Influence of subcontracting constraints on the performance of manufacturing industries in Nigeria

Victor Chukwunweike Nwokocha* and Iganatius Ani Madu

Department of Geography, University of Nigeria Nsukka, Nigeria

(Received 26 July 2015; accepted 28 September 2015)

In this work, an attempt has been made to show the influence of subcontracting constraints on firm performance in Nigeria. The study in line with the literature identified a number of constraints hindering an effective subcontracting arrangement in the study area. While the constraints were found not to have affected the use of subcontracting in the country, low capital intensity, disclosure of commercial secrets, poor services and interest conflict were found to have restricted subcontracting arrangements in the study area to sharing of equipment and short-term contracts. These constraints however were found not have affected the performance of manufacturing industries in the study area. This paper keeping in mind the findings of this study suggested that manufacturing industries in Nigeria should invest more in machineries and tools so as to increase subcontracting co-operations among industries.

Keywords: subcontracting; firms; performance; manufacturing industries; constraints; Nigeria

1. Introduction

Industrialisation is one of the packages in the economic development process of any country that could be used to accelerate economic growth. It acts as a catalyst to transform the economic structure of countries, from simple, slow-growing, and low-value activities to more productive activities (manufacturing) that enjoy greater margins driven by technology, and have higher growth prospects (Logan, 2006).

The success of industrialisation or industrial production, however, largely depends on the establishment of useful linkages between industries (Nguyen and Khac, 2013). Industrial linkage is the interrelationship amongst various industrial activities through the input–output relationship or the economic value chain (Mayhew, 2009). Subcontracting which is a type of industrial linkage based on alliance is a work contract that externalise production processes from one firm to another through interfirm relationships (Ajayi, 2007). In developing countries, business linkages with local small and medium enterprises, including procurement, distribution and sales, offer large firms an avenue through which to address some of these concerns. These relationships can allow large firms to reduce input costs while increasing specialisations and flexibility.

In Nigeria, subcontracting; a strategic positioning of industrial activities started in the early 1960s, the post-independence period (Ajayi, 2007). The earliest stage in the adoption of production subcontracting as an industrial production technique in Nigeria
was characterised by insignificant growth and rapid growth thereafter. Subcontracting became very important after the introduction of the Structural Adjustment Programme in 1986, and it is perceived by industrialists as very important in reducing the cost of production (Ajayi, 2007) and most recently following the works of Nwokocha, Madu, Ocheje, and Olerum (2015a), subcontracting is very important in enhancing the operational efficiency in industries, induce specialisation so as to gain professional resources and to strengthen cooperation amongst industries.

Firm performance on the other hand is a relevant construct in strategic management research and frequently used as a dependent variable. Despite its relevance, there is hardly a consensus about its definition, dimensionality, and measurement, what limits advances in research and understanding of the concept (Santos & Brito, 2012). The research into firm performance suffers from problems such as lack of consensus, selection of indicators based on convenience, and little consideration of its dimensionality (Combs, Crook, & Shook, 2005; Crook, Ketchen, Combs, & Todd, 2008; Richard, Devinney, Yip, and Johnson 2009). Many studies measure firm performance with a single indicator and represent this concept as one-dimensional, even while admitting its multidimensionality (Glick, Washburn, & Miller, 2005). If several dimensions exist, a researcher should choose the dimensions most relevant to his or her research and judge the outcome of this choice (Richard et al., 2009). Ray, Barney, and Muhanna (2004) stress this, warning against the difficulties of testing the resource-based theory using aggregated measures of performance and suggesting the use of indicators directly connected to the resources under analysis.

Consequently, this paper proposes to use a multidimensional measurement model of firm performance, structured in the Goal-Setting Theory (Chong, 2008; Locke & Latham, 2002) in order to assess the influence of subcontracting constraints on firm performance in Nigeria. Goal setting is the mechanism by which a firm delivers results against its strategy (e.g. subcontracting) on the extent to which there is clarity, challenge, commitment, feedback, and task complexity (Locke & Latham, 2002). It is explained using a combination of both financial and non-financial indicators. The financial indicators are: sales growth, growth in profits, changes in assets by gross value plant and machinery, return on assets to measure capital efficiency. The non-financial indicators were: growth in market share; product success; increase in number of employees and; labour productivity (Gakure, Kimemia, & Waititu, 2014; Hu, Zheng, & Wang, 2011; Kongmanilaa & Takahashib, 2009; Marimuthu, Aorkiasamy, & Ismail, 2009; Ongonga & Abeka, 2011; Tuan and Yoshi, 2010).

