

THE SPATIAL DIMENSIONS OF INDUSTRIAL RESTRUCTURING: A CASE STUDY OF FORMAL SECTOR INDUSTRIES IN THE CITY OF NAIROBI, KENYA

Dr James M. Moronge,
Department of Geography and Environmental Studies
University of Nairobi
PO Box 14700 00100 Nairobi, Kenya
jmmoronge@uonbi.ac.ke, +254722902090

ABSTRACT

This paper emanates from a larger study on economic liberalisation and industrial restructuring in the City of Nairobi, Kenya. One of the key objectives was to examine the spatial dimensions of industrial restructuring in the food processing, textiles and leather industries in the study area. The thrust of the study was to establish whether any industrial restructuring initiatives in the respective sectors in the study area, had resulted in the alteration of the industrial spatial economy through spatial clustering or agglomeration of industrial enterprises, leading to the creation of new industrial spaces. A sample of 110 enterprises were randomly selected out of a sampling frame of 310 enterprises. Research results indicate that transactional networks between industries were not well developed and that inventory management was not akin to the 'just-in-time' inventory control system. It is concluded industrial restructuring initiatives have not led to any spatial reorganisation in the study area.

KEY WORDS Industrial restructuring, industrial districts, spatial clustering, formal sector industries

1.0 INTRODUCTION

It has been argued that industrial restructuring has spatial dimensions. It may lead to the alteration of the industrial spatial economy through spatial clustering or agglomeration of industrial enterprises (Piore and Sabel 1984; Storper and Scott 1989; Pyke and Sengenberger 1992). For instance, the vertical disintegration of the production process has been linked to the development of clusters of industries based on dense transactional networks. This may in turn lead to the creation of new industrial spaces that are production related and locationally proximate, often referred to as industrial districts (Storper and Scott 1989).

The main impetus for the industrial districts model initially came from Italy, and especially the province of Emilia-Romagna. However, the characteristic features of the model have been observed elsewhere in Europe such as Baden-Württemberg in Germany and West Jutland in Denmark) as well as North America in the Silicon Valley (Pyke and Sengenberger 1992; Kristensen 1992 and Schmitz 1992).

Industrial districts are characterized by the existence of strong networks of many small firms, arising from the transactional relationships among the firms. These networks are related to the sourcing of materials, marketing of semi-processed and finished products; subcontracting of work processes, among others. Furthermore, the industrial districts are geographically bounded. It is argued that the locational proximity between firms, individuals and institutions improves efficiency and effectiveness in the spread of ideas, innovations and other forms of collaboration (Storper and Scott 1989, Pyke and Sengenberger 1992). This is

further enhanced by cooperation among firms. For instance, the sharing of information on new technologies or products may enable firms within the industrial district to be more efficient through improved productivity, quality, quantity, design, pricing, among others.

Industrial district are characterised by flexibility. (Pyke and Sengenberger 1992 pg. 5) note that industrial districts ‘... represent a type of industrial organisation that meets competitive challenges through differentiated high quality products, flexibility of adjustment and the ability for innovation’.

This paper examines the industrial spatial economy of the food processing, textiles and leather sectors with a view to establishing whether industrial restructuring initiatives in these sectors have led any significant spatial clustering and whether any of the characteristic features of industrial districts are evident in the study area. The analysis is based on transactional networks, inventory management and factory location. At the time of the research (2005), the food processing, textiles and leather sectors were identified as among those negatively affected by the liberalisation of Kenya’s economy and where some restructuring was evident. Several industrial restructuring initiatives evident in these sectors especially during the post-liberalisation period (1993-2005), including: development of increased linkages, changes in product characteristics such as product quality and product pricing; use of numerical labour flexibility as well as increased expenditure on capital intensive technology.

1.1 MATERIALS AND METHODS

The requisite data for this study was collected from both primary and secondary data sources in 2005. A sample size of 110 enterprises out of a sampling frame of 350 enterprises were selected using a simple random sampling design. Primary data was obtained using questionnaires, informal interviews and field observations. Secondary data was collected using both published and unpublished data sources. Data was analysed using both descriptive and inferential statistics.

