

Microenterprise performance amidst environmental turbulence and resource scarcity: an integrated capital approach

Microenterprise
performance
amidst
turbulence

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Abstract

Purpose – Microenterprises in emerging economies are known to operate in turbulent and resource-scarce environments. We test our hypothesis that a more comprehensive “Integrated Capital-Based Model” (ICBM) is needed when explaining the performance of microenterprises in such an environment. The model combines traditionally researched financial, human and social capital with more recently emphasized psychological and cognitive capital, providing greater explanatory power than models using only the traditional types of capital.

Design/methodology/approach – We use a pooled linear regression to analyze an existing survey of more than 900 independent business owners who were interviewed seven times between 2008 and 2012 in the Accra and Tema marketplaces in Ghana. We measure the performance of microenterprises using three dependent variables (revenue, profits, and productivity). We contrast the explanatory power of ICBM models against the more traditional models.

Findings – The ICBM has significantly higher levels of explanatory power over the traditional models in examining the performance of these microenterprises. These results highlight the importance of psychological and cognitive capital in emerging economies.

Research limitations/implications – We advocate for a more comprehensive view of capital as shown in our ICBM. However, the data were gathered only in an urban setting, which limits the generalizability to rural parts of emerging economies.

Practical implications – These findings suggest the utility of government and appropriate agencies finding ways to enhance the level of psychological and cognitive capital of microenterprise owners.

Originality/value – This paper’s originality stems from hypothesizing and empirically confirming the higher predictive efficacy of ICBM against more traditionally researched capital sources.

Keywords Ghana traders, Financial capital, Human capital, Social capital, Psychological capital, Cognitive capital

Paper type Research paper

Introduction

Any form of capital should improve the productivity of a microenterprise. Often these types are distinguished as *financial capital* (Orser *et al.*, 2006; Van den Brink and Chavas, 1997), *human capital* (Bates, 1990; Unger *et al.*, 2011) and *social capital* (Lyon, 2000; Stam *et al.*, 2014). In explaining a firm’s success, these traditional types of capital (financial, human, and social) have been used in both developed economies (e.g. Berge *et al.*, 2014; Carter *et al.*, 2003; Danes *et al.*, 2009; Kim *et al.*, 2006) and in emerging economies (e.g. Biggs and Shah, 2006; Chandler and Hanks, 1998; Fatoki, 2011; Honig, 1998).



Some scholars have suggested we include other types of capital. They posit that the constructs of *psychological capital* (Luthans *et al.*, 2004, 2006; Rauch and Frese, 2007) and *cognitive capital* (Mitchell *et al.*, 2002, 2011) are also important. Psychological capital puts an emphasis on the characteristics of optimism, determination, persistence and risk-taking (Luthans *et al.*, 2004; Rauch and Frese, 2007). Cognitive capital emphasizes characteristics such as the ability to quickly make decisions and the ability to effectively multi-task (Mitchell *et al.*, 2011). Few, if any studies have specifically set out to include these two newer constructs of capital along with the more traditional types of capital in the context of an emerging economy. This is surprising because some of the earliest work on social capital and other forms of capital discussed how there was an interaction between these forms, or otherwise how one form could develop from another (Bourdieu, 1986; Nahapeiet and Ghoshal, 1998). To take some initial empirical steps into these questions, we develop an integrated model that includes all these types of capital in explaining labor productivity and firm success.

Motivating the empirical analysis of this paper, is a body of thought stemming from institutional theory and in particular, the institutional difference hypothesis (IDH) (Garcia and Orsato, 2020; Julian and Ofori-Dankwa, 2013; Li *et al.*, 2018; Mair and Marti, 2009; Ofori-Dankwa and Julian, 2013; Ofori-Dankwa *et al.*, 2022). In this present work, we develop and test an “Integrated Capital-Based Model” (ICBM) using data collected from market traders in Accra and Tema, Ghana (Fafchamps *et al.*, 2014). This model is appropriate in the Ghanaian context. As an application of the IDH, our ICBM separates types of capital into components that relate to and are affected by social, political, and economic institutions. Our ICBM accounts for the fact that, compared to developed economies, markets in emerging economies such as Ghana are characterized by stringent financial and resource constraints (Agbeko *et al.*, 2016; Ofori-Dankwa and Omane-Antwi, 2015; Shantz *et al.*, 2018). For example, in the Ghanaian context, the uncertainty of operating in such marketplaces is compounded by frequent marketplace fires (Oteng-Ababio and Sarpong, 2015; Twum-Barima, 2014), regular flooding of the marketplaces (Das and Majumdar, 2019), as well as healthcare challenges and physical dangers that marketplace operators, particularly women, will face (Beek and Thiel, 2017; Kudzawu *et al.*, 2016; Quaidoo *et al.*, 2018; Steel *et al.*, 2014). The marketplace uncertainty is further compounded by historic political tensions. Government-endorsed bulldozing and destruction of several marketplaces in Ghana between 1979 and 1981 is one notable example of how politics can dramatically impact marketplace business owners (Campbell, 1985; Robertson, 1983). In such an environment, it is important to include the more recently explored sources of capital (psychological and cognitive), along with the traditional sources of capital (financial, human, and social). In sum, we argue that given the turbulence and high levels of uncertainty associated with the Ghanaian marketplace, the success of business operators would be better predicted by the ICBM.

We are developing an empirical model based on the ICBM. Estimation results show statistically significant and improved explanatory power, with better overall joint significance, in comparison to models that omit the more recently researched types of capital (i.e. psychological, and cognitive capital). In explaining the results, we apply the ICBM to highlight the theoretical, research, and practical implications. Specially, our results suggest greater scholarly/policy-maker attention to the incorporation of a wider and more comprehensive array of capital sources. Additionally, these results can be used by governmental and educational institutions to motivate and identify ways of enhancing the psychological and cognitive capital of marketplace actors. For example, Olorunshola and Odeyemi (2023) illustrate how governmental institutions can be used help micro and SME performance in the context of an African emerging economy. We also find that small business and microenterprise owners need support from governmental institutions, but our results indicate a different path governments can pursue. Governments and other institutions can and should also work to enhance psychological and cognitive forms of capital through the

creation of public programs that work more on improving the person as a whole. Many large corporations in developed nations provide this type of motivational and personal development training on their own. In a developed or emerging economy, we show this type of training is even more essential to the success of microenterprise.

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Context, theory and hypothesis

Ghana's resource scarce and turbulent marketplace context

The institutional difference hypothesis (IDH) highlights the potential firm performance implications of the institutional differences between developed economies and emerging economies such as Ghana (Garcia and Orsato, 2020; Julian and Ofori-Dankwa, 2013; Mair and Marti, 2009; Ofori-Dankwa and Julian, 2013).

In contrast to firms operating in developed economies, marketplace traders in emerging economies such as those in Ghana operate in a “double-void” context (Ofori-Dankwa and Julian, 2011). These environments are void of both quality institutions and quality factors of production (Fafchamps *et al.*, 2014; Julian and Ofori-Dankwa, 2013; Ofori-Dankwa and Julian, 2013). In such a context, there are elevated levels of credit constraints and low levels of infrastructure development (Ofori-Dankwa and Julian, 2013).