Empirical researches on subcontracting have received growing attention in the academia during the past few years. This is evidenced by an increasing number of publications and studies on the topic (Ajayi, 2001, 2002, 2003, 2007; Berry, 1997; Diaz-Mora & Triguero-Cano, 2007); Dahane, Clementz, & Rezg, 2008; Dahane, Dellagi, Clementz & Rezg, 2011; Deardorff & Djankov, 2000; Furlan, Grandinetti, & Camuffo, 2007; Grossman & Helpman, 2005; Gubik, 2005; Hajej, Rezg, & Gharbi, 2014; Kongmanila and Takahashi, 2009; Nwokocha et al. 2015a; Nwokocha, Madu, Ocheje, Olerum, & Nwosu, 2015b; Taymaz and Kiliçaslan, 2002; Tuan and Yoshi, 2010; Watanabe, 1971). According to these studies, subcontracting helps small and medium scale enterprises as well as large scale firms to stimulate, reduce, and control operation cost in manufacturing, improve company’s focus, and to access world class capabilities, develop joint maintenance and production strategies amongst others.

Similarly, researches on subcontracting constraints have never fallen short in the academia. Some of these researches include the works of (Annim & Machethe, 1998;
Bbenkele, 1998; Dahane et al., 2008; Hajej et al., 2014; Kumar & Subrahmanya, 2007; Okatch, Mukulu, & Oyugi, 2011). While the works of Dahane et al. (2008), generalised subcontracting constraint in computational engineering, Hajej et al. (2014), developed optimal production plans of principal and subcontracting machines which minimises the total production and inventory cost for cases without and with returned products under service level and subcontracting transportation delay. These two studies however were structured to solve subcontracting constraint arising from transportation delay, joint maintenance, and production management. Similarly, while Annim and Machethe (1998), in a study on business linkages in Kwazulu-Natal, point out that the constraint on the expansion and improvement of subcontracting linkages is, according to suppliers: limited application of new technology, poor product quality, unreliable delivery of goods or services, and high products prices, the studies of Bbenkele (1998) and Okatch et al. (2011) posited that the constraints to subcontracting are inability of the SMEs to supply quality products to schedule, lack of local suppliers for certain parts, the proliferation of makes and models, and competition from imported second hand vehicles from Japan and Europe.

Conceding from the above, there is a widespread consensus on the constraints of subcontracting on industrial activities. These empirical findings, however, did not state the influence or contributions of these constraints to the performance of manufacturing industries. Following the findings of Berry (1997), Yasuda (2005), Marsall, Mcivor, and Lamming (2007), and Gakure et al. (2014)), which suggested that subcontracting has a positive impacts on firm’s performance and the works of Hu et al. (2011), which observed that there is no significant relationship between subcontracting and firm performance, it will be difficult to make an informed assessment on the influence of subcontracting constraints on firm performance. This work is thus oriented to investigate the influence of subcontracting constraints on the performance of manufacturing industries in Nigeria.

1.1. Theoretical framework

The theoretical framework for analysing subcontracting is hinged on three theories. These theories are the dualistic approach, development approach, and networking and clustering approach. While dualistic approach considers subcontracting as an unequal power relationship whereby large contractors realise benefit at the expense of small contractors, development approach formulated by development economists considers subcontracting as a relationship between large and small firms, but emphasises a positive role of it.

The networking and clustering approach, largely regarded as the modern theoretical foundation of subcontracting, supports networking initiatives and the development of industrial cluster (Pyke, 1992; UNCTAD, 1994). In the case of the cluster approach, subcontracting itself is one of the main types of networking on which clusters could be established. This approach looks at a group of firms cooperating (and competing) within a complex web of supportive institutions. Externalities, linkages, and economics of scale generated by this form of cooperation and competition are internalised by the network so that the collective efficiency and flexibility of the industry is enhanced (Ceglie & Dini, 1999).

