Journal of Economics and Sustainable Development
ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online)
Vol.16, No.6, 2025


# Women's Empowerment in Agriculture: Pro-WEAI Analysis of Small-Scale Potato Farmers in Narok County, Kenya

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**Abstract**
Women's economic empowerment has become an important component in advancing gender-transformative agri-food systems and sustainable development. This study evaluated the empowerment status of women small-scale potato farmers in Narok County Kenya. Project-level Women's Empowerment in Agriculture Index (pro-WEAI) is a standardized, validated, and holistic metric of women's empowerment within agricultural households. Multistage sampling method was employed to select and identify 483 small-scale potato farmers from both dual adult and female-adult only households. The overall pro-WEAI score for women was 59.8% indicating gender disparities in access to resources and agency. The results further revealed that women small-scale potato farmers were highly disempowered in instrumental and intrinsic agency domains as compared to men, but more empowered than men in collective agency domain. This suggests that while national averages portray significant progress in achieving gender parity, women in some rural communities in Kenya remain marginalized due to prevailing gendered social norms. Therefore, strengthening women's empowerment in these domains through supportive policies and targeted interventions, will boost agricultural productivity and advance gender equality at the grassroots level.
**Keywords:** Pro-WEAI, Gender equality, Agriculture, Women's empowerment
**DOI:** 10.7176/JESD/16-6-02
**Publication date:**August 31st 2025

## 1. Introduction

Investing in women's economic empowerment has been an integral part of the global agenda, as recognized by the SDGs (Klugman & Quek, 2018). Women comprise approximately 37% of the world's rural agricultural workforce, a proportion that increases to 48% in developing countries (FAO *et al.,* 2020). Moreover, women's agricultural contribution in Africa is very significant, as they are responsible for the production of 80 per cent of the food consumed locally (Momsen, 1991; Palacios-Lopez *et al.,* 2015). Therefore, women's empowerment has become a critical element in gender-transformative agri-food systems, as it ensures gender equality in access to economic resources, contributing to the achievement of national development goals in poverty alleviation, improved agricultural productivity and income, food and nutrition security, and improved health outcomes (FAO, 2023; Malapit *et al.,* 2019; Quisumbing & Maluccio, 2003; Ragsdale *et al.,* 2018).

Countries worldwide have made significant progress towards gender equality. According to the World Economic Forum's Global Gender Gap Report, the global gender parity score is 68.5% (WEF, 2024). Sub-Saharan Africa region has also advanced in terms of closing the gender gap, with a gender parity score of 68.4%, a 5.6 percentage points increase from 2006. Kenya on the other hand, has closed 71.2% of its gender gap which is a 0.4% improvement from 2023 (WEF, 2023), and 6.3% improvement from 2006 (WEF, 2006). This has been supported by the current Constitution (Republic of Kenya, 2010) that safeguards women's empowerment and places great emphasis on gender equality since it is crucial for the realization of the national development goals (KNBS, 2020; Muigua, 2018). Despite the various remarkable legislative frameworks that have been implemented in Kenya, the country has not been able to achieve gender parity in the social, economic, and political spheres (KNBS, 2020). These gaps in implementation relate to certain customary, traditional or religious practices that discriminate against women, underscoring the need to extend beyond the amendments of legal provisions and texts (Morsy & Youssef, 2017).

In agriculture, women smallholder farmers in SSA still lag behind their male counterparts in access to and control over productive resources, assets, and opportunities, which directly influences their agricultural practices and productivity (FAO *et al.,* 2020; Hess *et al.,* 2021; Johnson *et al.,* 2016; Njuki *et al.,* 2021). Gendered social norms that discriminate against women are the root cause of these challenges, as they create power imbalances between men and women, hindering women's empowerment and socio-economic wellbeing (FAO, 2023; Muigua, 2018). Women experience disproportionate access to resources such as land and livestock because cultural norms still favour masculine ownership and control over productive decisions, especially within agricultural households (FAO, 2023; Hillesland *et al.,* 2022; Mudege *et al.,* 2016; Quisumbing *et al.,* 2022). As a result, women often rely on resources they do not own or control; consequently, lacking the means to improve them (Muigua, 2018).

 

Additionally, women experience mobility constraints due to culturally imposed domestic and care responsibilities (Lecoutere *et al.,* 2022; Mudege *et al.,* 2016; Vargas *et al.,* 2023). These normative limitations act as barriers to women's participation in agrifood systems, restricting their ability to access and benefit from services, agricultural trainings and social networks (Bergman Lodin *et al.,* 2019; Farnworth *et al.,* 2020; Kimathi, 2024), and also limiting their involvement in off-farm income-generating activities (World Bank Group, 2019). Moreover, women continue to lag behind men in literacy levels, resulting to their slow uptake of technology in production (Gichungi *et al.,* 2023; Hess *et al.,* 2021; Kimathi, 2024). Overall, these barriers restrict women's intrahousehold decision-making and bargaining power (Ogechi, 2017) and stifles their ability to adopt sustainable and resilient agricultural practices(Bakala & Tadesse, 2018).

In light of these gender disparities, this study examines the potato value chain, which is the second most important crop in Kenya after maize (AFA, 2022; MoALF&C, 2021). Women's involvement in this value chain is minimal due to social factors, slow adoption of appropriate production technology, and limited financial access due to lack of collateral (MoALF&C, 2021). Studies by Bakala and Tadesse (2018), Kawarazuka and Goswami (2019), and Mudege *et al.* (2016) in Ethiopia, India, and Uganda, respectively, found that the potato value chain is male-dominated, with inequalities in workload and sharing of production benefits between men and women potato farmers. Narok County, one of the major potato-growing regions in Kenya (MoALF&C, 2021), provides a relevant case for this study. Potato farming in the county is a valuable enterprise for smallholder farmers, significantly contributing to food security and income (Mulema *et al.,* 2021). However, prevailing norms (Archambault, 2016; Glass, 2019; Taeko, 2019; Takai *et al.,* 2024), continue to limit women's participation in decision-making regarding resources and leadership (Ogechi, 2017).

It is important to note that economic, social, and political resources have often played a significant role in empowering women; however, they are not sufficient. This is because women need individual or collective agency in the utilization of these resources in order to achieve empowerment (Malhotra *et al.,* 2002). By employing pro-WEAI, this research contributes to the existing literature on women's empowerment in agriculture. With agency being the defining criterion of empowerment (Kabeer, 1999), pro-WEAI provides a holistic, validated, and standardized metric of women's empowerment within agricultural households. It incorporates intrinsic, instrumental, and collective agency to assess empowerment levels not only in terms of access to and control over resources but by also examining the motivations behind decision-making across various dimensions (Hillesland *et al.,* 2022). Additionally, pro-WEAI allows for direct comparison of empowerment levels between men and women within the same household (Malapit *et al.,* 2019), providing an understanding of how women participate in decision-making at household and community levels regarding the utilization of productive resources. Despite this acknowledgement, limited empirical literature exists on the specific domains that mostly constrain women farmers in rural Kenya. This study seeks to fill this gap by providing evidence that helps policymakers and development organizations design targeted interventions to strengthen women's empowerment in the potato value chain.