The difficulties of operating microenterprises in such a national context are in part due to the lack of basic marketplace infrastructure and unclear tax regimes (Clark, 1994, 2010; Darkwah, 2001; King and Oppong, 2000). The difficulties are compounded when some of the market segments, such as those associated with petty-trading and reselling, have very low entry barriers. The low costs of entry cause a large influx of traders into the marketplace, including rural-urban migrants, thereby increasing levels of competition (Fafchamps *et al.*, 2014; Roever, 2014; Skinner, 2008). This low entry cost results in many market traders starting their small business out of necessity (Kuada, 2015). This necessity-oriented entrepreneurship is especially prevalent where there are female-dominated marketplaces (Calderon *et al.*, 2017).

Towards an integrated capital based theory

Our integrated capital-based model is reflected in Figure 1. Our model hypothesizes that a more accurate prediction of performance of market traders operating in contexts, such as the Ghana marketplace, will require integrating the more traditional financial, human, and social capital-based frameworks with the more recently emphasized psychological capital and cognitive capital approaches. The traditional types of capital are classified as financial, human and social. We first explain this existing literature as having a more traditional focus before moving on to the newer types of capital.

Financial Capital: The importance of financial capital in firm performance and in an entrepreneurial startup has been well established (Coleman, 2007; Cooper *et al.*, 1994; Davidsson and Honig, 2003). The extent of capitalization can not only predict the successful startup of businesses (Cooper *et al.*, 1994) but also the growth (Coleman, 2007) and the long-term viability of the small businesses (Bates, 1990; Honig, 1998). Financial capital constraints tend to be more present in developing economies (Abor and Quartey, 2010; Banerjee *et al.*, 2015; Biggs and Shah, 2006). These financial constraints have been shown to be prevalent in Ghana (Mohammed and Bunyaminu, 2021). Traders in the marketplace seek funding through a variety of formal and informal sources. Formally, traders seek financing for physical capital from financial institutions such as banks and credit unions who provide either cash or in-kind grants (Fafchamps *et al.*, 2014).

A well-established and traditional means of finance in West Africa is the susu. The susu is a type of rotating savings and credit association (ROSCA). Similar institutions are found in

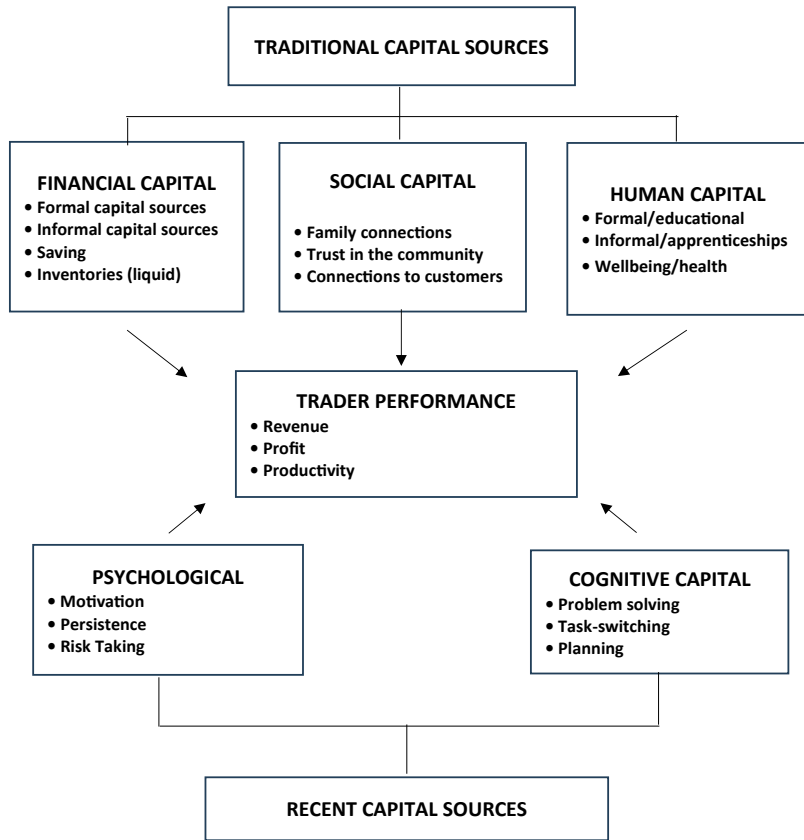


Figure 1. Factors which influence market trader performance in West Africa: toward an integrated capital-based theory

Source(s): Authors' own work

many other developing and emerging economies. The amounts that are financed, however, are typically not as substantial as what can be acquired in the formal banking system (Bortei-Doku Aryeetey and Aryeetey, 1996; Van den Brink and Chavas, 1997).

Human Capital: The importance of human capital to the success of small businesses has also been well established (Grossman, 2000; Kwon, 2009; Schultz, 1961). For example, the nature of human capital has been associated with the success of entrepreneurial startups (Davidsson and Honig, 2003; Unger *et al.*, 2011) and sustained success of small businesses (Castrogiovanni, 2011). One way that human capital has been conceptualized is through the extent of formal education that an owner/operator has (Becker, 2009; Honig, 1998; Kwon, 2009).

Another important conceptualization of human capital comes from a gender perspective (Cooper *et al.*, 1994; Orser *et al.*, 2006). This conceptualization is particularly important in the African context because of the historical, traditional, and systemic disadvantages of women in Africa (Dzapasi and Machingambi, 2014; Lindvert *et al.*, 2015; Newman and Alvarez, 2022; Shabaya and Konadu-Agyemang, 2004).

Social Capital: The utility of social capital has also been long recognized for business success in general (Davidsson and Honig, 2003) and for SME traders (Fafchamps and Minten, 2001, 2002; Honig, 1998; Payne *et al.*, 2011). For the entrepreneur, social capital can come from

a social network used to obtain information, advice, emotional support, and facilitate trust (Hoang and Antoncic, 2003). Social capital has also been associated with a well-established network of trusted suppliers and creditors who help provide a competitive advantage (Lyon, 2000; Trager, 1981). Some authors have studied social capital in “extreme contexts,” such as the West Bank and Gaza Strip (Khoury *et al.*, 2021). In the African context, social capital has been posited as giving a competitive advantage to an entrepreneur (Fafchamps and Minten, 1999; Jabbar *et al.*, 2006; Lyon, 2000; Mangaliso, 2001; Trager, 1981).

We therefore posit the following testable hypotheses:

- H1. Microenterprises’ access to financial capital will be positively related to the performance of their enterprises.
- H2. Microenterprises’ level of human capital will be positively related to the performance of their enterprises.
- H3. Microenterprises’ access to social capital will be positively related to the performance of their enterprises.

Our ICBM adds *Psychological Capital* (aka PsyCap) to the traditional types of analyses. Compared to these more traditional sources of capital, scholarly research on PsyCap and its impact on productivity has been less extensive (Rauch and Frese, 2007). Luthans *et al.* (2004) define PsyCap as encompassing the traits of confidence, hope, optimism, and resilience. It is the “positive appraisal of circumstances and probability for success based on motivated effort and perseverance” (Luthans *et al.*, 2007, p. 550). Frese *et al.* (2002) also suggest that an entrepreneur with elevated levels of PsyCap will be motivated, have a need for achievement, and be resilient in the face of adversity. Psychological capital thus enables effective risk-taking abilities (Shapira, 1995). Yitshaki (2021) has shown that psychological factors are important for firm growth. Kanfer (1992, p. 3) describes PsyCap as “non-cognitive individual differences on choice,” emphasizing the difference between motivations coming from mood and perspective vs motivations coming from conscious thought and intention. Given the tremendous difficulties and uncertainties of West African markets, it is likely that individuals with higher levels of PsyCap as measured by higher levels of motivation, persistence, and a willingness to take risks, will be more successful.

