Constraints to growth in informal sector activities and formalisation: A case study of Ghanaian slums

Authors:
Darma Mahadea[1]
Luther-King Junior Zogli[1]

Affiliations:
[1]School of Economics and Finance, Discipline of Economics, University of KwaZulu-Natal, South Africa

Corresponding author:
Darma Mahadea,
mahadead@ukzn.ac.za

Background: Globally, people often migrate from rural to urban areas in search of employment. Lack of adequate employment opportunities in cities forced individuals to engage in slum informal economic activities out of necessity.

Aim: The informal sector presently employed about 86% of labour in Ghana, contributing 42% to its gross domestic product (GDP). Various constraints held back the development of slum informal activities. Formalising the informal sector is advocated as a step to generate employment. This article investigated the dynamics of informal sector activities and formalisation among slum operators in Ghana, based on a survey in two major cities there.

Setting: This article investigated the constraints that hinder the development of slum activities in Accra and Kumasi, two cities in Ghana, and examined the informal operators' subjective well-being and their willingness to graduate to the formal sector, should the constraints be addressed.

Methods: Data were collected by means of a questionnaire, administered to a random sample of 342 informal slum operators. Enterprise constraints are examined by using the principal component analysis (PCA) method and the likelihood of the informal operators' graduating to the formal sector by using logistic regression.

Results: The PCA identified six clusters as limitations, explaining about 77% of the variation in constraints. These related to a lack of business knowledge, credit access, tools and materials, security and social networking. The logistic regression results reflect that, of all the constraints, it is only when access to capital is addressed, that slum operators will move into formal activities.

Conclusion: When people are happy in what they are doing, they are reluctant to move to the formal sector, despite incentives or interventions that address their enterprise constraints. Hence, slum operators and informal activities are unlikely to disappear. Nevertheless, policy-makers have to devise appropriate financing strategies for slum operators to help in their formalisation and growth pathways.

Introduction

A slum is a group of households in an urban area lacking durable housing of a permanent nature, sufficient living space, access to safe water, adequate sanitation and security of tenure (UN-Habitat 2007). Slums arise owing to in-migration, poverty, inadequate housing, poor infrastructure and planning for urban growth (UN-Habitat 2003). Slums sprung up in Ghana owing to the lack of adequate response mechanisms to housing, urbanisation and unemployment by the government (UN-Habitat 2009).

The Harris–Todaro model suggests that people migrate from rural to urban areas because of income differentials and lack of employment opportunities (Todaro & Smith 2015). In Ghana, high poverty levels in the north prompt one out of every five people to migrate to the southern regions (GSS 2007; Van der Geest 2011). Furthermore, owing to inadequate housing and employment opportunities in Ghana, migration to the cities results in the growth of slums and informal activities as people look for a place to stay and earn a living out of desperation. Slums are also a springboard for low-level entrepreneurship, associated with informal ventures. Various other reasons influence people in slums to engage in informal activities. These include avoidance of and unwillingness to pay tax, remuneration from illegal activities, unwillingness to register one's business because of intrusive regulations imposed on formal firms, avoidance of costs or bureaucratic hurdles and the benefit of working flexibly at one's convenience and being able to balance personal and family interests (Mohr 2016).

An informal enterprise launched today can be an incubating base for a larger venture in the future, more so if the founder has the right entrepreneurial attributes and network support.

Indeed, given the heterogeneity of the informal sector firms as a group, some might cease trading soon after start-up, some are likely to survive and remain small and some enterprises might have growth potentials. If the operators of these ventures are assisted to formalise, they can graduate to higher levels of entrepreneurship, experience higher levels of happiness and generate more employment and tax revenue (Urban, van Vuuren & Barreira 2008). Indeed, Bàculo's (2006) study in Italy revealed that informal operators' material and non-material needs are to be considered when deciding on their formalisation. A study by Pat Horn (2014) in South Africa indicated that formalisation of the informal sector is not a one-step event. Formalisation is an ongoing, gradual process that partly entails strengthening the rights, security and benefits of the operators and workers, and negotiating with municipalities and other stakeholders. Hence, for slum enterprises in the Ghanaian context to achieve formalisation, their growth constraints and subjective well-being have to be identified and attended to, and this can help policy-makers come up with supportive intervention measures facilitating the informal slum enterprises to transition into the formal sector. This is the main aim of the article.

Informal sector activities

Although informal trading is a global phenomenon, it is most visible in Africa (Van Rooyen & Antonites 2007). The significance of the informal sector to economic development and employment generation in urban and rural areas of the developing countries is widely recognised in the literature (Altman 2007; Todaro & Smith 2015). The International Labour Office (ILO) mission report in 1972 on employment in Kenya portrayed a dynamic income and employment picture of the informal sector, with notable characteristics, such as ease of entry, reliance on indigenous resources, family ownership, small-scale operations, labour-intensive with adaptive technology, unregulated, competitive and with skills often acquired outside formal education. Thereafter, other studies and international organisations have confirmed the vital empowerment role of the informal sector in both developed and developing countries, with linkages to the organised formal sector, and the necessity of state to support this subterranean economy (Sachs 2005; Van Rooyen & Antonites 2007).

International Labour Office (2014) estimates that the informal sector represents 82% of total employment in South Asia and Mali, 75% in Bolivia, 66% in sub-Saharan Africa, 65% in East and Southeast Asia, 51% in Latin America and 10% in Eastern Europe and Central Asia. The ILO further ranks India as having the largest share of informal sector employment, at 83.5% of the total employment, contributing about 30% to the country's GDP (Kalyani 2016). Ghana's informal sector employs about 86% of its labour force, contributing 42% to GDP (Anuwa-Amarh 2015). Of those in formal employment, 7% work in the public sector and another 7% in the private sector (GSS 2010).

