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SMALL AND MEDIUM ENTERPRISES
AND GLOBAL VALUE CHAINS
PARTICIPATION: EVIDENCE FROM NIGERIA

SMALL AND MEDIUM ENTERPRISES AND GLOBAL VALUE CHAINS PARTICIPATION: EVIDENCE FROM NIGERIA

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ABSTRACT

The study seeks to investigate factors that influence SMEs participation in Global Value Chains (GVCs) with focus on innovation and firms' characteristics. The World Bank Enterprise Survey data set which comprises 2676 firms was used. The Probit Model was employed to ascertain how the combination of private and foreign ownership, private ownership only and foreign ownership only would contribute to GVCs. The marginal effect explains the probability of these variables contributing to GVCs. The results suggest that the private sector participates more in GVCs, and that the size is significant with employees of more than 100. The study finds that hotel and restaurant sector participated more in GVCs compared to others. It further finds that the participation of Nigerian SMEs in GVCs is quite different from what obtains elsewhere. The study finds that the size of SMEs is important; but that it is common in private ownership that invests in hotel/restaurant sector which render services in GVCs.

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1.   Introduction

By definition, "a global value chain explains the full range of activities embarked upon to bring a product or service from its conception to its end use and how these activities are distributed geographically across international borders" (DFAIT, 2011). The nature and extent of industrialization as well as globalization seem to have influenced volume of foreign trade, and ushered in a more competitive and participative market conditions for Small and Medium Scale Enterprises (SMEs) globally. This new wave explains why SMEs are more domineering in productive and innovative activities, as well as, faster compared to government in which adaptation to market trends and changes in product dynamisms are slower. This slowness includes government's bureaucratic measure before adopting changes to meet market demands. The bureaucratic measure is referred to as governance in Humphrey (2001); Gereffi, Humphrey & Sturgeon (2005); Li-Sun (2010) and this governance structure include the complexity of transaction, the ability to code transactions and the capability of the supply base. Concerning governance, Humphrey, & Schmitz (2000); Humphrey (2001); and Giuliani, Pietrobelli & Rabellotti (2005) viewed it as an indirect control to upgrading of products by SMEs. This indirect control exhibits the possibility of fostering competition and challenging SMEs everywhere to improve their performance and increase competitiveness. With this challenge in upgrading, the presence of new products, low cost of production; producers enable SMEs to enter and remain in the global markets (Hobday & Rush, 2007). Despite these, upgrading has some drawbacks.

However, with the problem of governance and upgrading, SMEs in Nigeria can still compete in the global markets if the different upgrading approaches are implemented. For example, "process, product, functional and inter sectoral upgrading" (Humphrey, 2001). In Ernst (2001), these different approaches increase the survival rate of SMEs. The advantage of SMEs survival will not only be visible in an economy's Gross Domestic Product but rather increase circular flow of income and a direct positive impact on social welfare. For example, per-capita incomes, level of firm's expansion, product development, competition for market share and job creation are some of the "domestic activities" by SMEs. These competitive activities introduce the theory of GVCs (Gereffi et al., 2005) which involves outsourcing of goods from different locations at cheaper prices, more innovative, less distributive cost, no external government regulation from country A. The successes or failures of SMEs is highly dependent on "what" and "how" they embrace challenges to participate in GVCs (Gereffi 1994, 1999

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and Gereffi et al., 2005). Nigeria trades in several commodities, thus, for SMEs to participate, challenges such as markets for new buyers, suppliers must be outsourced, governance and product upgrading for new products to compete with international market standards are necessary (Gereffi, 1994; 1999). This upgrading method includes promoting research and development (R&D), product innovation and process innovation. In addition, the dimension and the trend of product development must be followed, for instance, the production of mobile phones. This is unique because it combines hardware and software from several countries and it is a proper example of integration because several SMEs in different countries participate to benefit from the global market (Lee, Gereffi & Nathan, 2013). The study emphasized on firm characteristics such as firm size, age, location with interest on business city (commercial city with large and international markets) and capital city (city where the seats of state governments are domiciled), access to credit, ownership structure, technological capabilities and level of education. Although Gereffi (1994, 1999), Humphrey and Schmitz (2000); Humphrey (2001); Giuliani et al. (2005), and Gereffi et al. (2005) have all focused on upgrading with respect to product. Studies such as Majumdar (1997), Lee (2009), and Harvie, Narjoko & Oum (2010) discussed upgrading with respect to firm size as an important factor for existing or new SMEs, and should be considered a priority to boosting GVCs participation. In addition, the size of SMEs, if large or small, roles they play, benefits they gain in market power and access to credit are problems further explained in (Lee, 2009). Nonetheless, Harvie et al. (2010), Wignajara (2013) and Arudchelvan & Wignaraja (2016) clarified the problems encountered by SMEs with size and performance in a competitive market, and then posited that most developing nations encounter firm size as a problem in GVCs participation.

There exists limited empirical evidence on investigating factors that influence Nigerian SMEs participation in GVCs for developing countries. Thus, policy decisions on GVCs in developing countries were formulated on research outcomes of GVCs studies in developed countries. Hence, there are differences in GVCs and the environment under which GVCs take place in developing countries. In addition, the different societal and economic structures create a difference in motivations and sources of GVC activities. Hence, the study empirically investigated factors that influence Nigerian SMEs participation in Global Value Chains (GVCs). The study covers manufacturing, retail and service sectors, and specifically analyzed a sample of 2676 firms from the World Bank Enterprise Survey data (2014).

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2.   LITERATURE REVIEW
SMEs and Global Value Chains in Nigeria.

The market challenge to larger firms in Nigeria have ignited a high possibility of spin- off of small-scale businesses that provide services to smaller population or smaller markets through competition in different sectors such as agricultural, manufacturing, small and retail businesses (Eniola & Eketbang, 2014). This challenge was contradicted by Ajayi & Morton (2015) which posit that the presence of SMEs in Nigeria is not because of market competition but rather due to global financial crises, high cost of employment, level of working experience obtained and a quest for self- employment. The increase in smaller establishments has increased the participation of SMEs in business activities. Different schools of thought have identified the importance of SMEs and how they paved way for increased job creation, low cost of production, supply of credit facilities, networking and new products for consumptions and services (Aremu & Adeyemi, 2011; Eniola & Eketbang, 2014).