The study was carried out in the City of Nairobi in Kenya (Figure 1). The City of Nairobi lies between latitudes $1^{\circ} 17' S$, and longitudes $36^{\circ} 49' E$ and covers an area of 696 square kilometres. The study area lies at an altitude of 1670 metres above sea level. At the time of the research the study area was divided into eight administrative divisions namely: Makadara (23.06 km²), Kasarani (86.43 km²), Central (10.71 km²), Embakasi (203.63 km²), Kamukunji (12.11 km²), Westlands (97.37 km²) and Dagoretti (38.63 km²) and Kibera (223.15 km²).

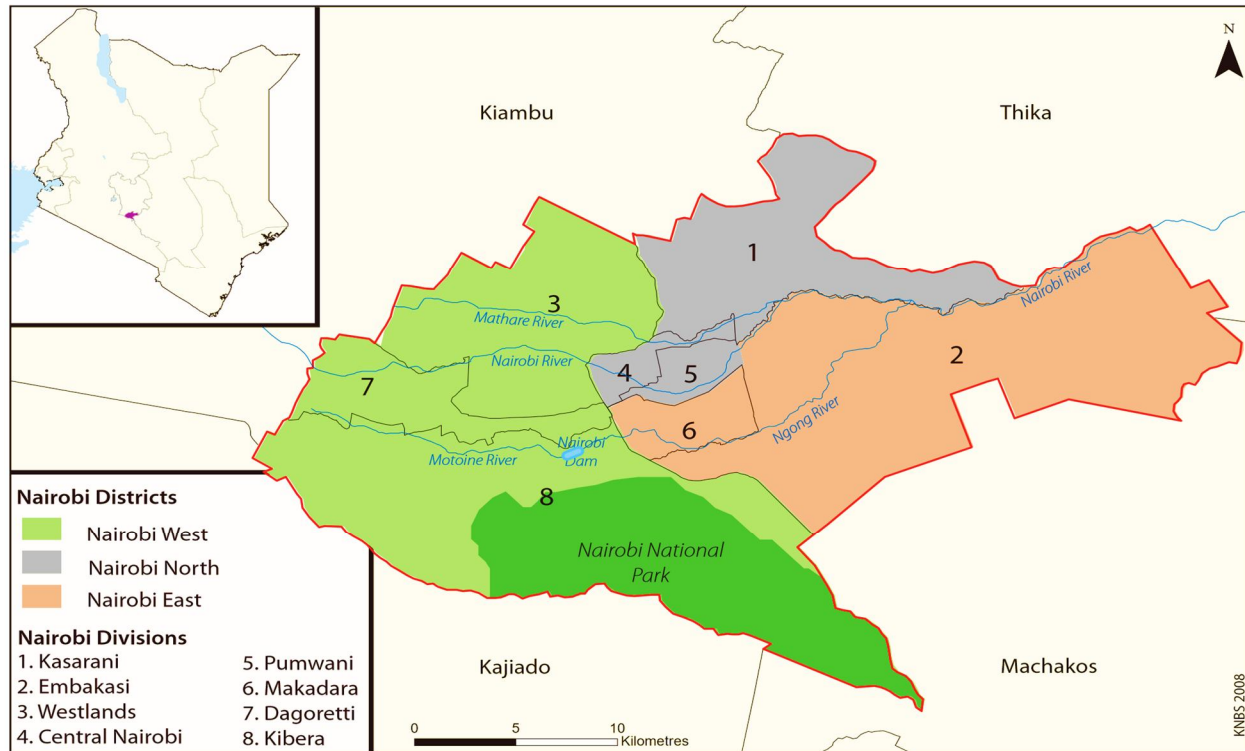
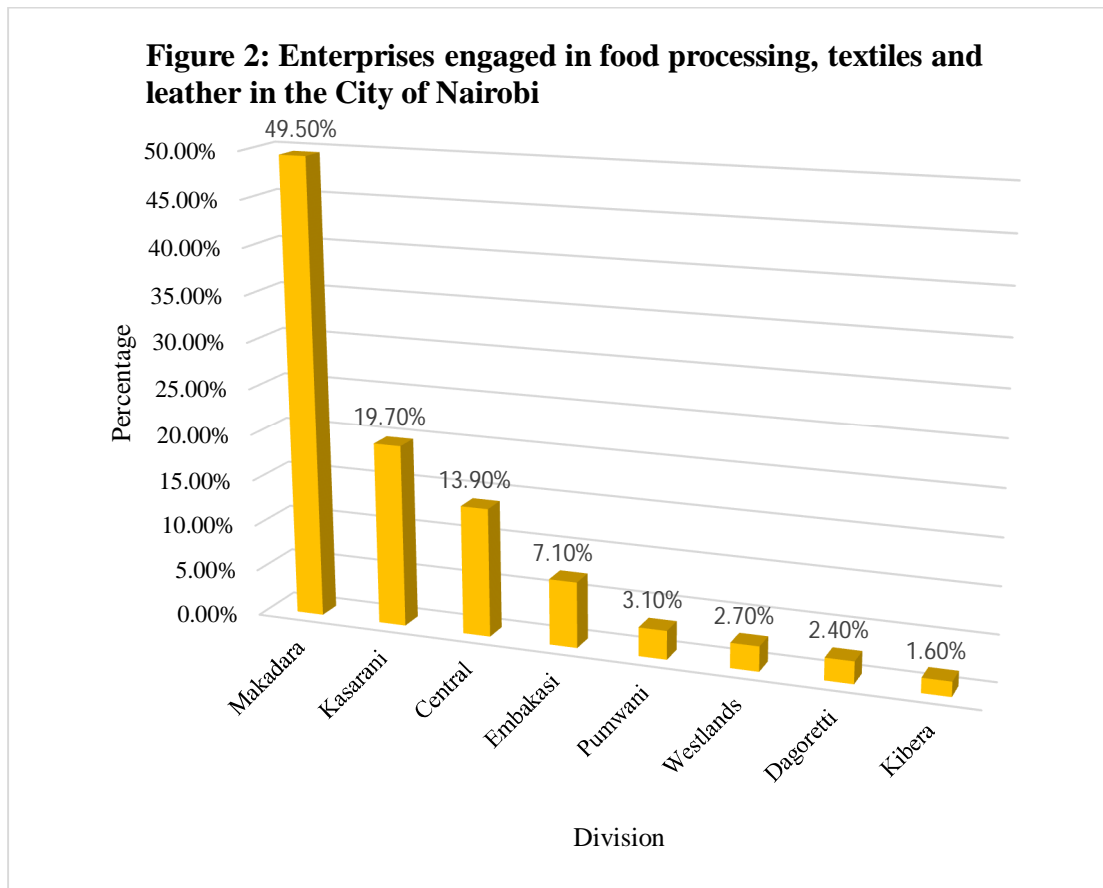