Informal business ventures in South Africa, though largely subsistence in nature, provide a safety net for many households that would otherwise be in dire poverty situations, without employment or an alternative source of income (Herrington, Kew & Kew 2010; Lings 2014). About 70% of individuals who start an informal business do so because of unemployment. The informal sector, including the slum operations, contributes between 5% and 7% to the country's GDP and provides between 16% and 22% of total employment. The shadow economy provides employment to over 3 million people, engaged in diverse activities, ranging from hawking, backyard mechanics and panel beating, street vending, drug peddling, hairdressing to light manufacturing (Davies & Thurlow 2010; Mohr 2016; Valodia 2007). With the recent downturn and apparent jobless economic growth in South Africa, an increasing number of workers are squeezed out of the formal labour market and they seek refuge in the informal sector (Horn 2016; SARB 2018).

Growth constraints in informal activities

In Accra and Kumasi, a large proportion of the population, as indicated above, is engaged in informal activities, ranging from peanut manufacturing to wood processing for many years. Although the operators have been trading for long, they are 'stuck' on the fringes of the main economy; they are not graduating to the formal level, partly because of 'comfortableness' and constraints they encounter in their attempts to grow.

These constraints inhibit the capital accumulation, physical expansion and employment potentials of the informal enterprises and their likelihood to move to the formal sector. If the linkages between the informal enterprises and formal firms are positive and complementary, then the growth of the latter can induce growth in the informal sector (Valodia 2007). Some of the constraints are internal to the firm, that is, within the control of its owner-operator, and others are external, beyond the control of the owner (Parsons 2013). Empirical studies in various countries have identified numerous growth-limiting factors, such as infrastructure, capital, lack of relevant skills, excessive regulations and security concerns. A summary of these constraints is presented in Table 1.

Unless appropriate interventions are made to equip the informal operators with relevant skills and resources, they are likely to continue operating on the fringes of the mainstream economy. Although the activities dealt in are usually not capital-intensive, and the operating environment is not sophisticated, many operators feel satisfied with status quo operations, business as usual. Research by Biswas-Diener & Diener (2001, 2006) indicates that although operators in the informal sector may be unhappy with their physical surroundings, such as lack of adequate infrastructure and comfort in slums, they are, most often than not, satisfied with their non-material well-being (happiness). Hence, this article seeks to find out if the perceived subjective well-being of the slum operators acts as a hindrance to them graduating into the formal sector.

TABLE 1: Growth constraints in the informal sector.

Constraints	Studies	Study details	Findings from studies
Infrastructural challenges	Parker, Kirkpatrick, and Figueira-Theodorakopoulou (2008) and USAID (2012)	Literature survey in developing countries	Absence of basic infrastructure, such as clean water, adequate sanitation, well-maintained roads, power and information and communication technologies
Financial problems	Aryeetey (2009)	Literature survey in sub-Saharan Africa	Lack of collateral security, high borrowing cost and unavailability of credit
Lack of adequate skills	Reddy, Naidu and Mohanty (2003)	Survey of informal businesses in Fiji	Lack of experience and training in business management and basic skills in book-keeping/ accounting and marketing
	Okpara (2011)	Survey of small business owners in Nigeria	Similar results to Reddy et al. (2003)
Government regulation	Schneider (2002)	Survey of 110 informal businesses in developing countries	High taxation, prohibitive legislation towards informal sector operators, and inability to obtain business licenses or permits
	Skinner (2005)	Survey of informal businesses in Durban, South Africa	Over-trading; low profits; lack of access to infrastructure, electricity, shelter and transport; harassment from inspectors and crime levels
	Rogerson (2016)	Survey of informal businesses in Zimbabwe	Intimidations and forced evictions by government officials
Security	Canagarajah and Sethuraman (2001)	Literature survey of the informal sector in developing countries	Lack of social protection and land tenure security
Other factors	Pisani and Patrick (2002).	Literature survey of the informal sector in Central America	Lack of tools, materials and machinery; too many competitors and over-trading
	Valodia (2007)	A panel study of informal sector in South Africa, based on Stats SA Labour Force Surveys 2000–2005	Barriers to entry, licensing; restrictive by-laws, labour legislation; poor access to capital, land and credit; crime and high transport costs

Subjective well-being

Subjective well-being is an appraisal of one's life satisfaction as being happy or otherwise. High subjective well-being made up of positive life experiences is an important concept of positive psychology as it makes life worth living (Diener, Lucas & Oishi 2005). A study by Biswas-Diener & Diener (2001) on slums of Calcutta (India) discovered that, even though the slum dwellers and operators there did not have many material assets, they found satisfaction in many other areas of their lives. This means that, even though the slum dwellers were poor, and unable to satisfy all their material needs, they were very happy with their non-material aspects of well-being. Biswas-Diener and Diener (2006) further studied subjective well-being of the homeless operators in Calcutta (India), California and Portland (United States of America). They found that although the homeless in these countries were dissatisfied with their material quality of life, especially their housing, income, and health, these individuals were inwardly happy.

In South Africa, Blaauw et al.'s (2013) study of the subjective well-being of operators and labour in the informal sector found that personal income, enabling individuals in a poor community to have access to food, is an important determinant of happiness. While Kingdon & Knight (2007) found that relative income is a determinant of subjective well-being, Mahadea (2013) found that both absolute and relative income are important for the happiness of both entrepreneurs and labour in South Africa. Bàculo's (2006) study of the informal sector in Italy found that if policy-makers' aim is to assist informal operators in formalising their businesses, both material (e.g. finance) and non-material resources (e.g. operator's culture and conduct of business) should be taken into consideration. As some limitations inhibiting the growth of informal enterprises are of a material nature and some are non-material, this article also seeks to find if subjective happiness influences informal operators to continue living and working in slums, even if they are helped to overcome their constraints.