## 2. Methodology

### 2.1 Study area

This study was conducted in Narok County situated in the Rift Valley region of Kenya. The county has two main agroecological zones; the lowland areas, where pastoralism is common due to unreliable rainfall, and the highlands which favour rain-fed agriculture (GoK, 2013). Arable land that constitutes approximately 47% of the county's total land area, is where most agricultural activities occur. These are predominantly concentrated in Narok North, Narok East, Narok South, the Mau area and the northern area of Narok West (GoK, 2018). Agriculture is the main source of livelihood for more than 46% of the county's population who engage in both subsistence and commercial farming (GoK, 2018). Maize is the staple food crop in the county followed by Irish potatoes and beans(NDMA, 2023). Potato production in the county is a valuable enterprise for smallholder farmers contributing positively to food security and income (Mulema *et al.,* 2021). According to the 2019 Kenya Population and Housing Census, the county has a total number of 241,125 households with an average household size of 4.8 (KNBS, 2019a; Narok County Government, 2023). Fig. 1 below represents the map of the study area.

 

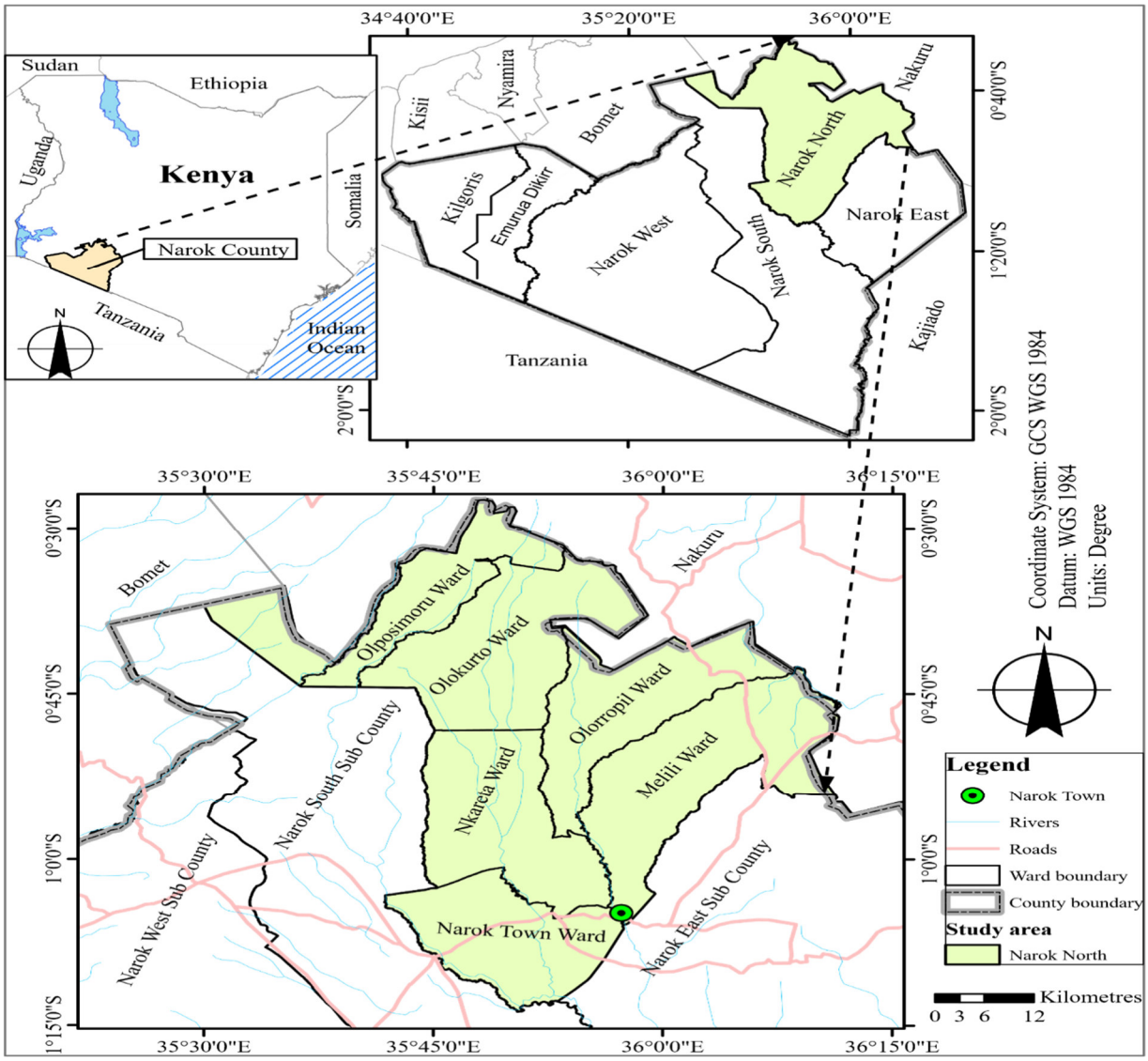


**Fig. 1. Map of Narok County**

## 2.2 Data collection

This research used cross-sectional research design that involved the collection of quantitative data. The target population of the study was small-scale potato farmers in Narok County. The sampling unit for this study was farmer households. Categorization of households was based on the gender of the adult decision makers in the house irrespective of who the family head was. In addition, the pro-WEAI calculation required data from at least one adult female decision maker in a household; therefore, male-adult-only households and child-headed households were excluded from the survey. Therefore, priority was only given to dual adult and female adult only households. Multistage sampling method was used for this study. In the first stage, Narok North Sub County was purposively selected because it is one of the sub counties that is situated in the highland areas of the county where most agricultural activities are conducted. In addition, Narok North Sub County has the highest population of potato farmers in Narok County (KNBS, 2019b). In the second stage, four wards from Narok North Sub County namely, Olokurto, Olorropil, Melili and Olpusimoru were randomly selected. Lastly, systematic random sampling was used to select the respondents that would participate in the study.

Data was collected using the standardized pro-WEAI tool developed by Malapit *et al.* (2019). One questionnaire was designed for the household and a separate one for individual household decision makers. These questionnaires were meant to capture the household's gender dynamics but the latter was exclusively designed to gather data required for calculating the pro-WEAI score. The household questionnaire was administered to both the primary male and female adult responsible for decision-making within the household. For dual adult-households, the individual questionnaire was administered separately to the primary male and female adult decision-makers through private interviews to avoid data bias. Extensive training of six enumerators (3 male and

 

3 female) was conducted before commencing the survey. A pilot study was conducted in Mauche ward, Nakuru County, to assess the questionnaire reliability and validity. The trained enumerators used SurveyCTO Collect software, during the pre-test and the actual data collection exercise. In total, 483 respondents were interviewed from 275 households (208 dual-adult households and 67 female-adult only households).

### 2.3 Data analysis

STATA Version 18 was used to process and analyze the data.

### 2.4 Analytical framework

The empowerment status of the women small-scale potato farmers, was measured using pro-WEAI as defined by Malapit *et al.* (2019) was computed using individuals' level data collected from both male and female respondents in various households. There is a total of ten indicators across the three dimensions as shown in Table 1. To estimate the three indices, 3DE, GPI and pro-WEAI score, the study adopted the following framework (see Malapit *et al.* (2019)).