From the foregoing, the approaches to subcontracting have shown that subcontracting is a form of relationship established by firms not only to be more competitive in their production activities, but also to share mutual benefits. These approaches however
failed to disclose the impact of subcontracting constraints on the performance of manufacturing industries. Based on this, three key questions are posed in this research in order to answer the above-stated question:

(1) What are the constraints hampering effective subcontracting arrangement?
(2) Have these constraints affected the use of subcontracting arrangement by firms?
(3) Have these constraints affected the performance of firms?

This work tends to explore the lacuna in the approaches to subcontracting in order to strengthen it.

1.2. Material and methodology
The purpose of this study was to establish the impact of subcontracting constraints on the performance of firms in Nigeria. The study adopted a number of methods comprising semi-structured interviews, field observations, reference to relevant literature, and questionnaire survey of 120 manufacturing industries as described elsewhere (Nwokocha et al., 2015a).

The appropriate sample size for the population-based survey was determined largely by the estimated prevalence of the variable of interest – subcontracting in this instance (estimated at 15%); the desired level of confidence, 95%; and the acceptable margin of error, 5% (standard value of .05). A pilot test on 20 firms helped to remove ambiguities and improve the instrument as well as test for its reliability and validity. Open- and close-ended questions asking respondents to rate various questionnaire items using a five-Likert scale of; 5 – very important, and 1 – not at all important. Likert-type ordinal scale representing a spectrum of subjective feelings and opinions were used to solicit specific responses from the industrialists.

1.2.1. Instrument/questionnaire validation
To establish the degree of reliability of the questions in the questionnaire, 20 manufacturing industries were made to rate each question in the questionnaire on a five-point scale. Principal Component Analysis method was used to extract the factors. The criteria states that: Cronbach’s Alpha of a scale should be greater than .70 for items to be used together as a scale while factor loadings greater than .40 are considered statistically significant for studies with sample size less than 200. Therefore, in the present study, ±0.40 was used as the cut-off for loadings since the sample size of the study was less than 200. The higher the factor loadings were, the closer they were related to the variable.

1.2.2. Constraints to subcontracting
Constraints to subcontracting were the independent variable in this study. Following our field observations, fourteen (14) variables were identified as the constraints to subcontracting in the industrial sector of Nigeria. The constraints were analysed using a five-Likert scale of; 5 – very important, and 1 – not at all important. The pilot test result can be seen in Table 1.

Following the results in Table 1, the original 14 factors which constituted the constraints to subcontracting were reduced to 10 factors. This was because four factors with
loadings less than .40 were discarded as shown in Table 1. Thus, ten (10) factors with factor loadings between .55 and .93 were subsequently considered valid as the constructs to represent the constraints to subcontracting. The Cronbach’s Alpha for these 10 factors was .91, which exceeded the reliability cut-off value of .70.

### 1.2.3. Firm performance

Firm performance was the dependent variable in the present study and in accordance with the literature, a combination of both financial and non-financial indicators led to a balanced performance measurement. The pilot test was conducted using a five-Likert scale of; 5 – significantly increased, and 1 – significantly decreased.

Firm performance measures had a total of 8 items generated from literature comprising both the financial and non-financial indicators. The results indicate that with factor loadings of between .70 and .90, the construct of the 8 measurement items was valid for firm performance (see Table 2).

The Cronbach’s Alpha coefficient for the 8 indices was =0.92, which means the instrument had an excellent level of consistency, and fit for use in data collection.

### Table 1. Factor analysis of subcontracting constraints.

| Items                              | Factor loading |
|------------------------------------|----------------|
| Proliferation of makes              | 0.67           |
| Increased demand for specialised technology | 0.29*         |
| Low visibility                      | 0.56           |
| Poor services                       | 0.70           |
| Limited application of new technology | 0.83           |
| Competition from imported parts     | 0.86           |
| Low capital intensity               | 0.81           |
| Lack of local suppliers for certain parts | 0.58           |
| Unfulfilled order from subcontractors | 0.13*         |
| Interest conflicts with subcontracting partners | 0.66         |
| Disclosure of commercial Secrets    | 0.55           |
| Legal disputes                      | 0.11*          |
| Weaken Culture                      | -0.02*         |
| Decrease compatibility of innovation | 0.75           |
| Number of Items                     | 14             |
| Cronbach’s Alpha                    | 0.91           |

Notes: Authors Computation, 2015.
NB: The factors marked with (*) were eliminated from further analysis.

