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Determinants of entrepreneurial engagement intensity in rural settings: evidences from Haramaya district, Ethiopia

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Abstract

Empirical research studies on entrepreneurial work intensity and its determinants in Ethiopia are negligible. Thus, the study examined the applicability of work intensity in rural entrepreneurship Haramaya district. The study was based on the Theory of Time Allocation. To this end, data were gathered via a cross-sectional survey of 381 rural households and were analyzed using the Tobit model. The findings revealed that ownership of the business site, location of the enterprise, contract work, the distance of residents from the main road, ecological settings, childhood experience of the household head as an orphan and the reason or motivation for starting an enterprise are found to be the most significant determinants of entrepreneurial intensity. The study underlined the prominence of household, spatial, and motivational factors in shaping the intensity of entrepreneurial engagement. Finally, the importance of placing emphasis on the vitality of improving household-level resources and capabilities to create as many devoted rural entrepreneurs as possible was recommended.

Keywords: Intensity of entrepreneurial engagement, Rural entrepreneurship, Work-hours

Introduction

Entrepreneurs differ in the magnitude and patterns of their entrepreneurial operations. One of the aspects is the difference in the intensity of their entrepreneurial engagement (Nagler and Naudé, 2017; Ayambila, 2014; Burmeister-Lamp et al., 2012). The amount of time spent on

entrepreneurial work shows the degree of devotion and talent of the entrepreneurs to undertake entrepreneurial work (Burke and Fiksenbaum, 2016; Ferrante, 2005). It, in turn, is the key to the performance of the business in particular and the socioeconomic development in general (Sumiati, 2020; Ayambila, 2014). Therefore, it is important to identify the factors behind entrepreneurs' differences in their work intensity. However, few studies have attempted to discuss the intensity of involvement in rural entrepreneurship (Ayambila, 2014; Burmeister-Lamp et al., 2012; Verheul et al., 2009).

Two major shortcomings could be identified in the aforementioned research works. First, crop diversification and non-farm participation,which are given much emphasis by those literatures, are not equivalent to entrepreneurship. Crop diversification includes non-entrepreneurial aims of meeting households subsistence. Besides, non farm activities are widely undertaken in both wage-employment (non-entrepreneurial) and self-employment (entrepreneurial) forms (Nagler & Naudé, 2014). Second, the studies have given prominence to the determinants of participation whereas the differences among the entrepreneurs in their intensity entrepreneurial work and its determinants are poorly addressed. Almost all of the exiting litrature have tried to discuss the intensity of engagement in conventional (urban) entrepreneurship, while the rural side of it is ignored (Sumiati, 2020; Burmeister-Lamp et al. 2012; Verheul et al. 2009). They have mostly emphasized the developed countries, and less is known about the case in the developing regions (Santoro et al., 2019). Third, the research that studied the difference in entrepreneurial time has placed much emphasis on its effects on enterprise performance rather than the factors behind the difference in entrepreneurial intensity (Sumiati, 2020).

Nowadays, a considerable share of the rural population, including those in the less developed regions, is joining rural entrepreneurship (CSA, 2018). One in every five rural households in Ethiopia participates in various temporary or continued entrepreneurial activities (CSA, 2018). By the same token, a remarkable share of rural households in Haramaya district and its environs have started to join entrepreneurship, though their dependence on traditional farming as their sole livelihood basis is decreasing from time to time (Jabessa et al., 2015). The area produces and exports large quantities of khat and vegetables as cash crops to the neighboring countries (Somaliland and Djibouti) and serves as a pathway for cross-border trade between those counties and the interior part of Ethiopia. In addition, its proximity to the major tourist sites of

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Eastern Ethiopia, such as the UNESCO-registered walled village of Harar, prehistoric sites of Laga-Oda, etc., attracts many residents to join entrepreneurship.

