simultaneously, efforts should focus on upgrading public healthcare, water, electricity and energy infrastructure to enhance overall livelihoods. Optimizing information infrastructure, like internet and phone coverage, is also vital for communication among UCOTA members and broader community engagement.

UCOTA can also enhance social capital by organizing local representatives into teams to foster collaboration and devise effective tourism and livelihood strategies. Creating area-

specific livelihood clusters with government and community partners will leverage social networks, while forming mutual aid groups can support marginalized members and build social cohesion. Integrating social capital into disaster preparedness and livelihood policies will strengthen community relationships and resources. Additionally, investing in educational infrastructure, job training, vocational education and employment strategies in secondary and tertiary industries will improve human capital access and sustain livelihood improvements.

This study acknowledges several limitations. Firstly, administering the questionnaire face-to-face orally by research assistants may inadvertently alter information or introduce recall biases, potentially affecting data accuracy. Secondly, the study's sample size is limited to the western region of Uganda, limiting generalizability to broader park-adjacent communities nationwide. Future research should employ qualitative or mixed-method approaches and longitudinal designs to delve deeper into the relationships between access to livelihood capital and sustainable livelihood outcomes. Comparative studies across industries and countries, with multi-level analyses, would enhance understanding of contextual factors and industry dynamics, thereby strengthening theoretical frameworks and practical implications in this field.

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