These activities are driven by individual creativity and innovative activities which have promoted growth and development. However, there are problems associated with SMEs which have limited their expansion and most times led to premature death of some firms namely financial issues, managerial expertise, inadequate infrastructure, social cultural, location and economic problems (Agwu & Emeti, 2014). These problems have complicated the activities of many SMEs and made it difficult for them to achieve efficiency and success in market competition and innovation process respectively. Innovation processes are "strictly on innovations that have growth on businesses and returns" (Ajayi & Morton, 2015). Despite the presence of SMEs in Nigeria, different dimensions in growth rate can be traced to the role played by both private firms and government in the establishment of SMEs: strong and efficient regulatory system and external support to market networks.

The links between GVCs and international trade have taken a new dimension as compared to pre-existing situation of international trade between countries.

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[1] Trade creation refers to the increased level of trade that results from the removal of trade barriers within a free trade area while trade diversion occurs when trade between countries within a free trade area replaces trade with third countries not a party to that free trade area (UNECA, AU and AfDB, 2017)

[2] The paper is not focusing on the GATT principle but I refer the reader to the World Trade Organization's GATT principles and Ismail,
F. (2018) for the detail explanations of the mentioned principles in GATT.

[3] Critics of the neo-classical economist believed that asymmetric information among member States do undermine the interest of weaker member States in development by exposing them to harsh conditions that do not necessarily benefit them.

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To achieve GVCs in Nigeria, globalization, integration of firms with different countries, the production of goods and services are very important and open participation in open trade is viewed as one of the best options rather than protectionism that firms benefit (Cattaneo, Gereffi & Miroudot, 2013). The aim of globalization and integration of SMEs would connect different SMEs nationally and internationally.

These firms produce different parts of a product at cheaper prices around the world, and supply to other firms as sales in one market (Deardorff, 2001; Hummels, Ishii, & Yi, 2001; Saliola & Zanfei, 2009; Koopman, Wang & Wei, 2014 and Los et al., 2015). Although to achieve proper and successful integration, certain characteristics must be obtainable such as improved science and technologies, infrastructure, credit facilities, established government regulations, innovation, invention, availability of raw materials and improved awareness for use of and availability of products. Effective integration cannot be attributed only to macroeconomic policies but also to fiscal policies and structural adjustments (Allard, Kriljenko, Chen, Gonzalez-Garcia, Kitsios & Trevino, 2016).

Integration into the global value chains implies SMEs being part of an international production network4 in which intermediate inputs and services are produced in many different locations globally (Harvie et al., 2010; Ogunleye, 2014 & OECD, 2014). This explains how Nigeria and other African countries optimize; source their inputs for overall export of final output and the level of globalization that she has achieved.

However, by participating in GVCs, SMEs in Nigeria are bound to increase firm's activities globally (Gereffi, 1994). Nigeria's participation in GVCs can be measured through her contribution to backward and forward integration. Backward and forward integration was introduced in Gereffi et al. (2005); Ogunleye (2014) as the best option to indicate which country especially developing countries participate in the supply chain network of goods and services. The study focused on explaining how a developing country gains in the market with strong supply power, reducing cost at the same time with improved efficiency of product (backward integration). In the same vein, countries would rather prefer vertical form of supply of goods and services (forward integration)

4Production networks were first introduced by (Harvie et al. 2010; Wignaraja, 2013; and Arudchelvan and Wignaraja, 2016).

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excluding the intermediate buyer rather than horizontal form of supply (Gereffi et al., 2005). This approach only favors the final buyer rather than the seller. The explanation of backward and forward integration by Ogunleye (2014) proves that African countries such as "Seychelles, Tanzania and Lesotho who participated in backward integration intensely have recorded 74%, 67% and 66% respectively in GVC participation, while Nigeria has recorded only 45% of her supplies in GVC as backward integration. This suggests that these countries with higher percentages, source most of their inputs from developed countries as imported products to be used in overall export" (Ogunleye, 2014. This level of supply chain can be translated indirectly as the level of technological transfer within firms and countries (Bell & Pavitt, 1997). It has been observed that countries "with strong backward linkage (buying) tend to have weak forward linkages (selling)" and vice versa (Kowalski, Gonzalez, Ragousis & Ugarte, 2015).

The benefits from backward and forward integration in Nigeria cannot be fully estimated (Watts, 2014). The most important are geographical location, "size of market and level of development" (Kowalski et al., 2015). In addition, Fernandez-stark, Frederick & Gereffi (2011) confirmed that this integration process would open the doors to upgrading of old products, and these new imports would trigger a new era of economic prosperity with respect to diversification. In addition, SMEs in various countries are forced to improve their R&D, innovation and invention, produce at the minimal average cost to maintain the pace of demand for new products as well as compete against different countries to maintain market share (Ogunleye, 2014). Still on backward and forward integration, (Fernandez-stark et al., 2011; Ogunleye, 2014) emphasized more on backward and forward integration, how to measure and to improve GVCs participation in developing countries in Sub-Saharan Africa and conclude that if integration is to be very successful, government policy must be effective. Geographical proximity is very important because it bridges the distance between participants, reduces the cost of exchanging knowledge, information and then fastens the communication between actors (Doloreux, Zenker & Muller, 2008). The establishments of Free Trade Agreement (FTAs), Regional Trade Agreement (RTA) especially in West African states were regarded as strong ties in achieving this proximity (Izuchukwu, 2011).

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Role of SMEs in Global Value Chains in Nigeria
SMEs are regarded as the linking route to globalization. While the actualization of GVCs is a necessary condition, the interaction of producers and buyers from different countries, is the sufficient condition for SMEs activities (Ajayi & Morton, 2015). A study by OECD (2008) supports this claim. The presence of Multinational enterprises (MNEs) with its high-level global networking attracts foreign direct investment which leads to economic development in host countries through spillover of capital, technology, skills and knowledge (Meyer, 2004; Ghauri & Yamin, 2009; Lee & Gereffi, 2015). However, the presence of MNEs in Nigeria does not mean the distribution of goods and services in the market but rather create a linking network with other SMEs in different countries to improve operational activities. Cusolito, Safadi & Taglioni (2016) further highlighted the two main challenges SMEs face in low-income countries which could also determine its size as compared to other developing countries namely:

"Heterogeneity of firm's activities and uneven distribution across and within countries: with respect to countries income level", and
"Participation through indirect contribution to export".

