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Article

Analyses of factors affecting street vendors' willingness to sell fruits and vegetables online: A case study of Moletji Mmotong, Polokwane Municipality, Limpopo province

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Abstract: One significant importance of street vending in South Africa is its role in providing livelihoods and economic opportunities, especially for marginalized and vulnerable populations. However, Street vendors, particularly those selling agricultural commodities, face numerous challenges. Street vending in Moletjie Mmotong is a vital source of income and employment, offering affordable goods and services, including food, clothing, and household items. One potential solution is online selling, but there is limited knowledge about it in the informal sector. This study aims to analyze the factors affecting street vendors' willingness to sell fruits and vegetables online in Moletjie Mmotong under Polokwane Municipality. Data was collected from 60 street vendors using a questionnaire and simple random sampling. Descriptive statistics identified and described the socio-economic characteristics of the vendors, while a binary logistic regression model analyzed the factors influencing their willingness to sell online. The study found that age, education level, gender, household size, and access to online selling information significantly influenced their willingness to sell online. The findings highlight the potential benefits of online selling for street vendors, such as increased sales and a broader customer base. The study recommends that governments provide training and workshops on online selling, develop educational programs, distribute educational materials, and create marketing strategies to support street vendors in transitioning to online platforms.

Keywords: street vendors; online selling; fruits; vegetables; willingness

1. Introduction

Street vendors sell goods in broadly defined spaces, including open-air spaces, transport junctions and construction sites (Elsayed et al., 2022; George, 2022; Tc et al., 2022). The study conducted by Tc et al. (2022) indicated that people in South Africa are forced to work as hawkers to make money because there are limited opportunities in the formal economy. The study of Elsayed et al. (2022) showed that the informal economy is common in developing countries as it provides an opportunity for individuals to earn an income.

All over the world, there have been street vendors for centuries. Yet it is difficult to accurately estimate their numbers, according to Arsene et al. (2020), street vendors who spend 9 to 3 hours a day looking for and selling a variety of commodities, including vegetables and fruits, are mostly young women (82.8%). According to Statistics South Africa (2022), in South Africa, street vendors account for 22% of all jobs and 7% of the GDP (Gross Domestic Product). Street vendors of agricultural commodities offer easy access to fruits and vegetables. Despite their contributions,

street vendors that deal with agricultural commodities that are highly perishable face many challenges daily (Roever and Skinner, 2016).

In 2020 the world was hit by COVID-19- pandemic, which presented a serious and unprecedented challenge around the globe (Thanh et al., 2022). Subsequently, these vendors experience a major reduction in business and lacked coping strategies to sustain their businesses. The Study conducted by Abdullah et al. (2021) highlighted that there are many difficulties with selling agricultural products on the streets in South Africa which includes the absence of appropriate infrastructure and regulations, unhygienic environments which compromise the quality of their products. However, the most pressing issue which is of great concern today is climate change (Wegerif, 2024). Quantifying the economic consequences of climate variables has long been recognized as extremely challenging (Kolstad and Moore, 2020). Scholars (Esayas and Mulugeta 2020; Islam et al 2019; Kiran et al. 2019) have explored challenges or rather effects of challenges faced by street vendors when selling on the street. While the increasing number of identified articles published with a primary focus on informal street vending has peaked, solutions on how they can overcome the unprecedented economic shocks remains unclear.

Having said the above, online selling might be the solution. In the modern days, most exchange of goods and services is currently being facilitated by recent technological advancements (Dhanalakshmi et al., 2020). Most people prefer to buy things from the comfort of their homes. For these reasons, this study aimed to determine factors that affect street vendors' willingness to sell fruits and vegetables online. The study by Das et al. (2020) is in idea that individuals' macroeconomic expectations are influenced by their socioeconomic status. Therefore, this paper attempted to identify and analyze factors that affect street vendors' willingness to sell online. The aim of paper was realized through the following specific objectives:

1) To identify and describe the socio-economic characteristics of street vendors in Moletjie Mmotong, Polokwane Municipality, Limpopo;
2) To analyze the socio-economic factors that affect street vendors' willingness to sell fruits and vegetables online.