Cognitive capital: Based on social cognition theory, this capital source emphasizes how “. . . entrepreneurs use simplifying mental models to piece together previously unconnected information that helps them to identify and invent new products or services, and to assemble the necessary resources to start and grow businesses” (Mitchell *et al.*, 2002, p. 97). Cognitive capital therefore emphasizes the importance of characteristics such as the ability to fully understand the marketplace environment, quickly make needed decisions, effectively multi-task and switch tasks when needed (Cornelissen and Clarke, 2010; Mitchell *et al.*, 2011; Randolph-Seng *et al.*, 2015). Ghana is an emerging economy, and becoming more international. Cognitive abilities have been shown to be especially important in multicultural business operations (Pauluzzo, 2021). In the West African context, the full implications of cognitive capital for trading in the marketplace have not been fully researched. Specifically, within the Ghanaian context, given the tremendous turbulence and uncertainties of markets, it is likely that individuals with the subsequent ability to make fast decisions and to effectively multi-task are likely to do better.

We therefore posit the following testable hypotheses:

- H4. Microenterprises’ access to psychological capital will be positively related to the performance of their enterprises.
- H5. Microenterprises’ level of cognitive capital will be positively related to the performance of their enterprises.

Comparing the traditional capital based model with the integrated capital model

The traditional capital-based models have been successfully applied to understand and predict performance of microenterprises in both developed economies (e.g. Kim *et al.*, 2006; Danes *et al.*, 2009) and in emerging economies (Honig, 1998; Fatoki, 2011). However, institutional theory suggests culture and socialization lead to behaviors that can affect individual performance. Therefore we also predict the inclusion of psychological and cognitive capital models would lead to better explanatory power, particularly in emerging economies such as Ghana.

- H6. An integrated capital-based model of the Ghanaian marketplace microenterprise will have a higher explanatory power than the traditional models in predicting the performance of their enterprises.

Method

The dataset for this study comes from a survey of more than 900 individual independent business owners in the Accra and Tema marketplaces in Ghana (Fafchamps *et al.*, 2014). This specific dataset has been used to publish research in several high-quality journals. The first paper to use this dataset has nearly 400 citations and another has over 300 (Fafchamps *et al.*, 2011, 2014). However, the dataset has not been used to explore the role of the various forms of capital and their impacts on microenterprise success. There is not a known alternative to examine the research questions herein, and moreover, this data has not yet been used to try to find answers to the questions we pose. The original purpose of this survey was to determine whether in-kind grants are more effective than cash grants. As such, we control for that difference in our regression estimates. Otherwise, this rich dataset has over 300 variables, over 5 time periods and 793 microenterprise owner-respondents.

The individuals studied in this data are sole-owners of businesses with no paid employees. The survey was funded by the World Bank and the data is available through the World Bank's Microdata Library collection. It took place over 4 years and in 7 different time periods from 2008 to 2012, resulting in a large panel dataset of some 4,354 observations, containing over 400 variables. This present research focuses specifically on microenterprises rather than the subset of entrepreneurs (Carland *et al.*, 1984). We therefore exclude outlier observations of revenues or profits that are 3 standard deviations above the mean. This results in eliminating 186 out of an initial 4,354 observations.

Dependent variables

We use 3 dependent variables as measures of entrepreneurial performance: *total sales*, *productivity*, and *total profit*. These measures of success have consistently been used in literature (e.g. Cooper *et al.*, 1994; Watson *et al.*, 2003).

Total sales represent the monthly total sales of the business, in cedis, adjusted for inflation by using the greater Accra consumer price index. *Productivity* is conceptualized as *total sales* per hour worked. It is computed by dividing total sales by the owner's self-reported number of hours worked "in full effort" towards the business. The owners have no paid employees, as such the variable measures output per hour worked. *Total profits* reflect the total sales minus expenses that the entrepreneur incurred in the month. This is also in cedis with adjustments for changes in prices.

Independent variables: measures of the traditional types of capital

To estimate the *financial capital* available to each respondent, we use three measures: total capital stock, level of savings and "use a susu daily."

Measures of total capital stock are common to this body of research (e.g. Evans and Jovanovic, 1989; Holtz-Eakin *et al.*, 1994; Kim *et al.*, 2006). Here we refer to a Ghana cedi measure of the value of physical capital and existing inventories (“Total capital stock GHc”). The owner’s level of saving enables access to financial capital by providing them with collateral (Chandler and Hanks, 1998; Parker and Belghitar, 2006; Petrova, 2012). The variable, “use a susu daily” measures participation in the Ghanaian form of a rotating savings and credit association (ROSCA). When an entrepreneur deposits money with a susu, it is a sign that they will be able to obtain more financing in the future.

To estimate the available *human capital*, we used three measures: years of education, how knowledgeable the respondent was about their business operations and gender of respondent. Self-reported years of schooling have been used as a measure of human capital. As Kaestner and Malamud (2014) observe, self-reported values are very good proxies for actual years of schooling. We also used a self-reported measure of how knowledgeable the respondent is about their type of business (Studdard, 2006). The last measure of human capital, gender, has been used as a measure of human capital in several existing publications (Cooper *et al.*, 1994; Cater *et al.*, 2003; Berge *et al.*, 2014). Human capital investment is not only provided by formal education. Informal education and on-the-job access to training is also important. Compared to men, women (and girls) traditionally have less access to informal and on-the-job training, which may start at a very young age. Consequently, women often have fewer opportunities to more fully develop relevant and needed work-related skills (Cooper *et al.*, 1994).

To estimate *social capital* available for each respondent, we also used three measures: family in the same business sector, the extent of communication with customers and extent of the entrepreneur’s trust in others. We used a measure that inquired whether the entrepreneur had family members working in the same sector. This is consistent with previous research in estimating social capital (Arregle *et al.*, 2007; Davidsson and Honig, 2003).

As a measure of social integration, we use an indicator of how often the entrepreneur interacts with their customers, which comes from answering the question, “In a typical week, how many hours would you spend: Talking with customers?” This is consistent with research on social capital (Colucci and Presutti, 2006; Yli-Renko *et al.*, 2001, 2002).

A third way we attempt to operationalize our concept of social capital is to use a measure of how trusting the trader is. We used the respondent’s own self-reporting of how much they trust their own community. Respondents are asked to agree/disagree on a Likert scale with the statement, “Generally speaking, most people in this community are honest and can be trusted.” This is also consistent with previous research (Caliendo *et al.*, 2012; Knack and Keeffer, 1997; Putnam, 1993; Sappleton, 2009).