Factors that influence Global Value Chains
GVCs should encourage countries to export more goods in which they have comparative trade advantage (Humphrey & Schmitz, 2002). Traded goods such as garments between East Asian countries and the USA (Gereffi, 1999), horticultural products between African countries and the United Kingdom (Dolan & Humphrey, 2000), and footwear from China and Brazil to the U.S.A, Europe and Africa (Schmitz & Knorringa, 2000) serve as examples of how GVCs participation and network existed. One major finding in this GVC is that access to different markets is highly dependent on global production networks of leading firms which are located in developing countries, for example, Nike, Adidas, Samsung, LG and Apple electronics. With respects to networks, (Schmitz & Knorringa, 2000) posit that "the dense of network of cooperation and affiliation by which firms are inter-related is obviously found in international trade". However, Humphrey & Schmitz (2002), Nadvi (2008) have an opposing viewpoint that not only encourages international trade but governance also[5]. Governance is not only to take decisions on "what" or "how" a good or service should be produced but also "when", "how much" and even

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[5] Governance means the framework and institutional structures by which rules (which includes laws at one extreme and norms at the other are set and implemented).

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"at what price" to produce (Morrison, Pietrobelli & Rabellotti, 2008). Gereffi (1999) & Fernandez- Stark et al. (2011) clearly emphasized the role of governance in global value chain.

Besides networking and governance, upgrading industrial clusters is also an important factor in determining GVCs by firms in developing countries (Gereffi, 1999 and Gereffi et al., 2005). However, Humphrey & Schmitz (2002) and Fernandez-Stark et al. (2011) clearly alerted on the challenges facing SMEs in developing countries as well as their level of performance and competitiveness. Constraints such as acquisition of production capability, market accessibility and distribution of gains explain how product suppliers in the network learn from leading firms through observation. Even though globalization has a strong relationship between firms and countries, it has shown many inequalities between and within countries as viewed by Kaplinsky (2004). With positive lenses, globalization has led to countries earning higher foreign income, improved availability, quality and increasingly differentiated final products. From negative perspectives, globalization has brought about growing inequality within and between countries, and this has led to increased poverty due to the failure in global integration.

Theoretical Literature

Three main diverging theoretical paradigms exist. The first is the *International fragmentation*[6] *of production approach* by Jones & Kierzkowski (1990) and Arndt and Kierzkowski (2001) which explains the specialization of firms at different stages of the production process based on geographical location. It explains the trade in components as opposed to final goods. The model argues that all goods traded globally have domestic value-added either through manufacturing and assembly processes or just through local transportation and retailing services (Falzoni and Tajoli, 2012). Notable works that contributed to the model of international fragmentation of production and trade in intermediate goods using the Ricardian and Heckscher-Ohlin type models are Arndt (1997), Yi (2003), Jones and Kierzkowski (2005), and Deardorff (2001a,b; 2005) etc. Another aspect of fragmentation is on firm's choice of organizational approach which incorporates firm heterogeneity such as works by Antràs and Helpman (2004) and Grossman and Helpman (2005). Also, Grossman and Rossi-Hansberg (2006) propose a formal model of trade in activities where offshoring acts as technological progress as well as results to a positive productivity effect which can generate gains for all domestic factors. The second is

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[6] The term international fragmentation was first introduced by Jones and Kierzkowski (1990), Hummels et al. (2001).

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the "New new" trade theory by Brander & Krugman (1983), Krugman (1991), Melitz (2003) and Helpman, Melitz & Yeaple (2004) which is based on firm heterogeneity, and argues that firms are different based on efficiency and the cost they incur while engaging in international trade. The third is the *technological capacity and national innovation systems* as factors that explain how firm behavior influences participation in global value chains.

Empirical Literature
Lindic (2015) empirically examines the Slovenian manufacturing and service firms using a panel dataset from 1997 to 2010. The study investigates the impact of outsourcing on relative employment of skilled employees in high and low-income countries. The study finds that: (i) off shoring has a stronger effect on the relative employment of skilled workers than outsourcing, (ii) controlling for high and low-income countries, there exist a positive effect on the relative share of skilled employees, and (ii) service firms in Slovenia have no significant effect on the skills share of firms, while off shoring to high income countries show a weak impact on the skill share than offshoring to low income countries.

Arudchelvan & Wignaraja (2016) focused on the import and export in Malaysia, and how they contribute to GVCs during Free Trade Agreements (FTAs) using data from Asian Development Bank. The probit model was employed to analyze the data. The rationale for the probit model was due to the fact that the dependent variable is binary. Also, Wignaraja (2013) studied five East Asian countries namely Malaysia, Thailand, Philippines, Indonesia and Viet Nam and employed probit model to test variables such as size of firms, technological license, R&D. The study analyzed how SMEs in these five countries would participate in production networks. The dataset consists of firm level dataset from World Bank Enterprise Survey. The results suggest that firm size is positive and significantly related to firm's participation in GVCs. The findings were consistent with those of Arudchelvan & Wignaraja (2016).

Gonzalez et al. (2015) which involves forty countries assume that not only factor endowments and cost are drivers for the emergence of services in GVCs, but that specific domestic structures of backward linkages are important. An OLS technique was employed alongside Generalized Method of Moments. The results suggest that manufacturing added value in final consumption, and this was vital in explaining value added in export. Variables such as availability of high skilled labor, patents,

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[7] A stratified random sample is one obtained by separating the population elements into non-overlapping groups, called strata and then selecting a simple random sample from each stratum (Lohr, Sharon 1999, pp.95).

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information technology and labor cost indicate both positive and negative significance.

3. METHODOLOGY

Data

Nigerian data from nineteen (19) states and across all six geo-political zones under the initiative of the World Bank Enterprise Survey Data collected between April 2014 and February 2015 were employed. It comprises two types of survey namely the innovative data and firm characteristics. It includes data on products innovation, process innovation, organizational innovation and market innovation, while the firm characteristics comprise manufacturing sector and two service sectors. The manufacturing sector was divided into seven different sectors namely food and beverages; fabricated metal products; non-metallic mineral products; furniture; publishing and other manufacturing. The service sectors include retail; wholesales; transportation; hotels and restaurants; repair of motor vehicle and other services. For survey accuracy, the sample was collected using stratified random sampling method[7].

