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Household Business Performance in Ghana

The Role of Personality Traits and Gender Role Attitudes

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Abstract

The informal sector contributes significantly to the total output and employment of low-income countries. While women-owned businesses feature strongly in these informal environments, they are generally characterized by low productivity. This paper explores how household business performance may be influenced by owners' personality traits and their attitudes toward gender roles. Using multi-topic household survey data collected in two regions of Ghana, the results show that among female business owners, being organized is an important determinant of business success, while among male business owners, power motivation and tenacity are important factors. However, increasing traditionalism tends to dampen the effects of these personality traits for both genders. Other factors that are positively correlated with women-owned business performance include business registration, separating expenses for home and business purposes, ownership of a business bank account, use of social media, as well as urban location of the business. For men-owned businesses, the results show that those that are located in traditional markets, have bank accounts, and use literate employees in their operations tend to perform better. The findings imply that policies that aim to boost women-owned business performance need to consider the main barriers, especially attitudes toward gender roles, that may determine how businesses operate in these settings. The results also suggest the importance of soft skills to boost business performance among men- and women-owned businesses.

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Household Business Performance in Ghana: The Role of Personality Traits and Gender Role Attitudes

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1. Introduction

The rapidly expanding informal sector in most low-income countries (LICs) has led to a burgeoning interest in the determinants of its performance in particular, and contributions to economic growth, more generally. The potential contribution of the informal sector has received less policy attention in the past largely due to the modernization theory, which posited that as a result of underproduction and backwardness, it would eventually disappear with the growth and development of a nation (Geertz, 1963). This notion is yet to materialize and in a number of LICs, the informal economy continues to grow stronger and contribute immensely to overall economic growth. In Ghana and in many parts of the LICs, small businesses have been acknowledged as an important engine of economic growth (Knoor, 2011; Madichie and Gallant, 2012).

Over the past two decades, the literature on female entrepreneurship and women-owned businesses, particularly in LICs, has been growing (De Vita et al., 2014), generating interest on how to boost their performance and expansion. While determining factors have typically featured economic elements such as education, access to credit and other infrastructures (Abor and Quartey, 2010; Owoo et al., 2019; Jennings and Brush, 2013; Welter and Smallbone, 2011; Akehurst et al., 2012), there is a growing awareness that women entrepreneurial initiatives are rooted in a complex cultural environment (Brush et al., 2018; Bullough et al., 2022). Indeed, culture and underlying gender norms can play a pivotal role in the success or failure of informal businesses (Anambane and Adom 2019; Khandelwal and Sehgal 2018). Additionally, barriers and constraints experienced by women entrepreneurs often tend to be gender specific and stem from cultural values, norms, and customs (Anambane and Adom 2019; Khandelwal and Sehgal 2018). For instance, Wang et al (2020) find that women entrepreneurs with traditional gender norms find it more difficult to seek and access external financing for their businesses.

There are, however, other arguments in favor of a more complementary relationship between traditional norms and the performance of women's businesses (Newburry et al. 2008; Ruderman et al. 2002). Individual qualities such as being nurturing, cooperative, affectionate, caring, empathetic, diplomatic, among others, may place women in advantageous positions to build good business teams and attain entrepreneurial success (Eagly and Carli 2003; Ruderman et al. 2002).

While a myriad of recent studies has focused on understanding determinants of women-owned business growth and gender-differences in enterprise performance, studies exploring the connections between women business growth and gender role attitudes and personality traits are limited (Gundry et al., 2002; Yadav and Unni, 2016), with no such study on Ghana. This paper explores the drivers of gender differences in small business performance in Ghana, with a focus on how individual gender role attitudes and personality traits affect these outcomes. First, we explore differences in enterprise performance among formal and informal (registered and unregistered) businesses, and between male- and female-owned businesses in Ghana. Second, we perform a taxonomy of male- and female-owned formal and informal business performance with a focus on the type (paid vs unpaid) and number of workers employed in each type of enterprise.

Third, using regression analyses, we examine the determinants of business performance in the absence of personality traits and gender role attitudes. Fourth, we explore the effect of gender role attitudes and personality traits on these performance indicators, both with and without household, individual and geographic controls. This allows for using personality groups to test the importance of non-cognitive skills on small business performance in Ghana. Finally, we examine the interaction effects of gender role attitudes and personality traits on business performance indicators, controlling for household, individual and geographic factors.

Ghana provides an interesting context for this study. According to the Ghana 2022 Annual Household and Income and Expenditure Survey (AHIES, 2022), eight of every ten individuals 15 years and older are employed in the informal sector, with females having relatively higher proportions (about 88%) compared to males (about 80%). In addition, Ghana records one of the highest rates of female entrepreneurship in the world, with over 70% of small and medium enterprises (SMEs) owned and operated by women. According to Amu (2006), women manage over 80% of all small informal businesses in Ghana.

Despite the influences of Western cultures, higher education and international exposure, Ghana is still predominantly patriarchal and there are distinct roles for men and women, with women expected to marry, bear children, keep the home tidy, care for young children and the elderly; men are chiefly expected to work, earn, and provide for family needs (IDS, 2016; Amoakohene, 2004; Sikweyiya et al., 2020). Studies show that although Ghanaian women are impressively engaged in this small business space, they often have worse entrepreneurial outcomes than their male counterparts (Fafchamps et al., 2011), a characteristics common in other LICs (Aterido and Hallward-Driemeier, 2011; Bardasi et al., 2011). Reasons for this unequal performance typically include women's low level of human capital, low capital stock, higher concentration in low-performing activities, and limited ability to access financial services (Aterido et al., 2011; Mead and Liedholm, 1998; Bardasi et al., 2011).

The paper uses a mix of descriptive and econometric analyses. Empirical analyses involve the use of ordinary least squares regression models to determine the associations between gender role attitudes and personality traits on men and women's businesses in Ghana. We find that while personality traits are significantly and positively associated with business performance, the additional effect of being traditional serves to negate or reverse these findings among both men and women. The remainder of the paper is structured as follows: In Section

2, we present a review of relevant literature. Section 3 presents the data used in the analyses, describes the main study variables, as well as provides descriptive statistics of these variables. Section 4 presents the empirical approach and discusses the main regression results, while Section 5 provides concluding remarks, with associated policy applications of the study.

2. Literature review

Gender norms can be described as generally perceived ways on how women and men should act and/or function in society. They are the behaviors, attitudes, and actions that a community prescribes as appropriate or inappropriate for men and women, according to set societal roles, cultural norms and traditions. They can also be described as the social rules and expectations that keep the gender system intact (Cislaghi and Heise, 2019). These are often internalized at an early age and can culminate in gender stereotyping later on (Cherie Blair Foundation for Women (CBFW, 2021)). Although some norms may be positive, others can encourage inequalities, with negative implications for various social and economic outcomes. For instance, norms that promote "double work duty" among young women reduce opportunities for their human capital development, given their culturally assigned domestic duties.

There are certain norms surrounding business engagement as well. Research indicates that entrepreneurship has generally been considered as a predominantly male activity (Bird and Brush, 2002; Bruni et al., 2004), which oftentimes discourages women's entry into this space. According to CBFW (2021), 35% of women in low- and middle-income countries (LMICs) that experienced gender stereotypes in childhood feel incapable of running their own businesses. In addition, 70% of the women reported that gender norms and stereotypes had negative implications for their business performance and how seriously they are taken as business people.

Other studies found supporting evidence that gender role expectations make business accomplishments harder for women, especially through lower access to business capital and fewer social networks (Gupta et al. 2019; Mitra and Basit 2019). In the CBFW (2021) report, half of the women entrepreneurs surveyed reported that family members and friends encouraged them to devote more effort to domestic and care work in their homes. Where women do run their own businesses, they often align with societal expectations that these should be small-scale and entail minimal risk (Adom, 2015; Croson and Gneezy, 2009).

In Madagascar, Nordman and Vaillant (2014) investigated whether gender-differentiated allocations of time within the household, based on gender norms, cause women to allocate their time sub-optimally to their businesses. They found that particularly for home-based businesses, domestic chores negatively affect business efficiency. Another notable exception is a recent work by Anambane and Adom (2019) which explores the role of culture and gender stereotypes on growth of women operated businesses in Ghana. Using qualitative data from 20 women entrepreneurs from the Upper East region of the country, the authors find that entry into entrepreneurship as well as the kinds of businesses pursued are affected by gender stereotypes. Gender stereotyping influences the size and sectors of women's businesses, with women operating small businesses in low value-added sectors like retail and services. The authors explain this as a cultural expectation of women showing modesty and humility in all endeavors, including business. It should be noted, however, that entry into other sectors like manufacturing may likely be affected by underlying skill sets and financial capabilities.

In addition to the effects of gender and social norms, there is a growing body of economics literature on the role of personal initiative on business outcomes (Dal Bo et al., 2013; Callen et al., 2015), a subject that has been explored for much longer in the field of industrial psychology. Burger (2010) defines personality traits as characteristics originating from within a person that define their individuality. Zhao (2022) found personality - income

correlations using data on Chinese start-ups. Hu et al. (2019) also find that relationship-oriented personal initiative increased entrepreneurial intentions. According to Frese (1997), although not identical, personal initiative and entrepreneurship are related and both imply the use of constructive, creative and active strategies to overcome challenges in cases where they occur. This suggests an empirical connection between personal initiative and entrepreneurial performance. Indeed, recent work by Amankwah et al. (2024) highlights the important role played by both gender role attitudes and personality traits in shaping individuals' decisions on labor market participation and employment choices. Crucially, the authors establish that the effects of personality traits tend to be mitigated or even reversed in the presence of greater traditionalism.

3. Data and descriptive statistics

3.1. Data

Data from the 2022 Ghana Informal Sector Measurement Study (GISMS) was used for the analyses in this paper. The GISMS is a multi-topic household survey with detailed information on household ownership of non-farm enterprises and other household, individual (including personality traits and gender role attitudes), and geographic characteristics. The GISMS adopted a list-based, multi-stage sampling approach to select respondents from two regions in Ghana – Ashanti and Northern. In the Ashanti region, the Kumasi Metropolitan Assembly and six surrounding municipalities were purposively selected, while in the Northern region, the Tamale Metropolitan Assembly and all districts that are within 40 kilometers from the center of Tamale were also purposively selected. Following the purposive selection of the districts, municipalities and metropolitan areas, 67 Enumeration Areas (EAs) were selected at random (using probability proportional to size (PPS)) in each region in the first stage. A full household

listing exercise was then conducted in each of the randomly selected EAs, followed by the systematic random selection of 15 households (2,010 in total) to be included in the main survey. Of the 2,010 households interviewed, 1,156 of them owned and operated non-farm enterprises, with about 1 – 4 enterprises per household. This gave a total of 1,180 non-farm enterprises.