Independent variables: measures of the alternative types of capital

To assess the extent of *psychological capital* that each respondent had, we used four measures: motivation, persistence, optimism, and willingness to take risks. These came from the Fafchamps *et al.* (2014) survey questions, are similar to those developed and validated by Luthans *et al.* (2007) and verified in empirical analyses (e.g. Joo *et al.*, 2016). To assess an owner-operator’s level of motivation, we look at the owner’s self-reported number of hours worked in “full effort” towards the business. For this measure, respondents were explicitly asked about working hours in “full effort” and instructed, “Do not include time spent also chatting with friends, doing housework, etc.” The item is therefore intended as a measure of how much effort the owner is putting into their business. It can also be noted that these are owner-operators, not employees, and so their time commitment is self-determined. Full-effort hours put into work are done so at the expense of leisure time, and as such choosing work over leisure is a revealed-preference measure for hard work and motivation (Kabeer, 1994; Oh, 2023).

With respect to persistence as a measure of psychological capital, [Fafchamps et al. \(2014\)](#)'s survey had three Likert scale measures of persistence. Respondents answered questions inquiring about the extent to which they agree with statements like: "I can think of many times when I persisted with work when others quit." The survey's three measures of persistence are all on the same Likert scale (1–5) and measure the same latent variable, persistence. As such we chose to estimate a principal component as a more comprehensive measure of persistence. Because there were more than 2 measures for persistence, and to form a more comprehensive measure of the latent variable (persistence) we formed a single principal component from these three similar attitudinal measures. The other measures of psychcap are on fundamentally different scales (e.g. yes/no, 0–100) and themselves form independent measures of psychcap. The same can be said for the other measures of the other forms of capital: they did not lend themselves to principal component analysis and were already well-researched within the existing body of literature. For example, the measures of the traditional forms of capital (years of schooling, gender, amount of capital in cedis, etc.) can be found as is in the existing body of literature ([Berge et al., 2014](#)). The same can be said about the measures of newer forms of capital (Cantrell's ladder, Raven test). These are on unique scales and well-established ([Behrman, 2010](#); [Bruns et al., 2022](#)).

In the end, to construct our measure of persistence, we therefore formed an index using factor analysis with principal components. We used the resulting first principal component. The scale reliability coefficient (Cronbach's alpha) is 0.64 ([Taber, 2018](#)). This is higher than the factor loading cut-off = 0.50 suggested by [Hair et al. \(1998\)](#).

Optimism is measured using a "Cantril's ladder" which is sometimes called a "self-anchoring" measure of optimism and quality of life. Respondents are asked where they see themselves in 10 years relative to where they anchor themselves today by using the analogy of a ladder ([Cantril, 1963](#)). The ladder is a consistently used measure of optimism within literature ([Bjørnskov, 2010](#); [Gallagher et al., 2013](#)).

Our last measure of psychological capital is an estimate of the respondent's willingness to take risks. The instrument is straightforward, asking respondents to indicate on a scale of 1–10, "Do you take risks, or do you try to avoid them?" Similar instruments have been used in psychological capital research ([Naldi et al., 2007](#)).

To measure an owner-operator's *cognitive capital*, we use two measures: Raven's progressive matrices and the respondent's self-assessment of their own polychronicity. Raven's progressive matrices ([Cattell, 1971](#); [Raven, 1998](#)) are a set of nonverbal questions designed to measure a person's cognitive intelligence. The test comprises of 12 standardized questions where the individual is asked to identify the next logical pattern given a sequence of patterns, a type of question common to most IQ tests. Respondents were given 5 min and some instruction to complete the test. The measure has been shown to be reliable in an African setting ([Rushton et al., 2004](#)) and used to measure cognitive abilities of entrepreneurs ([Gielnik et al., 2012](#)).

In assessing the importance of multitasking, respondents were asked about their level of agreement with the following statement: "I like to juggle several activities at the same time." This question has been shown to be reliable as part of a 4-item scale measure of a polychronic attitude index in [Kaufman et al. \(1991\)](#). The measure also been used in research ([Hecht and Allen, 2005](#)).

Control variables

Panel data allows us to control the variation which occurs across time and between the individual respondents. We control for business cycles, different sectors, and the owner's ethnicity and religion ([Payne et al., 2011](#)). The survey undertaken by [Fafchamps et al. \(2014\)](#), took place over 4 years, so we include time dummies to control for business cycle effects.

Second, there are likely to be variations in the different business sectors. To conserve space, we do not report these time and sector results, although it is worth noting that among all the sectors (construction, food, beauty, manufacturing, sewing, repair, trade, and “other”), we find the trade sector generates the most revenue while the manufacturing and construction sectors are the most profitable. Third, we control for firm age.

Finally at the individual level, we control for variables, such as, respondents age, marital status, ethnicity, and religion. “Religious majority” is a dummy variable taking on a value of 1 if the respondent self-reports as Christian. “Ethnic majority” is a dummy variable measuring whether an entrepreneur is part of the Akan ethnic majority or not. As part of the original [Fafchamps et al. \(2014\)](#) study, every one of the respondents randomly received either an in-kind form of aid or purely cash aid. This is also controlled for but is insignificant in our results. The results from the time dummies and the category of business activities are available upon request.

Empirical analysis

The dependent variables in the regressions are the measures of success. These measures are *total sales*, *productivity*, and *total profits*. Using these dependent variables, we run 3 sets of regressions (for a total of 9 regressions) to compare and examine the separate impacts of the traditional types of capital (restricted model 1) and alternative types of capital (restricted model 2) before combining them into one full regression (integrated model) to see if the explanatory power and predictive efficacy of the integrated model is significantly greater than the two restricted models.

One of our measures of success, *productivity*, is computed as the ratio of the owner’s total sales to their full-effort hours worked. This is a standard measure of productivity; however we also desire to use full-effort hours worked as a measure of motivation in our psychological capital construct. To avoid problems in interpreting the results, we leave out the “motivation” or full-effort hours from our set of independent variables in the set of regressions that have productivity as the dependent variable.

Given the time series component of the data, we ran unit-root tests on the 3 dependent variables to rule out autoregressive relationships. As described in [Choi \(2001\)](#), we implement a Fisher-type panel data unit root test. The resulting inverse Chi-square statistics for the three respective dependent variables are 1,782.69, 1,810.41, and 2,284.54. These all indicate we should strongly reject the null hypothesis that all panels contain a unit root.

We included a time fixed effect and multiple bivariate controls for sectors, which causes the inclusion of individual fixed effects to result in a level of collinearity that affects the ability to include all the desired measures of capital and controls. The controls themselves (e.g. an individual’s gender, age, ethnicity, religion, etc.) also do well at controlling for individual effects. We therefore assume our individual-level controls will address any omitted variable bias which would come from using ordinary least squares estimation. Also, using cluster-robust standard errors with clustering on the individual respondents helps to avoid any efficiency problems that arise [Rogers \(1994\)](#).

[Table 1](#) presents summary statistics for all our control, independent and dependent variables. The table also presents correlations and their levels of significance between all of the variables. Means are presented in the first column of descriptive statistics in [Table 1](#). Two means of interest are associated with gender and age, which are 0.61 and 35.99, indicating that 61% of our respondents are female with an average age of 36 years old. The remaining parts of [Table 1](#) show the correlation matrix and levels of significance of the individual correlations. The correlations are fairly low, except for the relationship between our 3 independent variables (revenues, productivity, & profits) and the strong relationship between gender and economic sectors, showing a high level of occupational gender segregation.