Formalising the informal sector

Although entrepreneurship is perceived as a rewarding activity in certain regions, enabling talented individuals of a Schumpeterian mould to bring about innovation, product development and new organisational structures, not many people are able to venture into the formal business and reach their aspirations (Luiz & Mariotti 2008; Mahadea 2013; Urban 2008). Consequently, many end up in the informal sector owing to a combination of push and pull factors. The negative influences, as mentioned earlier, include difficulties in raising finance, insufficient skills, problems in finding formal employment and avoidance of tax and compliance with bureaucratic regulations. On the positive side, people voluntarily choose to operate in the informal sector as they prefer to be their own boss, away from the control of nagging superiors; they prefer the flexibility of working at their pace and leisure, thus balancing personal and family interests (Altman 2007; Naudé 2010). However, there are numerous drawbacks when one operates in slums or in the informal sector.

The necessary infrastructure facilities and market expansion opportunities may be inadequate. Opportunities to do business with registered firms or the government via tenders and state procurement are almost non-existent. Raising funding from banks may pose a problem as the operators, especially women, may not have adequate title deeds to offer as collateral (Davies & Thurlow 2010; Wills 2009).

While the informal sector creates employment and generates revenue, operators in this sector mostly avoid paying tax, which otherwise could have played an important role in infrastructural development (ILO 1972; Loayza 1997; The World Bank 2013). Unlike the South African case, where the informal sector is an under-utilised source of employment (Van Rooyen & Antonites 2007), over four-fifths of the population in Ghana are informally employed and avoid

paying taxes; there is thus merit in formalising the informal sector there and augmenting the formal sector employment and tax revenue.

De Soto (1989, 2000) is of the view that, the only difference between the formal and informal sector is the legal status of the former. The informal sector lacks property rights; hence, its assets cannot be used as collateral for securing loans, and this implies that many profitable opportunities to increase investment are left untapped in the informal economy. De Soto (2000) argues that there is a total of $9.3 trillion of dead capital in the informal sector and slums in the developing world. This represents capital that cannot be used as leverage for credit facilities, thus denying the informal sector of growth. Further, formalisation may enable informal slum operators to have access to government support programmes and services (ILO 2009).

Objectives

Policy-makers in Ghana have invested in projects to curb the growth of slums. However, their efforts have not been successful thus far. The problem being that, there has been no conclusive evidence in Ghana regarding what factors hinder the growth of informal slum businesses and what will prompt them to move into the formal sector. The current study, therefore, seeks to provide answers to the growth-inhibiting factors of the informal sector in the slums of Accra and Kumasi, and how these operators can be assisted to enhance their development and transition into the formal sector. The study further investigates whether subjective happiness influences a slum operator's willingness to stay informal even if the constraints are being addressed.

Methodology

This article adopts a positivist, deductive research approach. This quantitative study gathers cross-sectional data by means of a survey. It uses a structured questionnaire administered to operators in informal activities in two urban slum regions of Ghana. These are the 'Sodom and Gomorrah'(S&G slum) in Accra and the 'Akwatia Line' (AL slum) in Kumasi. Principal component analysis (PCA) is used to examine the constraints to growth, and logistic regression is used to examine the willingness to formalise.

There is no existing data on the number of informal sector operators in urban slums of Ghana, making it difficult to determine a representative sample size. Accordingly, the researchers took into consideration the sample size requirements for PCA. According to Tabachnick and Fidell (2013), a sample of above 300 is appropriate for PCA. Thus, the sample consisted of 344 slum operators selected by simple random sampling from the Akwatia Line (AL slum) in Kumasi (172 respondents) and the S&G slum in Accra (172 respondents). The validity of the questionnaire, which shows the extent to which the measuring instrument is able to measure what it is supposed to measure, was addressed by linking the questionnaire design to literature review and previous research.

To determine the constraints, operators were required to state their level of agreement or disagreement (on a 7-point Likert scale) to 14 questions. Subjective well-being was measured using Layard's (2011) scale, where respondents were asked to state if they are happy or not on a Likert scale, from 1 to 7, where 1 stands for very unhappy and 7 for very happy. A respondent with a score below 3 may be considered unhappy and one above 3 is regarded as happy. The reliability of the questionnaire was indicated by the Cronbach's alpha. The Cronbach alpha coefficient was 0.74 (> 0.7), indicating a strong internal consistency.

Sample particulars

Of the 344 respondents interviewed, 59.6% were male while 40.4% were females. In terms of marital status, 70.6% were married and 29.4% were single. Almost 19% were in the 26–30 years age group, and 0.9% were in the old age group (over 60).

With regard to education, over two-fifths (42.2%) did not have a formal education; about 10% had secondary education; and only 1.5% had tertiary education. Males attained a higher education than females; 62% of the males had either a primary or higher education as compared to 51% of the female operators surveyed.

In S&G, foodstuff sales and peanut butter manufacturing are the most represented economic activities, each with a percentage of 16. The most dominant economic activities in AL are wood processing and wood sales, each accounting for 16.3% of the respondents. Operators involved in livestock are the least represented economic activity in AL, representing 3.5% of respondents.

The majority (52%) of the respondents in both regions have been in their current slum activity for over 10 years. About a quarter (28%) have been in operation between 6 and 10 years, while only 20% were operating for less than 5 years. With regard to happiness, 87.5% of the operators scored higher than 3, indicating they are happy and only 12.5% were unhappy, with a low score.

Principal component analysis

Principal component analysis is used to determine the conditions that constrain the growth of the informal sector business in surveyed slums. Literature survey identifies various constraints to informal sector development. In this study, the following constraints were examined: land tenure security, training in book-keeping and management, production inputs and production tools, access to bank loans, harassment by the municipal authority, financial management and planning skills, experience and poor communication systems, electricity supply, weak networking (social relations), state of roads, lack of collateral and access to basic infrastructure. The variables were measured on a Likert scale, ranging from one (strongly disagree) to seven (strongly agree).