The GISMS also randomly selected up to four adults 15 years old or older in each household to provide information on personality traits and gender role attitutes, with a total of 2,652 individuals responding. Given the specific objective of examining the linkage between personality traits, gender role attitudes and business performance, we restricted the sample further to only those businesses that the owner also provided all needed information on personality traits and gender role attitudes. This led to an analytical sample of 861 businesses, which is used for most of the analyses.

3.2. Definition and construction of main variables

Table 1 shows the definitions and construction of variables used in the analyses. We measure business performance in two ways: labor productivity (measured as ratio of total revenue/sale to total number of workers, including household workers) (Martins, 2021); and profits in the last month of operation (McKenzie, 2017). Each outcome variable was winsorized at the top 1% to deal with outliers. Although it may be argued that neither of these measures, taken alone, represents a perfect, universally agreed upon measure of small business success, together, they provide a fairly broad picture of business performance.

The main explanatory variables of interest are the measures of business owners gender role attitudes and personality traits, which were administered to upto four randomly selected men and women in each household. Five Likert scale response options were used – strongly disagree, disagree, neutral, agree, and strongly agree. The gender role attitudes index was constructed in four steps. First, all responses were recoded so that higher values correspond to

more traditional beliefs. Second, z-scores were generated for each variable entering the index using the mean and standard deviation of that variable. Third, means of z-scores were generated, followed by an index using the means of these z-scores. Finally, the index was standardized to take a value between 0 and 100 for the gender role attitudes, with higher z scores indicative of more traditional inclinations.

Following Laajaj and Macours (2017), nine personality groups were constructed using 5-point Likert scale responses to 28 questions on personality traits. Each personality group is a simple average of all related traits. See Table 1 for the personality traits questions that fall under each personality group.

3.3. Descriptive results

Table 2 provides descriptive statistics of the outcome, main explanatory and control variables, both for the pooled and the gender-disaggregated sample. The table shows that on average, men-owned businesses appear to be significantly more productive than women-owned businesses; men-owned businesses generate monthly revenues averaging Gh¢2,355 per worker, compared to Gh¢1,515 for women-owned businesses. In addition, men-owned businesses make about Gh¢738 more monthly profits than women-owned businesses.

Male business owners appear to hold more traditional views than their female counterparts, consistent with Larsen and Long (1988) and Brewster and Padavic (2000). We also observed from the table that there are no significant differences between men and women with respect to impulsiveness, good organisation, power motivation, tenacity and high achieving capabilities. Male business owners however appear to have greater work centrality, locus of control and optimism, compared to their female counterparts, while women business owners tend to have greater polychronicity, compared to men.

Looking further at the gender-disaggregated results, we see that men make up a third of business owners in the sample. The average age of business owners was 41 years, with women being almost two years older than men, generally. About 87% of men and women business owners have had at least a senior secondary school education, while significantly higher number of employees of male-owned businesses are literate. Although a majority of business owners in the sample are married, we observe that more women-business owners are either single, separated, widowed or divorced. A substantial proportion of women business owners are from poor households, lending credence to the general view that the main motivation for women engaging in non-farm family business activities in LICs, including Ghana, is a need to survive (Benzing and Chu, 2009; Jamali, 2009; UNIDO, 2001).

We see further from Table 2 that, about 29% of all businesses have been formalized (i.e., either registered with the Registrar General Department, Department of Cooperatives, District Assemblies, or the Ghana Revenue Authority), with a higher proportion being men-owned businesses (42%). On average, the sampled businesses have been operating for 9 years, with more than 40% of them operating from home, a characteristics more common with women-owned businesses. In addition, more than 20% of the businesses are mobile, with no fixed location of operation.

A substantial share of the business owners have separate accounts devoted to their busineses, a critical indicator for business formalization. About 42% of male and 21% of female business owners have opened independent bank accounts for their businesses. More male (44%) than female business owners (21%) have had prior experience working as apprentices in the same line of work as their current businesses.

The adoption of social media platforms such as WhatsApp, Facebook, TikTok, etc. for business operation is less prevalent in the study area. The data shows that only 27% of businesses use social media in their operations, with a significantly lower proportion of use

among women-owned businesses (19%). Membership of business associations/cooperatives is less common among the sampled businesses, with only 5% and 11% of women- and men-owned businesses, respectively, belonging to associations. The data also shows that 32% of businesses serve as subsistence provision to household members; this practice is more prevalent in women-owned businesses (39%).

Table 3 presents the same set of controls by registration status of businesses in the study area. Registered businesses are considered formal, and informal if otherwise. The results show that formally registered businesses appear to perform significantly better than informal types. Although there are no differences in gender role attitudes held by owners of formal and informal businesses, informal business owners appear to have more positive personality traits with significantly higher locus of control. Formal busineses appear to be headed more by males (50%) than informal businesses, and owners of registered businesses are generally more educated, with more literate employees.

Business owners who have registered their businesses are more likely to have wealthier backgrounds and appear to have also been in business longer. Unregistered businesses are more likely home-based or mobile, while more registered businesses are found in commercial or industrial areas, by the road or at some other fixed location. A higher proportion of formal businesses have separate expenses for home and business, and operate separate business bank accounts. A significantly larger proportion of registered businesses have access to credit, and owners report having past or current training as apprentices. We also observe a substantial proportion of formal business owners use social media in their operations, as well as belonging to business associations. Registered businesses are more prevalent in urban, compared to rural areas, and are also more predominant in the Ashanti, compared to the Northern region.

3.5. Taxonomy of formal and informal business performance

This section provides descriptive statistics on formal and informal businesses in the sample by the type (paid vs unpaid) and number of workers employed, including the gender of the owners. Figure 1 shows the number and types of employees hired to work in men- and women-owned informal businesses. A higher percentage of women-owned informal businesses have no paid workers (90%), compared to men-owned businesses (77%). Five percent of women-owned informal businesses have one paid employee, with a similar proportion having at least 2 paid workers, compared to 15% for men-owned informal businesses with 2 or more paid workers.

The figure also shows a greater use of unpaid workers among women-owned informal businesses. For instance, 16% of women-owned informal businesses use one unpaid worker, compared to 10% for men-owned businesses. In summary, majority (69%) of informal businesses do not hire any employees at all. The situation with formal businesses is different than what is observed among informal businesses. Formal businesses, across ownerships, use more employees – both paid and unpaid. Women-owned formal businesses lag behind in the hiring of paid employees.

Figures 2 and 3 show informal and formal business performance indicators for male- and female- owned businesses by paid and unpaid workers. In Figure 2, we see that informal businesses with paid employees perform better as measured by the firms' total monthly profits. In summary, paid workers appear to be correlated with better business performance across both men- and women-owned businesses.

In Figure 3, similar statistics are presented for formal businesses. Here, business outcomes are better among formal businesses, compared to the situation with informal businesses. The t-tests show that formal businesses have significantly higher revenues per

worker and profits (see Table 3). Gender differences in business performance are also observed. Although men-owned formal businesses have better total sales with zero or one paid employee, women-owned businesses do better with two or more paid employees. In addition, men-owned formal business profits are generally higher than women-owned formal businesses', but among both groups, profits increase with the use of more paid workers.

The results in Figure 2 and 3 show, in general, that business performance tend to improve for both male and female business owners with more paid employees. The situation is different with the number of unpaid workers. Business performance is lower among women-owned businesses, who tend to patronise unpaid workers. For men-owned businesses, however, although total revenue increases slightly with the use of more unpaid staff, profits generally tend to decline.

4. Econometric approach and results

4.1. Estimation strategy

The ordinary least squares (OLS) estimator is employed to estimate the following five regression models.

$$P_i = \mu + C_i\varphi + e_i \quad (1)$$

$$P_i = \mu + G_i\Phi + e_i \quad (2)$$

$$P_i = \mu + G_i\Phi + C_i\varphi + e_i \quad (3)$$

$$P_i = \mu + T_i\lambda + G_i\Phi + C_i\varphi + e_i \quad (4)$$

$$P_i = \mu + T_i\lambda + G_i\Phi + TG_i\psi + C_i\varphi + e_i \quad (5)$$

where P_i is a measure of business performance (labor productivity and profit); C_i refers to household, geographic, business and owner characteristics; G_i refers to gender role attitudes;

T_i refers to personality traits; and TG_i is the interaction between personality traits and gender role attitudes. $\mu, \lambda, \Phi, \psi, \varphi$ are parameters to be estimated, while e_i is the error term. Each specification is estimated for the pooled sample first, and then separately for men- and women-owned business samples.

In the first specification, we estimate the drivers of business performance without gender role attitudes and personality group. The second specification is a naïve model exploring the effect of gender role attitudes on business performance, while the third equation includes household, geographic, business and owner characteristics to the second model. In equation 4, we include both gender role attitudes and personality groups as well as the other controls identified in specification 3. Finally in equation 5, we include interactions of gender roles and personality groups to equation 4.

Although studies of this nature usually require considering endogeneity caused by potential reverse causality (between business performance indicators, and personality traits and gender norms), this is not necessarily the case for the present study. This is because individual gender role attitudes and personality traits are shaped earlier in a person's life prior to the decision to enter into business and the realization of these performance outcomes (Platt and Polavieja, 2016). Although not unalterable, most individuals' gender role attitudes remain remarkably constant through life (Schober and Scott 2012). Given these arguments, it is reasonable to assume that an individual's gender role attitude and inherent personality traits affect business outcomes and not the other way round. That notwithstanding, we conduct robustness checks using the average gender role attitudes of enumeration area, instead of the individual norms, and find that results are largely unchanged.[1]

[1] These results are not presented here but are available upon request.