Table 1.
Summary statistics

(Part 1)	Variables	Mean	SD	Min	Max	1	2	3	5	6	7
1	Total sales (Ghc)	421.5	642.1	0	7,200	1.00					
2	Productivity (Ghc)	9.36	18.41	0	509.4	0.70	1.00				
3	Profit (Ghc)	100.8	106.6	0	730.4	0.58	0.42				
5	Respondent age	35.99	8.97	20	67	0.05	0.07	1.00	1.00		
6	Firm age	7.46	7.44	0	45	0.04	0.05	0.07	0.49	1.00	
7	Ethnic majority (Akan = 1)	0.27	0.44	0	1	-0.02	-0.05	-0.00	-0.04	-0.06	1.00
8	Marital status (Married = 1)	0.65	0.48	0	1	0.05	0.03	0.03	0.27	0.15	-0.02
9	Religious maj. (Christian = 1)	0.73	0.44	0	1	-0.02	0.03	0.06	-0.00	0.01	0.08
10	Treatment group (Grant = 1)	0.49	0.50	0	1	0.05	0.02	0.05	-0.06	-0.05	0.06
11	Construction sector	0.07	0.25	0	1	-0.02	0.01	0.09	-0.02	0.10	-0.02
12	Food sector	0.21	0.41	0	1	0.05	0.06	-0.02	0.10	-0.05	-0.11
13	Beauty sector	0.09	0.29	0	1	-0.13	-0.11	-0.13	-0.20	-0.09	0.04
14	Manufacturing sector	0.05	0.21	0	1	-0.01	-0.01	0.10	0.01	0.12	0.03
15	Sewing sector	0.13	0.34	0	1	-0.16	-0.11	-0.11	-0.08	-0.09	-0.02
16	Repair sector	0.06	0.24	0	1	-0.07	-0.05	-0.01	-0.02	0.07	0.02
17	Trade sector	0.38	0.49	0	1	0.20	0.13	0.09	0.11	0.11	0.06
18	Gender (Female = 1)	0.61	0.49	0	1	-0.02	0.01	-0.15	0.09	-0.16	-0.08
19	Years of education	8.83	3.54	0	21	0.06	0.03	0.14	-0.10	-0.07	0.10
20	Business knowledge	4.33	0.81	1	5	0.15	0.11	0.16	0.02	0.11	0.09
21	Total capital stock (Ghc)	498.9	948.9	0	15,235	0.24	0.10	0.23	0.04	0.04	0.12
22	Regular saver	3.57	1.07	1	5	0.11	0.08	0.10	-0.04	-0.04	0.15
23	Use a susu daily	2.47	76.62	0	5,000	-0.00	-0.00	-0.01	0.02	-0.02	-0.01
24	Family in same sector	0.16	0.37	0	1	0.09	0.07	0.07	0.04	0.17	-0.08
25	Frequently talk to customers	8.05	11.68	0	100	0.14	0.06	0.14	-0.01	-0.05	0.02
26	Trust in the community	2.69	1.30	1	5	-0.11	-0.08	-0.10	0.04	-0.01	-0.02
27	Full effort hours	50.46	22.97	0	144	0.12	-0.16	0.08	0.02	0.01	0.09
28	Persistent work pc	0.73	0.15	0.16	0.99	0.04	0.04	0.09	-0.04	0.01	0.05
29	Five-year optimism	7.71	1.99	1	10	0.13	0.08	0.09	0.04	-0.01	0.07
30	Willingness to take risks	0.60	0.22	0.00	0.99	-0.04	-0.05	-0.08	-0.03	-0.01	0.07
31	Raven test	3.38	2.06	0	11	0.06	0.02	0.09	-0.12	-0.08	-0.05
32	Polychronicity	2.48	1.03	1	5	0.06	0.08	0.07	-0.06	-0.05	0.01

(continued)

Part 2)		8	9	10	11	12	13	14	15	16
Variables										
9	Religious maj. (Christian = 1)	0.02	1.00							
10	Treatment group (Grant = 1)	-0.03	-0.04*	1.00						
11	Construction sector	0.03	0.06**	-0.03	1.00					
12	Food sector	-0.03	0.02	0.04*	-0.13***					
13	Beauty sector	-0.03	-0.04*	-0.05**	-0.09***					
14	Manufacturing sector	0.06***	0.00	0.08***	-0.06***		1.00			
15	Sewing sector	-0.08	-0.09	-0.03	-0.10***		-0.09***		1.00	
16	Repair sector	-0.04*	0.05	0.01	-0.07***		-0.09***		-0.10***	
17	Trade sector	0.07***	0.02	-0.00	-0.20***		-0.26***		-0.31***	
18	Gender (female = 1)	0.05	0.03	-0.01	-0.32***		0.27***		-0.22***	1.00
19	Years of education	-0.04*	0.14***	0.03	0.05***		0.04*		0.10***	0.09***
20	Business knowledge	0.04*	0.14***	-0.01	0.06***		0.01		-0.13***	0.08***
21	Total capital stock (GHC)	0.06***	0.03	0.03	-0.01		0.06***		0.01	0.04*
22	Regular saver	0.02	0.06***	-0.01	-0.01		-0.04*		-0.04*	-0.04*
23	Use a susu daily	-0.03	-0.03	-0.02	-0.01		-0.01		-0.01	-0.01
24	Family in same sector	0.02	0.01	0.01	0.07***		-0.08***		-0.07***	-0.03
25	Frequently talk to customers	0.01	-0.01	-0.03	-0.07***		0.05**		-0.09***	0.00
26	Trust in the community	0.07***	0.02	-0.05**	0.01		-0.03*		0.11***	-0.14***
27	Full effort hours	0.07***	0.02	0.02	-0.12***		0.06**		-0.04*	-0.01
28	Persistent work pc	0.01	0.10***	-0.01	-0.01		-0.00		0.00	-0.05**
29	Five-year optimism	0.10***	-0.02	0.02	-0.08***		-0.01		0.03	-0.04*
30	Willingness to take risks	0.01	-0.03	0.12***	0.05***		-0.04*		0.05***	0.04*
31	Raven test	-0.05***	-0.02	0.04*	0.01		-0.04*		0.05**	0.08***
32	Polychronicity	-0.08	-0.00	0.08***	-0.00		0.00		-0.09***	0.05

(continued)

Table 1.

Table 1.