On the other hand, rural entrepreneurship research has startted to gain momentum in Ethiopia very recently and they are still at it's infant stage. Better emphasis, in this regard, has been given to the prevalence, factors and performances of rural households' nonfarm involvements, diversification and self-employment (Alemu and Adesina, 2017; Nagler & Naudé, 2017; Owoo & Naudé, 2014). Similarly, in Haramaya district and its environs, few studies have been undertaken on the nature and determinants of rural households' income diversification (Syraji et al., 2017); commercialization of agricultural items (Olani et al., 2017) and participation in nonfarm activities (Fami et al., 2021; Jabessa et al., 2015).

Therefore, to address the gaps, this research examined the determinants of rural entrepreneurs' entrepreneurial work intensity based on cross-sectional survey data gathered from rural areas of Haramaya district, Ethiopia. In doing so, it analyzes the time devoted to entrepreneurial activities in both farm and nonfarm sectors.

Theoretical underpinnings

This research was conducted based on Becker's (1965) Theory of Time Allocation. The theory asserts human time as one of the most fundamental economic resources and explains how and why people allocate this resource to different activities. It denotes the importance of technologies used for labor productivity, transportation issues, and consumption patterns in shaping work-hour. Accordingly, human beings' time allocation is divided into work time and leisure/consumption time. Ferrante (2005) asserts that the allocation of working time for entrepreneurial, organizational, and learning activities determines the technical and economic growth of a society. At the enterprise level, it shows the behavioral pattern, human capital, firm size, and performance (Ferrante, 2005).

Studies in this line have discussed entrepreneurial time allocation in two ways. Some have dealt with intra-firm time allocation between different tasks (Folta et al., 2006), whereas others have studied time for new ventures and other tasks (business vs non-business time) (Verheul et al., 2009). In this regard, entrepreneurs' times are dichotomized as work time and leisure time. The work times are also further divided as self-employment (entrepreneurial) work time and wage-employment work time. Burmeister-Lamp et al. (2012) state that hybrid entrepreneurs (those

who run both wage and self-employment activities) tend to have higher work hours compared to mainstream entrepreneurs.

There are different views regarding the determinants of entrepreneurial work hours. The difference stems from the various and complex nature of factors that affect work intensity (Fairris 2004). According to the utility view, work hours are primarily determined by expected return and the nature of risk associated with the work (Burmeister-Lamp et al. 2012). Ferrante (2005) notes that individuals prefer to allocate more time to more rewarding activities. The regulatory focus view explains that the allocation of time is based on either a promotion focus (growing and expanding business) or a prevention focus (preserving the security and sustainability of one's business) (Brockner et al., 2004). Entrepreneurial traits related to productivity orientation, risk calculation, and myopia strongly influence work time allocation (Ferrante, 2005). Coming to the internal capability and decision view, Verheul et al. (2009) describe that entrepreneurs allocate their time to the business based on their willingness and ability to run the enterprise.

With regards to indicators of entrepreneurial work-time Nagler and Naude (2017) have tried to roughly indicate the intensity of involvement in rural nonfarm entrepreneurship by taking the number of hours, days, and months per year worked in the enterprise for household and non-household employees. Ayambila (2014) deals with the number of days worked per year in nonfarm self-employment. This study takes the average number of work hours per week spent on work by entrepreneurs as an indicator of the intensity of entrepreneurial engagement.

Modeling

The theory of time allocation describes households as small units of production and consumption that combine the necessary capital goods, raw materials, and labor to clean, feed, create, and otherwise produce useful commodities on the one hand and consume products of other entities on the other (Becker, 1965). Their interests in survival or diversification of income sources serve as the major drivers and motives for starting entrepreneurial activities (Soderbom, 2019). Household decisions, especially in rural areas, are predominantly made by the household heads. This means the nature of households' entrepreneurial decisions is highly affected by the individual characteristics of the household head in addition to other factors that are common to all household members and the community. Based on this, four classes of variables are identified as potential determinants of rural entrepreneurship, using the works of Nagler and

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Naudé (2014), Ayambila (2014), Alemu and Adesina (2017), and Shehu and Abubakar (2015) as stepping stones. These four categories are individual characteristics, household characteristics, community and institutional characteristics, and enterprise characteristics.