Logistic regression

In determining which of the constraints, if addressed, may prompt slum operators to move out and venture into a formal sector business, logistic regression is employed. The variables (components drawn from the PCA) and an operator's happiness represent the explanatory factors, while an operator's willingness to move or stay represents the dependent variable. A willingness to move to the formal sector is captured as 1 and 0 otherwise. In introducing the components into a regression equation, variables are generated from the extracted components. SPSS's 'compute variable function' is used to create variables from the component results. This is done by entering the values of the component matrix multiplied by the questions they represent in the PCA (SPSS 2009). Hence, the loading of every variable in a component is multiplied by the question they stand for, generating a value (representing a component) for all 344 respondents. This procedure was also used by Liu et al. (2003) in generating variables for their regression analysis.

Results: Constraints to engaging in informal activities in slums

Informal activities cannot develop fast when operational constraints inhibit their growth. In this study, 14 variables were considered for the PCA, ranging from lack of accounting skills to poor communication (Table 4). The result (Table 2) from the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.625 – somewhat low but acceptable (Hair et al. 2010). The Bartlett's test of sphericity is significant ($p = 0.000$), reflecting that the data set is factorable.

Applying the principal component extraction method and Oblimin rotation with Kaiser normalisation, 6 components emerge, accounting for 77.2% of the total variation in slum operation constraints, as shown in Table 3. Only components with an Eigen value of at least 1 were considered in the analysis.

The first component explains about 20% of the total variation in constraints (Table 3). The rotated matrix (Table 4) indicates that the first component consists of three variables: lack accounting (loading, 0.896), financial management (loading, 0.857) and business management skills (loading, 0.849). This component, with a Cronbach alpha of 0.841, is labelled as 'Lack of business knowledge' (Table 4).

The second component has a Cronbach alpha of 0.801; it explains 16.4% of total variation (Table 3). This set is represented by variables such as infrastructural challenges, which has a loading of 0.881, electricity problems with a loading of 0.842 and bad roads, which has a loading of 0.785. This cluster of constraints is labelled as 'Infrastructural problems'.

The third component entails lack of collateral security (loading, 0.973) and difficulty in assessing bank loans (loading, 0.970). This component represents 13.66% (Table 3)

of total variation and is named as 'Difficulty in accessing credit'.

The fourth component accounts for 10.47% of the total variation in constraints of slum activities. This cluster has a Cronbach alpha of 0.743 (Table 4) and is represented by lack of inputs (loading, 0.896) and lack of tools (loading, 0.874).

Municipal harassment (loading, 0.886) and lack of land tenure security (loading, 0.684) represent cluster five. This cluster is labelled as 'lack of security', explaining 8.69% of total variation in constraints. The last component, accounting for 8.13% (Table 4) of the variation in constraints is labelled as 'poor communication and social networking' and is represented by weak networks (loading, 0.781) and poor communication (loading, 0.734). Although this last component has a low Cronbach's alpha, social networks and poor communication are retained as variables in the study because they are critical constraints in Ghana. A similar approach was used by Shin, Collier and Wilson (2000).

Willingness to move to the formal sector

Formalisation of the informal sector entails cost and benefits, and poses major challenges, especially taking into consideration the high levels of slums, poverty, unemployment and low level of formal ventures in Ghana (King, Braimah & Brown 2015). The Ghanaian state may be interested in formalising the informal sector for legal and fiscal considerations, while operators are reluctant to go formal, because of tax liabilities and bureaucratic compliance hurdles they are likely to encounter. Formalisation may not progress unless informal operators anticipate real net benefits from this

TABLE 2: Kaiser-Meyer-Olkin and Bartlett's test.

Kaiser–Meyer–Olkin measure of sampling adequacy	Bartlett's test of sphericity		
	Approximate chi-square	df	Sig.
0.625	1818.143	91	0.000

df, degrees of freedom; Sig., significance.

TABLE 3: Total variance explained.

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Eigen values	% of variance	Cumulative %	Eigen Values	% of variance	Cumulative %
1	2.782	19.869	19.869	2.782	19.869	19.869
2	2.300	16.426	36.295	2.300	16.426	36.295
3	1.912	13.657	49.951	1.912	13.657	49.951
4	1.465	10.468	60.419	1.465	10.468	60.419
5	1.216	8.689	69.108	1.216	8.689	69.108
6	1.138	8.129	77.238	1.138	8.129	77.238
7	0.794	5.669	82.907	-	-	-
8	0.588	4.202	87.109	-	-	-
9	0.451	3.219	90.328	-	-	-
10	0.366	2.613	92.941	-	-	-
11	0.319	2.275	95.216	-	-	-
12	0.304	2.170	97.386	-	-	-
13	0.276	1.974	99.360	-	-	-
14	0.090	0.640	100.000	-	-	-

TABLE 4: Rotated matrix.

Variables	Component					
	1	2	3	4	5	6
Lack of accounting skills	0.896‡	-0.006	-0.018	0.094	0.091	0.027
Lack of financial skills	0.857‡	-0.122	0.085	-0.069	-0.003	0.060
Lack of bus management skills	0.849‡	0.116	-0.031	-0.062	-0.057	-0.082
Infrastructural challenges	0.010	0.881‡	-0.006	0.054	-0.085	-0.038
Electricity problems	0.083	0.842‡	0.096	-0.122	0.056	-0.017
Bad roads	-0.077	0.785‡	-0.039	0.011	0.012	0.040
Collateral security	0.004	0.004	0.973‡	0.017	-0.020	0.020
Bank loan difficulties	0.016	0.018	0.970‡	0.022	-0.044	-0.027
Lack of inputs	0.015	-0.075	0.033	0.896‡	-0.033	-0.031
Lack of tools	-0.029	0.041	0.003	0.874‡	0.056	0.027
Municipal harassment	-0.014	-0.189	-0.043	-0.003	0.886‡	-0.039
Land tenure security	0.042	0.348	-0.016	0.112	0.684‡	0.040
Weak networks (social relations)	0.110	0.021	-0.089	0.045	-0.286	0.781‡
Poor communication	-0.098	-0.028	0.094	-0.045	0.290	0.734‡
Cronbach's alpha	0.841†	0.801†	0.951†	0.743†	0.560†	0.245†
Labels	Business knowledge	Infrastructural problem	Difficulty in accessing credit	Tools and materials	Security	Poor communication and social networking

Note: Extraction method, principal component analysis; Rotation method, Oblimin with Kaiser normalisation.