(Part 3)		17	18	19	20	21	22	23	24	25
Variables										
18	Gender (Male = 1)	0.12 ^{****}	1.00							
19	Years of education	-0.02	-0.24 ^{****}	1.00						
20	Business knowledge	0.04 [*]	-0.04 [*]	0.06 ^{***}	1.00					
21	Total capital stock (GHC)	0.03	-0.17 ^{****}	0.17 ^{****}	0.08 [*]	1.00				
22	Regular saver	0.09 ^{****}	-0.01	0.07 ^{****}	0.11 ^{****}	0.09 ^{****}	1.00			
23	Use a susu daily	0.02	-0.02	-0.04 [*]	-0.05 ^{**}	-0.00	-0.02	1.00		
24	Family in same sector	-0.01	-0.04 [*]	-0.05 ^{**}	-0.03	-0.00	-0.05 ^{**}	-0.01	1.00	
25	Frequently talk to customers	0.02	0.03	0.05 ^{**}	0.03	0.08 ^{***}	0.02	-0.01	-0.03	1.00
26	Trust in the community	0.01	0.01	-0.00	-0.13 ^{****}	-0.02	0.16 ^{****}	0.02	-0.03	-0.08 ^{****}
27	Full effort hours	0.16 ^{****}	-0.05 ^{**}	0.03	0.07 ^{****}	0.20 ^{****}	0.05 ^{**}	0.00	-0.05 ^{**}	0.11 ^{****}
28	Persistent work pc	0.02	-0.05 ^{**}	0.13 ^{****}	0.19 ^{****}	0.03	0.35 ^{****}	-0.07 ^{****}	-0.02	0.01
29	Five-year optimism	0.02	0.02	0.16 ^{****}	0.02	0.15 ^{****}	0.18 ^{****}	0.02	0.07 ^{****}	-0.11 ^{****}
30	Willingness to take risks	-0.03	-0.16 ^{****}	0.04 [*]	-0.01	0.08 ^{****}	0.22 ^{****}	0.03	-0.05 ^{**}	-0.19 ^{****}
31	Raven test	-0.07 ^{****}	-0.10 ^{****}	0.15 ^{****}	-0.06 ^{**}	0.09 ^{****}	-0.05 ^{**}	-0.01	0.04 [*]	0.06 ^{****}
32	Polychronicity	-0.08 ^{****}	0.01	-0.01	-0.01	-0.02	-0.03	-0.01	-0.01	0.13
(Part 4)										
Variables		26	27	28	29	30	31	32		
27	Full effort hours	0.04 [*]	1.00							
28	Persistent work pc	0.04 [*]	0.05 ^{**}	1.00						
29	Five-year optimism	0.08 [*]	0.13 ^{****}	0.04 ^{**}	1.00					
30	Willingness to take risks	0.11 ^{****}	0.12 ^{****}	0.09 ^{****}	0.29 ^{****}	1.00				
31	Raven test	-0.116 ^{****}	0.06 ^{****}	0.05 ^{**}	0.05 ^{**}	0.11 ^{****}	1.00			
32	Polychronicity	-0.22 ^{****}	0.00	0.01	-0.19 ^{****}	-0.04 [*]	0.04 [*]	1.00		

Note(s): ^{*} $p < 0.05$, ^{**} $p < 0.01$, ^{****} $p < 0.0001$

Source(s): Authors' own work

Table 2 shows the results of restricted regression model 1, which uses the traditional sources of capital only (financial, human and social). Table 3 shows the results of restricted regression model 2, which uses the more recently researched sources of capital only (psychological and cognitive). Table 4 shows the results of the integrated model, which uses all our capital constructs.

Each of the three regression models uses three dependent variables. The first column has *total sales* as a dependent variable, the second column has *productivity*, the third column has *total profits*. We present the regression results in sequence: restricted model 1, restricted model 2, and then the unrestricted model that includes the newer types of capital. We perform a Wald test to determine if the full, unconstrained model is preferred.

		(1) Total sales b/se	(2) Productivity b/se	(3) Total profits b/se
Control variables	Respondent age	-3.491 (2.18)	-0.021 (0.07)	-0.340 (0.35)
	Firm age	5.146 (3.22)	0.130 (0.09)	0.756* (0.44)
	Ethnic majority	-74.149* (43.45)	-2.834*** (0.99)	-12.183* (6.93)
	Marital status	46.578 (37.53)	0.631 (0.95)	1.862 (6.25)
	Religious majority	-87.115 (57.17)	-2.040 (1.37)	4.159 (6.54)
	Treatment group	35.531 (39.20)	0.703 (1.02)	6.331 (5.97)
Human capital	Gender (female = 1)	-120.824 (73.84)	-0.775 (1.71)	-23.655** (11.15)
	Years of education	11.857** (4.96)	0.314** (0.13)	2.848*** (0.83)
	Business knowledge	97.663*** (19.75)	2.129*** (0.52)	13.518*** (3.37)
Financial capital	Total capital stock	0.144*** (0.03)	0.002*** (0.00)	0.021*** (0.00)
	Regular saver	45.936** (18.84)	1.160** (0.48)	6.289** (2.61)
	Use a susu daily	0.039 (0.04)	0.001 (0.00)	0.002 (0.01)
Social capital	Family in same sector	139.446** (60.83)	2.448* (1.38)	13.944 (8.75)
	Frequently talk to customer	4.896*** (1.76)	0.060 (0.04)	0.991*** (0.29)
	Trust in the community	-38.945** (16.22)	-1.012** (0.40)	-5.938*** (2.29)
	N	3,618.000	3,434.000	3,559.000
	Adjusted R ²	0.182	0.076	0.153
	aic	56,518.786	29,766.942	42,742.966
	bic	56,692.209	29,938.903	42,915.928

Note(s): * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Source(s): Authors' own work

Table 2.
Traditional
independent variables

		(1)	(2)	(3)
		Total sales b/se	Productivity b/se	Total profits b/se
Control variables	Respondent age	-3.284 (2.08)	-0.012 (0.06)	-0.325 (0.34)
	Firm age	8.649*** (3.07)	0.212** (0.09)	1.104*** (0.41)
	Ethnic majority	-13.420 (35.83)	-0.739 (0.81)	-1.636 (6.59)
	Marital status	-2.851 (37.15)	0.129 (0.93)	-4.358 (6.30)
	Religious majority	-69.854 (52.93)	-1.208 (1.26)	5.453 (6.38)
	Treatment group	38.376 (38.83)	0.691 (1.06)	6.879 (5.85)
	Psychological capital	Full effort hours	3.508*** (0.57)	- -
	Persistent work pc	256.228*** (96.08)	5.774** (2.46)	47.014*** (16.30)
	5-year optimism	49.751*** (10.24)	1.307*** (0.32)	6.621*** (1.49)
	Willingness to take risks	-16.657*** (6.38)	-0.296** (0.15)	-4.014*** (0.95)
Cognitive capital	Raven test	15.455** (6.84)	0.287* (0.15)	3.422*** (1.16)
	Polychronicity	43.321** (20.35)	1.635** (0.71)	7.073** (3.14)
	<i>N</i>	4,043.000	3,851.000	3,964.000
	Adjusted <i>R</i> ²	0.118	0.091	0.091
	aic	63,184.439	33,056.211	47,836.048
	bic	63,342.057	33,212.614	47,993.173

Table 3.
New independent
variables

Note(s): * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source(s): Authors' own work

Results

Results of the model using the three traditionally researched sources of capital

Having established that the unrestricted empirical model representing the ICBM is preferred, we now quickly note some of the empirical results of that full model.

The first of our traditional types of capital, *financial capital*, is assessed by three measures. Total physical capital stock and regular savings are both significantly and positively related to all three dependent variables ($p < 0.05$), however the use of *susu* is not significant.

For *human capital*, years of education and business knowledge are significantly and positively related to at least one of three dependent variables ($p < 0.05$). Gender is negatively and significantly related to total profits.

For *social capital*, having family in the same sector is not significantly related to any of the three dependent variables. Frequent communication with customers is significantly related to both total sales and total profits ($p < 0.05$). Trust, on the other hand, was negatively and significantly related to both total sales and total profits at $p < 0.05$ and has a negative and marginally significant relation to productivity.