Figure 1: Nairobi's three districts and eight divisions

1.2 RESULTS AND DISCUSSION

As far as industrial location patterns in the study area are concerned, research findings indicated that the food processing, textiles and leather sub-sectors were largely concentrated in the Industrial Area (mainly within Makadara Division) which accounted for 49.5% of the total number of enterprises in the sub-sectors. Figure 2 shows that Kasarani and Central Divisions were also important industrial zones, accounting for 19.7% and 13.9%, respectively, of all the enterprises. Embakasi Division which accounts for 7.1 % of the enterprises is a fairly important industrial zone.



Sources: Fieldwork data 2001-2005; KAM Directory 2005/2006, Kenya, Republic of, 1998

In Kasarani Division, the main industrial areas identified at the time of the study were Ruaraka and Baba Dogo. They were important centres for food processing and textile export processing zones. The other important industrial location zone in the study area was the Central Business District (CBD) and its environs, located within Central Division. The historical significance of CBD as an industrial centre has been documented (Ogendo 1978; White 1948; Tiwari 1964). Prior to the 1948 Master Plan that delineated the current Industrial Area, most of the industries were located in the CBD. Some of the enterprises involved in food processing, textiles and leather are still located within the CBD and its environs. For instance, some coffee processing, footwear fabrication as well as the manufacture of clothing takes place within Central Division. In Embakasi Division, flour milling, bakeries and soft drinks industries were important. Some of the industries dealing with the processing of horticultural produce are located near the Jomo Kenyatta International Airport, within Embakasi Division. Figure 3 shows the location of food processing, textiles and leather industries in the City of Nairobi.