2. Theoretical background

It is not debatable to say that a lot has changed in the recent times, especially following the emergence of technology advancement post COVID-19. The shift towards online selling has transformed even in the informal sector. It should nevertheless be emphasized that online food sales are the fastest growing category of shopping via the Internet, according to experts, by 2026, nearly 40% of all products globally will be sold online (Barska and Wojciechowska-Solis, 2020). The study further mentioned that the segment of electronic commerce of local products is relatively small, but it is promising. Kedah (2023) defined electronic commerce as the process of buying, selling, or exchanging goods, services, and information through computer networks. It is no secret that consumers are increasingly utilizing e-commerce (Tokar et al., 2021).

However, for street vendors, particularly those selling fruits and vegetables, the willingness to adopt online platforms depends on various socio-economic factors. This

study explored these factors and their influence on the decision-making, drawing insights from established theoretical models and frameworks.

Socio-Economic Factors and Online Selling

Findings by scholars showed that an individual's capacity and willingness to engage in something is affected by socio-economic factors such as age, marital status, education which are the most common factors (Elahi et al., 2022; Harapan et al., 2020; Irfan et al., 2021; Kelly et al., 2021; Lazaridou et al., 2019; Liu et al., 2019; Yılmaz and Sahin, 2021). In the context of this study, socio-economic factors that were used in the analyses were obtained from existing economic literature. These factors were assumed to collectively influence the perceived feasibility and attractiveness of online selling amongst street vendors.

Relevance to Informal Sector and Street Vendors

Street vendors encounter numerous challenges in carrying out their daily operations (Zogli et al., 2021). Online selling could be the solution to overcome some of the challenges because they can still operate businesses without to physically interact with the consumers. As such, understanding their willingness to sell online requires a detailed analysis of how socio-economic factors affect their willingness.

By integrating these theoretical perspectives, this study seeks to identify and analyze the socio-economic factors that influence street vendors' willingness to sell fruits and vegetables online. This understanding not only contributes to the academic discourse on digital adoption in informal economies but also provides actionable insights for policymakers and organizations aiming to support street vendors in transitioning to online marketplaces.

3. Materials and methods

3.1. Research data and location

The study was conducted at Moletjie Mmotong, Polokwane Municipality in Limpopo province of South Africa. Coordinates: 2349′57.9″ S 2923′05.6″ E, the total area is 1.53 km^2. For this study, Primary data was collected through semi-structured questionnaires administered face-to-face and through online platforms. Street vendors were randomly selected using a simple random sampling technique, which gave each street vendor equal chance of being selected. From an estimated total population of 1553 of Moletjie Mmotong which consists of approximately 150 street vendors (Polokwane Intergrated Development Plan, 2023), 60 street vendors were selected to participate in this study. The study used the sampling formula adopted by Cochran (1977) to calculate the sample size.

Cochran's formula:

$$n = \frac{N}{1 + N(e)^2} \tag{1}$$

n = is the sample size N = is the population size e = Level of significance

Therefore: N = 150 e = 10% n = 150/1 + 150(0.1) 2 = 60

3.2. Analytical procedures

The study applied two methods in analysis of data as per the objectives. In describing the socioeconomic characteristics of street vendors, descriptive statistics in the form of frequencies and mean/averages was used. Kaur et al. (2018) noted that descriptive statistics are used to summarize data in a structured approach to describing how variables are related within a sample or population. The study employed descriptive statistics to present street vendors' demographics such as age, marital status and level of education, giving a foundational understanding of the vendor population involved.

Secondly, a binary logistic regression model was used to analyze the relationship between socioeconomic characteristics and willingness to sell fruits and vegetables online. The binary logistic regression model is a type of predictive model that can be used when the response variable is binary (Wilson et al., 2015). In this study the binary outcome is either a street vendor is willing to sell online or not willing to sell online.