†, Cronbach's alpha measures internal consistency, signifying how closely related is a set of items within a group. Component one has a Cronbach's coefficient of 0.841, suggesting that the three variables have a relatively high internal consistency.

‡, The variable loading within each cluster shows the strength of that variable within the component. Accordingly, lack of accounting skills (loading 0.896) is a constraint with a greater weight than lack of management skills. Component 1 (business knowledge) has three latent variables, each with a different loading. Similarly in component 2, infrastructure is a stronger constraint than bad roads, though they belong to the same component- infrastructure problem.

transition. The OECD (2006) is of the view that formalising the informal sector in developing countries is a solution to eradicating poverty there in the long run.

Constraints faced by the operators in AL and S&G slums were categorised under six clusters, in Table 4. These include lack of business knowledge, infrastructural problems, difficulty in accessing credit, lack of tools and materials, security problems and poor communication and social networking. This article also sought to find out if a non-material reason (happiness) acts as a deterrent to slum operators moving into formal sector activities. Happiness, as mentioned earlier, was measured on a 7-point Likert scale, a higher value reflecting a higher level of happiness. Hence, the above identified constraints and happiness are regressed on an operator's willingness to move, using logistic regression. The surveyed operators were asked to answer a 'Yes' or 'No', if they were willing to formalise their business, assuming they are helped and their constraints addressed.

The initial logistic model is presented below:

Predicted log of (*Willingness to move*) = $\beta_0 + \beta_1$ *Business Knowledge* $+ \beta_2$ *Infrastructure* $+ \beta_3$ *Capital* $+ \beta_4$ *Tools and Materials* $+ \beta_5$ *Security* $+ \beta_6$ *Communication* $+ \beta_7$ *Happiness* $+ Ut$

[Equation 1]

Generation of variables

In order to conduct the logistic regression analysis, the SPSS's 'compute variable' function is used to generate variables from the PCA results, a method suggested by Liu et al. (2003). To compute a variable, the component loadings (from PCA, Table 4) are multiplied by the question they stand for.

For each respondent, the variables from the six components are generated as follows:

- Business Knowledge = [(0.896 × Lack accounting skills) + (0.857 × Lack financial management skills) + (0.849 × Lack business management skills)]
- Infrastructural Problems = [(0.881 × Infrastructural challenges) + (0.842 × Electricity problems) + (0.785 × Bad roads)]
- Capital = [(0.973 × Collateral security) + (0.970 × Bank loan difficulties)]
- Lack of materials and tools = [(0.896 × Lack inputs) + (0.874 × Lack tools)]
- Security = [(0.886 × Municipal harassment) + 0.684 × Land tenure security)]
- Poor communication and social networking = [(0.781 × Weak networks) + (0.734 × Poor communication)].

Logistic regression results

After the computation of the needed variables, a logistic regression was run using STATA, to ascertain which of the constraints, if addressed, will motivate the slum operators to move into the formal sector. The explanatory variables are lack of business knowledge, infrastructural problems, difficulty in accessing capital, lack of tools and materials, security challenges, poor communication and social networks and happiness, while the predicted variable is willingness to move to the formal sector. The results are presented in Table 5.

The fitted model is stated as:

Predicted log of (*Willingness to move*) = 2.52 − 0.01 *BusKnowledge* + 0.08 *Infras* + 0.11 *Capital* + 0.05 *Tools & Materials* + 0.01 *Security* + 0.07 *Comm* & *Assoc* − 0.96 *Happiness*

[Equation 2]

TABLE 5: Willingness to formalise.

Willingness to formalise	Coefficient	Odds ratio	SE	Z	p
Business knowledge	-0.01	0.99	0.03	-0.30	0.770
Infrastructure challenges	-0.08	0.92	0.04	-2.14	0.030
Capital	0.11	1.11	0.05	2.54	0.010
Tools and materials	0.05	1.05	0.04	1.22	0.220
Security challenges	0.01	1.01	0.06	0.18	0.861
Communication and association problems	0.07	1.07	0.1	0.71	0.477
Happiness	-0.96	0.38	0.05	-7.85	0.000
_cons	2.52	12.00	12.2	2.56	0.010

SE, standard error; Z score, standard score.

Note: Pseudo R^2 = 0.3068; Hosmer–Lemeshow chi2 (8) = 9.16, Prob > chi2 = 0.24; Wald chi2 (7) = 64.92; Prob > chi2 = 0.0000.

The Hosmer–Lemeshow test is used to assess the goodness of fit of the model (Equation 2). A poor fit is indicated by a significance value less than 0.05 (Pallant 2007). In this study, the chi-square value for the Hosmer–Lemeshow is 9.16, with a significance level of 0.24 (Table 5). This value (0.24) is greater than the critical value of 0.05, therefore, indicating support for the fitted model, with an R^2 is about 31%. The Wald chi-squared (Prob > chi2 = 0.000) is less than 0.05, signifying that the independent variables are not simultaneously equal to zero. Only three variables are found to contribute significantly to the predictive ability of the model. This implies that infrastructural challenges, lack of capital and happiness explain 31% of variation in the outcome and are significant predictors of an operator's willingness to move into the formal sector.

The results in Table 5 are in odds ratio. In interpreting the odds ratio as a percentage, the probability of an event occurring is found by subtracting the odds ratio of the event occurring from 1, and expressing the result as a percentage. This approach was also used by Hailpern and Visintainer (2003) in their study.

From the results, an improvement in access to capital is the only constraint, which when addressed will prompt informal slum operators to move to the formal sector (Odds ratio = 1.11). A unit change in greater access to capital will increase a slum operator's willingness to formalise by 11% (1 – 1.11). Similarly, Blunch, Canagarajah & Raju (2001) concluded that financial capital investments tend to be low in the informal sector. Hence, greater availability of capital to slum operators will help them grow their businesses and graduate into the formal sector.