Different individual-level factors are described in the literature as affecting the nature and extent of involvement in entrepreneurship. Age is one of those variables that influences rural entrepreneurship (Meera, 2017). With regards to gender, men tend to invest more hours in entrepreneurial work as they have a lesser share of domestic and social responsibilities than women (Verheul et al. 2009). Marriage is widely described as having a positive relationship with entrepreneurship as rural dwellers get better access to farmland, material and financial gifts, and social networks when they get married (Justo and DeTienne, 2008). The *miiraasa* culture of the Hararghe community also entitles men to get plots of land and some livestoke from their parents as a marriage gift or inheritance. Women get cash and household utensils as bridal gifts from their families, relatives, and in-laws.

Entrepreneurship works of literature assert the importance of education in general and entrepreneurship training in particular in shaping entrepreneurial work patterns (Pluzhnik et al. 2018; Feher 2014). The more educated entrepreneurs are believed to be more participants and persistent in entrepreneurial activities (Owoo and Naudé, 2014). On the other hand, Burke & Fiksenbaum (2016) found that better-educated people are mostly better paid, and hence they seem to be less interested in working longer hours.

Individual decisions are swayed by their life experiences in addition to their educations and goals (Drennan et al., 2005). According to Cheng et al. (2021), children who have passed through hardship, especially at a young age, have a higher likelihood of being attached to entrepreneurship when they become grown-up. Similarly, children with more responsibility (i.e., the firstborn and those who have many siblings) are more likely to start business activities (Soderbom 2019; David, 2011).

According to Burke and Fiksenbaum (2016), personal motivation of an entrepreneur is a key factor that affects the intensity of entrepreneurial work. The same authors classify the motives as positive and negative reasons. The positive reasons include better payment, social commitment, work enjoyment, and self-actualization, whereas the negative ones include avoiding sanctions and unemployment insecurity. Similarly, these motivations are classified by Hyytinen and Ruuskanen (2007) as nasality-driven and opportunity-driven. Opportunity-driven entrepreneurs

have a higher likelihood of investing much of their work in entrepreneurship than their counterparts because of their intrinsic motivation and relatively better attention to non-pecuniary returns (Hyytinen and Ruuskanen, 2007; Hamilton, 2000).

Household size has a strong relationship with rural entrepreneurship because larger households can allocate surplus labor to nonfarm entrepreneurship (Nagler and Naudé, 2014).The possessions of households in terms of land size, communication means (phone); and their distance from the main road and marketplaces determine the facet of their participation and performance in entrepreneurial activities (Nagler and Naudé, 2014; Owoo and Naudé 2014). Ayambila (2014) further states that households' access to electricity increases their tendency to devote more time to entrepreneurship because it facilitates working in the evenings.

Community culture, the presence of communication infrastructures, and participation in cooperatives are very important as far as entrepreneurship is concerned (Owoo and Naudé 2014; Michalewska-Pawlak, 2012). The time spent on entrepreneurship in rural areas is also influenced by ecological factors that are linked to the amount and timing of rainfall, damages caused by insects and hail, and frost because most of the rural activities are dependent on nature (Berhanu and Amdework 2011). Trettin and Welter (2011) also call for future research that would assess the influence of socio-spatial contexts on the extent of entrepreneurial activities.

The characteristics that business enterprises manifest are also important factors that affect the intensity of entrepreneurial engagement. Ayambila (2014) describes firm age, location, sector, access to labor, and formal registration as being among the major enterprise characteristics influencing entrepreneurial intensity.

Based on the above discussions, the theoretical and hypothetical determinants of entrepreneurial work hours are summarized in table 1 below.

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Table 1. Summary table of the dependent and explanatory variable

Dependent Variable	Measurement	Hypothesis
Intensity of participation (hours per week)	Number /continues	
Explanatory Variables/Determinants		
Gender (being male)	1/0	+
Age of household head	Number of years	-
Marital Status (married)[2]	1/0	+
Income of household (monthly income)	Number (in ETB)	+
Number of siblings	Number	-
Eldership rank among siblings	Number	+
Grown as orphan	1/0	+
Household size	Number	+
Distance from main road (KM)	Number (KM)	-
Households access to electricity	1/0	+
Households access to mobile phone	1/0	+
Households access to radio	1/0	+
Entrepreneurship training	1/0	+
Membership in cooperatives	1/0	-+
Climatic zone of residence (midland?)	1/0	+
Firm location (is it residence village?)	1/0	+
Motivated (opportunity driven)	1/0	+
Is the business site your own?	1/0	+
Participation in contract employment	1/0	-

Source: Authors survey (2021)

Note: Household heads who are currently in marriage are marked as 1 and those who are not in marriage (i.e. single, divorced and widows) are marked as 0.