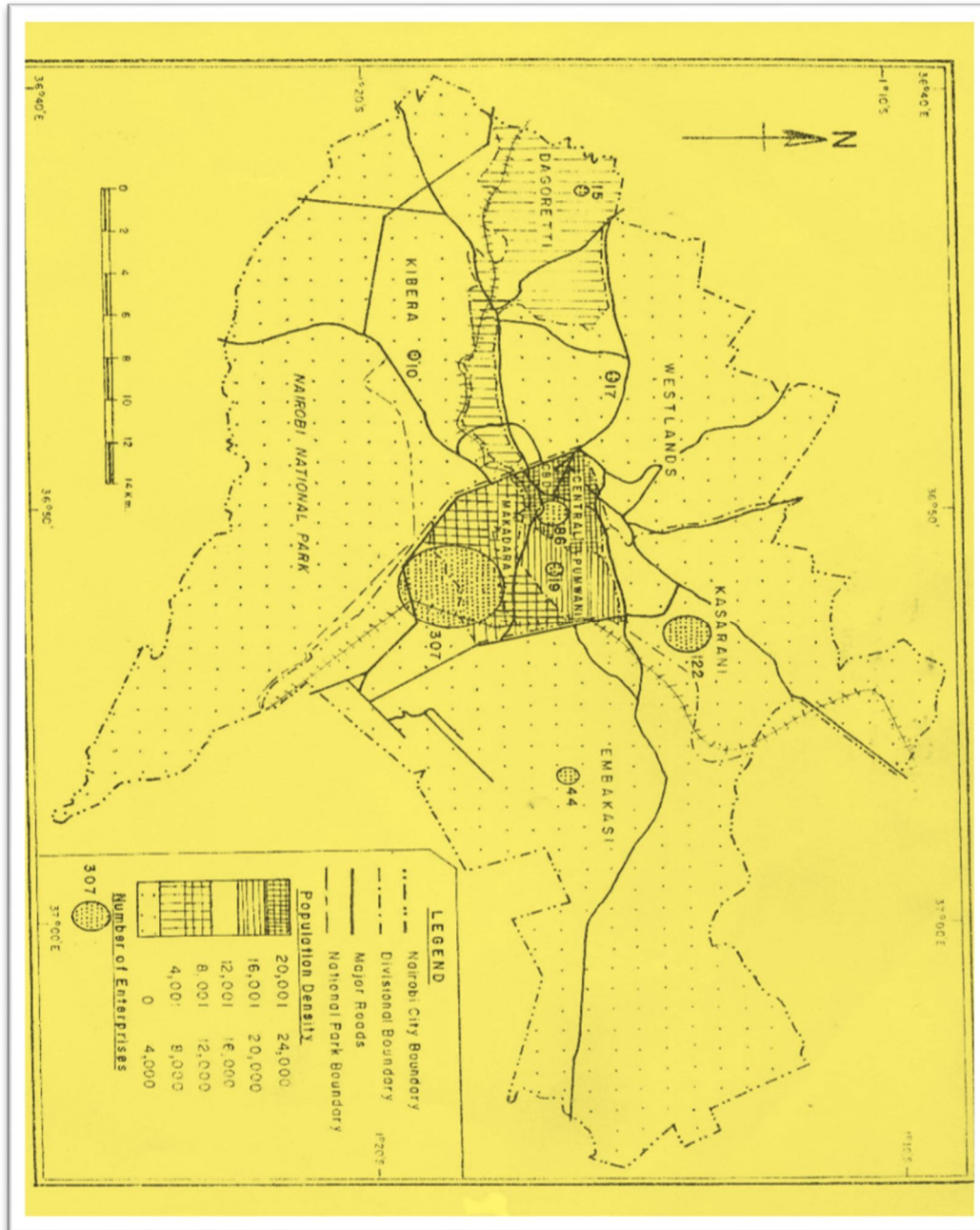


Figure 3: Location of food processing, textiles and leather industries in the City of Nairobi

The main objective of this paper is to establish whether industrial restructuring initiatives in the food processing, textiles and leather industries had resulted in any significant spatial clustering and whether any of the characteristic features of industrial districts are evident in the study area. The analysis was based on transactional networks, inventory management and changes in factory location.

The existence/development of transactional networks among enterprises is a major characteristic feature of industrial districts. These networks are related to sourcing of material inputs, marketing of finished products and subcontracting of work/processes/services. These variables were considered in evaluating the transactional networks of the food processing, textiles and leather industries in the study area. With regard to sourcing of material inputs, industrialists were asked to state the source of their main inputs. Accordingly, material inputs mainly were mainly obtained from the rest of Kenya and the wider City of Nairobi which together account for 72.2% of the total inputs (Table 1). The nearby sources (radius of 10km) of inputs accounted for only 10.8% of the total inputs.