The general Binary Logistic Regression Model is expressed as follows:

$$Y = \ln(\frac{p}{1-p}) \tag{2}$$

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_i X_i + U_i \tag{3}$$

where:

Y is the dependent variable which is the street vendor's willingness to sell online, In is the natural logarithm, *P* is the probability that the street vendor is willing to sell online, 1-P is the probability that the street vendor is not willing to sell online, β0 β1, β2, ..., βi are the estimated coefficients for the intercept and the independent variables, X1, X2, ..., Xi are the values of the independent variables, *i* is the number of independent variables and Ui is the error term.

MODEL SPECIFICATION

$$WTS = \beta0 + \beta1\ AGE + \beta2LED + \beta3GND + \beta4MRS + \beta5ATG + \beta6POP + \beta7CRD + \beta8EXP + \beta9KNO + \beta10INFO + \beta11HHS + \beta12INCO + \beta13TMI + \beta14NSI + Ui \tag{4}$$

where AGE represents age of a street vendor, LED level of education, GND is the gender, MRS is the marital status, ATG is access to online selling gadget, POP is perishability of products, CRD is credit access, EXP is experience in street vending, KNO is online selling knowledge, INFO is online selling information , HHS is household size, INCO is income received by the street vendor, TMI is total monthly income for the household, NSI is the number of sources of income in the households and Ui is the error term.

4. Results

4.1. Socioeconomic information of street vendors in Moletjie Mmotong.

Table 1 shows that the mean age of the street vendors was 50 years. The average household size was four, with a minimum of one and a maximum of nine. Furthermore, households reported an average number of sources of income received in most households per month sum up to 3. The Minimum total monthly household income

was found to be R600, and the maximum was R20.000. The average total monthly household income received was found to be R3077.68, this implies that even if households in Moletjie Mmotong were to have different income sources, the majority of these households rely on an income that ranges around R3077.68 per month regardless of how many members are in a household. The minimum number of years that a street vendor has been in street vending was found to be 1 and the maximum was found to be 25 with an average of 5.67 which is approximately 6 years.

Table 1. Socioeconomic information of street vendors (n = 60).

Variables	Min.	Max.	Mean	Std. Dev.
Age of street vendors(years)	21	75	49.92	14.312
Household size (actual number)	1	9	3.88	1.497
Number of sources of income (per month)	1	4	2.47	0.724
Total monthly income (rands)	600	20.000	3077.68	4059.984
Street vending experience (years)	1	25	5.67	5.121

Source: Researcher's compilation (2023).

Table 2 shows the results of categorical descriptive statistics. The study of street vendors in Moletjie Mmotong revealed several socio-economic characteristics. The gender distribution shows that 42% of street vendors are male, while 58% are female, indicating a higher involvement of females in street vending. Regarding marital status, 30% of vendors are married, 38% are single, 17% are cohabitating, and 15% are widowed, with no individuals recorded as divorced, highlighting that the majority are single. Regarding education, 5% have only primary education, 47% have matriculated, 20% have some secondary education without completing matric, and 28% have tertiary education, demonstrating that all vendors possess some formal education, predominantly at the matric level. Income levels vary, with 10% earning less than R500 monthly, 83% earning between R500 and R1000, 5% earning between R1500 and R2000, and only 2% earning above R2000, indicating most vendors make between R500 and R1000 per month. Additionally, 63% have access to online selling gadgets while 37% do not have access, primarily smartphones, but 92% lack access to credit leaving 8% having access to credit. Knowledge about online selling is limited, with 87% lacking awareness and 13% having knowledge. Lastly, 70% of vendors expressed willingness to sell online while 30% of them were not willing, despite 53% not having access to online selling information.

Table 2. Socio economic information of street vendors (n = 60).

Variables	Percentages (%)
Gender	
Male	42
Female	58
Marital Status	
Married	30
Single	38
Cohabitating	17
Widowed	15

Table 2. (*Continued*).