Results of the model using the two recent types of capital

We also use [Table 4](#) to provide the regression results of the non-traditional sources of capital, the psychological and cognitive types. We assess *psychological capital* using four measures

Microenterprise
performance
amidst
turbulence

(Part 1)

		(1) Total sales b/se	(2) Productivity b/se	(3) Total profits b/se
Control variables	Respondent age	-2.930 (2.16)	-0.001 (0.07)	-0.244 (0.36)
	Firm age	5.885* (3.25)	0.114 (0.09)	0.856* (0.45)
	Ethnic majority	-92.222** (41.51)	-2.990*** (1.03)	-12.762* (6.77)
	Marital status	18.924 (38.37)	0.296 (0.98)	-0.292 (6.25)
	Religious majority	-86.238 (57.57)	-1.894 (1.40)	4.517 (6.54)
	Treatment group	48.664 (40.98)	0.769 (1.15)	9.123 (5.92)
Human capital	Gender (female = 1)	-112.021 (73.05)	-1.528 (1.70)	-27.607** (11.43)
	Years of education	5.870 (4.96)	0.211 (0.13)	1.981** (0.84)
	Business knowledge	88.641*** (19.54)	2.149*** (0.59)	12.515*** (3.49)
Financial capital	Total capital	0.130*** (0.03)	0.002*** (0.00)	0.018*** (0.00)
	Regular saver	42.817** (20.54)	1.232** (0.55)	7.398** (2.88)
	Use a susu daily	0.032 (0.03)	0.000 (0.00)	0.005 (0.01)

(Part 2)

		(1) Total sales b/se	(2) Productivity b/se	(3) Total profits b/se
Social capital	Family in same sector	89.662 (57.63)	1.662 (1.39)	7.397 (8.86)
	Frequent talk to customer	4.466** (1.94)	0.038 (0.04)	0.744 (0.31)
	Trust in the community	-38.419** (17.18)	-0.816* (0.44)	-4.859** (2.31)
Psychological capital	Full effort hours	2.127*** (0.61)	- -	0.340 (0.11)
	Persistent work pc	92.745 (102.42)	0.045 (3.32)	19.333 (17.81)
	Five-year optimism	40.095*** (10.15)	0.471*** (0.17)	5.679*** (1.59)
	Willingness to take risk	-16.871** (7.23)	-0.471** (0.17)	-4.803*** (1.02)
Cognitive capital	Raven test	7.998 (7.77)	0.106 (0.19)	2.556** (1.14)
	Polychronicity	30.416 (21.94)	1.437* (0.82)	5.644* (3.25)
	<i>N</i>	3,497	3,333	3,436
	Adjusted <i>R</i> ²	0.203	0.130	0.182
	aic	54,507.153	28,761.502	41,182.050
	bic	54,716.581	28,969.297	41,390.880

Note(s): * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Source(s): Authors' own work

Table 4.
All the independent
variables

that reflect motivation (i.e. the owner's self-reported number of hours worked in "full effort"), persistence, optimism about the future, and the entrepreneur's willingness to take risks.

As previously mentioned, "full-effort" hours-worked is only included in 2/3 of the regressions. The result of our analysis indicates that hours-worked is positively and very significantly related to both total sales and total profits at $p < 0.001$.

The owner's persistence is NOT significantly related to any of the three dependent variables. The owner's optimism is very significantly and positively related to all three dependent variables at $p < 0.001$. Finally, willingness to take risks is significant but negatively related to the three measures of performance at $p < 0.05$ levels for both total sales and productivity and at $p < 0.001$ for profits.

Cognitive capital is our last measure of the more recently researched sources of capital. We used the cognitive intelligence test (Raven test), along with the entrepreneur's self-reported ability to rapidly switch between various tasks. The Raven test is positively and significantly related at $p < 0.05$ only to total profit. The second of our cognitive capital variables, polychronicity, has positively and marginally statistically significant relationships ($p < 0.1$) to productivity and total profits.

Comparing the traditional and the integrated model

We hypothesize that the explanatory power of our integrated (unrestricted) model (see [Table 4](#)) would be significantly better than that of the traditional (restricted) model (see [Table 2](#)). When comparing the restricted and unrestricted models, we observe that the adjusted coefficient of determination (adjusted R^2) in the regression with total sales as a dependent variable rises from 0.182 to 0.203. The adjusted R^2 in the regression with productivity as the dependent variable rises from 0.076 to 0.13. Finally, the adjusted R^2 in the regression with total profits as the dependent variable rises from 0.153 to 0.182. These changes represent an 11.5% increase in explanatory power of the total sales regression, a 71.1% increase in explanatory power of the productivity regression and a 18.9% increase in explanatory power of the total profits model. The other measures of the models' goodness of fit (Bayesian and Akaike information criteria) consistently show statistically significant increase in the adjusted R^2 .

To see whether these improvements in explanatory power come from statistically significantly different models, we conduct specification tests by treating the restricted regressions as nested in the full, unrestricted regressions found in [Table 4](#). In this way, we can test the hypotheses that the explanatory power of the integrated models is significantly better than the restricted model (model 1). If they are, we can conclude that the full models, which includes the measures of psychological and cognitive capital, are the correct regression models. This result would also support our ICBM framework.

The model specification tests we use are the Wald, likelihood ratio and Lagrange multiplier tests. These tests explicitly treat the variables "Full effort hours," "Persistent work pc," "5-year optimism," "Willingness to take risks," "Raven test" and "Polychronicity" as part of the correct full model which includes all variables. Restricting the coefficients on these newer measures of capital to zero gives us the restricted model in [Table 2](#), which only contains the traditional types of capital. The null hypothesis is that the restricted model is correctly specified. We therefore compare the three regression models in [Table 2](#) to the three regressions in the full models of [Table 4](#). We also use Bonferroni adjusted p -values in the Wald test to correct for the increased probability of rejecting the null (and erroneously concluding significance) which occurs when there are simultaneous hypotheses being tested ([Korn and Graubard, 1990](#)).

[Table 5](#) gives the results of these specification tests in each of the 3 regressions. All of the tests indicate we should reject the hypothesis that the restricted model is the correct one,

concluding that in every case the full model, which includes the psychological and cognitive types of capital, shows significant improvements in explaining the performance of Ghanaian marketplace operators.

In sum, our results indicate that by not including the psychological and cognitive types of capital, previous analyses have made the restrictive assumption that those variables have no impact on total sales, productivity, and total profits. This has the potential of creating an omitted variable bias in the estimated impacts of the traditional types of capital on profits and revenue in previous research. The integrated model is therefore a preferred model.

Discussion

There are several theoretical, research and policy implications which emerge from these results. First, our study confirms our thesis and suggests that compared to the traditionally researched capital-based models, the predictive efficacy of an integrated capital-based model (ICBM) that combines the three traditional capital theories (financial, human, and social) with the more recently referenced psychological and cognitive capital theories has better explanatory power. The conclusion then strongly suggests that the traditional sources of capital that have been found in existing literature should not be used without also incorporating the newer forms of capital.