The log of odds for an operator moving to the formal sector if infrastructural challenges are met is 0.92. This implies that an unit's increase in efforts to solving infrastructural challenges will lead to an 8% (1 – 0.92) decrease in an operator's willingness to move. This result perhaps highlights the failure of the Government of Ghana to resettle S&G informal operators in 2006, as a €10.4 million project was set up to resettle them at Adjin Kotoku, a suburb of Accra (Government of Ghana 2008; Smith-Asante 2015). The failure to relocate S&G operators to Adjin Kotoku can be attributed to inertia as the Adjin Kotoku region did not offer the same economic opportunities as S&G (Mukim 2011). This result apparently runs counter to van Rooyen and Antonites's (2007) findings that the improvement of infrastructure in Johannesburg is likely to help informal enterprises to formalise.

A happy slum operator is less likely to move into the formal sector (Odds ratio = 0.38). A unit increase in slum operators' happiness reduce their likelihood of moving to the formal sector by 62% (1 – 0.38). This implies that slum operators in Ghana are perhaps happy with staying in their slum activity, a result that is similar to the findings of Biswas-Diener and Diener (2001, 2006) regarding individuals being happy in slums in India and the USA. This result reinforces Horn's (2014) view that informal work is unlikely to ever disappear and thus many informal activities will remain informal or semi-formal in the future.

Improving access to tools and raw materials, security and communication, and social networks increase an operator's probability of joining the formal sector by 5%, 1% and 7%, respectively. However, these variables were not significant in the logistic regression.

Limitations of study and areas for further research

The study considered only two slums in Kumasi and Accra, owing to resource constraints. Better results might have been obtained if the study included other urban slums in Ghana. Hence, care should be taken in generalising the results. The logistic regression result indicates that improvement to infrastructure may not necessarily prompt slum operators to move to the formal sector. Many informal operators are happy to stay in the informal sector. Further studies need to be conducted as to why they prefer the informal to the formal sector.

Conclusion and policy implications

Operators in slum activities in Ghana are pushed into the informal sector out of necessity owing to unemployment. These operators face many growth constraints, of which lack of business knowledge and capital are most critical. About 79% of the surveyed operators have no formal education or only had primary education. Hence, government policies should be geared towards creating an enabling environment for formal and informal enterprises to grow through empowering enterprisers with higher levels of education and training. Not much can, however, be achieved through the provision of training alone, as this article found that infrastructural problems, difficulty in accessing credit, lack of tools and materials, security problems and poor communication and social networking are other challenges facing informal slum operators. Therefore, support programmes are necessary for the provision of basic tools and machinery, credit, improved communication facilities, as well as land tenure security to slum operators in Ghana. Hopefully, these measures will go a long way to help forward-thinking operators to grow.

In the quest to formalise, the study found that, if slum operators are helped with access to capital, they might be willing to formalise. The ILO (2014) also found that limited access to finance is a principal reason as to why the informal sector does not expand. The move to a formal economy involves challenges of tax compliance, regulations and bureaucracy. Their consequences may deter informal enterprisers from moving to the formal sector.

Informal operators in Ghana cannot access adequate finance from the commercial banks. About 70% of Ghanaians remain unbanked (Addae-Korankye & Abada 2017; Boateng 2015). Hence, they rely on micro-finance institutes (MFIs), which are presently largely unregulated. It is recommended that the Central Bank of Ghana (BoG) designs an effective regulation policy for the micro-finance institutions to ensure that informal operators have greater access to finance, which in turn may enable them to expand their business and formalise.

Even though addressing infrastructure challenges will not prompt operators to formalise, it may help to modernise their operations. Hence, the improvement of basic infrastructure in Ghana, such as access to sanitation, good roads, an adequate supply of electricity, storage facilities and information technologies, as well as improving land tenure security and no unnecessary harassment from legislation and municipal inspectors, can help informal operators to grow. As Altman (2007) puts it succinctly, policy should focus on productivity, capital, asset accumulation and skills development. However, it must be stressed that enterprise growth may be restrained by internal inertia embedded in the minds of their owners or by personal motivational factors. When people are happy in what they are doing, business as usual in the informal economy, then incentives designed to help their ventures to grow by relieving the growth constraints may have little effect.

Acknowledgements

The authors would like to thank the reviewers for their helpful comments on this article.

Competing interests

Authors contributions

Both authors were responsible for the analysis and writing of the article. The fieldwork was done by L.J.Z. in Ghana.

References

Addae-Korankye, A. & Abada, A., 2017, 'Microfinance and women empowerment in Madina in Accra, Ghana', *Asian Economic and Financial Review* 7(3), 222–231. https://doi.org/10.18488/journal.aefr/2017.7.3/102.3.222.231

Altman, M., 2007, 'What are the policy implications of the informal sector becoming the informal economy', Concept Paper for *IZA/WB Conference on Employment & Development*, Bonn, Germany, pp. 8–9, June.

Anuwa-Amarh, E.T., 2015, *Understanding the urban informal economy in Ghana, a survey*, A Friedrich-Ebert-Stiftung report, viewed 29 January 2017, from http://www.fesghana.org/uploads/PDF/Understanding%20the%20Urban%20Informal%20Economy%20in%20Ghana_A%20Survey%20Report.pdf

Aryeetey, E., 2009, *The informal economy, economic growth and poverty in sub-Saharan Africa*, Framework Paper, African Economic Research Consortium, Paper prepared for the AERC Project Workshop on 'Understanding links between growth and poverty reduction in Africa', viewed n.d., from https://www.africaportal.org/documents/6563/Aryeetey_Informality.pdf

Bàculo, L., 2006, 'Tackling informal employment: The case of southern Italy', *International Journal of Manpower* 27(6), 552–571. https://doi.org/10.1108/01437720610690482