Variables	Percentages (%)
Education	
Primary Education	5
Matriculated	47
Secondary education without matric	20
Tertiary education	28
Income of a street vendor per month(R)	
<500	10
500–1000	83
1500–2000	5
Above 2000	2
Access to online selling gadget	
Do not have access	37
Have access	63
Perishability of fruits and vegetables	
Highly perishable	5
Less perishable	22
Moderately perishable	73
Access to credit	
Do not have access	92
Have access	8
Online selling knowledge	
Do not have knowledge	87
Have knowledge	13
Access to online selling information	
Do not have access	53
Have access	47
Willingness to sell online	
Not willing	30
Willing	70

Source: Researcher's compilation (2023).

4.2. Binary logistic regression model results

The binary logistic regression model was used to analyze factors that affect street vendors' willingness to sell fruits and vegetables online and the results are shown in **Table 3**. The analysis was obtained using Statistical Packaging for the Social Sciences (SPSS). From fourteen independent variables that were logged in during the analysis, only five variables were found to be significant namely, age of the street vendor, gender, level of education, household size and access to online selling information. The (−2) Log-likelihood of the estimated model is 20.370. From the study, a Nagelkerke R-square of 0.831 was obtained, which suggests that the model does a better job of explaining and predicting the observed outcomes. The value of Cox & Snell R square is 0.586, which tells us that 58.6% of variance in the dependent variable is explained by the independent variables in the model. The direction of influence for each significant variable is explained below.

Table 3. Binary logistic regression.

Variables	Coefficients	Standard errors	Wald	Sig.
Constant	−60.257	38.347	2.467	0.116
Age of the street vendor	−1.496**	0.501	2.986	0.051
Gender of the street vendor	−3.656*	1.816	2.013	0.064
Marital status	−2.698	2.464	1.199	0.273
Level of education	9.471**	3.626	2.612	0.032
Household size	34.644***	7.872	4.401	0.001
Number of sources of income in the household	−2.429	1.604	2.292	0.130
Total monthly income in the household	1.789	1.838	0.947	0.331
Income of the street vendor	4.413	2.823	2.445	0.118
Access to online selling gadget	−1.017	1.809	0.316	0.574
Perishability of product	12.445	108.051	0.013	0.908
Credit access	−10.412	108.460	0.009	0.924
Street vending experience	0.099	0.051	1.941	0.413
Access to online selling information	0.317*	0.145	2.186	0.068
Online selling knowledge	28.834	7612.647	0.000	0.997

−2 Log−likelihood = 20.370
Negelkerke R square = 0.831
Cox and Snell R square = 0.586

Where: ***, **, * means statistically significant at 1%, 5% and 10% respectively. Source: Researcher's compilation (2023).

Age (AGE)

Age has a negative influence over street vendors' willingness to sell online, again it was found to be significant at 5% significance level. This indicates that a unit increase in age will decrease the likelihood of street vendors' willingness to sell fruits and vegetable online. In simpler terms, the outcomes suggest that the more the street vendors age, the lesser they are willing to sell fruits and vegetables online. These results support the empirical studies by Onodugo et al. (2016), results of this study noted that older street vendors may be more unwilling to use e-commerce for several reasons with the most common one being limited technology skills thus the older the street vendors, the lesser they are likely to be willing to sell fruits and vegetables online.

Gender (GND)

Gender was found to negatively influence street vendors' willingness to sell online at 10% significance level. This implies that a unit increase in the number of females street vendors will decrease the likelihood of female street vendors to be willing to sell online as opposed to males. These findings are in line with studies by Mahope et al., (2022), Mahope et al., (2023) and WIEGO, (2020) which outlined that street vending globally, Africa and in Limpopo is dominated by women and this is evident in the descriptive statistics of this study. However, this does not concur with the study of International Labour Organization (2021) which argued that male activity rates in the informal sector are generally higher than female activity rates.

Level of education (LED)

The level of education was found to be positive and statistically significant at 5% significance level. This indicates that a unit increase in the level of education, the

likelihood of the street vendors' willingness to sell fruits and vegetables online will also increase. The findings are supported by the study of Agrawal (2022) who argued that education can provide people with the knowledge and skills to make informed decisions. Thus, the more a street vendor increase his/her level of education the more she/he will be aware of many things subsequently leading to willingness to sell online as this knowledge makes it easier for them to start selling online and to be successful.