4.2. Empirical results

This section presents the empirical results from the linear regression models. Following the empirical approach above, we first run regression models using only household, geographic, business and owner characteristics as covariates to understand the drivers of business performance in the absence of gender role attitudes and personality traits (Table 4). We then proceed to estimate six different models (Tables 5 to 10) based on the specifications in the equations above for the two business performance indicators (labor productivity and profits). In each of Tables 5 to 10, we first present the naïve regression that examines the effects of gender role attitudes alone on performance indicators. Second, we examine the effects of gender role attitudes on these performance indicators after controlling for other covariates. Next, we present results that includes personality traits as covariates. Finally in models 4-12, the full set of controls are included, as well as simultaneous interactions of gender role attitudes with each of the nine (9) personality group variables.

4.2.1. Drivers of business performance: Household, business and owner characteristics

Regressions of the determinants of the two business performance indicators are presented in Table 4, separately for the full sample and the gender-disaggregated business owner sample. The importance of demographic factors such as gender, age and education of business owner on business performance in Table 4 is consistent with other prior studies (Islam et al., 2011; Littunen & Virtanen, 2006; Unger et al., 2009; Essel et al., 2019). Age is positively associated with business performance, although the relationship is generally non-linear (Kristiansen et al., 2003). Consistent with existing research, we see from the full sample that women-owned businesses perform worse than men-owned businesses across the two business performance indicators, all things being equal (Fairlie and Robb, 2009; Essel et al., 2019).

Businesses owned by persons in poor households tend to perform significantly lower than those owned by non-poor households. Businesses that have been operating for a longer period of time appear to perform better, though the effect is not statistically significant The location of a business appears to be critical for its performance and consistent with Owoo et al. (2019). Excluding home-based businesses as the reference category, businesses located in traditional market centres, are significantly positively associated with higher productivity and profits, both in the full and the gender-disaggregated results. Other studies have, however, found that women-owned home-based businesses are more productive due to greater flexibility in dealing with childcare and domestic responsibilities (Collins-Dodd et al., 2004).

In women-owned businesses, the ability to keep business and home expenses separate is significantly associated with higher revenues and profits. Ownership of a business bank account is also positively associated with better business performance for both men- and women-owned businesses. Interestingly, while having literate employees is associated with lower labor productivity for men- and women-owned businesses, it is associated with high profits, particularly among men-owned businesses, corroborating findings of Okafor (2017) and Adewuyi and Emmanuel (2019).

The use of social media is observed to be particularly important in women-owned businesses and shows positive, though marginally significant, associations with profits (Jones et al., 2015). Belonging to a business association, particularly for female business owners, is negatively associated with higher productivity and profits. This may be due to activities by these associations that are not directly connected with business growth. Businesses in which household members consume their products are associated with better revenue and profits, compared to those otherwise. This may suggest that own use of products helps business owners to improve on and refine the quality of their products and services. Among women-owned businesses, formalization is particularly important they are characterized by higher

productivity and profits, compared to those that are not registered. With respect to geographic controls, businesses located in urban areas perform better than those in rural areas, especially those owned by women.

4.2.2. Drivers of business performance: Effects of gender role attitudes and personality traits

The effect of gender role attitudes and personality traits on labor productivity and profits of the pooled sample are presented in Tables 5 and 8 respectively. In the naïve specifications, being more traditional appears to hurts business performance. The negative effect is retained even after the inclusion of controls, as well as personality traits. In Table 5, results from the interactions between traditionalism and personality traits indicate that among less traditional individuals, traits such as work centrality (5), power motivation (10) and being organized (11) are positively associated with labor productivity, while polychronicity (7) has a negative significant effect on same. The additional effect of being more traditional, however, removes the significant effects of work centrality, being organized as well as polychronicty, and reverses the effects of power motivation. In Table 8, among less traditional individuals, power motivation and polychronicity are associated with higher and lower firm profits, respectively, although the interaction with gender role attitudes tends to render them insignificant.

The effects of gender role attitudes and personality traits on productivity and profits on women-owned businesses are presented in Tables 6 and 9. In the naïve specifications, the results show that being more traditional reduces business performance. The negative effect is retained even after controlling for household, geographic location, business and owner characteristics, including personality traits (3). In Table 6, we see, however, that among women owners who are less traditional, being organized increases their business productivity, although traditionalism tends to negate this effect (11). We learn additionally that a female business

owner who is organized tends to obtain higher profits. In the presence of increasing traditionalism, however, these traits become less relevant for profit maximization (11).

In Tables 7 and 10, we present the drivers of men-owned business performance, including the effect of gender role attitudes and personality traits. The analyses show some interesting results compared to the pooled and women-owned business sample results discussed earlier. Whereas the naïve regression result (1) show that being more traditional reduces business performance across all indicators, the inclusion of household, geographic location, and individual characteristics, including personality traits, renders this variable less important in explaining men-owned business performance (3). From the productivity function, we see that power motivation is associated with higher business revenue per worker for men owners. The interaction with gender role attitudes, however, make this trait irrelevant for a potential positive shift in labor productivity (Table 7).

We also observe negative relationship between tenacity and profits, though in the presence of traditionalism, this trait's impact reverses, which is not surprising since tenacious individuals would be more conservative. In addition, power motivation increases profits of men-owned businesses, but only if the owner is less traditional.

In summary, the results indicate that traditionalism is an important determinant of business performance among men- and women-owned small businesses in Ghana. Among women-owned businesses, the negative effects of increasing traditionalism are retained even when other individual, households, business and geographical factors are controlled for. Among men-owned businesses, initially observed negative effects of traditionalism on business performance become less relevant once other variables are controlled for. We also find being organized is an important determinant of women-owned business performance, particularly when the owner does not possess traditional inclinations. Traditionalism, however, tends to either reverse or mask the relevance of this traits in determining women-owned

business performance. Among men-owned businesses, personality traits such as power motivation and tenacity are important determinants of business performance. Consistent with what is observed for women-owned businesses, traditionalism tends to either cancel or reverse these effects. The effects of other individual, business and geographical variables are consistent with what was discussed from Table 4.

5. Conclusions and implications

The paper uses multi-topic household survey data from two regions in Ghana to examine the drivers of men- and women-owned business performance, with special focus on personality traits and gender role attitudes. This is achieved by employing both descriptive and econometric analytical procedures. The econometric approach employs linear regression models to examine the determinants of business performance using two indicators – labor productivity and profits.

A taxonomy of men-owned businesses and women-owned businesses showed that although the use of paid employees is correlated with better business performance, the hiring of this category of workers is higher among men-owned businesses, while women-owned businesses tend to use more unpaid workers. The empirical results in general show that the main business owners' characteristics that are important for enterprise success are age, gender and household poverty status. Enterprise-related factors include the registration status of firms, business tenure, location, the separation of business and domestic expenses, ownership of a business bank account, literacy of employees, use of social media, as well as urban location of the business. The results indicate that characteristics of business performance vary for men and women. Home-based businesses, particularly for women-owned businesses, have negative implications for business performance. Thus, cost restrictions to traditional markets and

commercial spaces should be addressed. The empirical results show further that both personality traits and gender role attitudes are vital in explaining business performance. Among the women-owned business sample, personality traits, such as being organized, are important determinants, while among men-owned businesses, traits like power motivation and tenacity are important drivers of business performance. Interactions of gender role attitudes and personality traits, however, make some of these traits lose their significant effects, or reverses the effects.

Policies that aim to increase the performance of women-owned businesses need to consider what the main barriers are, especially the "social norms" that may determine how women operate in these settings. The results provide evidence of the important role of soft-skills or personal initiative training to boost business performance among male and female business owners. For example, the government may provide more accessible and affordable childcare programs that make it easier to balance domestic and business responsibilities, allowing them to operate outside the home where profits and revenues are higher. We also find that while business registration is consistently related with better business performance, only a third of businesses are formalized, suggesting that barriers to business registration should be removed. Finally, social media also appears to have beneficial links with business performance, indicating the need to develop reliable and affordable internet infrastructure and services across the country.

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Table 1. Definition of variables

Variable	Description
Performance indicators	
Labor productivity	Value of total sales/revenues (in Ghana cedis) divided by total number of workers (paid and unpaid), plus owner/manager, in the last month of operation (GH¢/person).
Profits	Total profit during the last month of operation (GH¢)
Main explanatory variables	
Gender role attitudes	A *Z score* index derived from responses to 14 questions on gender norms
Personality groups	Responses: *Strogly agee/Agree/ Neither agree nor disagree/disagree/ strongly disagree*
Impulsiveness	I plan tasks carefully (*reverse coded*); I make up my mind quickly; I save regularly (*reverse coded*)
Work centrality	I look forward to returning to my work when I am away from work; The most important thing that happens in life involves work.
Tenacity	I can think of many times when I persisted with work when others quit; I continue to work on hard projects even when others oppose me.
Polychronicity	I like to juggle several activities at the same time; I would rather complete an entire project every day than complete parts of several projects (*reverse coded*); I believe it is best to complete one task before beginning another (*reverse coded*)
Locus of control	It is difficult to know who my real friends are (reverse code); I never try anything that I am not sure of (reverse code); A person can get rich by taking risks.
Achievement	It is important for me to do whatever I'm doing as well as I can even if it isn't popular with people around me; Part of my enjoyment in doing things is improving my past performance; When a group I belong to plans an activity, I would rather direct it myself than just help out and have someone else organize it; I try harder when I'm in competition with other people; It is important to me to perform better than others on a task.
Power motivation	I enjoy planning things and deciding what other people should do; I find satisfaction in having influence over others; I like to have a lot of control over the events around me.
Organized	My family and friends would say I am a very organized person.
Optimism	In uncertain times I usually expect the best; If something can go wrong for me, it will (*reverse coded*); I'm always optimistic about my future; I hardly ever expect things to go my way (r*everse coded*); I rarely count on good things happening to me (*reverse coded*); Overall I expect more good things to happen to me than bad.
Owner Characteristics	
Male	1 if the business owner is male
Age	Age of business owner in completed years
Secondary education	1 if the owner has completed at least a secondary school education
Married	1 if the owner is married (monogamous/ polygynous) or living with a partner
Muslim	1 if the owner is a muslim
Household characteristics	
Poor	1 if the business owner belongs to the poorest and poorer asset-based wealth quintiles
Under 5	Number of children under 5 years present in the household
Under 15	Number of children under 15 years present in the household
Business characteristics	
Registered	1 if the business is registered with the Registrar General, Department of Cooperatives, District Assemblies, or the Ghana Revenue Authority
Business tenure	Length of time that the business has been actively operating or operated (years)
Businesses operated	Number of businesses operated in the household
Home	1 if the business usually operated at home- inside or outside the residence
Traditional market	1 if the business usually operated in a traditional market
Commercial	1 if the business is located in an industrial or a commercial area
Roadside	1 if the business is located on a roadside or other fixed place
Mobile	1 if the business is mobile or has no fixed location
Separate expenses	1 if business expenses are kept separately from the household expenses
Apprenticeship	1 if the Main owner/manager of business has ever been an apprentice in line with her/his current activity
Credit	1 if the credit was used to operate the business in the last 12 months
Business account	The owner has a bank account to run the business
COVID support	Since the outbreak of COVID-19, this business has received any national or local government support issued in response to the crisis
Literate employees	How many of the people working in this business (including [owner]) can read and write?
Social media	The owner/manager uses any digital application/technology such as instagram, WhatsApp, emails, Facebook, etc. to operate the business
Association	1 if the business is a member of or part of any organized association such as a market association, a professional association, a trade union, etc.
Subsistence	1 if the household consumes some of the goods and services produced by the business
Manufacturing	1 if the business is in the manufacturing sector
Retail	1 if the business is in the retail sector
Geographic controls	