### Table 2. Factor analysis of firm performance.

| Items                              | Factor loading |
|------------------------------------|----------------|
| Growth in sales (volume)           | 0.90           |
| Growth in profit                   | 0.88           |
| Gross value of capital (machinery) | 0.81           |
| Return on assets                   | 0.78           |
| Growth in market share             | 0.87           |
| Product success                    | 0.76           |
| Labour productivity                | 0.71           |
| Increase in workers                | 0.70           |
| No. of indices                     | 8              |
| Cronbach’s Alpha                   | 0.92           |

Note: Author’s Computation, 2015.
1.3. Data analysis

Ordinal multinomial logit model was used to test for the effect of explanatory variables on those responses that had more than two categories. Similarly, ordinary logit model was used for binary responses. Relevant statistical techniques were used to analyse the data. All analyses were carried out with the aid of Statistical Packages for Social Sciences version 17 (SPSS 17).

2. Results

The result of the study is discussed below. The focus is on the impact of subcontracting constraints on the performance of manufacturing industries in Nigeria.

2.1. Analysis of respondents

Out of the 120 questionnaires administered, 80 (66.7%) were considered valid, with no missing data. The response rate of 66.7% was, therefore, considered adequate for the study. The targeted enterprises were aged 10 years for the firms and 45 years and above for the managers on the average. About 64.5% of the firms were managed by men. The preliminary findings showed that 80.4% of the respondents had attained secondary level of education while 50.6% had attained product-related skills training through apprenticeship and learning on the job. From our observations, industrial products manufactured were Plastics and rubber items (ranging from gallons, buckets, paper and plastic bags, etc. 25%), metallic windows and doors including aluminium roofing sheets (28%) food and Beverage products (28%), and foams and chemical products (ranging from detergents, engine oil, bed forms, etc. 19%). About 85.6% of the investigated firms were engaged in subcontracting arrangements.

2.2. Constraints to subcontracting

Despite the benefits of production subcontracting, there are constraints limiting its effectiveness in the industrial sector. These constraints based on the field observation have been synthesised into ten (10) factors, and how they appeal to the industries were analysed using a five-point Likert-type scale ranging from 1 = ‘not at all important’ to 5 = ‘very important’ in relation to how they affect the industrialist (see Table 3).

The analysis shown in table 3 reveals that the majority of the industries believed that engaging in production subcontracting has a number of constraints associated with it. From the analysis, most of the industries identified: disclosure of commercial secrets, low capital intensity, interest conflicts, decrease compatibility of innovation, importation of parts and poor services with mean and standard deviation values of 4.23 (STD = .77), 4.23 (STD = .77), 4.18 (STD = .72), 3.52 (STD = .50), 3.52 (STD = .50), 3.52 (STD = .50), and 4.13 (STD = .74), respectively, as the major constraints affecting the effectiveness of subcontracting in Nigeria. Most of the industrialists interviewed have experienced one of these problems at one time or the other making them either to change their subcontracting partner or acquire the capacity to handle the activity (ies) in house. While ‘Low capital intensity’ was found to have made most of the firms in the study area to invest very little in machineries, reducing subcontracting strategies predominantly to sharing of equipment and short-term contracts, ‘Poor services, Disclosure of commercial secrets, importation of parts and interest conflict’ were found...
to have forced firms to frequently change their subcontracting partners or acquire the capacity to handle the activity (ies) in house.

2.3. Firm performance

Firm performance, the dependent variable in this study was measured in both financial and non-financial indicators. The respondents were asked to evaluate their firm’s performance by rating various indicators of their business performance in the last 10 years on a scale of 1–5, where 1 represented significantly decreased and 5 represented significantly increased. Following the result in Table 4, 7.90% of the respondents had experienced significant increase while 35.31% had seen relative increase in firm performance in the last 10 years. Furthermore, while 18.12% of the manufacturing industries had experienced relative decrease in their business performance, 33.13% had experienced significant decrease. The result also revealed that 33.96% of the SMEs were static and recorded no changes (see Table 4).