The Model

The probit model was used to explain probability of occurrence especially when two dependent variables exist. GVCs participation and sustained export are both dependent and dummy variables. GVCs participation takes the value 1 if it participates and 0 otherwise if it does not, while the sustained exporter takes the value 1 if sales is greater than 5 and 0 if sales is less than 5. The study used GVC participation as dependent variable with dummies 1 and 0.

The core independent variables included is size of firms. Other independent variables include logarithm of size of firm, In age, food and Beverages, Furnitures, Hotel and Restaurant, Business city, Capital city, private ownership, Foreign ownership, International Standard Organization certificates (ISO), R&D expenditures, High school and Manager's Experience, ownership, access to credit, measure of innovation and human capital. Some control variables which ensures consistency were employed in the study. They include firm size as In size, ages as In age, location of firms - business (commercial nerve centre with international markets) city and capital (seat of government) city, three different sectors - food and beverages, furniture and hotel/restaurants.

The basic linear model is given by:

$$\text{GVC Participation} = f[\alpha_0 + \beta_1 \, Uit + \varepsilon_{it}] \qquad \forall \chi_1 > 0 \dots\dots (1)$$

Thus, GVC Participation

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$$f[\alpha_0 + \beta_1 \ln\_size + \beta_2 \ln_{age} + \beta_3 food\&beverages + \beta_4 furniture + \beta_5 Hotel\&Restaurant + \beta_6 businesscity + \beta_7 capitalcity + \varepsilon_{it}]$$

In model (1) above, U^{it} represents all control variables, while ε_{it} represents error terms.

Also, GVC participation $= f\alpha_0 + \beta_1\mu_{it} + \beta_2 x_{it} + \varepsilon_{it}$ $\geqslant 0$ …...............… (2)

The next model for manager's experience was included to estimate its impact on GVCs.
GVC participation $= f\alpha_0 + \beta_1\mu_{it} + \beta_3 x_{it} + \varepsilon_{it}$ $\forall i \geqslant 0$ …................… (3)

In determining the probability of how SMEs participate in GVCs, the marginal effect was calculated. This tells us the probability of a variable occurring as compared to the probit model which explains only the level of significance of a variable. The choice of the probit model is due to its popularity in the specification of an ordinal or a binary response model. The model treats the same set of problems such as logistic regression using similar techniques. The probit model is most often estimated with the use of the standard maximum likelihood method.

Variable	Obs	Mean	Std. Dev.	Min	Max
ln_size	2,231	2.336649	1.16309	0	8.779557
ln_age	2,649	3.039724	1.538913	0	7.612337
Food&Beve.	2,676	.0732436	.2605847	0	1
Furniture	2,676	.0650224	.2466115	0	1
Hotel&Rest	2,676	.0467115	.2110597	0	1
BusinessCity	2,676	.4047085	.4909273	0	1
Capital City	2,676	.2832586	.4506651	0	1
Bank Credit	2,652	3.467949	12.15979	-9	100
Non-Bank	2,529	.0818505	.2741911	0	1
Private owner	2,676	70.59865	42.14509	-9	100
Foreign owner	2,676	3.190957	14.04616	-9	100
R&D Exp.	2,596	.1737288	.3789491	0	1
ISO	2,473	.0970481	.2960831	0	1
High-School	2,652	46.32677	43.26935	-9	100
Manger Exp.	2,437	.5129257	.4999355	0	1

Source: Calculations using Nigerian Enterprise Survey Data (2014)

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It is also observed that the average value of the natural log of size is 2.33, with a standard deviation of 1.16. The natural log of age has an average value of 3.04, with a standard deviation of 1.53. The variables having minimum values of 0 and maximum values of 1 are dummy variables while the variables with a minimum value of -9 and a maximum value of 100 are measured in percentages. It is further revealed from the descriptive statistics that the natural log of size has the lowest number of observations compared to other variables in the model.

The marginal effect explains how each regressor in the model explains the probability of participation by private and foreign ownership in GVCs. The empirical results from the marginal effect suggest that a percentage increase in the natural logarithm of firm size increases the probability of private and foreign ownership participation significantly by 10.4%. However, a percentage increase in the natural logarithm of firm age decreases the probability of private and foreign ownership participation significantly by 1%. Food and beverages, furniture and hotel/restaurant do not possess significant influence on private and foreign ownership participation in GVCs. It is however revealed that for firms that produce food and beverages, there is 4.6% higher chances of participating in GVCs than those that do not. Firms that produce furniture have 4% higher chances to participate in the GVCs than those that do not produce furniture, while firms that are engaged in the hotel/restaurant industry have 6.6% higher chances of participating in the GVCs than those that do not.

Furthermore, firms in a business city have 7% higher chances of participating in GVCs as against those that do not operate in a business city. This relation is observed to be significant. It was further observed from table 1 that firms in a capital city have 5.5% lower chances of participating in GVCs than those who do not operate in a capital city. It is worthy to note that both private owned and foreign owned firms have the same chances of participating in GVCs. Bank finance and non-bank finance increase the chances of firm participation in GVCs by 0.3% and 0.1% respectively. High-school can also be revealed to increase the participation of private and foreign owned firms in GVCs.

The results from the marginal effect show the significant influence firm size has in increasing the probability of its participation in GVCs. This indicates that firms that are larger in size participates more in GVCs compared to firms that are smaller in size. Also, firms that have been in existence much longer have lower probability to participate in GVCs. The firm sector (food/beverage, furniture and

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hotel/restaurant) has no substantial contribution to the participation of private and foreign owned firms in GVCs. The result indicates the importance of location in GVCs. Firms situated in commercial nerve centers with international markets are more likely to participate more in GCVs than firms in capital city which are more likely to participate less in GVCs. Importantly, it does not matter whether firms are privately owned or foreign owned in terms of GVCs participation since the likelihood of participation are similar. Firms that are financed by banks have more likelihood of participating in GVCs relative to firms that are not financed by banks. In sum, this shows the importance of the banking sector to GVCs participation. The importance of high school to GVCs participation is further revealed.