**Table 1**

Description of pro-WEAI aggregate measures, indicators and weights

| Indicator | Description | Measurements | Weight |
|---|---|---|---|
| **Pro-WEAI Measure** | | | |
| Three Domains of empowerment (3DE) | Whether empowered; if individual achieves at least an empowerment score of 80% | | |
| Gender Parity Index (GPI) | Whether household achieves gender parity; woman's empowerment score is greater than or equal to the empowerment score of the male decision maker in her household. | | |
| **Pro-WEAI component indicators** | | | |
| **Intrinsic Agency** | | | |
| Autonomy in income | A respondent is motivated more by their own values rather than coercion or fear of others' disapproval: Relative Autonomy Index score>=1. RAI score is calculated by summing responses to the three vignettes about a person's motivation for how they use income generated from agricultural and non-agricultural activities (yes = 1; no = 0), using the following weighting scheme: 0 for vignette 1 (no alternative), -2 for vignette 2 (external motivation), -1 for vignette 3 (introjected motivation), and +3 for vignette 4 (autonomous motivation) | Binary | 1/10 |
| Self-efficacy | ''Agree" or greater on average with self-efficacy questions: New General Self-Efficacy Scale score>=32 | Binary | 1/10 |
| Attitudes about intimate partner violence against women | Believes husband is NOT justified in hitting or beating his wife in all 5 scenarios: 1) She goes out without telling him; 2) She neglects the children; 3) She argues with him; 4) She refuses to have sex with him; 5) She burns the food | Binary | 1/10 |
| **Instrumental Agency** | | | |
| Input in productive decisions | Meets at least ONE of the following conditions for ALL the agricultural activities they participate in: 1) makes related decision solely; 2) makes the decision jointly and has at least some input into the decisions; 3) feels could make decision if wanted to (to at least a MEDIUM extent) | Binary | 1/10 |
| Ownership of land and other assets | Owns, either solely or jointly, at least ONE of the following: 1) At least THREE small assets (poultry, nonmechanized equipment, or small consumer durables); 2) At least TWO large assets; 3) Land | Binary | 1/10 |

 

| Indicator | Description | Measurements | Weight |
|---|---|---|---|
| Access to and decisions on financial services | Meets at least ONE of the following conditions: 1) Belongs to a household that used a source of credit in the past year AND participated in at least ONE sole or joint decision about it; 2) Belongs to a household that did not use credit in the past year but could have if wanted to from at least ONE source; 3) Has access, solely or jointly, to a financial account | Binary | 1/10 |
| Control over use of income | Has input in decisions related to how to use BOTH income and output from ALL the agricultural activities they participate in AND has input in decisions related to income from ALL non-agricultural activities they participate in, unless no decision was made | Binary | 1/10 |
| Work balance | Works less than 10.5 hours per day: Workload = time spent in primary activity + (1/2) time spent in childcare as a secondary activity | Binary | 1/10 |
| Visiting important locations | Meets at least ONE of the following conditions: Visits at least TWO locations at least ONCE PER WEEK of [city, market, family/relative], or 2) Visits least ONE location at least ONCE PER MONTH of [health facility, public meeting] monthly between health and public places, and 0 if otherwise | Binary | 1/10 |
| **Collective Agency** | | | |
| Group membership | Active member of at least ONE group | Binary | 1/10 |

*Source*: Malapit *et al.* (2019) and Ferguson *et al.* (2023)

## 3 Results and discussions

### 3.1 Empowerment status of women small-scale potato farmers

The empowerment status of women small-scale potato farmers was determined using the pro-WEAI metric. The aggregate pro-WEAI score for women small-scale potato farmers was 0.598, which is the weighted average of the 3DE score for women, 0.582, and the GPI, 0.744 as shown in Table 2. The results also showed that 85.09% of women and 54.81% of men were disempowered. The mean inadequacy (disempowerment) score for the disempowered women, was 0.491, implying that they were disempowered on an average of 49.1% of the indicators. On the other hand, the mean inadequacy score of men identified as disempowered, was 0.403, implying they were inadequate in 40.3% of the indicators on average. The gender parity index for the sampled dual-adult households was 0.744, with only 28.36% achieving gender parity (women's empowerment scores were either equal or more than that of men). The average empowerment gap in households that did not achieve gender parity was 35.8%. The 3DE score shows the overall achievement of sampled women in all the 10 pro-WEAI indicators (Malapit *et al.,* 2019).

**Table 2**

Empowerment results

| | Women | Men |
|---|---|---|
| Number of observations | 275 | 208 |
| 3DE Index | 0.582 | 0.779 |
| % Not achieving empowerment (H) | 85.091 | 54.808 |
| Mean disempowerment score (A)* | 0.491 | 0.403 |
| Number of dual households | 208 | . |
| Gender Parity Index (GPI) | 0.744 | . |
| % Without gender parity (HGPI) | 71.635 | . |
| Mean empowerment gap (IGPI) | 0.358 | . |
| pro-WEAI | 0.598 | . |

Note: * Refers to the mean disempowerment score among only women/men who are disempowered. 3DE = 1 - (H*A); GPI = 1 - (HGPI*IGPI)

Table 3 represents the uncensored and censored inadequacy headcount ratios of the respondents. The uncensored inadequacy headcount ratios refer to the proportion of respondents with inadequacies in a given indicator, regardless of their status of empowerment. In contrast, censored inadequacy headcount ratios refer to the proportion of respondents who are both disempowered and inadequate in a given indicator (Malapit *et al.,* 2019). Overall, the results revealed that across all the indicators within the intrinsic and instrumental domains, a larger percentage of women were disempowered compared to men. Indicators under the instrumental agency domain such as input into livelihood decisions, access to and decisions on credit, control over use in income, work

 

balance and mobility, recorded the highest values for both censored and uncensored headcount ratios among women as compared to men, indicating that women were more disadvantaged in these indicators as compared to their male counterparts. On the other hand, ownership of land and assets had the least headcount ratio for both men and women. Intrinsic agency indicator, attitudes about IPV against women, had the highest censored and uncensored inadequacy headcount ratios for female farmers than their counterparts, followed by autonomy in income and self-efficacy. The collective agency indicator, group membership, men had higher censored and uncensored headcount ratios than women.

**Table 3**

Uncensored and Censored Inadequacy Headcount Ratios (n = 483)

| Indicator | Uncensored inadequacy headcount ratios (%) | | Censored inadequacy headcount ratios (%) | |
|---|---|---|---|---|
| | Women | Men | Women | Men |
| Autonomy in income | 38.2 | 29.3 | 36.4 | 24 |
| Self-efficacy | 17.8 | 16.8 | 17.5 | 15.4 |
| Attitudes about domestic violence | 66.9 | 47.6 | 61.8 | 37 |
| Input in livelihood decisions | 58.2 | 27.9 | 56.4 | 24.5 |
| Ownership of land and other assets | 2.91 | 0.962 | 2.91 | 0.962 |
| Access to and decisions on financial services | 53.1 | 31.7 | 52 | 22.6 |
| Control over use of income | 58.5 | 29.3 | 57.5 | 26.4 |
| Work balance | 75.6 | 36.5 | 66.5 | 24.5 |
| Visiting important locations | 48.4 | 21.2 | 44.7 | 14.9 |
| Group membership | 23.3 | 38.5 | 22.2 | 30.3 |

Note: Censored headcount ratio (see Malapit *et al.* (2019))

Table 4 reports the proportion each indicator contributes to the overall disempowerment of respondents identified as disempowered (Malapit *et al.,* 2019). On the other hand, Fig. 2 shows the absolute contribution of each indicator to disempowerment of women and men in the sample[1]. The length of the female respondents' bars indicates that women reported more inadequacies than men. The indicator-specific estimates provide information on the sources of disempowerment between women and men small-scale potato farmers; making it possible to understand women's participation in household and community decision making regarding use of productive resources, mobility, division of labour, and participation in community group activities. Instrumental agency indicators will first be discussed, followed by intrinsic and collective agency indicators.