Urban	1 if the household resides in urban area
Ashanti	1 if the household resides in Ashanti region

Table 2. Descriptive statistics by gender of business owner

	Pooled		**Women Owners**		**Men Owners**		
	Mean	***SD***	***Mean***	***SD***	***Mean***	***SD***	***T-tests***
Performance indicators							
Labor productivity	1,793	2,844	1,514	2,772	2,355	2,907	-807***
Profits	947	1,176	701	845	1,444	1,539	-738***
Main explanatory variables							
Gender Norms index	41.12	10.74	40.47	10.13	42.45	11.79	-1.835**
Personality Groups							
Impulsiveness	2.41	0.54	2.39	0.55	2.43	0.51	-0.011
Work centrality	4.24	0.68	4.19	0.71	4.33	0.59	-0.130***
Tenacity	3.96	0.7	3.95	0.72	3.97	0.68	-0.031
Polychronicity	2.21	0.68	2.26	0.72	2.13	0.58	0.094*
Locus of control	3.14	0.7	3.07	0.71	3.30	0.65	-0.196***
Achievement	3.74	0.59	3.76	0.59	3.71	0.6	0.006
Power motivation	3.38	0.81	3.36	0.81	3.43	0.81	-0.091
Organized	4.14	0.72	4.17	0.73	4.08	0.69	0.071
Optimism	3.6	0.51	3.58	0.5	3.64	0.53	-0.075*
Owner Characteristics							
Male	0.33	0.47					
Age	40.7	10.31	41.27	10.51	39.53	9.83	1.385*
Secondary education	0.86	0.35	0.86	0.35	0.86	0.35	0.006
Married	0.71	0.45	0.7	0.46	0.74	0.44	-0.047
Muslim	0.55	0.5	0.52	0.5	0.61	0.49	-0.075**
Household characteristics							
Under 5	0.54	0.78	0.52	0.79	0.57	0.77	-0.098*
Under 15	1.86	1.79	1.92	1.82	1.74	1.73	0.111
Poor	0.27	0.44	0.29	0.45	0.22	0.42	-0.073**
Business Characteristics							
Registered	0.29	0.45	0.22	0.41	0.42	0.49	-0.200***
Business tenure	9.12	7.93	8.85	7.78	9.67	8.22	-0.718
Businesses operated	1.35	0.58	1.32	0.56	1.39	0.6	-0.055
Home	0.41	0.49	0.48	0.5	0.28	0.45	0.180***
Traditional	0.08	0.28	0.09	0.29	0.07	0.25	0.036*
Commercial	0.07	0.25	0.06	0.23	0.09	0.29	-0.038**
Roadside	0.2	0.4	0.15	0.36	0.3	0.46	-0.150***
Mobile	0.24	0.43	0.22	0.42	0.27	0.44	-0.029
Separate expenses	0.38	0.49	0.36	0.48	0.41	0.49	-0.048
Apprenticeship	0.28	0.45	0.21	0.41	0.44	0.5	-0.235***
Credit	0.05	0.21	0.05	0.21	0.05	0.22	0.007
Business account	0.28	0.45	0.21	0.41	0.42	0.49	-0.206***
COVID support	0.03	0.16	0.03	0.17	0.02	0.14	0.005
Literate employees	1.03	3.21	0.64	1.78	1.82	4.88	-1.075***
Social media	0.27	0.45	0.19	0.39	0.44	0.5	-0.204***
Association	0.07	0.26	0.05	0.22	0.11	0.31	-0.050***
Subsistence	0.31	0.46	0.39	0.49	0.17	0.37	0.213***
Sector of Operation							
Manufacturing	0.28	0.45	0.28	0.45	0.27	0.44	0.019
Retail	0.51	0.5	0.58	0.49	0.38	0.49	0.184***
Geographical controls							
Urban	0.9	0.31	0.88	0.32	0.92	0.27	-0.050*
Ashanti	0.56	0.5	0.57	0.5	0.53	0.5	0.045
# Observations	861		585		276		

t test if the mean difference between men and women * p<0.10, ** p<0.05, *** p<0.010

Table 3. Descriptive statistics by business registration status

	Informal		**Formal**		
	Mean	***SD***	***Mean***	***SD***	***T-tests***
Performance indicators					
Labor productivity	1530.44	2600.83	2448.54	3290.25	-1003.4***
Profits, GHC	773.19	1041.59	1382.02	1367.58	-625.4***
Main explanatory variables					
Gender Norms index	40.82	10.47	41.87	11.36	0.0104
Personality Groups					
Impulsiveness	2.41	0.54	2.41	0.54	0.0645
Work centrality	4.25	0.69	4.21	0.64	0.044
Tenacity	3.98	0.71	3.9	0.69	0.031
Polychronicity	2.23	0.69	2.17	0.64	0.0624
Locus of control	3.09	0.7	3.29	0.66	-0.199***
Achievement	3.77	0.59	3.67	0.6	0.0824*
Power motivation	3.39	0.82	3.37	0.78	0.0364
Organized	4.15	0.69	4.13	0.78	0.0197
Optimism	3.62	0.51	3.56	0.52	0.00776
Owner characteristics					
Male	0.27	0.44	0.49	0.5	-0.224***
Age	40.5	10.27	41.18	10.43	-0.442
At least secondary education	0.85	0.36	0.88	0.33	-0.0106
Married	0.69	0.46	0.76	0.43	-0.0427
Muslim	0.59	0.49	0.47	0.5	0.145***
Household characteristics					
Under 5	0.53	0.77	0.56	0.8	-0.0258
Under 15	1.90	1.82	1.76	1.73	0.180
Poor	0.33	0.47	0.12	0.32	0.265***
Business characteristics					
Registered					
Business tenure	8.87	7.8	9.76	8.22	-1.183*
Businesses operated	1.35	0.59	1.34	0.55	-0.0258
Home	0.46	0.5	0.3	0.46	0.150***
Traditional	0.07	0.26	0.1	0.31	-0.0245
Commercial	0.05	0.21	0.11	0.32	-0.0661***
Roadside	0.14	0.35	0.35	0.48	-0.214***
Mobile	0.28	0.45	0.13	0.34	0.154***
Separate expenses	0.35	0.48	0.44	0.5	-0.0974***
Apprenticeship	0.26	0.44	0.34	0.48	-0.0962***
Credit	0.03	0.17	0.09	0.29	-0.0458***
Business account	0.21	0.41	0.46	0.5	-0.258***
COVID support	0.02	0.15	0.04	0.2	-0.014
Literate employees	0.51	1.64	2.33	5.2	-1.595***
Social media	0.21	0.41	0.42	0.49	-0.192***
Association	0.03	0.18	0.17	0.37	-0.135***
Subsistence	0.32	0.47	0.29	0.45	0.0481
Sector of business					
Manufacturing	0.29	0.46	0.23	0.42	0.0688**
Retail	0.53	0.5	0.46	0.5	0.0815**
Geographic controls					
Urban	0.88	0.33	0.94	0.23	-0.112***
Ashanti	0.52	0.5	0.65	0.48	-0.159***
Observations	632		229		

t test if the mean difference between formal and informal; * p<0.10, ** p<0.05, *** p<0.010

Table 4. Drivers of business performance, without gender role attitudes and personality traits