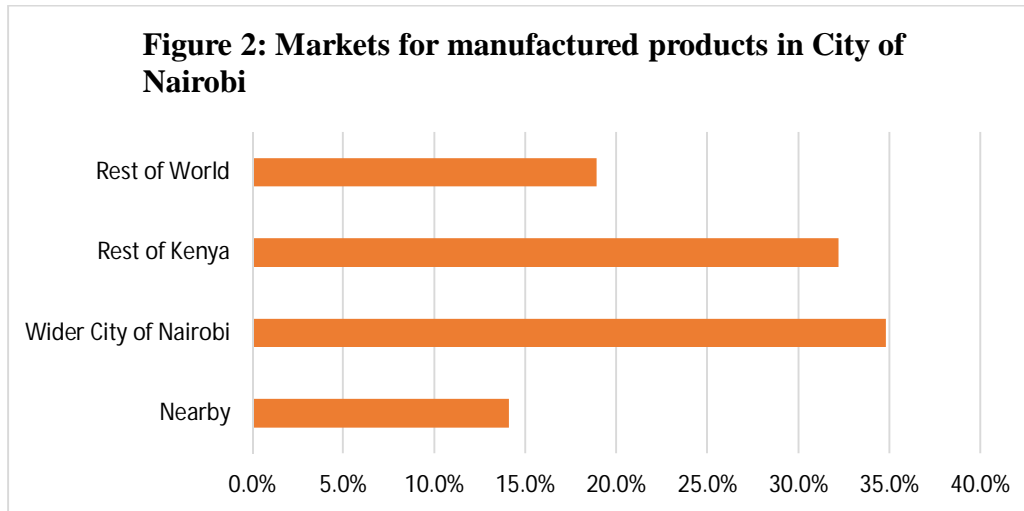
Table 1: Sources of material inputs for manufacturing industries in the City of Nairobi

Source of Inputs	Frequencies	Percentage of responses
Nearby (radius of 10km)	21	10.8%
Wider City of Nairobi	65	33.5%
Rest of Kenya	75	38.7%
Rest of World	33	17.0%
Total	194^a	100%

194^a is the total number of responses and not respondents since the variable analysed is a multiple response variable.

Source: Fieldwork 2005

Regarding the markets for finished products it is evident that the wider City of Nairobi and the rest of Kenya account for the largest share of the market for manufactured products in the study area. Figure 2 indicates that the two locations account for 77% of the total market share as compared to 18.9% for the rest of the world and only 14.1% for nearby market. It was therefore evident that industrialists did not sell a lot of their produce to the nearby markets and to the rest of the world.

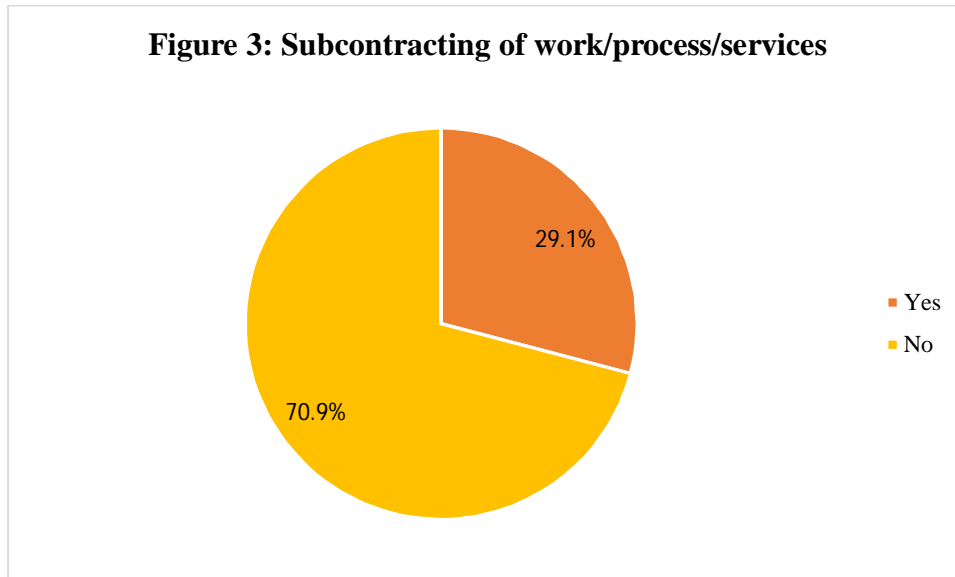


Source: Fieldwork 2005

It is apparent from the research findings that linkages related to the sourcing of inputs and marketing of produce were not well developed among manufacturing industries in the study area. The wider City of Nairobi and the rest of Kenya account for the largest share of not only the sources of inputs but market for products the as well. The nearby enterprises accounted for the least share of both the sources of inputs and the market for finished products.