Household size (HHS)

Household size was found to be positive and statistically significant at highly statistical significance of 1%, this means that a unit increase in household size will increase the likelihood of the street vendors' willingness to sell fruits and vegetables online. The findings are in line with the findings by Meyer and Nishimwe-Niyimbanira (2016) which indicated that individuals from larger households have high social support as compared to those from smaller households. This support can be helpful in several ways such as providing financial assistance for online resources, help with marketing and promotion. A study conducted by Jamsheer (2019) argued that individual from smaller households may not have the time to manage an online store also concur with the findings.

Access to online selling information (INFO)

Access to online selling information was found to be negative and statistically significant at significance level of 10%, this implies that a unit increase in access to online selling information will decrease the likelihood of the street vendors' willingness to sell fruits and vegetables online. These finding contrast with the findings of Sabeena and Ayyapparajan (2020) which noted that when people have access to more information, they are better able to assess the pros and cons of different options and to choose the option that is best for them. This simply means that when a street vendor has access to more information about online selling, they will be more likely to be willing to sell online. However, these findings support the empirical studies by Nanehkaran (2013) which argued that people are naturally curious and may want to try new things, even if they don't know much about them.

Independent variables such as marital status, number of sources of income in the household, total monthly income in the household, income of a street vendor per month, access to online selling gadget, online selling knowledge, perishability of products, credit access and street vending experience were found to be non-significant. Therefore, there is no enough evidence to explain the influence they have over the dependent variable which is willingness of street vendors to sell fruits and vegetables online.

Estimated Binary Logistic Regression Model Equation

$$\begin{aligned}\text{WTS (Willingness to sell online)} = {} & -60.257 - 1.496\text{AGE} - 3.656\text{GEND} + \\ & 9.471\text{LED} + 34.644\text{HHS} + 0.317\text{INFO}\end{aligned} \tag{5}$$

5. Conclusion

The hypothesis of this study stated that the socio-economic factors do not affect street vendors' willingness to sell fruits and vegetables online in Moletjie Mmotong, Polokwane Municipality of Limpopo province. Based on the results from the research

study, we therefore reject the hypothesis because the study showed that there is a relationship between some of socio-economic factors and willingness of street vendors to sell fruits and vegetables online. The factors that showed to have an influence on the willingness of include, age of a street vendor, level of education, gender, household size and access to online selling information.

6. Recommendations

With large number of individuals in rural areas taking part in street vending due to ongoing high unemployment rate in South Africa yet facing several difficulties when selling their fruits and vegetables in the streets. The study indicated that gender is statistically significant, since the findings revealed that more females are involved in street vending than males, they should be encouraged to go into street vending as it can provide a source of income for their families who may have difficulty finding other jobs, this can be facilitated by provision of stalls and other start up resources by governments. Training and workshops can play an important role in helping street vendors of all ages to sell their products online. However, the specific needs of older vendors may differ from those of younger vendors. Most older vendors indicated that they do not have knowledge of online selling, this can be resolved by entities such as governments through providing training and workshops to street vendors on how to sell online.

Training and workshops can provide a space for older vendors to connect with other vendors and learn from each other's experiences. There should be development and distribution of educational materials on online selling in multiple languages and formats during training and workshops. This will enable street vendors to have access to online selling information. For level of education this study recommends that government agencies such as ministries of small business development develop educational programs that are tailored to the specific needs of street vendors. This could include programs that focus on digital literacy, online marketing, and business skills. For street vendors with small households, the study recommends that entities such as non-government organizations help the street vendors to develop a marketing strategy for their online business. This will help them manage both their stalls and online selling.

While there are several policies in South Africa aimed at assisting street vendors and the informal sector, the focus of these policies tends to be generalized, and there is a need for more specific, socio-economic targeted strategies. The current policies and frameworks, such as the National Informal Business Upliftment Strategy (NIBUS) and the Small Business Development Act, provide broad support for small businesses and informal traders. However, they overlook the unique barriers faced by specific sub-groups within the informal sector, such as older people, those with limited access to education or digital literacy, and those in rural or remote areas. Most policies have traditionally focused on providing only financial support because they believe that it is the means to overcome barriers to reach one's objectives. While access to funds is undoubtedly crucial, the narrow focus overlooks other significant challenges faced.