Biswas-Diener, R. & Diener, E., 2001, 'Making the best of a bad situation: Satisfaction in the slums of Calcutta', *Social Indicators Research* 55(3), 329–352. https://doi.org/10.1023/A:1010905029386

Biswas-Diener, R. & Diener, E., 2006, 'The subjective well-being of the homeless, and lessons for happiness', *Social Indicators Research* 76(2), 185–205. https://doi.org/10.1007/s11205-005-8671-9

Blaauw, P., Botha, I., Schenck, R. & Schoeman, C., 2013, *Happy in the informal economy? A case study of well-being among day labourers in South Africa*, Economic Research Southern Africa Working Paper No. 337, viewed n.d., from https://econrsa.org/system/files/publications/working_papers/working_paper_337.pdf

Blunch, N.H., Canagarajah, S. & Raju, D., 2001, 'The informal sector revisited: A synthesis across space and time', The World Bank Social Protection Discussion Papers, No. 0119, viewed n.d., from http://documents.worldbank.org/curated/en/496711468766544695/pdf/multi0page.pdf

Boateng, A.A., 2015, 'An examination of challenges and prospects of microfinance institutions in Ghana', *Journal of Economics and Sustainable Development* 6(4), 52–60.

Canagarajah, S. & Sethuraman, S.V., 2001, 'Social protection and the informal sector in developing countries: Challenges and opportunities', Social Protection Discussion Paper, No 0130, viewed n.d., from http://documents.worldbank.org/curated/en/464851468739448448/pdf/multi0page.pdf

Davies, R. & Thurlow, J., 2010, 'Formal–informal economy linkages and unemployment in South Africa', *South African Journal of Economics* 78(4), 437–459. https://doi.org/10.1111/j.1813-6982.2010.01250.x

De Soto, H., 1989, *The other path: The informal revolution*, Harper & Row, New York, NY.

De Soto, H., 2000, *The mystery of capital: Why capitalism triumphs in the west and fails everywhere else*, Basic Books, New York, NY.

Diener, E., Lucas, R.E., & Oishi, S., 2005, 'Subjective well-being: The science of happiness and life satisfaction', in C.R. Snyder & S.J. Lopez (eds.), *Handbook of positive psychology*, 2nd edn., pp. 63–73, Oxford University Press, New York, NY.

Ghana Statistical Service, 2007, *Ghana Living Standard Survey Round 5 (GLSS5)*, Ghana Statistical Service, Accra.

Ghana Statistical Service, 2010, *News Brief; new series of the Gross Domestic Product (GDP) estimates*, Highlights of the Rebased Series of the GDP – formal press release on November 5, 2010, Ghana Statistical Service, Accra, Ghana.

Government of Ghana, 2008, 2008 budget highlights (a brighter future)', Accra, Government of Ghana, viewed 12 October 2016, from https://www.mofep.gov.gh/sites/default/files/budget-statements/2008_Budget_Highlight.pdf

Hailpern, S. & Visintainer, P., 2003, 'Odds ratios and logistic regression: Further examples of their use and interpretation', *The Stata Journal* 3(3), 213–225.

Hair, J., Black, W., Babin, B. & Anderson, R., 2010, *Multivariate data analysis*, 7th edn., Pearson Prentice Hall, Upper Saddle River, NJ.

Herrington, M., Kew, J. & Kew, P., 2010, *Global entrepreneurship monitor*, UCT Centre for Innovation and Entrepreneurship, Cape Town.

Horn, P., 2014, *Collective bargaining in the informal economy street vendors*, WEIGO Research, Manchester, United Kingdom, viewed 12 June 2018, from http://www.wiego.org/sites/default/files/resources/files/Horn-Collective-Bargaining-Street-Vendors.pdf

ILO, 1972, *Employment, incomes and equality: A strategy for increasing productive employment in Kenya*, International Labour Office, Geneva.

ILO, 2009, *The informal economy in Africa: Promoting transition to formality: Challenges and strategies*, International Labour Office, Employment Sector and Social Protection Sector, ILO, Geneva.

ILO, 2014, 'Transitioning from the informal to the formal economy', *International Labour Conference*, International Labour Office, Geneva, viewed 06 August 2016, from https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meetingdocument/wcms_218128.pdf

Kalyani, M., 2016, 'Indian informal sector: An analysis', *International Journal of Managerial Studies and Research (IJMSR)* 4(1), 78–85.

King, R.S., Braimah, I. & Brown, A., 2015, 'Formalising the informal sector through association: The case of Kumasi Informal Bakers' Association', *Journal of Sustainable Development* 8(2), 46. https://doi.org/10.5539/jsd.v8n2p46

Kingdon, G.G. & Knight, J., 2007, 'Community, comparisons and subjective well-being in a divided society', *Journal of Economic Behavior & Organization* 64(1), 69–90. https://doi.org/10.1016/j.jebo.2007.03.004

Layard, R., 2011, *Happiness*, Penguin, London.

Lings, K., 2014, *The missing piece: Solving South Africa's puzzle*, Macmillan, Johannesburg.

Liu, R.X., Kuang, J., Gong, Q. & Hou, X.L., 2003, 'Principal component regression analysis with SPSS', *Computer Methods and Programs in Biomedicine* 71(2), 141–147. https://doi.org/10.1016/S0169-2607(02)00058-5

Loayza, N.V., 1997, 'The economics of the informal sector: A simple model and some empirical evidence from Latin America', *Carnegie-Rochester Conference Series on Public Policy*, 45, 129–162. https://doi.org/10.1016/S0167-2231(96)00021-8

Luiz, J. & Mariotti, M., 2008, *Perceptions regarding entrepreneurship in an emerging and culturally diverse economy: A South African survey*, Working Paper, No. 95, viewed n.d., from https://core.ac.uk/download/pdf/6428946.pdf

Mahadea, D., 2013, 'On the economics of happiness: The influence of income and non-income factors on happiness', *South African Journal of Economic and Management Sciences* 16(1), 39–51. https://doi.org/10.4102/sajems.v16i1.204

Mohr, P., 2016, *Economic indicators*, Van Schaik Publishers, Pretoria.