Our ICBM is reflected in [Figure 1](#). In explaining microenterprise success in an emerging economy multiple types of capital should be used (i.e. financial, human, social, psychological and cognitive capital). We obtain a better understanding of factors leading to firm performance by including psychological and cognitive capital than without. Furthermore, a traditional measure of human capital, years of formal education has been significantly associated with firm performance. In our results, we show that years of education is robust when looking at what determines profits, but once a fully specified model the relationship between education and revenues falls out. In this way, traditional capital matters less, at least with respect to revenue and productivity, than we might have thought without including traditional forms of it.

Second, the ICBM appears consistent with several recent articles examining small business operators in Ghana ([Knack and Keeffer, 1997](#); [Moulik *et al.*, 2019](#); [Newman and Alvarez, 2022](#); [Shantz *et al.*, 2018](#)). This literature highlights the potential performance advantages that accrue when characteristics reflective of both psychological and cognitive capital are working in concert with the traditional capital constructs.

For example, [Newman and Alvarez \(2022\)](#) highlight “bounded rationality” normative constraints that women traders in Kumasi faced. This societally prescribed “glass ceiling” that women traders face can be overcome, in part by cognitive capital characteristics that will enable going out of prescribed roles to question the existing system. In an institutionally constrained environment, characteristics associated with psychological and cognitive capital

	(1) Total sales	(2) Productivity	(3) Total profits
Wald (F-stat)	15.31	35.07	20.11
<i>p</i> -value	0.00	0.00	0.00
Likelihood-ratio test (Chi-sq)	91.54	206.08	119.74
<i>p</i> -value	0.00	0.00	0.00
Lagrange multiplier test	90.35	199.84	117.67
<i>p</i> -value	0.00	0.00	0.00

Source(s): Authors' own work

Table 5.
Model
specification tests

enable business operators to thrive by creating “institutional slack” (Shantz *et al.*, 2018). For example, despite these substantial institutional constraints, some market women have found ways around strict domestic institutions by finding ways to internationalize their trade (Darkwah, 2002, 2016, 2021).

Fourth, the results of ICBM using our unrestricted and integrated model are consistent with research undertaken in other emerging economies (e.g. Biggs and Shah, 2006; Chandler and Hanks, 1998; Fatoki, 2011; Honig, 1998) confirm the utility of the traditional financial, human, and social types of capital in explaining the performance of microenterprise operators. Our detailed results provide us with a clearer understanding of the relative impact of these types of capital on the performance of microenterprise operators. However, the results also show that the inclusion of psychological capital and cognitive capital is imperative. In fact, traditional measures of education could be mediated by these newer forms of capital. Further research is needed to fully determine if that is the case.

Fifth, the results of ICBM using our unrestricted and integrated model also confirm the utility of psychological and cognitive capital in explaining the performance of microenterprise operators. Our findings are consistent with studies that suggest that high levels of motivation and optimism associated with *psychological capital* are associated with the performance of small businesses (Luthans *et al.*, 2004, 2006; Rauch and Frese, 2007).

However, a very intriguing and counter-intuitive result was that our findings show that business operators who were more willing to take risks were not as successful. This seems counter to existing literature, primarily in the more developed contexts that suggest risk taking is associated with greater firm performance (Tipu, 2017). Seen from the institutional difference hypothesis described above, we surmise that given the high level of turbulence, relative to scarcity and high cost of capital, higher risk taking would result in lower profitability.

With respect to cognitive capital, our study shows that, consistent with several studies, cognitive intelligence, and abilities to switch tasks is related to the profitability of microenterprises in the Ghanaian marketplace (Mitchell *et al.*, 2002, 2011). The fast pace of the marketplace setting requires business operators to consistently make rapid decisions and be prepared to quickly switch tasks when needed.

Sixth, it is important to fully understand the turbulent and resource scarce environment that these microenterprises in emerging economies operate within (Julian and Ofori-Dankwa, 2013; Ofori-Dankwa and Julian, 2013). Microenterprises in such economies play vital societal roles not only in being major engines for job creation, but also for substantially aiding in the economic development of the nation and poverty reduction (Bradley *et al.*, 2012; Vial and Hanoteau, 2015). Consequently, we therefore advocate for further research to design and implement governmental policies that help improve psychological and cognitive forms of capital among the microenterprise owner-operators in emerging economies. Such policies, if successfully designed and implemented, will help microenterprises in emerging economies to not only survive but grow, expand and innovate. Even more important is the recognition that the success of these microenterprises in emerging economies forms the backbone for national economic development of these emerging economies.

We also suggest that designing and implementing these governmental policies could benefit from looking at the study by Olorunshola and Odeyemi (2023). While the Olorunshola and Odeyemi (2023) study specifically focuses on ways that traditional forms of capital can be incorporated into government policies, extending their work to address government policies that enhance and strengthen the psychological and cognitive capital of business operators in emerging economies should be encouraged.

The psychological and cognitive capital emphasis that this study is highlighting could help inform and improve programs that non-profit organizations, such as Makola Institute in

Ghana, provide to microenterprise owners (Owusu, 2020). We hope the conclusions of this paper can help motivate further research on microenterprise policies and spur pilot projects within this region and others with similar high-potential growth prospects.

Finally, there are some limitations to our study that we wish to acknowledge. The data that this study uses was obtained in the marketplace in Accra and Tema, an urban setting in Ghana. This therefore limits the generalizability of these findings with respect to more rural settings in Ghana. Second, Ghana, is a relatively small emerging country and the generalizability of our results may be limited given substantive historic, cultural and economic differences between different emerging economies. An additional limitation the reader should consider is that measures of the more abstract or latent forms of capital may not always provide information that fully aligns with the concept we seek to measure. These are often challenges inherently present in this type of research. Here we rely on the previous literature, cited above, as guides with the intention of looking more at the relationships between the measures rather than seeking to improve the measures themselves.

A further direction suggested by the results would be to examine the interactions between traditional and new forms of capital. For example, as was suggested above, cognitive and social capital may enhance each other's impact on firm performance. There may be mediating effects occurring between the forms of capital. A structural equation modeling technique could be employed to explore these interactions. However, the effects may also be complementary, in which case their interaction may be what is driving some of these results. Another way to think about the relationships would be to consider one form as being built up from another form of capital as in Bourdieu (1986). As mentioned below, an extension of this research would be to explore these mediation and interaction effects. A new survey with this in mind would be ideal.

The results of our empirical analysis using our integrated capital-based model also appear consistent with the Boso *et al.* (2013) study. This study (2013) examined firm performance in several emerging economies, including the Ghanaian context, and suggested that firm performance is enhanced when some of the cognitive capital characteristics associated with entrepreneurial orientation (e.g. opportunity taking) are concurrently combined with social capital characteristics associated with market orientation (e.g. firm's orientation to customers, and competitors) and network ties. Moreover, these results indicate that further funding for survey research in the Makola and Tema marketplaces can be incredibly warranted. Such a survey could be geared to producing data that can be used in a structural equation analysis.

In sum, this research draws on a wide range of existing theories to try to bring them together into what we describe as the integrated capital-based model (ICBM). This is especially important in the context of developing and emerging economies. The impact of psychological and cognitive forms of capital in this setting highlight the importance for governments and non-profit organizations to maintain an more comprehensive and integrated view of capital when seeking ways to further the development of microenterprises.

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