Marginal effect explains the probability of participation by each variable, unlike the probit model which explains the level of significance. The pseudo R2 suggests that the estimated regression equation explain about 20% of the variation in the model. In_size is positive and statistically significant at 10% and 5%. In_age is statistically significant
but negative at 10 % and 5% levels. This suggests that it does not contribute to GVCs. The variables business city and capital city are inversely related to each other. While business city contributes positively at 10% level of significant, capital city contributes negatively at 10%. This holds for all the models. Ownership of SMEs plays a vital role in GVC participation. Despite private ownership being positive and constant at 10% level of significance, foreign ownership was found to be positive but declines from 5% to 1%. This clearly results to a fall in its contribution. The access to bank credit is positive and significant at 10% compared to non-bank which is positive and significant at 1%, and this suggests that bank credit contributes more to GVCs. The introduction of high school which is positive and significant at 10% explains the reduction in level of significance of In_size from 10% to 1%. In sum, despite firm size playing a vital role in explaining SMEs contribution to GVCs, it still does not capture the ownership structure.

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[11] The large population growth may support investment through the provision of cheap labour in the economy. However, a large population may not support rapid growth if their income level or purchasing power is low.

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Table 1: Private and Foreign Ownership Participation in GVCs

Independent Variables	Model 1	Model 2	Model 3	Model 4	Marginal Effect 5
ln_size	0.128***	0.133***	0.132***	0.0903*	0.104*
	(0.0394)	(0.043)	(0.048)	(0.053)	(0.006)
ln_age	-0.074***	-0.051*	-0.057*	-0.060*	-0.010*
	(0.028)	(0.030)	(0.033)	(0.036)	(0.004)
Food & Beverages	0.308*	0.292	0.256	0.394	0.046
	(0.185)	(0.198)	(0.203)	(0.247)	(0.028)
Furniture	0.293	0.415*	0.373*	0.347	0.040
	(0.194)	(0.218)	(0.220)	(0.236)	(0.027)
Hotel & Restaurant	0.459*	0.495*	0.331	0.572	0.066
	(0.266)	(0.289)	(0.299)	(0.395)	(0.044)
Business City	0.598***	0.518***	0.592***	0.599***	0.070***
	(0.104)	(0.113)	(0.122)	(0.131)	(0.015)
Capital City	-0.470***	-0.487***	-0.460***	-0.477***	-0.055***
	(0.104)	(0.112)	(0.121)	(0.131)	(0.015)
Private Ownership		0.009***	0.010***	0.008***	0.001***
		(0.000964)	(0.00102)	(0.00114)	(0.001)
Foreign Ownership		0.0074**	0.0065*	0.0066*	0.001*
		(0.00360)	(0.00366)	(0.00396)	(0.001)
Bank Finance		0.0364***	0.0325***	0.0298***	0.003***
		(0.00612)	(0.00687)	(0.00752)	(0.001)
Non-bank Finance			0.00619	0.00975*	0.001*
			(0.00440)	(0.00553)	(0.001)
ISO			-0.234	-0.220	-0.025
			(0.165)	(0.191)	(0.022)
R&D Expenditure			-0.00741	0.0217	0.004
			(0.132)	(0.143)	(0.016)
High-School				0.00883***	0.001***
				(0.00132)	(0.0001)
Manger Experience				-0.00214	-0.001
				(0.101)	(0.011)
Constant	1.229***	0.538***	0.547***	0.392**	
	(0.125)	(0.152)	(0.162)	(0.184)	
Observations	2,141	2,141	2,019	1,819	1,819
Standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					
Chi square	65.82	204.69	188.64	234.11	
Pseudo R²	0.0550	0.1710	0.1725	0.2337	

Source: Authors' calculation based on Enterprise Survey Data (2014)

Private Ownership in GVCs Participation

After stratifying ownership into two different strata (private and foreign), the pseudo R2 of the private ownership suggests the same level of variation of 20% in both private and foreign. In the different sectors, hotel and restaurants stands out from food & beverages and furniture with 5% level of significance. Private ownership showed high level of significance in all three models at 10% level of significance. Although other variables such as In_size, In_age, business city, capital city, bank and high school remain significant, and have the same result with respect to private ownership. The results explain further that, hotel and restaurant increased in level of significance from 1% to 5%. This increase was due to the introduction of high school in the estimated model. The size of firms is still positive and significant to SMEs participation and it explains the

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increase in size of SMEs. For example, the probability of firms participating increases from 12% to 24% as firm size increases from 25 to 50, and it increases further from 28% to 36% when firm size increases from 75 to 100. The result suggests further that, firms who enter and maintain a strong market share in GVCs experience economies of scale which helps in overcoming their initial fixed cost.

Foreign Ownership in GVCs Participation
The pseudo R2 explains that the model has about 20% variation in the data. In addition, the foreign ownership showed some different interpretations. These differences are showed in In_size which is positive and significant from and thus does not play any role in the contribution of SMEs to GVCs. Unlike the food and beverages; furniture and hotel and restaurant in model 1, the food and beverages industry showed positive level of significance at 10% in furniture industry is only significant in model 2 and contributes positively to GVCs at 10% level. The most important characteristics in these ownership structures is the hotel and restaurant industry. While the private ownership showed higher level of significance in all the models, the foreign ownership was positive and significant in GVCs in models 1 and 2. The ISO which is a measure of innovative activities is significant but non-positive, thus, does not contribute to GVCs. Variables such as In_size, hotel and restaurant, ISO and manager experience were less significant as compared to private ownership.

The study progresses by stratifying ownership into two (private and foreign ownership). The result from table 2 indicates that a percentage increase in the natural logarithm of size significantly increases the probability of private ownership participation in GVCs by 0.1%. However, the natural logarithm of age reduces the probability of private ownership participation in GVCs by 0.03%. Firms in the food and beverage industry as well as in the furniture industry have 3.2% and 4.2% higher chances respectively in participating in the GVCs than those that are not in these sectors. However, these relations are not statistically significant. It is revealed that private firms in the hotel/restaurant industry have a 7.3% significant higher chance of participating in the GVCs than those who are not in this industry. Furthermore, private firms which are located in the business city has a 6.7% higher chance of participating in the GVCs compared to firms which are not located in the business city. Private firms which are located in the capital city have a 5.1% lower chance of participating in the GVCs. It is also revealed from table 2 that bank credit increases private

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ownership participation in the GVCs by 0.4% while high school increases private ownership participation in the GVCs by 0.1%.