The large number of firms that experienced significant decrease with reference to the little number that experience significant increase in performance is an indication that the Nigerian Industrial sector have underperformed. Similarly, the overall mean and standard deviation score of 2.38 and .71 shows that majority of the firms experienced some increase in performance. The respondents indicated that they have achieved highest performance in Profit Growth with an average mean value of 2.84 and standard deviation of .80 and least performance in return to assets with an average mean of 2.04, and standard deviation value of .54 (see Table 4).

Furthermore, in order to show the impact of these constraints on subcontracting activities in the study area, the share of subcontracting for all the industries was computed using a ten years (10 years) time frame. The share of subcontracting according to Taymaz and Kiliçaslan (2002) and Holl (2007) is subcontracted input – the share of a plant’s inputs subcontracted to supplier plants, in total inputs and subcontracted output – the share of output subcontracted by plants, in total output. Subcontracted input share

| Variables                                           | N statistic | Range statistic | Minimum statistic | Maximum statistic | Mean statistic | Std deviation |
|-----------------------------------------------------|-------------|----------------|-------------------|-------------------|---------------|---------------|
| Proliferation of makes                              | 0.00        | 2.00           | 2.00              | 2.00              | 2.00          | 0.00          |
| Limited application of advance technology           | 0.00        | 2.00           | 2.00              | 2.00              | 2.00          | 0.00          |
| Decrease compatibility of innovation                | 1.00        | 3.00           | 4.00              | 3.52              | 0.50          |
| Disclosure of commercial secrets                    | 3.00        | 2.00           | 5.00              | 4.23              | 0.77          |
| Interest conflicts                                  | 3.00        | 2.00           | 5.00              | 4.18              | 0.72          |
| Low visibility                                      | 0.00        | 2.00           | 2.00              | 2.00              | 0.00          |
| Poor services                                       | 2.00        | 1.00           | 3.00              | 4.13              | 0.74          |
| Imported goods                                      | 1.00        | 3.00           | 4.00              | 3.52              | 0.50          |
| Low capital intensity                               | 3.00        | 2.00           | 5.00              | 4.23              | 0.77          |
| Lack of local suppliers for certain parts           | 0.00        | 2.00           | 2.00              | 2.00              | 0.00          |
| Valid number                                        | 80          |                |                   |                   |               |               |

Source: Field Work and Author’s Computation, 2015.
Table 4. Percentage and mean distribution of responses to firm performance.

| Item                      | Significantly decreased (1) % | Relatively decreased (2) % | Static (3) % | Relatively increased (4) % | Significantly increased (5) % | Mean | Standard deviation |
|---------------------------|-------------------------------|----------------------------|--------------|----------------------------|-------------------------------|------|-------------------|
| Growth in sales           | 2.30                          | 28.30                      | 10.00        | 40.40                      | 19.00                        | 2.15 | 0.46              |
| Profit Growth             | 3.50                          | 29.30                      | 16.60        | 50.60                      | 0.00                         | 2.82 | 0.80              |
| Return on assets          | 5.60                          | 16.70                      | 43.10        | 24.60                      | 10.00                        | 2.04 | 0.54              |
| Gross value of capital    | 5.50                          | 19.00                      | 34.30        | 21.00                      | 20.20                        | 2.64 | 0.89              |
| Profit success            | 0.60                          | 12.60                      | 39.40        | 45.10                      | 2.30                         | 2.15 | 0.36              |
| Growth in market share    | 10.00                         | 13.40                      | 25.20        | 50.30                      | 1.10                         | 2.44 | 0.90              |
| Increase in workers       | 5.00                          | 10.90                      | 48.10        | 35.40                      | 0.60                         | 2.16 | 0.96              |
| Labour productivity       | 5.00                          | 14.90                      | 55.00        | 15.10                      | 10.00                        | 2.64 |                  |
| Total average             | 33.13                         | 18.12                      | 33.96        | 35.31                      | 7.9                          | 2.38 | 0.71              |

Note: Field work and Author’s Computation, 2015.
can also be referred to as the proportion of subcontracted input in total inputs while subcontracted output share refers to the proportion of subcontracted output in total output (Morrison & Yasar, 2008). These definitions were based on the survey definition of income from subcontract as income generated from the processing of materials provided by the firm offering the subcontract, see Table 5.