Methodology

Study area and sampling technique

The data for this research were gathered from five Kebeles/sub-districts (i.e Ugaz Lencha and Haqa from the lowland; and Biftu Gada, Kuro Jalala, and Fandisha Lencha from midland sub-districts) of Haramaya district, which is located in the eastern part of Ethiopia. According to the latest population projection by the CSA (2020), Haramaya district has a total population of 386,305, out of which about 199,024 (51.5%) are males and 187,281 (48.5%) are females. The latest unpublished official report I got from the district administration office shows that there are a total of 44,644 households in the district (HDAO 2019). The dominant livelihood activities in the district are farming. The highest share (36.5%) of the household income comes from Khat production, followed by vegetables, sorghum, maize, and haricot beans (Abebe et al. 2014). On the livestock side, goats, cattle, sheep, and donkeys are the dominant animals reared in the area (Nuru and Mhatebu 2017; Abebe et al. 2014). Petty trade, non-farm business activities, and off-farm daily labor are other major activities the people in the district engage in away from agriculture.

Using the Krejcie and Morgan (1970) formula for calculating sample size, 381 households were chosen for the survey.

$$S = \frac{\chi^2 NP(1-P)}{d^2(N-1) + \chi^2 P(1-P)}$$

Where: S = the sample size;

χ^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level which is the squire of 1.96 (3.841)

N = the total target population (44,644).

P = the population proportion assumed to be 0.50 (since this, according to Krejcie and Morgan (1970) would provide the maximum sample size); and

d = the degree of accuracy expressed as a proportion (0.05).

$$S = \frac{1.96^2 x 44644 x 0.5(1-0.5)}{0.05^2(44644-1) + 1.96^2 x 0.5(1-0.5)}, \quad S = \frac{3.841 x 44644 x 0.5(0.5)}{0.0025(44643) + 3.841 x 0.5(0.5)}, \quad S = 380.83$$

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The number of sample households from each sample sub-districts were identified using the formula:

$$ns = n(\frac{Ns}{N})$$

Where n**s** refers to sample size of households from *Sub-district*; N stands for total Household of the district; N**s** implies total household of the *Sub-district;* and n is total sample (at district level). Based on this, 128 households were taken as a sample from Kuro Jalala and 108 were from Biftu Gada. In addition to this, 58, 46 and 41 households, respectively, were taken as sample from Fandisha Lencha, Haqa and Ugaz Lencha.

Finally, the respondent households were selected through a simple random sampling method (i.e. roll number-based lottery) using the household list from the administration offices of each Sub-district.

Survey questionnaire was developed in English language and translated in to the local Afan Oromo language and administered as a tool of data collection. The data collection was undertaken with the help of agricultural extension workers and local youths who were hired and trained for the specific reason. Finally, 381 questionnaires were filled and the gathered data were analyze using STATA version-14 software. In addition to this, the qualitative data were gathered through key informant and in-depth interviews, focus group discussions and observation. Interview guides were prepared and the researchers personally interviewed 6 rural entrepreneurs and 11 stakeholders as key informants and in-depth interviewees. Besides, focus group discussion (FGD) with 7 rural entrepreneurs was undertaken with the help of colleagues from Haramaya University to get further explanations on some aspects.

Analytical framework

In this research, entrepreneurial intensity is measured by the amount of time devoted to running rural enterprises. Time is a resource that every human being accesses equally. Everybody has 24 hours in a day and 168 hours in a week. However, people differ in the allocation of these equally offered resources based on their priorities. This research takes the average number of hours per week spent by entrepreneurs on entrepreneurial work as a measure of entrepreneurial intensity and identifies the determinants of it.