As far as subcontracting of work/processes/services is concerned, the pressure to reduce costs and create 'lean' organisations forced firms all over Europe, America and Japan to disaggregate and subcontract their activities as a competitive strategy (Masinde 1996). Subcontracting of non-core work/process/services such as transport services; security services; advertising and marketing is common among industrialists. It has been argued that subcontracting practices may lead to industrial clustering and hence spatial reorganisation (Gertler 1988). For instance, industries subcontracting work and those performing it have to be located in close proximity so that production is not disrupted.

An examination of the subcontracting practices among industrialists in the study reveals that subcontracting was not widely practised. Figure 3 shows that only 29.1% of the industrialists indicated that they had subcontracted work, processes or services. The rest (70.9%) indicated that they meet their own requirements for work, processes and/or services.

Figure 3: Subcontracting of work/process/services

Source: Fieldwork 2005

With regard to inventory management, manufacturing inventories (stocks) tie up large sums of capital and are costly to maintain (Estall 1985). The direct costs of stock holding include storage, insurance, damage and deterioration, pilferage, obsolescence and administrative costs (Firth 1976). Furthermore, the loss of other possible uses of the tied-up capital represents a major opportunity cost. To reduce the costs associated with inventories, industrialists in Japan, North America and Europe have been restructured by adopting a system of inventory control referred to as 'just-in-time' (JIT) system. The principle of JIT is to control the inventory held at each stage of production so as to achieve an ideal 'zero inventory' (Harvey 1989). Hence, suppliers in JIT system would be expected to deliver goods just in time for them to be used on the factory floor or assembly line.

The JIT system has implications for the spatial organisation of industries. It requires close proximity for the suppliers of inputs and the industrialists. This may encourage industrial agglomeration leading to the formation of new industrial spaces. To establish whether any form of inventory management is being practised in the study area, industrialists were asked whether they held some stocks of their inputs and the proportion of the inputs held at any one time, in relation to the total inputs.

Research findings indicate that majority of the industrialists (83%) held some stocks of their inputs. An examination of the percentage of stocks held indicates that 56.8% of the industrialists held 50% and above of their stocks in relation to total inputs (Table 2). There was no significant variation in the proportion of the industrialists holding between 50%-75% of stocks and those holding less than 50% of stocks in relation to total inputs.

Table 2: Percentage of stocks in relation to inputs

Percentage of stock to inputs	Frequency	Percentage
Over 75%	13	14.8%
50-75%	37	42%
Less than 50%	38	43.2%
Total	88	100

Source: Fieldwork 2005

To establish the statistical significance of the data, the chi-square test was utilised. Table 3 shows the observed and expected frequencies.

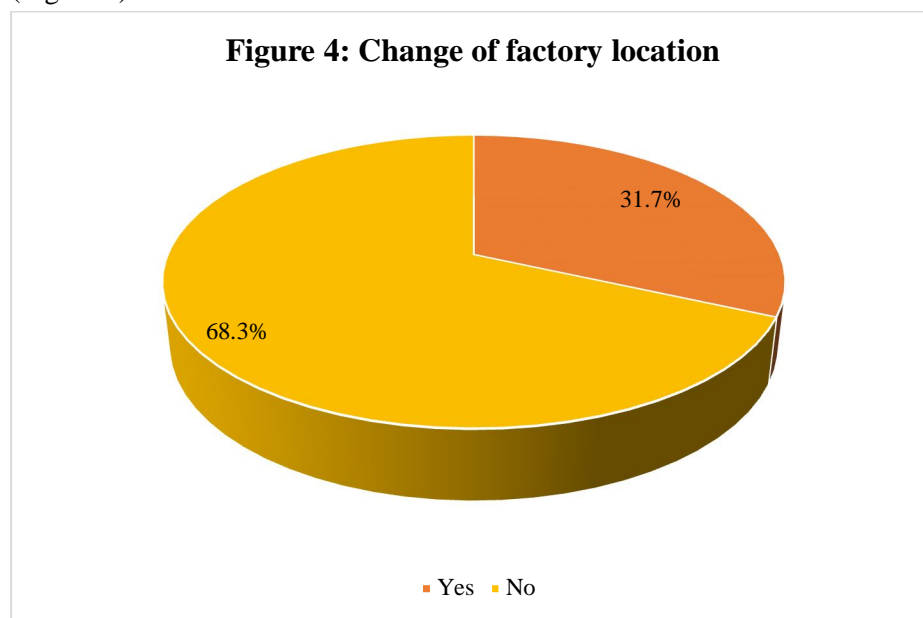
Table 3: Observed and expected frequencies