The results in Table 5, Figures 1 and 2 shows that the subcontracted input share and output share of the firms have been relatively stable. This relative stability shows that most firms still make use of this process despite the constraints associated with subcontracting as was noted earlier. This lays credence to our earlier finding which noted that about 85.6% of the surveyed firms were engaged in subcontracting arrangements in the study area. This result also reveals that the constraints to subcontracting have no impact or influence on the performance or underperformance of firms. This is because the subcontracted input and output share shown in Table 5 have remained relatively stable and therefore cannot account for the performance or underperformance of firms in the study area.

Table 5. Subcontracted input and output share over a period of ten (10) years.

| Years        | Subcontracted input share (%) | Subcontracted output share (%) |
|--------------|------------------------------|-------------------------------|
| 2000–2001    | 6.31                         | 6.56                          |
| 2001–2002    | 5.22                         | 5.30                          |
| 2002–2003    | 4.54                         | 4.80                          |
| 2003–2004    | 4.41                         | 4.52                          |
| 2004–2005    | 5.38                         | 5.40                          |
| 2005–2006    | 4.41                         | 4.52                          |
| 2006–2007    | 4.41                         | 4.00                          |
| 2007–2008    | 4.50                         | 4.87                          |
| 2008–2009    | 5.36                         | 5.50                          |
| 2009–2010    | 5.77                         | 5.99                          |

Note: Fieldwork Author’s Computation, 2015.

![Figure 1](image-url)  
Figure 1. Subcontracted input share (time series analysis).
2.4. Summary of finding and conclusion

This paper in line with the literature identified a number of constraints to subcontracting arrangement in the study area. These constraints ranges are disclosure of commercial secrets, poor quality of service, interest conflicts, decrease compatibility of innovation, importation of parts, and unfulfilled orders from subcontractors. While ‘Low capital intensity’ was found to have made most of the firms in the study area to invest very little in machineries and tools thereby making their subcontracting strategies in the study area to sharing of equipment and short-term contracts, ‘Poor services, Disclosure of commercial secrets, importation of parts and interest conflict’ was found to have forced firms to frequently change their subcontracting partners or acquire the capacity to handle the activity (ies) in house. Similarly, the analysis of firm performance also showed that a majority of the firms have experienced some increase in performance. The firms indicated that they have achieved highest performance in Profit Growth and least performance in return to assets. Going forward, the paper also discovered that subcontracted input and output share of the firms have been relatively stable. This showed that despite the constraints associated with subcontracting, firms have continued to make use of this production process, signifying that subcontracting constraints have no impact on the use of subcontracting strategy by the firms.

Keeping in view the findings of the study and conclusion drawn, this paper recommends that manufacturing industries in Nigeria should invest more in machineries and tools so as to increase subcontracting co-operations amongst industries in the study area. This will not only help the firms to be more competitive, it will also help them to engage in subcontracting more intensely as well as building up superior capabilities in order to bypass some of the aforementioned constraints associated with subcontracting.

Disclosure statement

No potential conflict of interest was reported by the authors.
References

Ajayi, D. D. (2001). Industrial subcontracting linkages in the Lagos Region, Nigeria. *The Nigerian Journal of Economic and Social Studies (NJESS)*, 43, 265–277.

Ajayi, D. D. (2002). Temporal pattern of production subcontracting in Nigeria. *Annals of the Social Science Academy of Nigeria, 14 & 15*, 67–81.

Ajayi, D. D. (2003). Nature and scope of production subcontracting in Nigeria. *Africa Development, XXVIII*, 89–111.

Ajayi, D. D. (2007). Recent trend and patterns in Nigeria’s industrial development. *Africa Development*, 32, 139–155.