The research employs the Tobit regression model to measure the determinants of entrepreneurial work hours. The model is mathematically represented hereunder using the formulae of Sigelman and Zeng (1999).

$$Y_i^* = \beta X_i + \varepsilon_i$$

$$\boldsymbol{Y_i} \begin{cases} = Y_i^* : if \text{ Yi } > 0 \quad (\text{because i. e. non} - \text{entrepreneurs are censored out}) \\ =0\textbf{:} \text{ otherwise} \end{cases}$$

where $\mathbf{y_i^*}$ is the latent dependent variable,

$\mathbf{y_i}$ is the observed dependent variable (participants in RE),

$\mathbf{x_i}$ is the vector of the independent variables,

$\boldsymbol{\beta}$ is the vector of coefficients, and

$\boldsymbol{\varepsilon_i}$ is are assumed to be independently normally distributed.

In the application of the STATA command, 16 is used as the lowest limit (ll) because the entrepreneurs work in their entrepreneurial businesses at least 16 hours per week on average, and the non-entrepreneurs give 0 hours for entrepreneurial work, according to the data obtained from the study.

The appropriateness of the model and the nature of the available variables and data were checked to fit the basic assumptions. The first thing checked in this regard was how viable the variable to use was based on its multi-collinearity and collinearity. The multicollinearity of the variables is measured by the famous multicollinearity test method known as the variance inflation factor (VIF). Collinearity between two independent variables was also measured using Pearson correlation. A few variables, such as level of education and start-up capital, are omitted from the analysis because they have a negligible influence on rural entrepreneurship and their presence affects other variables. The average VIF result for all variables is found to be 1.36, which is very good since it is far less than 10 and the Prob > F result is 0.000. This shows that the relationship between the existing variables fits the basic assumptions of regression models, and it is advisable to proceed with data analysis and interpretation. In addition to this, the model shows the total similarity between the average marginal effect (dy/dx) and the coefficient of regression (Coef.) for all variables.

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Results and discussion

Out of 381 randomly selected rural households, 93 (24.4%) are identified as having one or more entrepreneurial activities, while the majority of the remaining 288 (75.6%) are classified as non-entrepreneurs. The share of rural entrepreneurs in the study area is higher than the national average, which is 20%, according to the CSA (2018). This demonstrates that a significant number of rural households engage in entrepreneurial activities. The entrepreneurs households have a large share of households with six to ten members (63.4%) compared to the non entrepreneurs (50%) (Table 2).

Table 2. Household characteristics of the respondents

Variables	Category	Total households		Non- entrepreneurs		Entrepreneurs	
		Freq	%	Freq	%	Freq	%
Gender of the household head	Female	56	14.7	43	14.9	13	14
	Male	325	85.3	245	75.1	80	86
	Total	381	100	288	100	93	100
Age of the household head	18-34	172	45.1	134	46.5	38	40.9
	35-64	205	53.8	150	52.1	55	59.1
	65 and above	4	1.1	4	1.4	0	0
	Total	381	100	288	100	93	100
Marital status	Single	31	8.1	24	8.3	7	7.5
	Married	300	78.7	226	78.5	74	79.6
	Divorced	30	7.9	23	8	7	7.5
	Widowed	20	5.2	15	5.2	5	5.4
	Total	381	100	288	100	93	100
Level of education	No schooling	166	43.6	128	44.4	38	40.9
	Primary	112	29.4	80	27.8	32	34.4
	Secondary	66	17.3	49	17	17	18.3
	Diploma	21	5.5	18	6.3	3	3.2
	Bachelor	14	3.7	12	4.2	2	2.2
	Masters	2	0.5	1	0.3	1	1.0
	Total	381	100	288	100	93	100
Household size (persons)	1-5	165	43.3	135	46.9	30	32.3
	6-10	203	53.3	144	50	59	63.4
	More than 10	13	3.4	9	3.1	4	4.3
	Total	381	100	288	100	93	100

The result indicates that, generally, the rural entrepreneurs invest an average of 42.5 hours in a week, with the minimum and maximum hours spent being 16 and 105 hours, respectively (Table 3). As it is indicated here, some enterprises are active for only 16 hours out of 168 hours in a week, whereas others operate for as much as 105 hours on average. The standard deviation, which is 16.7 hours, also shows the presence of a high disparity among the entrepreneurs in the time they spend on their businesses. Hence, we will try to see the factors behind this disparity in the following discussions.