Table 2: Private Ownership Participation in GVCs

	Model 1	Model 2	Model 3	Model 4	Marginal Effect 5
Independent variables					
ln_size	0.128***	0.143***	0.136***	0.0851*	0.010*
	(0.039)	(0.0423)	(0.0433)	(0.0458)	(0.005)
ln_age	-0.074***	-0.0523*	-0.0503	-0.0286	-0.003
	(0.028)	(0.0301)	(0.0306)	(0.0321)	(0.004)
Food&Beverages	0.308*	0.296	0.283	0.277	0.032
	(0.185)	(0.197)	(0.200)	(0.207)	(0.024)
Furniture	0.293	0.407*	0.371*	0.358	0.042
	(0.194)	(0.216)	(0.215)	(0.225)	(0.026)
Hotel&Restaurant	0.459*	0.497*	0.485*	0.621**	0.073**
	(0.266)	(0.290)	(0.292)	(0.315)	(0.037)
Business City	0.598***	0.520***	0.529***	0.571***	0.067***
	(0.104)	(0.112)	(0.114)	(0.119)	(0.014)
Capital City	-0.470***	-0.463***	-0.415***	-0.440***	-0.051***
	(0.104)	(0.112)	(0.114)	(0.119)	(0.014)
Private Ownership		0.0084***	0.0085***	0.0066***	0.001***
		(0.001)	(0.001)	(0.001)	(0.000)
Bank Credit		0.0382***	0.0327***	0.0314***	0.004***
		(0.006)	(0.007)	(0.007)	(0.001)
Non-bank Credit			0.006	0.005	0.001
			(0.00433)	(0.00435)	(0.001)
R&D Expenditure			0.0274	0.0916	0.011
			(0.126)	(0.132)	(0.015)
High school				0.00898***	0.001***
				(0.00121)	(0.000)
Constant	1.229***	0.547***	0.543***	0.345**	
	(0.125)	(0.151)	(0.154)	(0.162)	
Observations	2,141	2,141	2,121	2,121	2121
Standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					
Chi (2)	65.82	199.81	187.43	247.76	
Pseudo R(2)	0.0550	0.1669	0.1650	0.2155	
Notes: Dependent binary variable :1= SMEs part of GVCs					

Source: Authors' 'calculation based on Enterprise Survey Data (2014)

Table 3 presents the results of foreign ownership participation in GVCs. The result from the marginal effect show that a percentage increase in the natural logarithm of firm size leads to a 7% increase in the probability of foreign firms participation in GVCs. However, a percentage increase in the natural logarithm of age leads to a 10% decrease in the probability of foreign firm participation in GVCs.

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Table 3: Foreign Ownership Participation in GVCs

	Model 1	Model 2	Model 3	Model 4	Marginal Effect 5
Independent Variables					
ln_size	0.128***	0.108***	0.115**	0.0593	0.007
	(0.0394)	(0.0413)	(0.045)	(0.0506)	(0.006)
ln_age	-0.0744***	-0.062**	-0.0682**	-0.0609*	-0.010*
	(0.028)	(0.029)	(0.031)	(0.0345)	(0.004)
Food & Beverage	0.308*	0.290	0.260	0.402*	0.050*
	(0.185)	(0.186)	(0.189)	(0.237)	(0.029)
Furniture	0.293	0.345*	0.332	0.288	0.035
	(0.194)	(0.202)	(0.204)	(0.225)	(0.028)
Hotel&Restaurant	0.459*	0.526*	0.410	0.573	0.071
	(0.266)	(0.275)	(0.283)	(0.378)	(0.016)
Business city	0.598***	0.559***	0.623***	0.648***	0.080***
	(0.104)	(0.107)	(0.114)	(0.127)	(0.016)
Capital city	-0.470***	-0.475***	-0.473***	-0.486***	-0.060***
	(0.104)	(0.108)	(0.114)	(0.125)	(0.015)
Foreign ownership		0.00459	0.00419	0.00529	0.001
		(0.004)	(0.00399)	(0.00431)	(0.001)
Bank credit		0.0402***	0.0379***	0.0338***	0.004***
		(0.007)	(0.00719)	(0.00767)	(0.001)
Non-bank credit			0.00518	0.00826	0.001
			(0.00439)	(0.00544)	(0.001)
ISO			-0.306**	-0.292	-0.036
			(0.152)	(0.180)	(0.022)
High school				0.0112***	0.001***
				(0.00126)	(0.001)
Manger Experience				-0.00711	-0.001
				(0.0979)	(0.012)
Constant	1.229***	1.194***	1.206***	0.843***	
	(0.125)	(0.129)	(0.137)	(0.165)	
Observations	2,141	2,141	2,034	1,832	1832
Standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					
Chi (2)	65.82	124.73	125.83	215.69	
	0.0550	0.1042	0.1113	0.2087	
Notes: Dependent binary variable :1= SMEs part of GVCs					

Source: Authors' Calculation using Enterprise Survey Data (2014)

The result indicates that firms in the food and beverage industry have a 5% statistically significant chances of participation in GVCs than those outside the industry. Foreign firms located in business city have 8% significant chances of participation in GVCs than those who are not located in the business city, whereas foreign firms located in capital city have 6% significant lower chances of participation in GVCs than those who are not located in the capital city.

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It is further observed that bank credit and high school significantly increases the probability of GVCs participation of foreign firms by 0.4% and 0.1% respectively.

The aim of marginal effect is to examine not just the level of significance but also the probability of these variables contributing to GVCs. However, the paucity of literature on marginal effect on GVCs in Nigeria would limit its comparison to different literature. The study finds that the size of firms is determined by the total number of employees. The marginal effects in all three analyses, translates how the combination of both private and foreign ownership have a probability of 10.4%, while foreign ownership has 0.7% which is below 1%, private ownership have 1% of participating in GVCs. The combination of both private and foreign ownership would have higher probability as compared to individual ownership. Comparing business city and capital city which translates into the location of SMEs, the business city has positive and higher probability of participation at 7%; 8%; and 6.7% in the combination of private and foreign ownership, foreign ownership and private ownership respectively. Capital city has lower probabilities of participation namely 5.5%; 6% and 5.1% respectively. This suggests that SMEs with this ownership structure would not contribute to GVCs.

Access to credit which is divided into bank credit and non-bank all have smaller probabilities. Bank credit as a source of loan, albeit positive, contributes about 4% to GVCs. The combination of private and foreign ownership contributes only about 1.1% when credit is obtained from non-banking sector. Thus, for SMEs to contribute to GVCs, they should have higher probability of obtaining loans from the bank. High- School which measures the level of experience of workers in a firm has the same likelihood of 0.1% probability of participating in GVCs.