Percentage of stock to inputs	Observed frequency	Expected frequency
Over 75%	13	29.3
50-75%	37	29.3
Less than 50%	38	29.3

Source: Fieldwork 2005

At 0.05 significance level and 2 degrees of freedom, the calculated chi-square value is 13.67 while the critical value is 5.99. This implies that the observed differences in the percentage of stocks held in relation to total inputs are statistically significant.

Regarding factory location, industrialists in the study area were asked whether they had changed their factory location since they were established. Research findings indicate that only a relatively small proportion of the industrialists (31.7%) had changed their location with a majority (68.3%) having retained their locations (Figure 4).



Source: Fieldwork 2005

1.3 CONCLUSION

It is evident from research findings industrial restructuring initiatives in the food processing, textiles and leather sectors have not contributed to any spatial clustering leading to the creation of new industrial spaces/industrial districts. Transactional networks based on sourcing of material inputs, marketing of products and subcontracting of work/processes/services are not well developed in the study area. Furthermore, inventory management practices akin to the JIT system and the expected spatial alignments are not evident in the study area. The fact that majority of the industrialists in the study area have not changed the location of their factories is further indicative of the aspatial nature of industrial restructuring initiatives in the study area.

REFERENCES

- Estall, R.C. (1985) 'Stock Control in Manufacturing: The just-in-time system and its Locational Implications' in *Area*, Vol. 17, pp. 129-133.
- Gertler, M.S. (1988) 'The Limits to Flexibility: Comments on the Post-Fordist Vision of Production and its Geography,' in *Transactions of the Institute of British Geographers*, N.S. 13: pp 419-432.
- Harvey, D. (1989) *The Condition of Postmodernity*, Basil Blackwell, Oxford
- KAM (2006) *Kenya Association of Manufacturers Directory, 2005-2006*, KAM
- Kenya, Republic of, (1998) *Official National Directory of Industries 1998/99*, Government Printer
- Kristensen, H.P. (1992) 'Industrial Districts in West Jutland, Denmark' in Pyke, F. and W. Sengenberger (1992) *Industrial Districts and Local Economic Regeneration*, International Institute for Labour Studies, Geneva.
- Masinde, K.M.C. (1996) 'Small Enterprise Development: Production and Distribution in Kenya's Motor Industry' in McCormick, D. and Pedersen, P.O. (eds) *Small Enterprises: Flexibility and Networking in an African Context*, Longhorn Kenya.
- Ogendo, R.B. (1978) 'Industrial Location in the Nairobi' Area in *Geojournal*, Vol. 2, No. 4 pp.451-462.
- Piore, M.J. and Sabel, C. (1984) *The Second Industrial Divide: Possibilities for Prosperity*, Basic Books, New York.
- Pyke, F. and W. Sengenberger (1992) *Industrial Districts and Local Economic Regeneration*, International Institute for Labour Studies, Geneva.
- Schmitz, H. (1992) 'Industrial Districts: Model and Reality in Baden-Württemberg, Germany' in Pyke, F. and W. Sengenberger (1992) *Industrial Districts and Local Economic Regeneration*, International Institute for Labour Studies, Geneva.
- Storper, M. and Scott, A.J. (1989) 'The geographical foundations and social regulation of flexible production complexes' in J. Wolch and M.J. Dear (eds) *The Power of Geography: How Territory Shapes Social Life*, Unwin Hyman, Winchester, MA.
- Tiwari, R.C. (1964) *Nairobi: A Study in Urban Geography*, Unpublished PhD Thesis, United Kingdom.
- White, L.W.T. et al (1948) *Nairobi: Master Plan for a Colonial Capital, A Report Prepared for the Municipality of Nairobi*, HMSO, London.