**Table 4**

Proportional contribution of each indicator to disempowerment (%)

| | Weight | Women | Men |
|---|---|---|---|
| Autonomy in income | 0.100 | 8.271 | 9.141 |
| Self-efficacy | 0.100 | 3.970 | 5.850 |
| Attitudes about domestic violence | 0.100 | 14.061 | 14.077 |
| Input in livelihood decisions | 0.100 | 12.821 | 9.324 |
| Ownership of land and other assets | 0.100 | 0.662 | 0.366 |
| Access to and decisions on financial services | 0.100 | 11.828 | 8.592 |
| Control over use of income | 0.100 | 13.069 | 10.055 |
| Work balance | 0.100 | 15.136 | 9.324 |
| Visiting important locations | 0.100 | 10.174 | 5.667 |
| Group membership | 0.100 | 5.045 | 11.517 |

Note: The relative contribution of each indicator to disempowerment reflects how much each indicator contributes to the disempowerment index (1 - 3DE) for women and men in the sample.

[1] See Malapit *et al.* (2019).

 

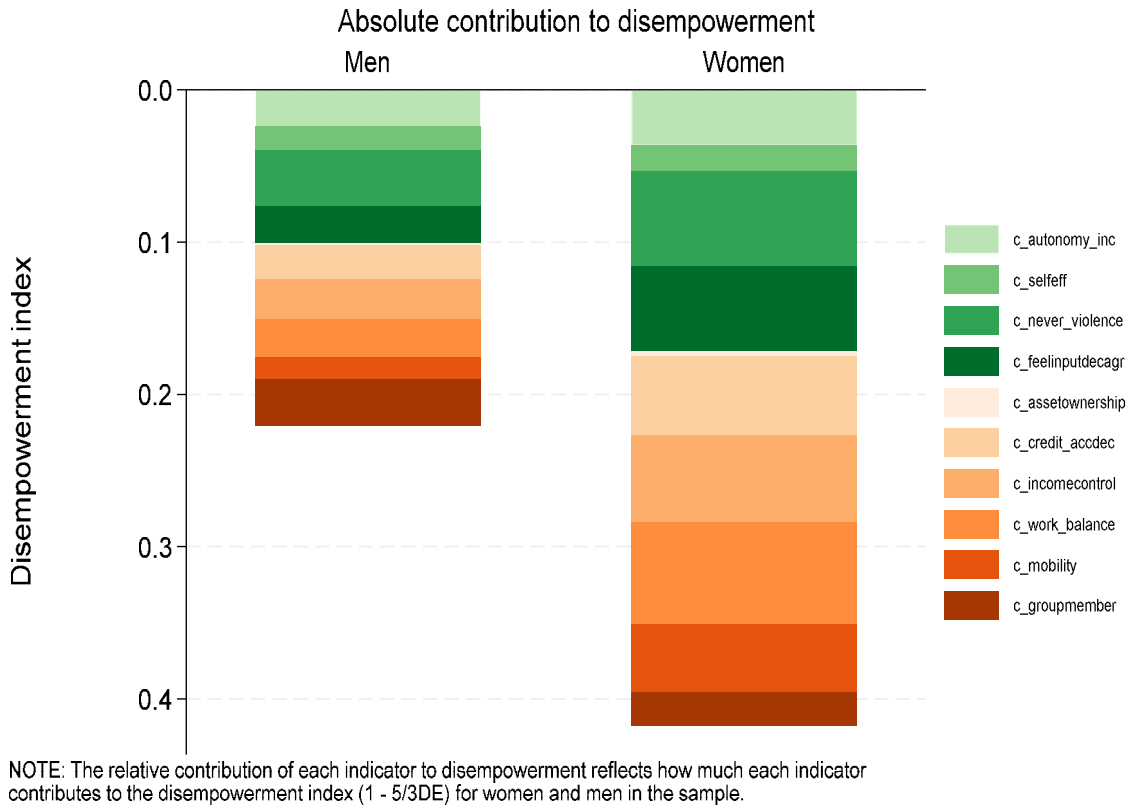


**Fig. 2. Absolute contribution to disempowerment**

### 3.1.1 Instrumental agency

Input into livelihood decisions of the household, was among the major contributors to women's disempowerment. In general, women were less likely to participate in making decisions regarding agricultural and non-agricultural household activities as compared to their male counterparts. The results revealed that women were more likely to participate in making agricultural decisions regarding poultry and horticultural farming as compared to other agricultural enterprises. On the other hand, more men had most input into decisions on staple grain farming, potato farming, large livestock and small livestock raising, horticultural farming and minimal input into poultry farming. A study by Takai *et al.* (2024) highlights that women in Narok County are restricted in the ownership of livestock property such as cattle and sheep which are the main sources of wealth in pastoral communities. Glass (2019) and Archambault (2016) noted that Maasai cultural norms give men exclusive rights to livestock ownership. Similarly, Mudege *et al.* (2016) study found out that women potato farmers in Uganda had less ownership of large livestock as compared to men, but were more likely to own poultry. Hillesland *et al.* (2021) and Hovorka, (2012) studies reported that men often have control over livestock breeds such as cattle and camels

 