	Average revenue			Profits		
	Full	Women	Men	Full	Women	Men
Age	0.076**	0.047	0.117*	0.097***	0.086**	0.104*
	(2.20)	(1.21)	(1.82)	(3.10)	(2.18)	(1.88)
Age_sq	-0.001**	-0.000	-0.002**	-0.001***	-0.001**	-0.001**
	(-2.25)	(-1.13)	(-2.08)	(-3.26)	(-2.24)	(-2.24)
Male	0.525***	0.000	0.000	0.565***	0.000	0.000
	(5.82)	(.)	(.)	(7.01)	(.)	(.)
Secondary education	0.009	-0.025	0.042	0.084	-0.002	0.219
	(0.07)	(-0.14)	(0.17)	(0.65)	(-0.01)	(0.80)
Married	-0.083	-0.073	0.054	-0.010	-0.098	0.323
	(-0.71)	(-0.46)	(0.26)	(-0.09)	(-0.66)	(1.34)
Muslim	-0.130	0.020	-0.308	-0.304**	-0.145	-0.495**
	(-0.84)	(0.14)	(-1.24)	(-2.51)	(-1.04)	(-2.47)
Poor	-0.254**	-0.173	-0.449**	-0.297***	-0.169	-0.494**
	(-2.59)	(-1.51)	(-2.23)	(-2.69)	(-1.41)	(-2.48)
Under 5	0.118*	0.021	0.215*	0.055	0.021	0.056
	(1.76)	(0.25)	(1.96)	(0.81)	(0.27)	(0.47)
Under 15	-0.021	0.031	-0.075	-0.019	0.019	-0.066
	(-0.71)	(0.83)	(-1.39)	(-0.69)	(0.56)	(-1.27)
Registered	0.217**	0.383***	-0.056	0.285***	0.442***	-0.025
	(1.98)	(3.00)	(-0.35)	(3.26)	(3.69)	(-0.19)
Business tenure	0.007	0.012	0.002	0.009	0.009	0.012
	(1.23)	(1.55)	(0.18)	(1.61)	(1.29)	(1.27)
Businesses operated	-0.044	-0.124	0.126	-0.035	-0.129	0.109
	(-0.54)	(-1.31)	(0.92)	(-0.42)	(-1.27)	(0.90)
Traditional market	0.795***	0.866***	0.701**	0.575***	0.496***	0.996***
	(5.66)	(5.03)	(2.39)	(4.73)	(3.43)	(3.82)
Commercial	0.304	0.375	0.126	0.097	0.001	0.079
	(1.63)	(1.33)	(0.44)	(0.53)	(0.00)	(0.28)
Roadside	0.191	0.187	0.104	0.162	0.213	0.061
	(1.57)	(1.21)	(0.44)	(1.53)	(1.42)	(0.27)
Mobile	0.100	0.163	-0.083	0.218**	0.211	0.149
	(1.01)	(1.20)	(-0.44)	(2.14)	(1.55)	(0.80)
Separate expenses	0.151*	0.240**	-0.001	0.267***	0.373***	0.088
	(1.69)	(2.21)	(-0.00)	(3.18)	(3.63)	(0.63)
Apprenticeship	-0.142	0.016	-0.290**	0.031	0.148	-0.065
	(-1.47)	(0.10)	(-2.01)	(0.33)	(1.17)	(-0.53)
Credit	0.139	-0.016	0.322	0.259*	0.161	0.285
	(0.79)	(-0.08)	(1.02)	(1.75)	(0.86)	(1.00)
Business account	0.368***	0.429***	0.284*	0.370***	0.413***	0.331**
	(3.42)	(3.21)	(1.70)	(3.63)	(3.15)	(2.24)
COVID support	-0.070	-0.324	0.199	-0.020	-0.143	0.078
	(-0.36)	(-1.38)	(0.46)	(-0.10)	(-0.58)	(0.26)
Literate employees	-0.058**	-0.115***	-0.045**	0.030***	0.013	0.036***
	(-2.35)	(-2.96)	(-2.47)	(2.64)	(0.38)	(2.92)
Social media	0.173	0.271*	0.069	0.144	0.263*	-0.001
	(1.56)	(1.92)	(0.39)	(1.62)	(1.84)	(-0.00)
Association	-0.463**	-0.752**	-0.113	-0.456**	-0.653*	-0.153
	(-2.28)	(-2.35)	(-0.47)	(-2.23)	(-1.96)	(-0.72)
Subsistence	0.296***	0.254**	0.359*	0.299***	0.288***	0.286*
	(3.32)	(2.55)	(1.95)	(3.28)	(3.07)	(1.67)
Manufacturing	-0.169	-0.035	-0.284	-0.096	0.076	-0.334
	(-1.36)	(-0.24)	(-1.18)	(-0.84)	(0.51)	(-1.52)

Retail	0.076	0.129	0.120	-0.182*	-0.051	-0.249
	(0.76)	(0.91)	(0.77)	(-1.84)	(-0.36)	(-1.60)
Urban	0.436***	0.437**	0.400	0.229*	0.250*	0.114
	(2.76)	(2.46)	(1.52)	(1.70)	(1.68)	(0.54)
Ashanti	-0.092	0.124	-0.264	-0.041	0.200	-0.333
	(-0.55)	(0.80)	(-1.01)	(-0.28)	(1.32)	(-1.26)
Constant	4.519***	4.681***	4.837***	3.635***	3.501***	4.660***
	(5.81)	(5.25)	(3.44)	(4.79)	(3.54)	(3.91)
R^2	0.214	0.213	0.212	0.281	0.241	0.277
N	861	585	276	857	581	276

t statistics in parentheses: * p<0.10, ** p<0.05, *** p<0.010; standard errors clustered at cluster level

Table 5. Effects of Gender role attitudes and Personality traits on labor productivity (pooled sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Norms	Norms+ Controls	Norms+ Controls+ Personality	*Norms+ Controls+ Impulsive*	*Norms+ Controls + Work Central*	*Norms+ Controls+ Tenacity*	*Norms+ Controls+ Polychronicity*	*Norms+ Controls+ Locus of Control*	*Norms+ Control+ Achievement*	*Norms+ Control+ Power Motivation*	*Norms+ Controls+ Organized*	*Norms+ Controls+ Optimism*
Traditional	-0.017***	-0.010**	-0.012***	-0.015	0.012	-0.012	-0.028*	-0.029	0.014	0.022	0.012	-0.012
	(-3.75)	(-2.42)	(-2.73)	(-0.82)	(0.74)	(-0.57)	(-1.88)	(-1.56)	(0.50)	(1.40)	(0.67)	(-0.33)
Age		0.072**	0.062*	0.072**	0.064*	0.068*	0.072**	0.070**	0.067*	0.068**	0.068**	0.070**
		(2.08)	(1.91)	(2.06)	(1.89)	(1.97)	(2.09)	(2.07)	(1.92)	(2.02)	(2.01)	(2.02)
Age sq		-0.001**	-0.001*	-0.001**	-0.001*	-0.001**	-0.001**	-0.001**	-0.001*	-0.001**	-0.001**	-0.001**
		(-2.12)	(-1.95)	(-2.10)	(-1.91)	(-2.01)	(-2.15)	(-2.09)	(-1.92)	(-2.08)	(-2.04)	(-2.07)
Male		0.547***	0.548***	0.545***	0.524***	0.539***	0.528***	0.572***	0.556***	0.539***	0.557***	0.560***
		(6.11)	(6.01)	(6.09)	(5.95)	(5.96)	(5.74)	(6.38)	(6.28)	(6.25)	(6.34)	(6.15)
Secondary education		0.022	-0.029	0.022	0.031	0.013	0.020	0.036	0.011	-0.023	0.000	0.016
		(0.16)	(-0.22)	(0.15)	(0.22)	(0.09)	(0.14)	(0.26)	(0.08)	(-0.17)	(0.00)	(0.12)
Married		-0.067	-0.065	-0.066	-0.060	-0.056	-0.067	-0.079	-0.054	-0.061	-0.043	-0.072
		(-0.56)	(-0.56)	(-0.56)	(-0.52)	(-0.49)	(-0.57)	(-0.67)	(-0.46)	(-0.52)	(-0.36)	(-0.62)
Muslim		-0.071	-0.123	-0.075	-0.084	-0.087	-0.060	-0.078	-0.098	-0.115	-0.089	-0.081
		(-0.49)	(-0.88)	(-0.52)	(-0.58)	(-0.60)	(-0.41)	(-0.54)	(-0.68)	(-0.80)	(-0.63)	(-0.56)
Poor		-0.226**	-0.230**	-0.228**	-0.211**	-0.223**	-0.227**	-0.239**	-0.215**	-0.229**	-0.233**	-0.217**
		(-2.32)	(-2.40)	(-2.33)	(-2.19)	(-2.29)	(-2.34)	(-2.43)	(-2.19)	(-2.33)	(-2.38)	(-2.25)
Under 5		0.114*	0.116*	0.115*	0.105	0.118*	0.108	0.116*	0.115*	0.112*	0.119*	0.114*
		(1.71)	(1.86)	(1.73)	(1.59)	(1.79)	(1.62)	(1.74)	(1.74)	(1.75)	(1.79)	(1.71)
Under 15		-0.019	-0.022	-0.019	-0.015	-0.018	-0.018	-0.023	-0.017	-0.018	-0.023	-0.022
		(-0.65)	(-0.77)	(-0.64)	(-0.50)	(-0.61)	(-0.61)	(-0.75)	(-0.58)	(-0.62)	(-0.78)	(-0.73)
Registered		0.232**	0.267***	0.232**	0.254**	0.238**	0.242**	0.258**	0.251**	0.241**	0.238**	0.227**
		(2.15)	(2.74)	(2.15)	(2.37)	(2.16)	(2.28)	(2.45)	(2.37)	(2.31)	(2.24)	(2.09)
Business tenure		0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.007	0.007	0.008	0.008
		(1.30)	(1.29)	(1.30)	(1.29)	(1.34)	(1.37)	(1.35)	(1.25)	(1.28)	(1.37)	(1.36)
Businesses operated		-0.044	-0.037	-0.046	-0.043	-0.051	-0.038	-0.040	-0.059	-0.066	-0.046	-0.027
		(-0.53)	(-0.48)	(-0.56)	(-0.53)	(-0.60)	(-0.47)	(-0.50)	(-0.72)	(-0.81)	(-0.54)	(-0.33)
Traditional market		0.778***	0.743***	0.780***	0.760***	0.768***	0.779***	0.760***	0.769***	0.795***	0.759***	0.767***
		(5.49)	(5.43)	(5.58)	(5.29)	(5.44)	(5.64)	(5.59)	(5.39)	(5.52)	(5.26)	(5.57)
commercial		0.296	0.243	0.296	0.252	0.264	0.293	0.271	0.251	0.291	0.278	0.315*