Annim, F. D. L., & Machethe, C. (1998). Promoting the growth of MSEs through business linkages in the Northern Province of Kwazulu-Natal. South African Province: Research Report: United States Agency for International Development Bureau for Africa.

Bbenkele, E. C. (1998). Enhancing economic development by fostering business linkages between the pharmaceutical companies and the traditional medicines sector. Research report. Center for Partnerships in Enterprise Research and Technology Transfer University of Natal, Pietermaritzburg South Africa.

Berry, A. (1997). *SME competitiveness: The power of networking and subcontracting* in R. W. Gakure, P. N. Kimemia, & G. A. Waititu. Influence of Subcontract Offering on the Performance of Manufacturing Micro and Small Enterprises in Kenya. *Journal of Humanities and Social Science (IOSR-JHSS)*, 19, Ver. II, 37–46.

Ceglie, G., & Dini, M. (1999). SME cluster and networking development in developing countries: The experience of UNIDO (Working Paper No. 2). Vienna: Private Sector Development Branch, UNIDO.

Chong, H. (2008). Measuring performance of small-and medium sized enterprises: The grounded theory approach. *Journal of Business and Public Affairs, 2*(1), 1–10.

Combs, J. G., Crook, T. R., & Shook, C. L. (2005). The dimension of organizational performance and its implications for strategic management research. In D. J. Ketchen & D. D. Bergh (Eds.), *Research methodology in strategy and management* (pp. 259–286). San Diego, CA: Elsevier.

Crook, T. R. Ketchen, D. J., Combs, J. G., & Todd, S. Y. (2008) Strategic resources and performance: A meta-analysis. *Strategic Management Journal, 29*, 1141–1154.

Dahane, M., Clementz, C., & Rezg, N. (2008). Analysis of joint maintenance and production policies under a subcontracting constraint. *International Journal of Production Research, 46*, 5393–5416.

Dahane, M., Dellagi, S., Clementz, C., & Rezg, N. (2011). Development of joint maintenance and production strategies in a subcontracting environment. *International Journal of Production Research, 49*, 6937–6961.

Deardorff, A., & Djankov, S. (2000). Knowledge transfer under subcontracting: Evidence from Czech firms. *World Development, 28*, 1837–1847.

Diaz-Mora, C., & Triguero-Cano, A. (2007). Why do some firm contract out Production? Evidence from the firm-level panel data. Albacete: Department of International Economics, Faculty of Juridical and Social Science, University of Castilla-La Mancha Albacete Spain.

Furlan, A., Grandinetti, R., & Camuffo, A. (2007). How do subcontractors evolve? *International Journal of Operations & Production Management, 27*, 69–89.

Gakure, R. W., Kimemia, P. N., & Waititu, G. A. (2014). Influence of Subcontract Offering on the Performance of Manufacturing Micro and Small Enterprises in Kenya. *IOSR Journal of Humanities and Social Science (IOSR-JHSS)*, 19, Ver. II, 37–46.

Glick, W. H., Washburn, N. T., & Miller, C. C. (2005). *The myth of firm performance*. Proceedings of the Annual Meeting of American Academy of Management, Honolulu, Hawaii, USA, in J. B. Santos & L. A. L. Brito (Eds.), *Towards a subjective measurement model for firm performance* (pp. 95–177). Brazilian Administrative Review.

Grossman, G. M., & Helpman E. (2005). Outsourcing in a global economy. *Review of Economic Studies, 72*, 135–159.

Gubik, A. (2005). New opportunities for SMEs founded by cooperation. *European Integration Studies, Miskolc, 4*, 25–36.

Hajej, Z., Rezg, N., & Gharbi, A. (2014). Forecasting and maintenance problem under subcontracting constraint with transportation delay. *International Journal of Production Research, 52*, 6695–6716.
Holl, A. (2007). *Production subcontracting and location.* Madrid: FEDEA Foundation for Applied Economics Studies.

Hu, Z., Zheng, J., & Wang, J. (2011). Impact of industrial linkages on firm performance in Chinese development zones, Yangtze River Delta, Jiangsu Province, China. *The Chinese Economy, 44,* 78–105.