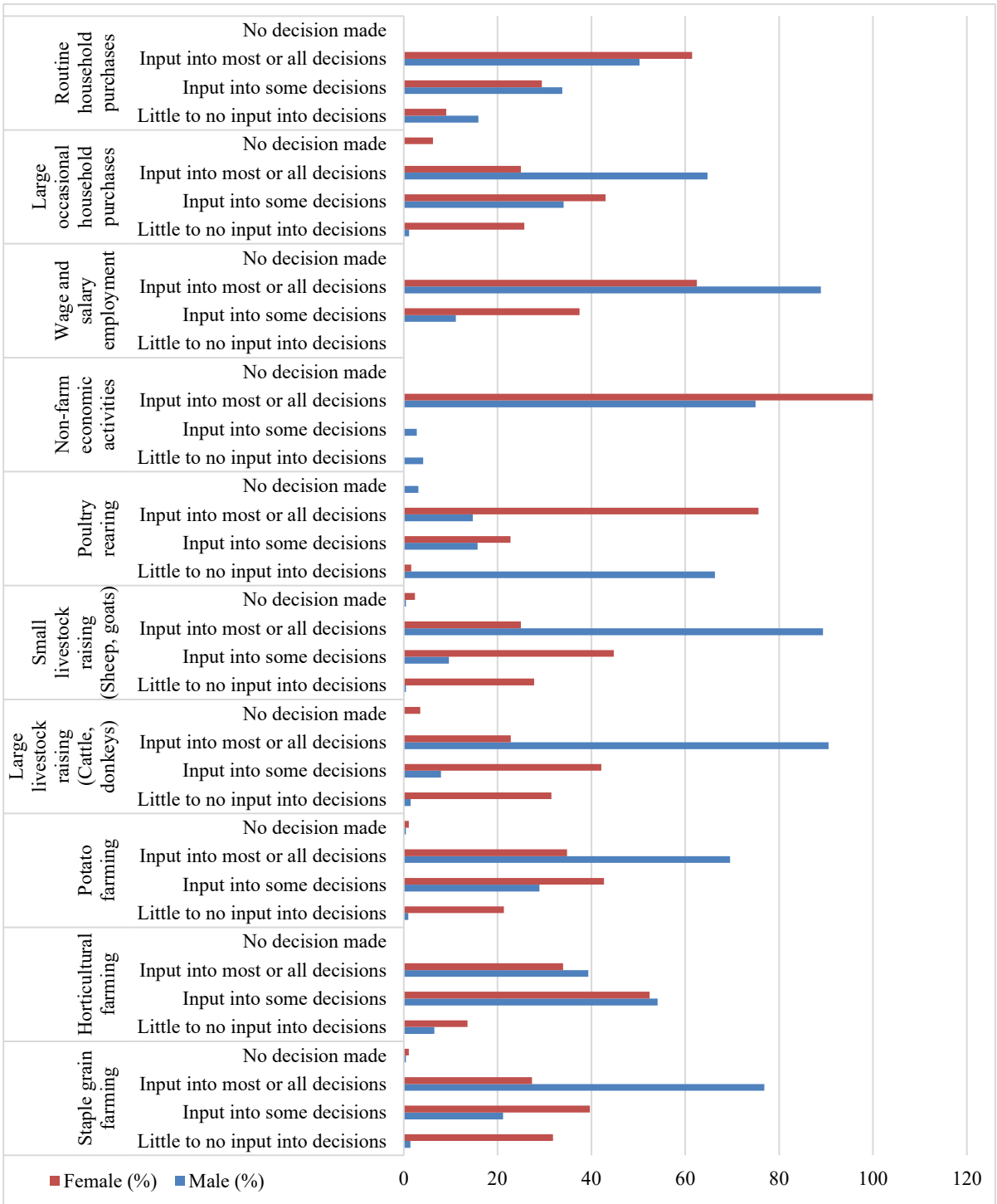


**Fig. 3. Input into livelihood decisions on agricultural and non-agricultural activities**
Source: Author's survey data (2024)

as they are considered to be highly profitable, while women are more likely to control poultry and small ruminants classified as less-profitable livestock breeds.

A study by Quisumbing *et al.* (2022) highlighted that gendered social norms continue to support male dominance over productive decisions. For agricultural activities as presented in Fig. 3, a minimal gap between men and women that reported input into most or all decisions is found for decisions concerning horticultural farming (39.34% of men and 33.98% of women). Furthermore, a greater proportion of women participated in making decisions about poultry production compared to men (14.74% of men and 75.61% of women). For potato which is the study's crop of interest, only 34.83% of women had input into most or all decisions in potato farming as compared to 69.54% of men. This implies that there is minimal involvement of women small-scale potato farmers in the potato production decisions. Mudege *et al.* (2016) highlighted women farmers had a low probability

 

of being involved in potato farming decision-making than men, which limited their efficiency and productivity. Concerning non-agricultural activities, women's input into decisions was higher because there were minimal variations between men and women that had input into most or all decisions. However, women were more actively involved than men in making decisions regarding non-farm economic activities and routine household purchases. On the other hand, women reported less involvement in large occasional household purchases which was in line with Mudege *et al.* (2016) findings that women did not have significant input into decisions regarding major expenditure items.

This study results showed that control over use of income indicator also had a higher contribution to women's disempowerment than men. This means that most of the women farmers were less involved in decisions regarding income generated from on-farm and off-farm activities they participated in. These findings corroborated with Lumet *et al.* (2022) study which revealed that smallholder women sugarcane farmers in Western Kenya were less involved in the control over income from sugarcane or other agricultural enterprises of the household. A study by Sell and Minot (2018) in Uganda, found out that men had control over decisions on the use of income than women. On the contrary, Diiro *et al.* (2018) found out that women maize farmers in Western Kenya were most likely to achieve adequacy in the control over use of income.

Overall, as shown in Fig. 4, women potato farmers participated mostly in making decisions on income from poultry rearing (24.21% of men and 75.61% of women) and fairly in horticultural farming (42.62% of men and 33.01% of women) as compared to income from other agricultural activities. A study by *Waid et al.* (2022) in Bangladesh found out that while men participated in poultry and horticultural farming, they had minimal input into how the products were used. A study by Alemayehu *et al.* (2018) confirms that women tend to dominate smallholder poultry value chains across the developing world. The results from the current study also revealed that women's involvement in the control of income from potato farming was low, given that 34.46% of women had input into most or all decisions as compared to 71.07% of men. Mudege *et al.* (2016) study found out that potato marketing was male dominated largely due to deep seated gendered social norms designating potato as a men's crop therefore promoting their sole involvement in marketing and control over income without necessarily consulting women. Moreover, the market set up tended to restrict women's participation, because buyers preferred transacting with men based on the belief that they were the primary decision-makers and household heads. As a result, the women potato farmers reported not benefitting from potato sales due to their low involvement in both marketing and income-related decisions.

 

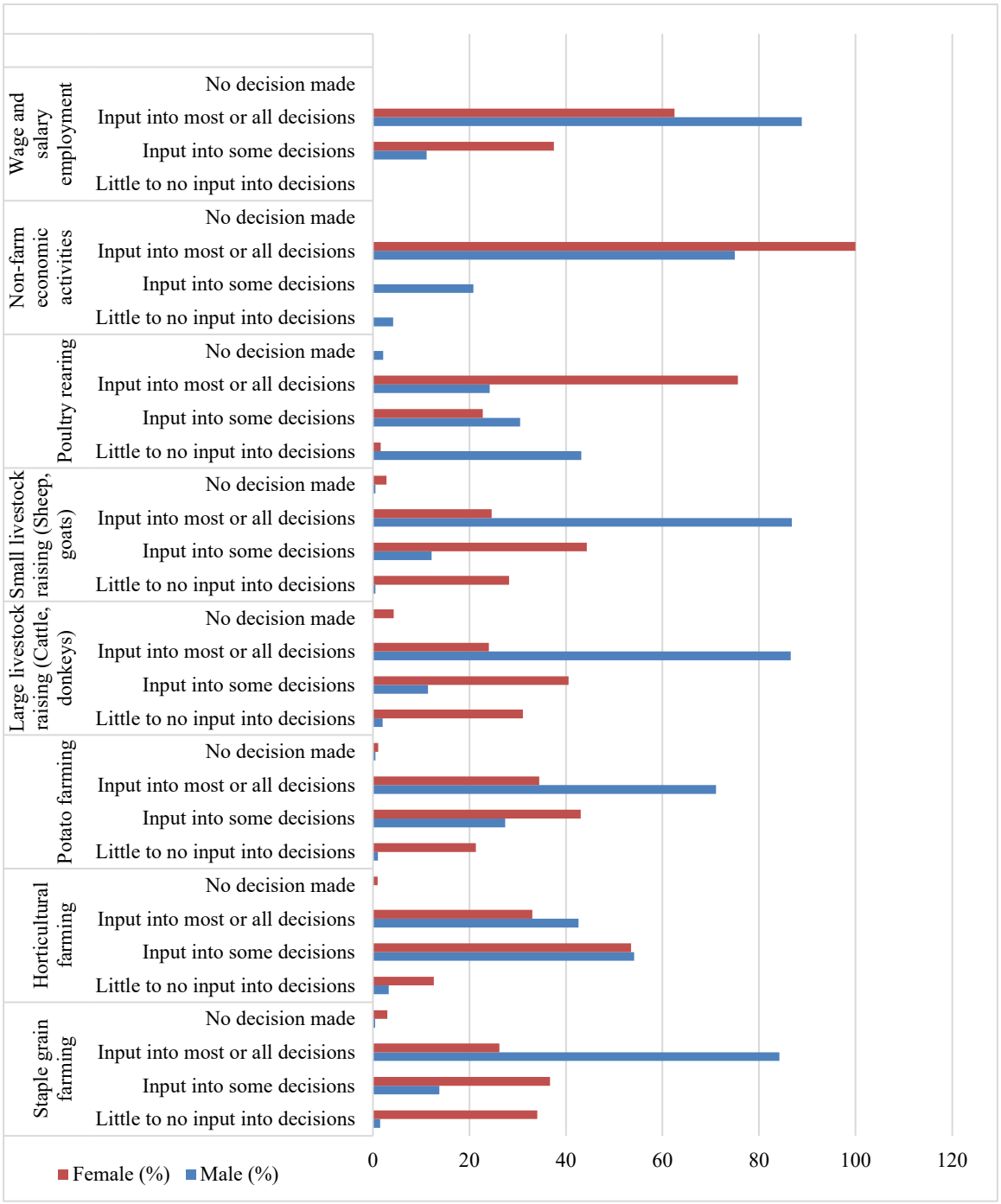


**Fig. 4. Control over use of income from agricultural and non-agricultural activities**
Source: Author's survey data (2024)