		(1.60)	(1.28)	(1.61)	(1.37)	(1.39)	(1.54)	(1.49)	(1.35)	(1.55)	(1.50)	(1.71)
Roadside		0.176	0.152	0.176	0.185	0.169	0.168	0.179	0.164	0.170	0.177	0.186
		(1.45)	(1.26)	(1.45)	(1.51)	(1.39)	(1.42)	(1.47)	(1.37)	(1.44)	(1.47)	(1.51)
Mobile		0.096	0.097	0.091	0.107	0.104	0.095	0.099	0.120	0.132	0.110	0.085
		(0.97)	(1.03)	(0.90)	(1.08)	(1.06)	(0.97)	(0.99)	(1.23)	(1.37)	(1.11)	(0.88)
Separate expenses		0.137	0.123	0.142	0.130	0.128	0.149*	0.115	0.101	0.119	0.131	0.134
		(1.52)	(1.42)	(1.57)	(1.46)	(1.43)	(1.66)	(1.29)	(1.09)	(1.36)	(1.44)	(1.50)
Apprenticeship		-0.137	-0.118	-0.136	-0.128	-0.144	-0.130	-0.139	-0.163*	-0.156	-0.135	-0.128
		(-1.42)	(-1.24)	(-1.42)	(-1.37)	(-1.49)	(-1.38)	(-1.47)	(-1.69)	(-1.61)	(-1.42)	(-1.32)
Credit		0.135	0.101	0.129	0.118	0.139	0.117	0.098	0.148	0.163	0.140	0.145
		(0.76)	(0.67)	(0.72)	(0.72)	(0.81)	(0.67)	(0.55)	(0.93)	(1.01)	(0.78)	(0.84)
Business account		0.352***	0.359***	0.353***	0.374***	0.349***	0.347***	0.326***	0.367***	0.391***	0.325***	0.355***
		(3.31)	(3.32)	(3.27)	(3.50)	(3.31)	(3.33)	(3.07)	(3.40)	(3.58)	(3.13)	(3.33)
COVID support		-0.067	-0.171	-0.057	-0.140	-0.118	-0.041	-0.046	-0.156	-0.152	-0.092	-0.064
		(-0.34)	(-0.82)	(-0.29)	(-0.69)	(-0.61)	(-0.20)	(-0.23)	(-0.80)	(-0.76)	(-0.46)	(-0.31)
Literate employees		-0.057**	-0.055**	-0.058**	-0.057**	-0.056**	-0.057**	-0.055**	-0.056**	-0.059**	-0.056**	-0.058**
		(-2.41)	(-2.37)	(-2.40)	(-2.48)	(-2.45)	(-2.53)	(-2.28)	(-2.57)	(-2.57)	(-2.55)	(-2.26)
Social media		0.198*	0.185	0.196*	0.186*	0.222**	0.178*	0.197*	0.220**	0.185*	0.226**	0.174
		(1.82)	(1.64)	(1.77)	(1.73)	(1.99)	(1.68)	(1.79)	(2.01)	(1.75)	(2.06)	(1.52)
Association		-0.462**	-0.500**	-0.462**	-0.473**	-0.467**	-0.491**	-0.440**	-0.442**	-0.436**	-0.510**	-0.451**
		(-2.27)	(-2.36)	(-2.26)	(-2.31)	(-2.30)	(-2.42)	(-2.12)	(-2.11)	(-2.02)	(-2.50)	(-2.29)
Subsistence		0.311***	0.346***	0.314***	0.317***	0.310***	0.326***	0.322***	0.309***	0.336***	0.311***	0.296***
		(3.58)	(3.96)	(3.60)	(3.63)	(3.59)	(3.77)	(3.63)	(3.52)	(4.02)	(3.58)	(3.37)
Manufacturing		-0.176	-0.173	-0.180	-0.166	-0.166	-0.181	-0.191	-0.179	-0.179	-0.168	-0.178
		(-1.40)	(-1.44)	(-1.43)	(-1.34)	(-1.31)	(-1.45)	(-1.52)	(-1.44)	(-1.48)	(-1.32)	(-1.44)
Retail		0.081	0.105	0.078	0.095	0.077	0.087	0.089	0.087	0.075	0.085	0.088
		(0.82)	(1.13)	(0.79)	(0.97)	(0.77)	(0.88)	(0.89)	(0.88)	(0.78)	(0.85)	(0.89)
Urban		0.381**	0.383**	0.383**	0.383**	0.393**	0.392**	0.366**	0.383**	0.389**	0.390**	0.374**
		(2.37)	(2.34)	(2.38)	(2.33)	(2.41)	(2.44)	(2.31)	(2.38)	(2.30)	(2.38)	(2.37)
Ashanti		-0.059	-0.063	-0.059	-0.056	-0.073	-0.074	-0.059	-0.029	-0.007	-0.084	-0.062
		(-0.38)	(-0.40)	(-0.38)	(-0.36)	(-0.46)	(-0.47)	(-0.37)	(-0.18)	(-0.05)	(-0.54)	(-0.40)
Impulsive			0.085	-0.032								
			(0.86)	(-0.09)								
Work centrality			0.086		0.395*							
			(1.14)		(1.89)							
Tenacity			-0.006			0.081						

			(-0.07)			(0.34)						
Polychronicity			-0.131**				-0.492*					
			(-2.31)				(-1.86)					
Locus of control			-0.071					-0.381				
			(-1.00)					(-1.29)				
Achievement			0.002						0.494			
			(0.02)						(1.38)			
Power motivation			0.179**							0.636***		
			(2.29)							(2.73)		
Organized			0.129*								0.391*	
			(1.82)								(1.84)	
Optimism			-0.098									-0.164
			(-0.91)									(-0.34)
Traditional*Impulsive				0.002								
				(0.25)								
Traditional*Work centrality					-0.005							
					(-1.31)							
Traditional*Tenacity						0.001						
						(0.11)						
Traditional*Polychronicity							0.008					
							(1.37)					
Traditional*internal control								0.006				
								(0.91)				
Traditional*Achievement									-0.007			
									(-0.86)			
Traditional*Power motiva,										-0.010**		
										(-2.00)		
Traditional*Organized											-0.005	
											(-1.25)	
Traditional*Optimism												0.000
												(0.02)
R^2	0.019	0.220	0.253	0.221	0.229	0.223	0.227	0.226	0.229	0.242	0.229	0.224
N	861	861	861	861	861	861	861	861	861	861	861	861

t statistics in parentheses: * p<0.10, ** p<0.05, *** p<0.010; standard errors clustered at cluster level

Table 6. Effects of gender role attitudes and personality traits on labor productivity (women sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Norms	Norms+ Controls	Norms+ Controls+ Personality	*Norms+ Controls+ Impulsive*	*Norms+ Controls+ Work Central*	*Norms+ Controls+ Tenacity*	*Norms+ Controls+ Polychronicity*	*Norms+ Controls+ Locus of Control*	*Norms+ Control+ Achievement*	*Norms+ Control+ Power Motivation*	*Norms+ Controls+ Organized*	*Norms+ Controls+ Optimism*
Traditional	-0.018***	-0.007	-0.011**	-0.025	0.017	0.015	-0.022	-0.033	0.025	0.011	0.026	-0.019
	(-3.32)	(-1.44)	(-2.11)	(-1.12)	(0.82)	(0.66)	(-1.37)	(-1.42)	(0.70)	(0.59)	(1.08)	(-0.48)
Impulsive			0.100	-0.272								
			(0.89)	(-0.59)								
Work centrality			0.031		0.408							
			(0.36)		(1.48)							
Tenacity			0.035			0.380						
			(0.38)			(1.40)						
Polychronicity			-0.166***				-0.450					
			(-2.70)				(-1.48)					
Locus of control			-0.072					-0.475				
			(-0.85)					(-1.28)				
Achievement			0.041						0.590			
			(0.32)						(1.23)			
Power motivation			0.139*							0.445		
			(1.67)							(1.47)		
Organized			0.150*								0.526*	
			(1.86)								(1.90)	
Optimism			-0.224									-0.380
			(-1.51)									(-0.71)
Traditional*Impulsive				0.008								
				(0.85)								
Traditional*Work centrality					-0.006							
					(-1.13)							
Traditional*Tenacity						-0.006						
						(-0.96)						
Traditional*Polychronicity							0.006					
							(0.98)					
Traditional*locus control								0.008				
								(1.00)				

Traditional*Achievement									-0.009			
									(-0.90)			
Traditional*Power motiva,										-0.006		
										(-0.96)		
Traditional*Organized											-0.008	
											(-1.39)	
Traditional*Optimism												0.002
												(0.20)
_Constant	7.262***	5.022***	4.994***	5.650***	3.348**	3.551***	5.975***	6.659***	2.851	3.612***	2.876*	6.734***
	(30.643)	(5.072)	(2.965)	(3.771)	(2.090)	(2.654)	(4.826)	(5.248)	(1.400)	(2.708)	(1.696)	(3.097)
Controls included	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.020	0.216	0.259	0.218	0.225	0.222	0.227	0.224	0.226	0.232	0.230	0.227
N	585	585	585	585	585	585	585	585	585	585	585	585

t statistics in parentheses: * p<0.10, ** p<0.05, *** p<0.010; standard errors clustered at cluster level

Table 7. Effects of gender role attitudes and personality traits on labor productivity (men sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Norms	Norms+ Controls	Norms+ Controls+ Personality	*Norms+ Controls+ Impulsive*	*Norms+ Controls+ Work Central*	*Norms+ Controls+ Tenacity*	*Norms+ Controls+ Polychronicity*	*Norms+ Controls+ Locus of Control*	*Norms+ Control+ Achievement*	*Norms+ Control+ Power Motivation*	*Norms+ Controls+ Organized*	*Norms+ Controls+ Optimism*
Traditional	-0.020***	-0.013*	-0.013	0.023	-0.005	-0.063*	-0.020	-0.036	-0.010	0.052**	-0.031	-0.002
	(-3.03)	(-1.97)	(-1.54)	(0.75)	(-0.15)	(-1.89)	(-0.59)	(-1.38)	(-0.25)	(2.21)	(-0.97)	(-0.03)
Impulsive			0.091	0.716								
			(0.53)	(1.36)								
Work centrality			0.044		0.188							
			(0.33)		(0.51)							
Tenacity			-0.150			-0.604						
			(-1.20)			(-1.61)						
Polychronicity			-0.033				-0.147					
			(-0.23)				(-0.23)					
Locus of control			-0.045					-0.367				
			(-0.34)					(-0.94)				
Achievement			-0.017						0.210			
			(-0.09)						(0.44)			
Power motivation			0.283**							1.098***		
			(2.05)							(3.73)		
Organized			0.052								-0.107	
			(0.39)								(-0.30)	
Optimism			0.137									0.196
			(0.76)									(0.23)
Traditional*Impulsive				-0.015								
				(-1.34)								
Traditional*Work centrality					-0.002							
					(-0.23)							
Traditional*Tenacity						0.013						
						(1.50)						
Traditional*Polychronicity							0.003					
							(0.21)					
Traditional*locus control								0.007				
								(0.80)				

Traditional*Achievement									-0.001			
									(-0.09)			
Traditional*Power motiva,										-0.020***		
										(-2.75)		
Traditional*Organized											0.004	
											(0.53)	
Traditional*Optimism												-0.003
												(-0.13)
Constant	7.980***	5.331***	4.146**	3.407*	4.796***	7.395***	5.663***	6.467***	4.783**	2.510*	5.917***	4.549
	(27.66)	(3.74)	(2.47)	(1.67)	(2.73)	(4.00)	(2.63)	(3.33)	(2.25)	(1.72)	(2.79)	(1.46)
Controls included	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R2	0.036	0.224	0.257	0.230	0.227	0.232	0.225	0.228	0.229	0.271	0.226	0.225
N	276	276	276	276	276	276	276	276	276	276	276	276

t statistics in parentheses: * p<0.10, ** p<0.05, *** p<0.010; standard errors clustered at cluster level