Khac, N. N. (2013). *Demand creation and competition effect of export-platform FDI on backward linkages; evidence from panel data analysis of Vietnames supporting industries.* Paper provided by Centre d’Etudes des Politiques Économiques (EPEE), Université d’Evry Val d’Essonne in its series Documents de recherche with number 13-02, 1–42.

Kongmanilaa, X., & Takahashib, Y. (2009). Determinants of subcontracting and firm performance in Lao PDR: Evidence from a Garment industry cluster. *Asia Pacific Management Review, 15,* 97–112

Kumar, R. S., & Subrahmanya, B. (2007). Subcontracting relationships of Indian SMEs with global TNCs: Do SMEs gain, How. *Journal of Asian Economics, 5,* 2–35

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey, American Psychologist. *American Psychological Association, 57*(9), 705–717.

Logan, M. I. (2006). The shift from informal to formal: Some cost and benefits of large scale industrialization in Asian Countries. *Singapore Journal of Tropical Geography, 3*(2), 170–176

Marimuthu, M., Arokiasamy, L., & Ismail, M. (2009). Human capital development and its impact on firm performance: Evidence from developmental economics. *The Journal of International Social Research, 2/8*(Summer 2009), 265–272.

Marsall, D., Mcivor, R., & Lamming, R. (2007). Influences and outcomes of outsourcing: Insights from the telecommunications industry. *Journal of Purchasing & Supply Management, 13,* 245–260.

Mayhew, S. (2009). *A dictionary of Geography.* (4th ed.), Oxford: Oxford University Press.

Morrison, C. J., & Yasar, M. (2008). *Outsourcing, productivity, and input composition at the plant level.* *Canadian Journal of Economics, 42*(2), 422–439.

Nwokocha, V. C., Madu, I. A., Ocheje, J. F., & Olerum, V. N. (2015a). Production subcontracting: A strategy for the survival of small and medium scale industries in Nigeria. *Mediterranean Journal of Social Sciences, 6,* 641–651.

Nwokocha, V. C., Madu, I. A., Ocheje, J. F., Olerum, V. N., & Nwosu, I. G. (2015b). Production subcontracting: A policy issue for small and medium scale manufacturing industries in Nigeria. *Academic Journal of Interdisciplinary Studies, 4,* 375–385.

Okatch, B. A., Mukulu, E., & Oyugi, L. (2011). Constraints to subcontracting arrangements between SMEs and large firms in the motor vehicle industry in Kenya. *International Journal of Business and Social Science, 2*(15), 208–223.

Ongonga J. O., & Abeka E. O. (2011): Networking in the Kenyan informal sector: An attempt to manage the market failures. *African Journal of Business Management, 5,* 11323–11334.

Pyke, F. (1992). *Industrial development through small-firm co-operation.* Geneva: ILO.

Ray, G., Barney, J. B., & Muhanna, W. A. (2004). Capabilities, business processes, and competitive advantage: Choosing the dependent variable in empirical tests of the resource-based view. *Strategic Management Journal, 25,* 23–37.

Richard, P. J., Devinney, T. M., Yip, G. S., & Johnson, G. (2009). Measuring organizational performance: towards methodological best practice. *Journal of Management, 35*(3), 718–804.

Santos, J. B., & Brito, L. A. L. (2012). Towards a subjective measurement model for firm performance [Special issue]. *Brazilian Administrative Review, 9,* 95–117.

Taymaz, E., & Kiliçaslan, Y. (2004). Determinants of subcontracting and regional development: An empirical study on Turkish textile and engineering industries. Ankara: Department of Economics Middle East Technical University

Tuan, N. P. & Yoshi, T. (2010). Vertical Linkage and Firm’s Performance in Supporting industries in Vietnam. *Asian Journal of Management Research, 1*(1), 1–14.

UNCTAD. (1994). *Technological dynamism in industrial districts: An alternative approach to industrialization in developing countries.* New York, NY: United Nations.

Watanebe, S. (1971). Subcontracting, industrialisation and employment creation. *International Labour Review, 104,* 51–76.

Yasuda, T. (2005). Firm growth, size, age and behaviour in Japanese manufacturing. *Small Business Economics, 24,* 1–15.