The results from this present study also found out that income from non-farm economic activities (75% of men and 100% of women) and wage and salary labour (88.89% of men and 62.5% of women) were other exceptions where women had input into most or all decisions in high proportions like men. Although the number of cases for these two activities was quite low for women (n = 12, and n = 8) respectively, it implies that if women engaged in off-farm economic activities and salary or wage employment, it enhances their agency in income-use decisions. In the study of Sell and Minot (2018), wage and salary labour was the only exception where women reported equal input into most or all decisions as men, implying that women's participation in wage and salary labour enhanced their control over decisions on the use of income. Mudege *et al.* (2016) study among potato farmers in Eastern Uganda also emphasized that women's participation in off-farm income generating activities, enhances their intrahousehold decision-making and bargaining power.

Access to and decisions on financial services indicator was also among indicators that highly contributed to the disempowerment of women, as illustrated in Table 4. The results show that women were more disempowered

 

than men in this indicator as most of them did not meet the criteria for achieving adequacy in this indicator. This aligns with studies by Sell and Minot (2018) and Lumet *et al.* (2022) which identified access to and decisions regarding credit to be among main indicators contributing to women's disempowerment. In addition, Malapit *et al.,* (2014) WEAI results showed this indicator as a primary driver of disempowerment for the sampled women and men. However, a study by Diiro *et al.* (2018) contradicts the study findings on this indicator. On the other hand, ownership of land and assets indicator had the least contribution to women's disempowerment. More women reported owning productive and non-farm assets either, solely or jointly. This is similar to a study by Waid *et al.* (2022) pro-WEAI findings that women who participated in the FAARM project in Bangladesh reported having more ownership to land and other assets. Gichungi *et al.* (2023) study in Zambia also found ownership of land and other assets to be among the least contributors to women's disempowerment.

The work balance indicator was the highest contributor to women's disempowerment. A respondent was said to achieve adequacy in this indicator if the total number of hours worked in a day, inclusive of time spent on childcare was less than or equal to 10.5. The pro-WEAI results revealed that women farmers shouldered a greater burden of primary work activities and childcare as a secondary activity. The difference in time spent in work and non-work activities between men and women was significant at 1% level, as shown in Table 5. These findings suggest disproportionate division of labour between the male and female small-scale potato farmers. This was similar to the findings of Gichungi *et al.* (2023), Diiro *et al.* (2018), Lumet *et al.* (2022), (FAO *et al.* (2020) and Ragsdale *et al.* (2018) that workload was among the major contributors to disempowerment among women. According UNDESA (2023) report, there exists gender disparities in the global patterns of time use particularly on time spent on unpaid domestic and caregiving duties, particularly in low-and middle-income countries. Karimli *et al.* (2016) further emphasized that these gender disparities in unpaid domestic and caregiving responsibilities are higher in rural than urban settings.

**Table 5**

Average time in hours spent on the listed work and non-work activities

| Activity | Women | | Men | | t |
|---|---|---|---|---|---|
| | Mean | Std Dev. | Mean | Std Dev. | |
| **Work** | **11.57** | **2.55** | **9.61** | **2.95** | **-7.81**$^{***}$ |
| Work (employed) | 0.24 | 1.35 | 0.66 | 2.42 | |
| Business work (Own) | 0.95 | 2.20 | 1.18 | 2.95 | |
| Staple grain farming | 0.09 | 0.57 | 0.16 | 0.69 | |
| Horticultural (gardens) or high value crop farming | 0.12 | 0.54 | 0.04 | 0.33 | |
| Potato farming | 1.74 | 2.26 | 2.29 | 2.68 | |
| Large and small livestock raising (cattle, donkeys, sheep, goats) | 1.66 | 1.94 | 4.61 | 3.33 | |
| Poultry and other small animals raising (chickens, ducks, turkey) | 0.13 | 0.42 | 0.04 | 0.43 | |
| Fishpond culture | 0.00 | 0.00 | 0.00 | 0.00 | |
| Commuting (to/from work or school) | 0.03 | 0.15 | 0.12 | 0.38 | |
| Shopping/getting service (including health services | 0.15 | 0.68 | 0.37 | 1.01 | |
| Weaving/sewing/textile care | 0.00 | 0.00 | 0.00 | 0.00 | |
| Cooking | 2.55 | 0.86 | 0.00 | 0.00 | |
| Domestic work (including fetching water and collecting fuel) | 3.04 | 1.94 | 0.01 | 0.15 | |
| Caring for children | 0.80 | 1.16 | 0.10 | 0.47 | |
| Caring for adults (sick, elderly) | 0.06 | 0.39 | 0.00 | 0.00 | |
| **Non-work** | **12.42** | **2.59** | **14.39** | **2.95** | **7.82**$^{***}$ |
| Sleeping and resting | 8.28 | 1.99 | 8.80 | 2.03 | |
| Eating and drinking | 2.06 | 0.97 | 2.70 | 0.93 | |
| Personal care | 0.87 | 0.97 | 0.72 | 0.51 | |
| School (including homework) | 0.05 | 0.22 | 0.04 | 0.34 | |
| Traveling (not from work or school) | 0.20 | 0.73 | 0.15 | 0.90 | |
| Exercising | 0.00 | 0.06 | 0.01 | 0.14 | |
| Social activities and hobbies | 0.58 | 1.19 | 1.14 | 1.28 | |
| Religious activities | 0.34 | 1.10 | 0.20 | 1.15 | |
| Other activities | 0.03 | 0.28 | 0.63 | 2.23 | |

Note: *** p < 1%, ** p < 5%, * p < 10%

Source: Author's survey data (2024)

 

Research shows that gender stereotypes shape the division of labour and influence how women spend their time, which in turn affects their level of engagement and the extent of benefits they gain (Lecoutere *et al.,* 2022; Malapit *et al.,* 2019; Mudege *et al.,* 2017). In Narok County, cultural norms and practices are well preserved and practiced (Archambault, 2016; Glass, 2019; Taeko, 2019; Takai *et al.,* 2024). Shaped by belief, different communities in different contexts establish norms that outline gender roles for women and men. These discriminatory social norms and practices create power imbalances between the two genders which hinders women's empowerment and socio-economic wellbeing (FAO, 2023; Muigua, 2018).