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References

Abdullah, H., Ismail, I., Alnoor, A, et al. (2021). Effect of perceived support on employee's voice behavior through the work engagement: a moderator role of locus of control. International Journal of Process Management and Benchmarking, 11(1), 60-79.

Agrawal, D.K. (2022). An Empirical Study on Socioeconomic Factors Affecting Producer's Participation In Commodity Markets In India. Journal of Positive School Psychology, pp.2896-2906.

Arsene, M.B., Lebon, H.M., Maurice, K.N, et al. (2020). Understanding the roles of street vendors of agricultural commodities during the COVID-19 outbreak in the informal economy. Open Journal of Social Sciences, 8(9), 115-129.

Barska, A., and Wojciechowska-Solis, J. (2020). E-consumers and local food products: A perspective for developing online shopping for local goods in Poland. Sustainability, 12(12), 4958.

Cochran, W. G. (1977). Sampling techniques. 3rd Ed. New York: John Wiley & Sons.

Das, S., Kuhnen, C.M. and Nagel, S. (2020). Socioeconomic status and macroeconomic expectations. The Review of Financial Studies, 33(1), 395-432.

Dhanalakshmi, A., Hui, X. and Supriya, R. (2020). Technological advancements in E-Commerce and customer relationship management. International Journal of Engineering and Management Research, 10(6), 9-20.

Elahi, E., Khalid, Z., and Zhang, Z. (2022). Understanding farmers' intention and willingness to install renewable energy technology: A solution to reduce the environmental emissions of agriculture. Applied Energy, 309, 118459.

Elsayed, M.A., Ashour, A., Elshater, A, et al. (2022). Mapping street vendors and informal economy effects in public spaces. In IOP Conference Series: Earth and Environmental Science. August 2022, Vol. 1056, No. 1, p. 012043. IOP Publishing

Esayas, E. and Mulugeta, S. (2020). Analysis of socioeconomic vulnerability of street vendors. Theoretical and Empirical Researches in Urban Management, 15(2), 49-65.

George, C. (2022). Formalisation of street vendors'businesses in dar es salaam city, tanzania.

Harapan, H., Wagner, A. L., Yufika, A, et al. (2020). Willingness-to-pay for a COVID-19 vaccine and its associated determinants in Indonesia. Human vaccines & immune therapeutics, 16(12), 3074-3080.

International Labour Organization. (2021). Informal employment in Viet Nam: Trends and determinants. Retrieved from https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-hanoi/documents/publication/wcms_819789.pdf

Irfan, M., Elavarasan, R. M., Hao, Y, et al. (2021). An assessment of consumers' willingness to utilize solar energy in China: End-users' perspective. Journal of Cleaner Production, 292, 126008.

Islam, M.S., Hasan, D.B. and Hasan, R. (2019). Difficulties Faced by Street Vendors: A Study on Street Garments Vendors in Dhaka City. Jagannath University Journal of Business Studies, 7, pp.123-137.

Jamsheer, K. (2019). Impact Of E-Commerce on Society: Advantages and Disadvantages. Available online: https://acowebs.com/impact-ecommerce-society/ (accessed on 17 October 2024).

Kaur, P., Stoltzfus, J. and Yellapu, V. (2018). Descriptive statistics. International Journal of Academic Medicine, 4(1), 60-63.

Kedah, Z. (2023). Use of e-commerce in the world of business. Startupreneur Business Digital (SABDA Journal), 2(1), 51-60.

Kelly, B. J., Southwell, B. G., McCormack, L. A, et al. (2021). Predictors of willingness to get a COVID-19 vaccine in the US. BMC infectious diseases, 21, 1-7.

Kiran, P.N., Babu, G.N., Narendra Kiran, P.B, et al. (2019). Problems and prospects of street vendors: a study with reference to Visakhapatnam city. Int J Manag Technol Eng, 9, 2249-455.