Mukim, M., 2011, 'Industry and the urge to cluster: A study of the informal sector in India', Discussion Paper 0072, Spatial Economics Research Centre, London.

Naudé, W., 2010, 'Entrepreneurship, developing countries, and development economics: New approaches and insights', *Small Business Economics* 34(1), 1–12. https://doi.org/10.1007/s11187-009-9198-2

OECD, 2006, 'Promoting pro-poor growth: Private sector development', An extract from the publication, *Promoting pro-poor growth: Policy guidance for donors*, pp. 27–35, Paris, France.

Okpara, J.O., 2011, 'Factors constraining the growth and survival of SMEs in Nigeria: Implications for poverty alleviation', *Management Research Review* 34(2), 156–171. https://doi.org/10.1108/01409171111102786

Pallant, J., 2007, *SPSS survival manual*, 3rd edn., McGraw-Hill, London.

Parker, D., Kirkpatrick, C. & Figueira-Theodorakopoulou, C., 2008, 'Infrastructure regulation and poverty reduction in developing countries: A review of the evidence and a research agenda', *The Quarterly Review of Economics and Finance* 48(2), 177–188. https://doi.org/10.1016/j.qref.2006.12.005

Parsons, R., 2003, *Zumanomics revisited*, Jacana, Johannesburg.

Pisani, M.J. & Patrick, J.M., 2002, 'A conceptual model and propositions for bolstering entrepreneurship in the informal sector: The case of Central America', *Journal of Developmental Entrepreneurship* 7(1), 95–111.

Reddy, M., Naidu, V. & Mohanty, M., 2003, 'The urban informal sector in Fiji results from a survey', *Fijian Studies: A Journal of Contemporary Fiji* 1(1), 127-154.

Rogerson, C.M., 2016, 'Responding to informality in urban Africa: Street trading in Harare, Zimbabwe', *Urban Forum* 27(2), 229–251. https://doi.org/10.1007/s12132-016-9273-0

Sachs, J., 2005, *The end of poverty: How we can make it happen in our lifetime*, Penguin Books, London.

SARB, 2018, *South African Reserve Bank Quarterly Bulletin, No. 287*, March 2018, SARB, Pretoria.

Saunders, M., Lewis, P. & Thornhill, A., 2009, *Research methods for business students*, 5th edn., Pearson, London.

Schneider, F., 2002, 'Size and measurement of the informal economy in 110 countries around the world', paper presented at the Workshop of Australian National Tax Centre, ANU, Canberra Australia, 17 July 2002, viewed n.d., from https://www.researchgate.net/profile/Friedrich_Schneider/publication/253147023_Size_and_Measurement_of_the_Informal_Economy_in_110_Countries_Around_the_World/links/0c96052c5462c3fff8000000/Size-and-Measurement-of-the-Informal-Economy-in-110-Countries-Around-the-World.pdf?origin=publication_detail

Shin, H., Collier, D.A. & Wilson, D.D., 2000, 'Supply management orientation and supplier/buyer performance', *Journal of Operations Management* 18(3), 317–333. https://doi.org/10.1016/S0272-6963(99)00031-5

Skinner, C., 2005, *Constraints to growth and employment in Durban: Evidence from the informal economy*, School of Development Studies, University of KwaZulu-Natal, Research Report No. 65.

Smith-Asante, E., 2015, 'Adjen Kotoku market: Investment gone waste', *Graphic Online*, viewed 30 October 2016, from http://www.graphic.com.gh/features/features/adjen-kotoku-market-investment-gone-waste.html

SPSS, Inc., 2009, *SPSS Statistics Base 17.0 user's guide*, viewed 06 April 2016, from http://www.jou.ufl.edu/archive/researchlab/SPSS-Statistcs-Base-Users-Guide-17.0.pdf.

Tabachnick, B.G. & Fidell, L.S., 2013, *Using multivariate statistics*, 6th edn., Pearson Education Inc, NJ.

The World Bank, 2013, *Workers in the informal economy*, viewed 11 December 2016, from http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTSOCIALPROTECTION/EXTLM/0,,contentMDK:20224904~menuPK:584866~pagePK:148956~piPK:216618~theSitePK:390615,00.html

Todaro, M.P. & Smith, S.C., 2015, *Economic development*, 12th edn., Pearson, Upper Saddle River, NJ.

UN-Habitat, 2003, *The challenge of slums: Global report on human settlements*, UN-Habitat, Nairobi.

UN-Habitat, 2007, *State of the world cities*, UN Habitat, Nairobi.

UN-Habitat, 2009, *Ghana: Accra urban profile*, UN Habitat, Nairobi.

Urban, B., 2008, 'Entrepreneurship orientation in a developing country context: Juxtapositions with South Africa's innovation index', *Journal of Developmental Entrepreneurship* 13(4), 425–445. https://doi.org/10.1142/S108494670800106X

Urban, B., Van Vuuren, J. & Barreira, J.D., 2008, 'High-growth entrepreneurs: The relevance of business knowledge and work experience on venture success', *Journal of Contemporary Management* 5(1), 58–71.

USAID, 2012, *Infrastructure*, viewed 29 October 2016, from https://www.usaid.gov/what-we-do/economic-growth-and-trade/infrastructure.

Valodia, I., 2007, *Informal employment in South Africa*, HSRC, Pretoria.

Van der Geest, K., 2011, 'North-South migration in Ghana: What Role for the environment?', *International Migration* 49(S1), e69–e94.

Van Rooyen, E. & Antonites, A.J., 2007, 'Formalising the informal sector: A case study on the City of Johannesburg', *Journal of Public Administration* 42(3), 324–346. https://doi.org/10.1111/j.1468-2435.2010.00645.x

Wills, G., 2009, *South Africa's informal economy*, Urban policies research no 7, WIEGO, Durban.