Concerning visiting important locations indicator, there was a large variation in terms of disempowerment of women and men. This implies that women were highly disempowered than men in terms of mobility. Malapit *et al.* (2019) also found visiting important locations to be among the large contributors to women's disempowerment. This indicator measures the extent of women's mobility and some possible hindering factors. As shown in Fig. 5, women visited urban centres, markets, family or relatives and public village gathering/community/training less frequently than men. On the other hand, men visited health centres less frequently than women.

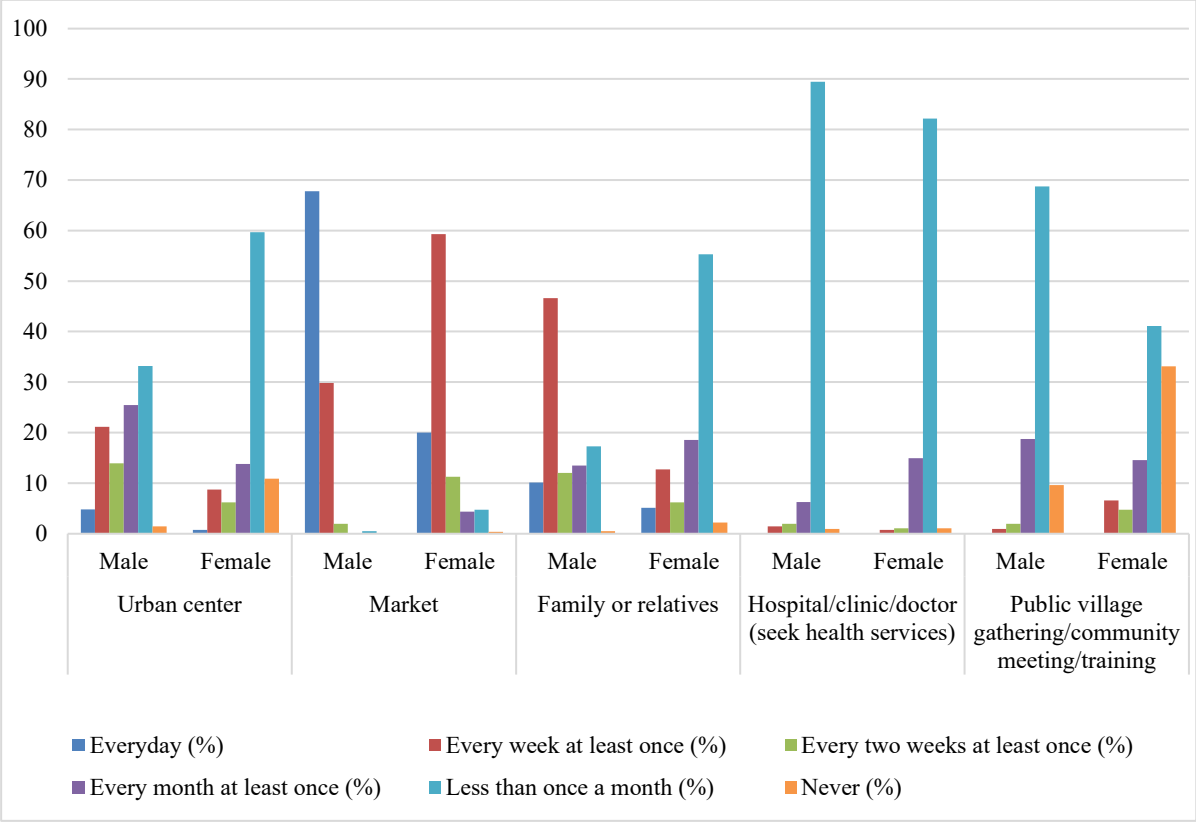


**Fig. 5. Frequency of visiting important locations, by gender of respondent**
Source: Author's survey data (2024)

Only a few women reported being restricted by their partners from visiting urban centres, family or relatives and friends. A study by Waid *et al.* (2022) in Bangladesh found that men visited markets and urban centres more frequently than women, but visited health centres less frequently. In addition, a study by Vargas *et al.* (2023) in Colombia found out that women coffee farmers were burdened by domestic work limiting their involvement in activities they valued such as, participating in community groups and attending trainings. Some women coffee farmers reported situations of men restricting their group participation. Similarly, Mudege *et al.* (2016) study found that women involved in potato farming experienced social restrictions particularly related to domestic and caregiving duties, which significantly limited their time and hindered their physical mobility. As a result, these constraints to their mobility became a barrier towards involvement in potato marketing. Furthermore, mobility constraints due to the gendered social norms could also hinder women farmers' access to agricultural information (Bergman Lodin *et al.,* 2019; Kimathi, 2024).

### 3.1.2 Intrinsic agency

Attitudes towards intimate partner violence (IPV) against women contributed significantly to the disempowerment. This indicator measured the number of times in which IPV against women was considered unjustifiable. Both men and women reported relatively few instances in which IPV against women was unjustified. Women were more likely to rationalize IPV than men. The results indicate that the traditional male dominance persists in the community. In line with these findings is Malapit *et al.* (2019) study that found attitudes towards IPV against

 

women to be among the large contributors to women's disempowerment. Similarly, KNBS (2020) highlighted that women were more likely than men to experience gender-based violence from their intimate partners. In addition, other studies show that IPV can also be in the form of backlash against women, evident in restricting mobility, resistance to women's access and decisions over productive resources, and a trigger for conflict and violence. Abramsky *et al.* (2019) found that women who contribute more financially than their partners face higher IPV risk, suggesting that economic empowerment can trigger male backlash. This reflects how some men may assert control through violence to reclaim perceived lost authority – a major barrier to the empowerment of women (Niyonkuru & Barrett, 2021).

The autonomy in income indicator assesses whether respondents' use of income is primarily driven by their personal values rather than by coercion or fear of disapproval from others (Malapit *et al.,* 2019). Questions for this indicator were presented through vignettes, which illustrated how an individual spent their income and then asked the respondent if they identified with that person. A weighting scheme by Malapit *et al.* (2019) was applied to generate RAI (Annex 1). Table 3 results revealed that a higher proportion of women were disempowered in this indicator compared to men, similar to the findings of Gichungi *et al.* (2023). Malapit *et al.* (2019) also identified autonomy in income as a significant factor contributing to the disempowerment of women.

**Table 6**

Autonomy in income

| Source of motivation for use of income generated from agricultural and non-agricultural activities | Gender of the respondent | | $\chi^2$ |
|---|---|---|---|
| | Male | Female | |
| External motivation (Using income how another person tells them) | 49.59% | 50.41% | 2.80* |
| Introjected motivation (Using income in a way that family and community expect) | 64.13% | 35.87% | 116.56*** |
| Autonomous motivation (Using income as they personally want to and think is best) | 51.52% | 48.48% | 64.04*** |

Note: *** p < 1%, ** p < 5%, * p < 10%

Source: Author's survey data (2024)

The results in Table 6 show that a slightly higher percentage of men reported greater autonomy in how they use their income compared to women, with a highly significant difference ($p < 0.01$; $\chi^2 = 64.04$). This indicates that men are somewhat more likely than women to experience a sense of freedom and agency in managing their income. This contributes to women's higher inadequacy in this indicator. Conversely, a large proportion of men reported using their income in ways that their family or community expected, compared to women. The difference is highly significant ($p < 0.01$; $\chi^2 = 116.56$), depicting that men feel a stronger sense of duty to align their financial behaviour with societal and familial standards, reflecting their gendered role of being primary providers. These findings are consistent with Muigua (2018), who suggests that societal norms around appropriate behaviour for men often pressure them to provide materially for their families, negatively impacting their autonomy, which explains why this indicator contributes slightly more to men's disempowerment. External motivation was similarly distributed between men and women. However, women were marginally more likely than men to experience external motivation, at a 10% significance level ($\chi^2 = 2.80$), indicating that both genders experience high similarities in external motivation.