Table 8. Effects of gender role attitudes and personality traits on profits (*pooled* sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Norms	Norms+ Controls	Norms+ Controls+ Personality	*Norms+ Controls+ Impulsive*	*Norms+ Controls+ Work Central*	*Norms+ Controls+ Tenacity*	*Norms+ Controls+ Polychronicity*	*Norms+ Controls+ Locus of Control*	*Norms+ Control+ Achievement*	*Norms+ Control+ Power Motivation*	*Norms+ Controls+ Organized*	*Norms+ Controls+ Optimism*
Traditional	-0.011***	-0.003	-0.007**	-0.008	-0.002	-0.014	-0.021	-0.011	-0.004	0.015	0.007	0.009
	(-2.73)	(-0.77)	(-2.00)	(-0.47)	(-0.12)	(-0.69)	(-1.54)	(-0.72)	(-0.18)	(1.04)	(0.38)	(0.27)
Impulsive			0.023	-0.073								
			(0.25)	(-0.24)								
Work centrality			-0.000		0.101							
			(-0.00)		(0.50)							
Tenacity			0.016			-0.025						
			(0.18)			(-0.10)						
Polychronicity			-0.030				-0.421*					
			(-0.49)				(-1.80)					
Locus of control			-0.088*					-0.270				
			(-1.69)					(-1.14)				
Achievement			0.134						0.217			
			(1.25)						(0.64)			
Power motivation			0.044							0.375*		
			(0.64)							(1.71)		
Organized			0.141**								0.251	
			(2.25)								(1.25)	
Optimism			-0.318***									-0.151
			(-3.28)									(-0.35)
Traditional*Impulsive				0.002								
				(0.32)								
Traditional*Work centrality					-0.000							
					(-0.01)							
Traditional*Tenacity						0.003						
						(0.59)						
Traditional*Polychronicity							0.009					
							(1.52)					
Traditional*locus control								0.002				
								(0.43)				

Traditional*Achievement									0.000			
									(0.06)			
Traditional*Power motiva,										-0.006		
										(-1.19)		
Traditional*Organized											-0.002	
											(-0.54)	
Traditional*Optimism												-0.004
												(-0.45)
Constant	6.642***	3.749***	4.377***	3.930***	3.388**	3.914***	4.682***	4.707***	3.055**	2.619**	2.768**	4.583**
	(35.95)	(4.65)	(3.72)	(3.29)	(2.57)	(3.31)	(4.57)	(4.31)	(2.07)	(2.61)	(2.29)	(2.59)
Controls included	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.009	0.281	0.316	0.281	0.283	0.285	0.284	0.290	0.290	0.290	0.289	0.297
N	857	857	857	857	857	857	857	857	857	857	857	857

t statistics in parentheses: * p<0.10, ** p<0.05, *** p<0.010; errors clustered at cluster level

Table 9. Effects of gender role attitudes and personality traits on profits (*women* sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Norms	Norms+ Controls	Norms+ Controls+ Personality	*Norms+ Controls+ Impulsive*	*Norms+ Controls+ Work Central*	*Norms+ Controls+ Tenacity*	*Norms+ Controls+ Polychronicity*	*Norms+ Controls+ Locus of Control*	*Norms+ Control+ Achievement*	*Norms+ Control+ Power Motivation*	*Norms+ Controls+ Organized*	*Norms+ Controls+ Optimism*
Traditional	-0.015***	-0.003	-0.008	-0.007	0.016	0.013	-0.020	-0.013	0.004	0.012	0.017	-0.013
	(-3.02)	(-0.55)	(-1.60)	(-0.37)	(0.76)	(0.51)	(-1.36)	(-0.62)	(0.14)	(0.73)	(0.87)	(-0.35)
Impulsive			0.117	-0.013								
			(1.07)	(-0.03)								
Work centrality			-0.070		0.257							
			(-0.74)		(0.99)							
Tenacity			0.000			0.293						
			(0.00)			(0.91)						
Polychronicity			-0.076				-0.407					
			(-1.22)				(-1.64)					
Locus of control			-0.095					-0.285				
			(-1.31)					(-0.89)				
Achievement			0.215						0.343			
			(1.43)						(0.78)			
Power motivation			0.029							0.335		
			(0.38)							(1.27)		
Organized			0.188***								0.399*	
			(2.73)								(1.76)	
Optimism			-0.264*									-0.364
			(-1.96)									(-0.70)
Traditional*Impulsive				0.002								
				(0.27)								
Traditional*Work centrality					-0.005							
					(-0.88)							
Traditional*Tenacity						-0.004						
						(-0.59)						
Traditional*Polychronicity							0.008					
							(1.36)					
Traditional*locus control								0.003				

								(0.39)				
Traditional*Achievement									-0.002			
									(-0.22)			
Traditional*Power motiva,										-0.005		
										(-0.88)		
Traditional*Organized											-0.005	
											(-0.99)	
Traditional*Optimism												0.002
												(0.20)
Constant	6.537***	3.620***	3.755**	3.653**	2.577	2.484	4.527***	4.681***	2.365	2.556*	1.957	5.274**
	(29.02)	(3.37)	(2.24)	(2.44)	(1.47)	(1.64)	(3.56)	(3.19)	(1.20)	(1.89)	(1.29)	(2.42)
Controls included	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.016	0.241	0.283	0.242	0.243	0.246	0.246	0.250	0.254	0.250	0.256	0.252
N	581	581	581	581	581	581	581	581	581	581	581	581

t statistics in parentheses: * p<0.10, ** p<0.05, *** p<0.010; errors clustered at cluster level

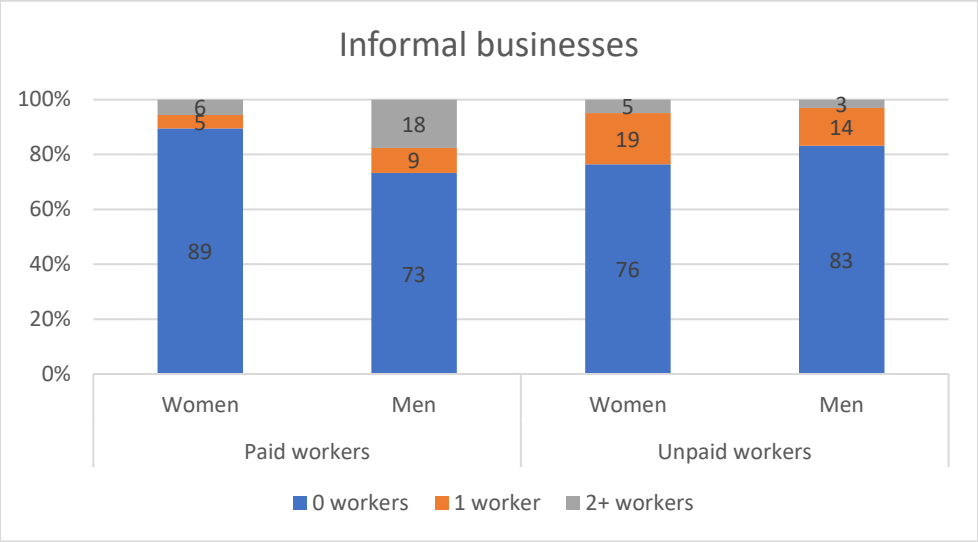
Table 10. Effects of gender role attitudes and personality traits on profits (*men* sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Norms	Norms+ Controls	Norms+ Controls+ Personality	*Norms+ Controls+ Impulsive*	*Norms+ Controls+ Work Central*	*Norms+ Controls+ Tenacity*	*Norms+ Controls+ Polychronicity*	*Norms+ Controls+ Locus of Control*	*Norms+ Control+ Achievement*	*Norms+ Control+ Power Motivation*	*Norms+ Controls+ Organized*	*Norms+ Controls+ Optimism*
Traditional	-0.012**	-0.002	-0.004	0.011	-0.037	-0.070***	-0.012	-0.024	-0.023	0.036	-0.029	0.055
	(-2.00)	(-0.25)	(-0.56)	(0.42)	(-1.33)	(-2.68)	(-0.39)	(-1.17)	(-0.57)	(1.63)	(-0.87)	(1.05)
Impulsive			-0.167	0.123								
			(-1.21)	(0.27)								
Work centrality			0.093		-0.290							
			(0.72)		(-0.83)							
Tenacity			0.016			-0.719**						
			(0.13)			(-2.17)						
Polychronicity			0.009				-0.239					
			(0.06)				(-0.43)					
Locus of control			-0.043					-0.443				
			(-0.49)					(-1.47)				
Achievement			0.030						-0.105			
			(0.16)						(-0.20)			
Power motivation			0.052							0.598*		
			(0.41)							(1.95)		
Organized			0.077								-0.203	
			(0.57)								(-0.50)	
Optimism			-0.450***									0.271
			(-3.56)									(0.45)
Traditional*Impulsive				-0.005								
				(-0.51)								
Traditional*Work centrality					0.009							
					(1.34)							
Traditional*Tenacity						0.018**						
						(2.57)						
Traditional*Polychronicity							0.005					
							(0.37)					
Traditional*locus control								0.007				
								(1.03)				

Traditional*Achievement									0.006			
									(0.50)			
Traditional*Power motiva,										-0.011		
										(-1.63)		
Traditional*Organized											0.007	
											(0.80)	
Traditional*Optimism												-0.016
												(-1.11)
Constant	7.223***	4.722***	6.646***	4.385**	5.987***	7.356***	5.265***	6.137***	5.177**	3.183**	5.725***	3.970
	(26.14)	(3.99)	(4.54)	(2.41)	(3.87)	(4.79)	(2.87)	(4.16)	(2.36)	(2.34)	(2.84)	(1.50)
Controls included	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.014	0.277	0.321	0.279	0.283	0.292	0.278	0.286	0.281	0.290	0.281	0.311
N	276	276	276	276	276	276	276	276	276	276	276	276

t statistics in parentheses: * p<0.10, ** p<0.05, *** p<0.010; errors clustered at cluster level