Table 3. Average entrepreneurial work-hours in a week.

Variable	Obs	Mean	Std. Dev.	Minumum	Maximum
Entrepreneurial Work Hour per week	91	42.49	16.74	16	105

Source: Authors survey (2021)

The result of the Tobit model (Table 4) shows that out of the total of nineteen independent variables, the output of the Tobit model indicates that eight are a strong factors at 1% and 5% levels of significance. It makes us reject the null hypothesis and conclude that these variables are significant determinants of entrepreneurial intensity. Among those variables, ownership of the business site, location of the enterprise, participation in wage employment, and the distance of residents from the main road are found to be the most significant determinants at a 1% level of significance, with values of 0.000, 0.000, 0.001, and 0.009, respectively. The other variables with almost the same level of significance in influencing entrepreneurial work hours are ecological settings and the reason or motivation for starting an enterprise, each with a value of 0.011. Childhood experience of the household head as an orphan and household size are also found to be very significant determinants at a 5% level of significance with values of 0.017 and 0.47, respectively.

The remaining 11 variables (i.e., gender, age, marital status, number of siblings, a birth rank of the household head, entrepreneurship training, income, access to electricity, mobile phones, and radio, and membership in cooperatives) are found to have a statistically insignificant influence on entrepreneurial intensity, which makes us fail to reject the null hypothesis.

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Table 4. Determinants of intensity entrepreneurial engagement

Number of obs	379	Prob > chi2	0.0000
LR chi2(19)	109.47	Pseudo R2	0.2933
Log likelihood	-531.9018		

EntWeekHour	Robust Coef = dy/dx.	Std. Err.	P>t
Gender	-4.566284	6.926553	0.510
Age	-.4991545	.3232123	0.123
Marital	-1.46132	6.352295	0.818
Siblings	-2.063571	1.371718	0.133
Rank of birth	-.3767589	1.962765	0.848
Orphan	12.15771	5.079064	0.017
Household size	2.498219	1.253245	0.047
Distance from road	.8925407	.3393044	0.009
Income	.0000925	.0001101	0.401
Household electricity	1.954592	5.462606	0.721
Household mobile	8.045932	6.862064	0.242
Household radio	4.133001	6.039823	0.494
Training	-.0965076	11.11239	0.993
Contract work	36.18577	11.22295	0.001
Site owned	25.81187	6.366572	0.000
Cooperative member	7.782056	5.90852	0.189
Motivation	-17.55273	6.835702	0.011
Ecology	-18.30342	7.141116	0.011
Business site location	34.93855	7.107872	0.000
/sigma	32.75718	2.832068	

289 Observations left-censored observations at EntWeekHour <= 16

90 uncensored observations

0 right-censored observations

Source: Authors' Survey (2021)

To further elaborate on the results, entrepreneur household heads who have grown up as orphans spend significantly more of their time (nearly 12.2 hours per week) on entrepreneurial work compared with those who have not passed through such experiences. It allied with Cheng et al. (2021) and David (2011), which associate entrepreneurialism with childhood challenges and a degree of responsibility in the family. As shown in Table 3, the motivation for starting an entrepreneurial business has a negative and significant impact on entrepreneurial work time. It means necessity-driven entrepreneur households work more hours (17.6 hours per week more) than opportunity-driven ones. This strongly challenges existing knowledge, such as the works of Hyytinen and Ruuskanen (2007) and Hamilton (2000), which associate opportunity-driven entrepreneurs with devoting much time to entrepreneurial activity.