The variable In_size, is positive and statistically significant. The level of significance is quite small and confirms the hypothesis that *In_size is positive and contributes to GVCs*. This result is consistent with Wignaraja (2002, 2013); Harvie et al. (2010) and Arudchelvan & Wignaraja (2016) that firm size is positive and highly significant in SMEs participation in GVCs. Supporting this positive relationship are Majumdar,

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1997; Biesebroeck, 2005; Serrasqueiro & Nues, 2008; Lee, 2009; Kushnir et al., 2010; and Luqman et al., 2017. However, Luqman et al. (2017) pointed out that firm size will have negative relationship in terms of total assets on performance. The role of age in determining how firms participate in GVCs is highly dependent on the level of experience (Deed & Rothaermel, 2003). Accumulated knowledge emanates from experience over a period, and this is common in older firms. Theoretically, the older the firm is, the more experienced they become especially in productive activities (Deed & Rothaermel, 2003; Kushnir et al., 2010; Serrasqueiro & Nunes, 2012. According to Serrasqueiro & Nunes (2012), the age of firms is necessary but not sufficient to boost GVCs. This means that attention should be placed on the features of young firms, such as new technology and the ability to transform R&D would encourage younger firms to compete against older firms and survive market fluctuation (Kushnir et al., 2010). Despite that older firms lose the battle of innovative activities and product upgrading to younger firms (Gereffi, 1999), it compensates this loss through loan finance from financial institutions. Credit institutions would always patronize older firms especially in developing countries. This is referred to as de facto advantage because of low risks involved with older firms unlike younger firms. The older firms have higher access to credits but this has no correlation to their level of innovation (Deed & Rothaermel, 2003).

According to Biggs & Shah (2006), market and institutional failure were regarded as the primary reason for negative relationship between private ownership of SMEs and GVCs. However, in Kay (1993), the solution to these failures was regarded as networking which consists of the "architect of contacts that solve the problems of SMEs competitive potentials" (Kay, 1993). Competitive potentials include but not limited to financial flows, sales revenue, payment to suppliers, returns to social capital and finally transfer of knowledge. Biggs & Shah (2006) had referred to this as value-added to SMEs output. In Nigeria, most private SMEs establish linkages with experienced firms of high-income countries, which are resource intensive, economically structured, growing interest in extracting and outsourcing the products of some firms as inputs (Kay, 1993; Morris, Kaplinsky & Kaplan, 2012).

Cooke (2003) emphasized that human capital popularly referred to as knowledge capital rises with innovative inputs, the firm's internal knowledge for innovation, and cooperation on innovation with domestic universities. In addition, Wignaraja (2013) supported this statement and concluded that the size

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of firm and level of education simultaneously contribute to GVCs. Despite high school education influencing the size of firm, it explains the sudden drop in level of significance (Tamer et al., 2003).

Thus, manager's experience plays no role in foreign domestic ownership, reasons such as high cost in hiring experienced managers especially with firm size, low productivity in foreign domestic firms entering manufacturing market who cannot speak the language, or does not know the market well (Quan, 2008). To strike a balance between private ownership and foreign domestic ownership, government intervention seems imperative. Government intervention enacts policy that encourages co-existence of ownership, transfer of knowledge, product up grade and improved networking (Pack & Westphal, 1986) and Gereffi et al., 2005).

Most importantly, Audretsch et al. (2005) pointed out that SMEs in Nigeria need to affiliate and collaborate with foreign corporations. It is expected that affiliation would "limit lock-in effect with the presence of international ties". For example, SMEs in Nigeria cooperate less with foreign SMEs, limiting its resources and participating more in forward integration (Jegede, 2012; Ogunleye, 2014). Access to credit in Nigeria is presumed the most important factor for start-ups and the daily activities of SMEs (Ogunleye, 2014). Although, Wignaraja (2013) and Arudchelvan & Wignaraja (2016) posit that access to credit, and location of SMEs are positively related and significant to GVCs. This is consistent with the finding of this study as well as with the last hypothesis that access to bank credit and SMEs located in business cities are positive and significant. This is justified by the fact that SMEs located in business cities like Lagos, Kano, Port Harcourt, Aba, Onitsha, Nnewi amongst others have more tendencies to attract huge business, and is influenced by the concentration of banks, population and social activities. Despite these, the theory of upgrading and governance by Gereffi (1994, 1999) would not be undermined, and this would motivate SMEs to compete to attract larger market size. Thus expansion, improvement on innovative activities such as designs, introduction of new products, will facilitate the demand for capital and location of firms.

Robustness Checks

To check for robustness of empirical results, different estimation using the same probit model, excluding In_size and replacing it with large firms was

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[8]SME in this chapter represents small firms.

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done. The results were slightly affected by larger firms compared to SMEs8 which were non- sequential, and hence, ignored. This novel approach was not employed by previous studies such as Harvie et al. (2010), Wignaraja (2013) and Arudchelvan & Wignaraja (2016). The coefficients of the large firms were significant in the three models, and they exhibited signs of consistency with GVCs relative to SMEs which were insignificant. Rather than use furniture, food and beverages, hotel and restaurants as the core sectors of focus, the manufacturing and self-service sectors were used. Due to these fundamental changes, the results were slightly adjusted. The results show that business city, private ownership, foreign ownership, bank credit, non-bank credit and high school were significant and positive except In_age which was significant but negative. These variables further explain their consistency in contributing in GVCs. Business city and private sector showed high level of significance. This further explains what drives the location of firms. One would puzzle why business city instead of capital city. It could be explained away by population, location of banks, commercial activities and firm clustering which attracts most SMEs to business cities than to capital cities. It was observed that the other two sectors contributed less to GVCs. More attention was focused on hotel and restaurants as the main drivers of and major contributors to GVCs in Nigeria. The marginal effect which was used to measure the probability of participation in GVCs indicate that large firms and business city have the highest probability of 0.06 (6%), while variables such as private ownership, foreign ownership, bank credit, non-bank credit and high school have probability less than 0.01 (1%) suggesting that their level of participation was miniscule. In sum, SMEs in Nigeria have the tendency to participate in GVCs if the firm size is large, and the firm is located in business cities and focuses on service rendering activities in hostel and restaurants. Although the combination of private and foreign ownership is required but higher probability would be possible with private owners than foreign domestic owners. Such reasons as population size, capital base, and the ability for large firms to access to bank credits could complement for participation in GVCs.