Figure 1. Type and number of workers by business registration status



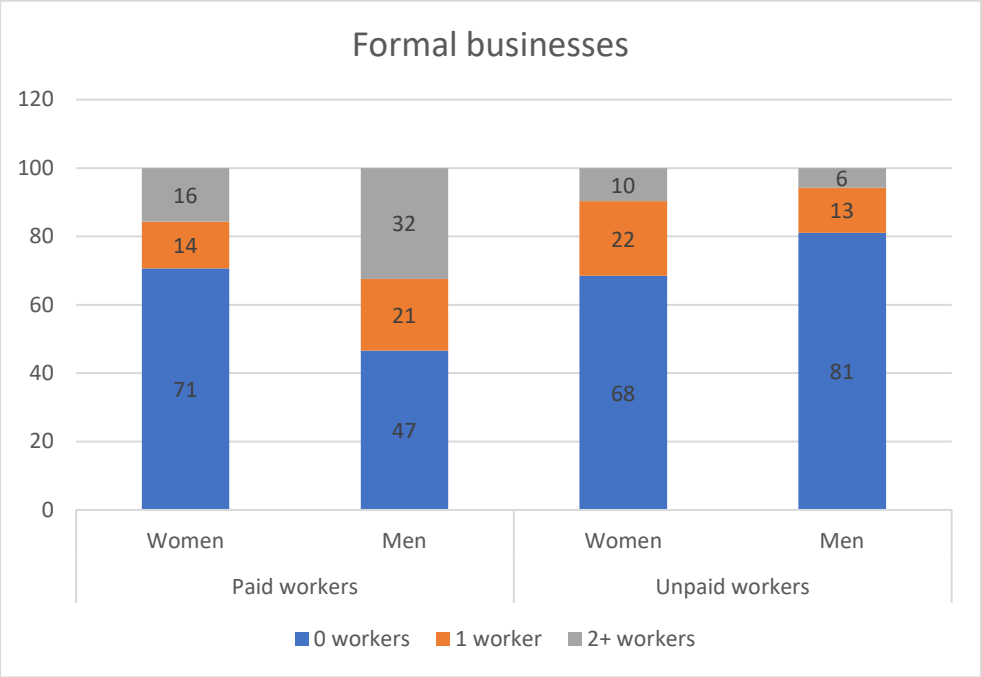
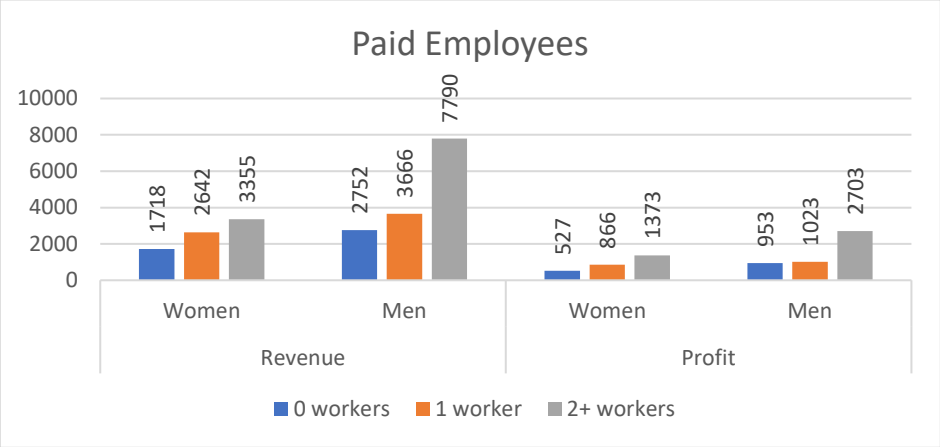


Figure 2. Informal business performance by number of employees and gender of owner



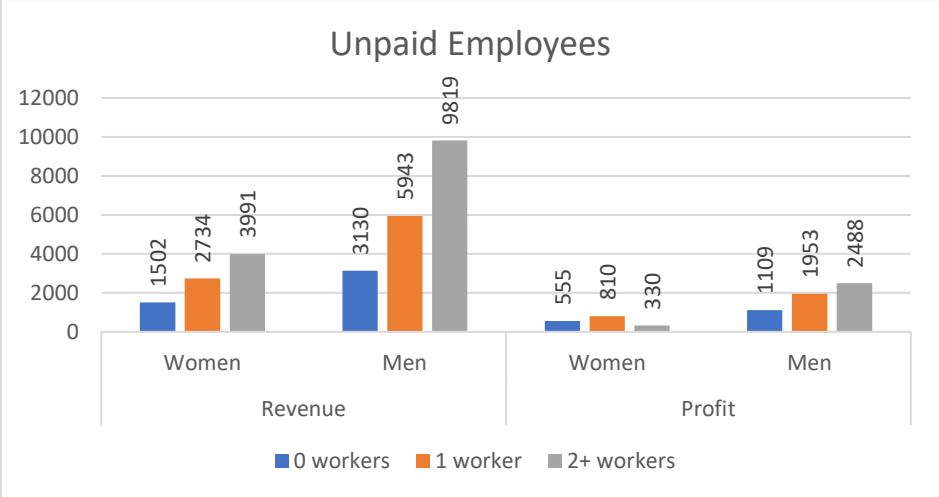
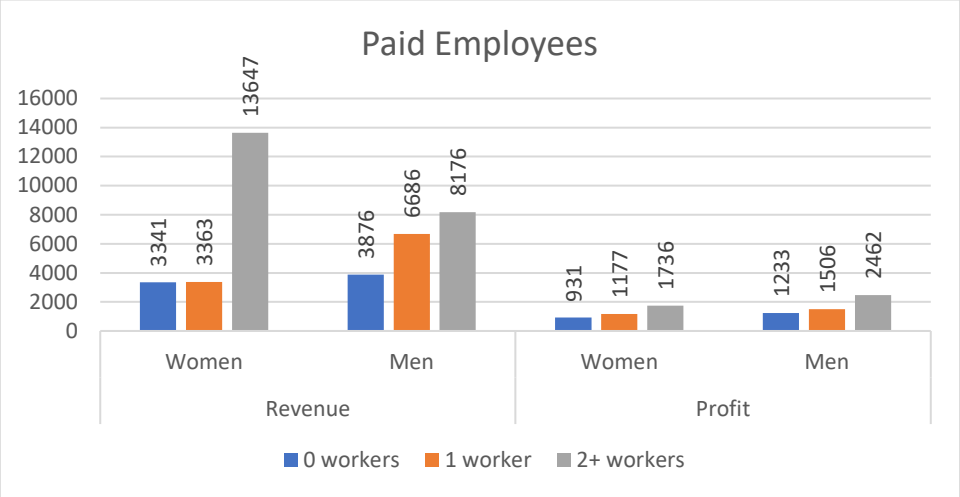


Figure 3. Formal business performance by number of employees and gender of owner



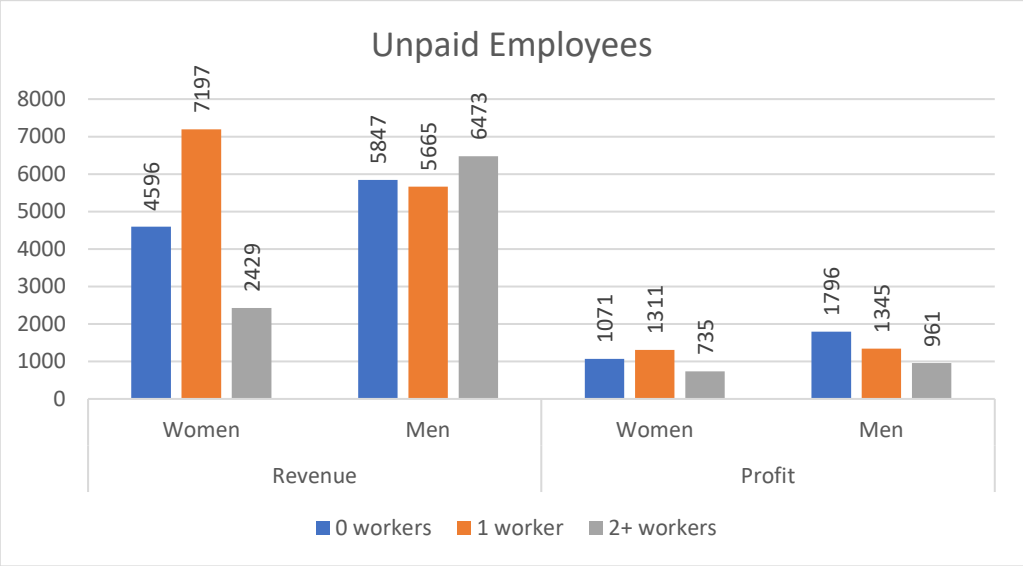


Table A1. Differences in perceptions of gender roles by all men and women surveyed (*weighted*)

Gender role attitudes (Proportion Agreeing with Statements)	**Women**		**Men**		**T-test of**
	Mean	**SD**	**Mean**	**SD**	**Differences**
Only men should work outside the home	0.246	0.43	0.215	0.41	0.03
It is not okay for women to work outside of the home, even if she has young children less than 5 years	0.174	0.38	0.257	0.44	-0.07**
Men should not perform household chores	0.289	0.45	0.328	0.47	-0.05
Women should perform household chores	0.977	0.15	0.98	0.14	-0.01
Men should not care for children/dependents	0.097	0.3	0.141	0.35	-0.03
Women should care for children/dependents	0.968	0.18	0.927	0.26	0.04***
Women are not as capable as men to manage workers.	0.06	0.24	0.137	0.34	-0.07***
Women are not as capable (intellectually) as men of being successful	0.066	0.25	0.099	0.3	-0.03*
Men should make all the important business and financial decisions in the family	0.375	0.48	0.467	0.5	-0.09**
Women farmers should focus on growing food for the family	0.319	0.47	0.289	0.45	0.031
It is not okay for a woman to grow crops for sale in the market	0.054	0.23	0.073	0.26	-0.02
Only men should grow crops for sale in the market.	0.239	0.43	0.178	0.38	0.05
It is not okay for a woman to manage men working on her land	0.041	0.2	0.087	0.28	-0.04**
It is okay for a man to manage women working on his land	0.948	0.22	0.971	0.17	-0.02
Observations	585		276		

T-statistics- * p<0.10, ** p<0.05, *** p<0.01