Household size is also helping rural entrepreneurs positively and significantly devote much of their time to entrepreneurial work. The increase in household size by a person makes the entrepreneurs invest 2.5 hours more in their businesses. This is most likely because households with larger sizes can allocate their additional workforce for many other tasks and allocate more time for business work. The study is associated with Nagler and Naudé (2014) and Soderbom (2019) since they describe household size having a strong positive relation with rural entrepreneurship since larger households can allocate surplus labor into entrepreneurship. In addition, the response from a key informant interview in Haramaya indicates that household heads with large families force themselves to work more hours to feed their families.

Another factor that has a significant impact on rural entrepreneurs' work-time is the distance of their residence from the main road (a business-friendly environment). However, contrary to the previous assumptions (Ayambila 2014), the positive coefficient indicates that entrepreneurs who reside far from the main roads spend more time on their entrepreneurial works. The entrepreneurial work hours are increased by 0.9 hours with 1KM increase in the distance from the main road. This was the case since most rural entrepreneurs are involved in agriculture (either commercially or for household consumption), which does not directly require close attachment to roads, and because most village settlements are far from the main road. Similarly, the location of firms in relation to their places of residence is also another significant factor that affects the amount of time devoted to entrepreneurial work. Entrepreneurial households whose site of entrepreneurial activity is located within their own villages devote much more time to their entrepreneurial businesses than those whose business sites are located away from their

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village. The average marginal effect shows that the former ones invest 35 hours more in a week than the latter ones. The research result strongly complies with the works of Ayambila (2014) and Mcpherson et al. (2010) to establish the strong impact of a firm's location on entrepreneurial work hours.

With regards to ecological zone of residence, the coefficient of regression and the marginal effect show that lowlander entrepreneurs devote significantly more time, which is an average of 18.3 hours in a week, than the midlanders. Lowlands are mostly characterized by a hot climate that is challenging for work. However, in Haramaya, lowlanders are more engaged in working longer hours in the morning, evening, and even night hours, encouraged by the motivation they get from the *khat* they chew, compared to mid-landers who mostly focus on working during the daytime (FGD). Chewing *khat* (a hallucinating leaf) is a common culture in the district and its environs.

Further more, the result indicates that entrepreneurs who participate in wage employment devote significantly more time, i.e., 36.2 hours more, than their counterparts. In this regard, the study is consistent with the work of Burmeister-Lamp et al. (2012) that hybrid entrepreneurs (those who run both wage and self-employment activities) tend to have higher work hours as compared to mainstream entrepreneurs.

Entrepreneurs, who run their entrepreneurial activity in their own business site, work substantially more time on their business than those who have accessed their sites through rent or a temporary gift. As the marginal effect result shows, those who run their businesses on their own site devote an average of 25.8 hours a week as compared to their counterparts. This is well expressed in the responses of an interviewee, who says:

Mine is mine. In my own building, I can expand or change the appearance of the building, I can buy and set up fixed assets like permanent shelves and a refrigerator, and I can even work on starting additional businesses there. But if it is someone else's site, I would limit myself to putting up temporary things and just doing the business that I rented the place for.

Conclusion

Among the nineteen independent variables, eight are significant determinants of entrepreneurial work hours. Most of them are related to household and enterprise characteristics. The finding aligns with Becker's (1965) Theory of Time Allocation. Moreover, the study underscores the

importance of household characteristics in shaping the intensity of entrepreneurial engagement. Besides, entrepreneurial intensity in rural settings is largely influenced by spatial factors, such as distance from the main road, location of the firm, and ecological zone of residence, as well as motivational factors such as necessities caused by an increase in household size. On the other hand, entrepreneurship training and membership in social networks (cooperatives) have a weak influence on entrepreneurial work hours. Therefore, the government and other development actors should emphasize enhancing household-level resources and capabilities as a means to increase the entrepreneurs' work hours. Improving the transportation infrastructure will also be of paramount importance to facilitate the entrepreneurs' ability to devote much of their time to entrepreneurial works. Finally, this research emphasizes the importance of looking at work hours as an aspect of entrepreneurial intensity. Future researchers are encouraged to undertake similar studies in different and wider contexts since the subject is less explored.

Declarations

Competing interests

The authors declare that there are no interests to disclose.

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Availability of data

The data used for this study are available from corresponding author upon reasonable request.

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