Kolstad, C.D. and Moore, F.C. (2020). Estimating the economic impacts of climate change using weather observations. Review of Environmental Economics and Policy.

Lazaridou, D., Michailidis, A., and Trigkas, M. (2019). Socio-economic factors influencing farmers' willingness to undertake environmental responsibility. Environmental Science and Pollution Research, 26, 14732-14741.

Liu, P., Guo, Q., Ren, F, et al. (2019). Willingness to pay for self-driving vehicles: Influences of demographic and psychological factors. Transportation Research Part C: Emerging Technologies, 100, 306-317.

Mahopo, T. C., Mabunda, S. S., Malatji, P. M, et al. (2023). Socioeconomic Characteristic of Street Food Vending Enterprises in the Vhembe District, Limpopo Province. Technium Social Sciences Journal, 29(1), 419-437.

Mahopo, T.C., Nesamvuni, C.N., Nesamvuni, A.E, et al. (2022). Operational characteristics of women street food vendors in rural South Africa. Frontiers in Public Health, 10, 84905

Meyer, D.F. and Nishimwe-Niyimbanira, R. (2016). The impact of household size on poverty: An analysis of various low-income townships in the Northern Free State region, South Africa. African population studies, 30(2).

Nanehkaran, Y.A. (2013). An introduction to electronic commerce. International journal of scientific & technology research, 2(4), 190-193.

Onodugo, V.A., Ezeadichie, N.H., Onwuneme, C.A, et al. (2016). The dilemma of managing the challenges of street vending in public spaces: The case of Enugu City, Nigeria. Cities, 59, 95-101.

POLOKWANE INTERGRATED DEVELOPMENT PLAN. (2023). Available online: https://www.polokwane.gov.za/wp-content/uploads/2023/07/2021-2026-Draft-IDP.pdf (accessed on 17 October 2024).

Roever, S., Skinner, C. (2016). Street vendors and cities. Environment and Urbanization, 28(2), 359-374.

Sabeena, M.S. and Ayyapparajan, R.A. (2020). Innovating start-up business and entrepreneurship. International Journal for Research in Engineering Application & Management, 6(3), 29-33.

Statistics South Africa. (2022). Quarterly Labour Force survey: Quarter 2,2022. Retrieved from https://www.statssa.gov.za.

Tc, M., Cn, N., Ae, N. and de Bruyn, M. (2022). Socioeconomic characteristic of street food vending enterprises in the Vhembe district, Limpopo province. Technium Soc. Sci. J., 29, 419.

Thanh, P.T., Nguyen, H.T.H., Ngan, L.T.B, et al. (2022). No one left behind: risk communication to the street vendors during COVID-19 social distancing. Library Hi Tech, 40(2), 357-375.

Tokar, T., Jensen, R., and Williams, B. D. (2021). A guide to the seen costs and unseen benefits of e-commerce. Business Horizons, 64(3), 323-332.

Wegerif, M. C. (2024). Street traders' contribution to food security: lessons from fresh produce traders' experiences in South Africa during COVID-19. Food Security, 16(1), 115-131.

WIEGO. (2020). Women in Informal Employment: Globalizing and Organizing (WIEGO) network. Available online: https://thecityfix.com/blog/gender-informal-economy-vendors-inclusive-women-thomas-abbot-lizzette-sotelo/ (accessed on 17 October 2024).

Wilson, J.R., Lorenz, K.A., Wilson, J.R, et al. (2015). Standard binary logistic regression model. Modeling binary correlated responses using SAS, SPSS and R, 25-54.

Yılmaz, M., and Sahin, M. K. (2021). Parents' willingness and attitudes concerning the COVID-19 vaccine: A cross-sectional study. International journal of clinical practice, 75(9), e14364.

Zogli, L. K. J., Dladla, N., and Dlamini, B. (2021). Assessing the challenges faced by informal street traders operating in Durban, South Africa. International Journal of Entrepreneurship and Business Development, 4(4), 412-417.