Conclusion and Policy Implications
Three main findings were observed. First, SMEs size was important in GVCs participation. Even among the SMEs, firm size was found to be positive and significant in the three models indicating strong contribution to GVCs. Nevertheless, the robustness checks clearly identify the problem of size and streamline it to larger SMEs with employees greater than 99 as against smaller

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SMEs with employees between 5 and 99. These results imply that economies of scale and SMEs resources, which are positively related to firm size, are relevant in overcoming initial entry into the value chains. Recent theories on GVCs participation indicates that shoes, electronics, and manufacturing have dominated the market over the years (Arudchelvan & Wignaraja, 2016). However, hotel and restaurant emerged as the most successful sector when analyzing the significance of Nigerian SMEs participation in GVCs. This result is consistent with Christian & Nathan (2013) and Daly & Gereffi, (2017). They posit that hotel and restaurant participation relies on nature and extent of tourism. Despite tourism providing revenue for countries in developing countries, the most important part of GVCs participation is the link between consumers and service providers (Daly & Gereffi, 2017).

Second, the theory of upgrading and governance, according to Gereffi et al. (2005), Fernandez-Stark et al. (2011) outlined how SMEs would improve their GVCs participation. This entails improvements in technology, service capabilities, and knowledge transfers. All of these translate into prompt and efficient service delivery, improved internet services used in and by hotels and restaurants, improvement in overall services rendered. This would enable customers to have easier access to services and products globally, besides; faster feedback of information such as inquiry and continuous upgrades in service packages. However, upgrading would be unsuccessful if governance was lacking and lagging. Gereffi (1999) and Fernandez- Stark et al (2011) had argued that these simultaneous activities would improve GVCs participation.

Finally, GVCs participation depends on the effectiveness of public policy. Given the intractable and pervasive corruption, governments at all levels have a huge role to play. This expected interventionist role would minimize both market failure and government failure. For example, if governments assist SMEs to obtain credits/loans, establish networks with foreign firms, support knowledge transfers and encourage products' standardization, massive confidence would be restored. This would encourage producer-buyer relationship in global transactions (Gereffi, 1994).

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Appendix A
Firms Characteristics

Types of Traders	Count	%
Direct Exporters	2658	99.3
Indirect Exporters	2659	99.3
Importers	1041	39
No answer	1554	58.1
size		
Small	2451	91.5
Large	225	8.4
Sectors		
Fabricated Meta lProducts	170	6.3.
Food & Beverages	196	7.3
Furnitures	174	6.5
Gaments	146	5.5
Non metalic menerals	160	6
Other services	103	3.6
Repairs of motor vehicle	136	5.1
Wholesales	116	4.3
Hotels & Restaurants	125	4.7
Retail	127	4.8
Transport	106	4
Publishing	149	5.6
Other manufacturing	185	6.9
Retail Panel	259	10
Other Panel	212	8
Manufacturing Panel	312	11.7
Owenrship		
Private	2676	100
Foreign	2767	100
Public	2676	100
Total number of respondents	2676	100

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Appendix B
Robustness Checks Results

	(1)	(2)	(3)	4
VARIABLES	gvcpatip	gvcpatip	gvcpatip	marginal Effect
large	0.302**	0.336**	0.424**	0.068**
	(0.134)	(0.149)	(0.170)	
ln_age	-0.117***	-0.0986***	-0.0748***	-0.012***
	(0.0239)	(0.0256)	(0.0285)	
Manufacturing	0.0123	0.0435	0.189	0.030
	(0.112)	(0.121)	(0.136)	
If firm is a Services (non -Retail) firm	-0.0211	-0.0810	-0.0404	-0.007
	(0.115)	(0.123)	(0.137)	
Business City	0.454***	0.374***	0.367***	0.059***
	(0.0915)	(0.0990)	(0.109)	
Private Ownership		0.00923***	0.00727* **	0.001***
		(0.000946)	(0.00106)	
Foreign Ownership		0.00984***	0.00806**	0.001**
		(0.00362)	(0.00384)	
Bank Credit		0.0354***	0.0188***	0.003***
		(0.00542)	(0.00601)	
Non-bank Credit			0.0195***	0.031***
			(0.00618)	
High-School			0.0111***	0.018***
			(0.00130)	
Manager Experience			-0.0559	-0.009
			(0.0994)	
Constant	1.290***	0.633***	0.247	
	(0.118)	(0.140)	(0.167)	
Observations	1,532	1,532	1,413	
Standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				
Chi square	53.67	220.83	298.71	
Pseudo R2	0.0441	0.1814	0.2686	

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Appendix C
Pearson Correlation Matrix

Correlation matrix coefficients are significant at 0.05

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
tc	1														
ye	0.1411*	1													
&Bev.	0.1180*	-0.0139	1												
ture	-0.0310	0.0462*	-0.0741*	1											
&Rest.	0.0543*	0.0479*	-0.0622*	-0.0584*	1										
es city	0.0017	-0.0241	-0.0389*	0.0612*	-0.0057	1									
alicity	-0.0454*	-0.0591*	-0.0303	0.0058	-0.0095	0.4617*	1								
te	-0.1014*	-0.1069*	0.0049	-0.0523*	0.0217	0.0893*	-0.0128	1							
gn	0.1775*	-0.0353	0.0487*	-0.0204	-0.0205	0.7727*	0.0913*	-0.2080*	1						
	-0.0163	-0.0206	0.0129	-0.0216	-0.0403*	0.3947*	0.3328	-0.0120	0.1545*	1					
Bank	0.1213*	-0.0916*	0.0193	-0.0047	-0.0457*	0.3611*	0.0332	-0.0361	0.1160*	0.2880*	1				
exp.	0.2288*	-0.0001	-0.0117	-0.0193	-0.0220	0.3465*	0.0899*	-0.0813*	0.1139*	0.0868*	0.0230	1			
	0.3208*	0.0600*	0.0482*	0.0032	-0.0093	0.3706*	-0.0519*	-0.0557*	0.1478*	0.0521*	0.0202	0.1612*	1		
School	0.1401*	-0.0866*	0.0252	-0.0166	0.0083	0.2203	-0.0533*	0.3069*	-0.0185	0.0124	-0.0094	-0.0228	0.0804**	1	
ager.Exp.	-0.0106	0.0087	-0.0342	-0.0054	-0.0734*	0.2280	-0.0336	0.0421*	-0.0115	0.0023	0.0489*	-0.0091	0.0213	0.0417*	1