The pro-WEAI measures self-efficacy using the well-validated New General Self-Efficacy Scale (NGSE) (see Malapit *et al.* (2019). A respondent was adequate in this indicator if their total score was greater than or equal to 16 based on responses to statements in Figure 6. The self-efficacy indicator marginally contributed to the disempowerment of both genders (Table 4). This indicator had a slightly greater contribution to the disempowerment of disempowered men than female farmers. However, the results in Table 3 showed that more women than men were inadequate in this indicator, aligning with the findings of Gichungi *et al.* (2023). Additionally, Malapit *et al.* (2019) had similar observations on self-efficacy as one of the major contributors to women's disempowerment.

 

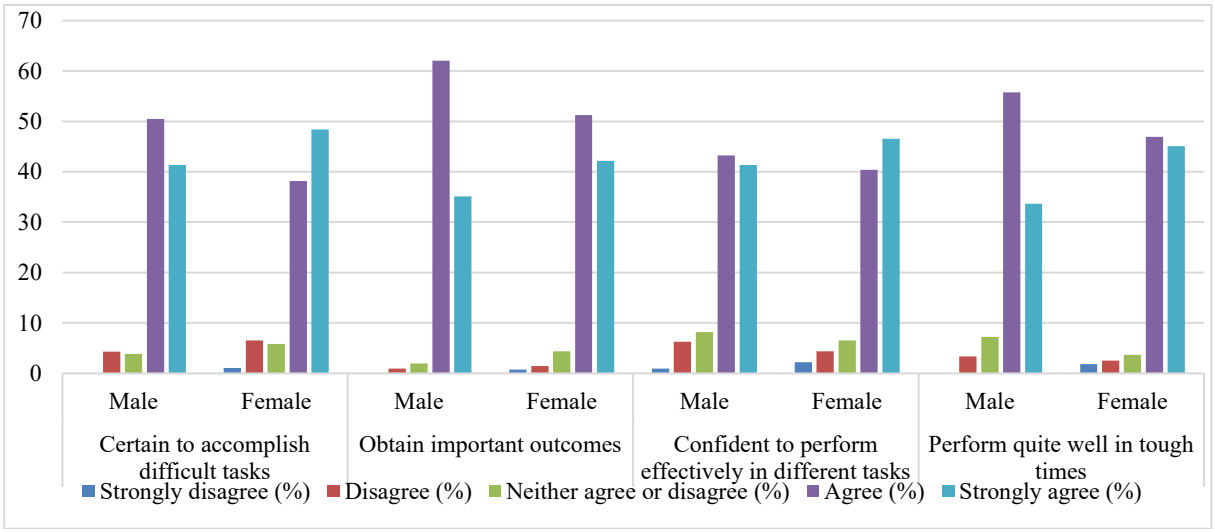


**Fig. 6. Responses to statements on the new general self-efficacy scale**
Source: Author's survey data (2024)

### 3.1.3 Collective agency

Group membership result indicator revealed a large variation in its contribution to the disempowerment of men and women. A respondent was adequate in this indicator if they participated in at least one formal or informal community group. Group membership was among the least contributors to the disempowerment of women, while it was among the highest contributors to men's disempowerment (Table 4). This implies that women farmers were more empowered in terms of group membership than men, corroborating the study by Crookston *et al.* 2021). Participating in community groups can positively influence an individual's empowerment through access to resources, information and connections with others (Malapit *et al.,* 2019; Mwambi *et al.,* 2021), a finding similar to that of Vargas *et al.* (2023). Additionally, Quisumbing *et al.* (2022) highlighted that group membership positively influences women's empowerment.

Similarly, Kumar *et al.* (2021) study in India found that membership in self-help groups (SHGs) positively influenced empowerment of women, but not of men. Mwambi *et al.* (2021) found, in their study in Kenya, that the participation of women in dairy producer organizations improved their empowerment in terms of decision-making, control over resources, and access to and use of credit. However, research findings differ based on cultural and regional contexts. The study by Malapit *et al.* (2019) found group membership as one of the most significant contributors to disempowerment for both men and women. In addition, WEAI findings by Mudege *et al.* (2016) illustrated that women potato farmers were less involved in farmer social groups than men, highlighting that they did not receive group-related information because training invitations were often sent to men regarded as household heads. Ultimately, men held authority to decide which household member would attend the training.

## 4 Conclusion and recommendations

This study used pro-WEAI metric to examine the empowerment status of women small-scale potato farmers in Narok County. It also provides comparisons between factors contributing to disempowerment across genders and illustrates how heterogeneous empowerment is based on the regional and cultural contexts. While some aspects of disempowerment for rural women farmers were similar in the reviewed literature for various regions, there were also distinct differences identified. National level data shows that Kenya has made great strides in achieving gender parity, with a gender parity score of 71.2% (WEF, 2024). However, counties like Narok, women remain marginalized due to the deeply entrenched gendered social norms. The study findings report a pro-WEAI score of 59.8% for women small-scale potato farmers, highlighting significant gender disparities in access to resources and agency. The lived experiences of women in some rural communities reveal that much work remains to achieve true gender equality at the grassroots level albeit the milestones documented in the national level data. This study further offers valuable insights for policymakers and development organizations on key target areas needed to improve women's involvement in the potato value chain by not only reaching them but by also benefitting and empowering them.

The overall pro-WEAI score for women was 59.8% indicating gender disparities in access to resources and agency. The results further revealed that women small-scale potato farmers were highly disempowered in instrumental and intrinsic agency domains as compared to men. However, women farmers demonstrated higher levels of empowerment in the collective agency domain, as they were more likely to participate in the community groups than men. This underscores the role of group membership in fostering women's empowerment through social capital.

 

Gendered social norms present significant complexities in the achievement of women empowerment and socio-economic wellbeing. Therefore, to enhance women's involvement in the potato value chain, it is crucial that policymakers and development organizations incorporate gender-responsive approaches into their respective policies and projects frameworks. This could involve addressing existing norms on intrahousehold and community relationships, by conducting community-based gender campaigns that engage both men and women, raise gender awareness and encourage proportionate sharing of household roles, and create a more supportive environment for women to participate in agricultural and household decision making. This will in turn alleviate the pre-existing time and mobility constraints for women, and ensure women have access to productive resources, increased agency in decision making, and overall empowerment. Most importantly, this approach will make sure men play a supportive role towards women's empowerment while minimizing potential backlash. Addressing these multifaceted barriers towards women's empowerment, creates a more inclusive agricultural sector where women are not just participants but key drivers of rural sustainable development. Therefore, achieving gender equality in agriculture requires a holistic approach that not only ensures women farmers have access to resources, but also enables them to achieve benefits and strengthen their agency empowering them to make decisions that positively influence their lives.

While this study focused on the empowerment status of women small-scale potato farmers, the data is not nationally representative and thus may not reflect the empowerment status of women farmers across all potato growing counties in Kenya. More research using gender disaggregated data at national level and in Sub-Saharan Africa, is recommended to fully understand the empowerment status of women potato farmers.

**Funding statement**
This work was supported by the African Economic Research Consortium (AERC); [Grant Number: AE/TG/21-101 (Award 2002)]

**Declaration of competing interest**
The authors declare that they have no known competing interests.

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