Changing Horticultural Supply Chains in Africa: Implications for Government and Donor Investments

Evidence from Kenya and Implications for Africa

David Tschirley and Miltone Ayieko
Michigan State University and Tegemeo Institute of Agricultural Policy and Development, Nairobi

*Presented at World Bank “Rural Week”, 6 April 2005*

---

Focus

- What is the current mix of “traditional” and “modern” supply chains in horticultural markets of Africa?
- How is this mix likely to evolve over the next 10-20 years? What are the key factors that will influence this evolution?
- What does this imply about government and donor investment programs over the next decade?
Roadmap

- Concerns about supermarket growth in Africa
- Basic conditions of supply and demand in Africa
- Current shares of supermarkets and “traditional” channels in the fresh produce market in Kenya
  - Growth scenarios
- Characteristics of shoppers in supermarkets and “traditional” channels
- Implications for government and donor investments

Concerns about Supermarkets

- Exclusion of small farmers due to:
  - Heavy emphasis on quality, timeliness, and safety
    - Tough for small farmers to meet these conditions
    - Many failures in attempts to help them do this
  - Rapid movement towards centralized distribution and “preferred supplier” programs
    - Smaller number of larger farmers delivering to centralized distribution warehouses
  - Rapid take-over of market share

*Key point:* all these factors have to come together for exclusion to be a major policy issue
Basic conditions of supply in Africa

- Jo Swinnen makes a very simple but very important observation in Eastern Europe:
  - “in some cases, small farmers represent the vast majority of the potential supply base”
- This is absolutely true in Africa outside of South Africa
  - Small farm sizes (typically > 90% farm < 4 ha)
  - Safety first orientation

Basic conditions of demand in Africa

- Very few consumers own vehicles or refrigeration
  - Locational convenience is key
- 59% of FFV in Nairobi purchased by hhs with per capita incomes < $2/day
  - Price levels are key
- In rural areas of Kenya, 79% is purchased by such hhs
- In Uganda, Tanzania, Mozambique, Malawi, Zambia … these characteristics even more accentuated
These basic production and consumption patterns don’t change overnight

Are they even moving in the “right” direction?

Production and consumption patterns in Africa: Two Questions

- How will these patterns affect the *rate* at which modern retail outlets grow?
- How will they affect *the way* in which they grow?
- Will they be able to reach a 20-30% market share without depending on smallholders?
- Will they be able to reach such shares while emphasizing quality as the main driver?
- What mix of quality and reduced cost is needed to really grow market share, given characteristics of farmers and consumers?
Current supermarket shares

- “Basic foods”
- Fresh produce
- Rural areas

---

### Market shares of various retail outlets in sales of “basic foods”, Nairobi, October 2003

<table>
<thead>
<tr>
<th>Per capita Income Quintile</th>
<th>Mean Per Capita Income (Ksh)</th>
<th>Market Outlet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Supermarket Chains</td>
<td>Small super-market</td>
</tr>
<tr>
<td>1 (lowest)</td>
<td>7,407</td>
<td>2.5%</td>
</tr>
<tr>
<td>2</td>
<td>19,199</td>
<td>6.4%</td>
</tr>
<tr>
<td>3</td>
<td>33,567</td>
<td>2.8%</td>
</tr>
<tr>
<td>4</td>
<td>59,560</td>
<td>9.0%</td>
</tr>
<tr>
<td>5 (highest)</td>
<td>276,698</td>
<td>25.7%</td>
</tr>
<tr>
<td>Overall</td>
<td>79,079</td>
<td>11.5%</td>
</tr>
</tbody>
</table>

--------- % of total expenditure over 40 food items ---------
<table>
<thead>
<tr>
<th>Per capita Income Quintile</th>
<th>Mean Per Capita Income (Ksh)</th>
<th>Market Outlet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Supermarket Chains</td>
<td>Small super-market</td>
</tr>
<tr>
<td>1 (lowest)</td>
<td>7,407</td>
<td>2.5%</td>
</tr>
<tr>
<td>2</td>
<td>19,199</td>
<td>6.4%</td>
</tr>
<tr>
<td>3</td>
<td>33,567</td>
<td>2.8%</td>
</tr>
<tr>
<td>4</td>
<td>59,560</td>
<td>9.0%</td>
</tr>
<tr>
<td>5 (highest)</td>
<td>276,698</td>
<td>25.7%</td>
</tr>
<tr>
<td>Overall</td>
<td>79,079</td>
<td>11.5%</td>
</tr>
</tbody>
</table>

Slightly more than 1 in 10 Ksh spent on “basic foods” are spent in supermarket chains …

… but these purchases are concentrated among wealthiest 20% of the population.
### Market shares of various retail outlets in sales of *fresh fruits and vegetables*, Nairobi, October 2003

<table>
<thead>
<tr>
<th>Per capita Income Quintile</th>
<th>Mean Per Capita Income (Ksh)</th>
<th>Market Outlet</th>
<th>Supermarket Chains</th>
<th>Small supermarket</th>
<th>Duka/shop Open Market</th>
<th>Kiosk</th>
<th>Butchery</th>
<th>Other Minor Outlets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (lowest)</td>
<td>7,407</td>
<td></td>
<td>0.0%</td>
<td>0.1%</td>
<td>0.2%</td>
<td>53.3%</td>
<td>42.9%</td>
<td>0.0%</td>
</tr>
<tr>
<td>2</td>
<td>19,199</td>
<td></td>
<td>0.0%</td>
<td>0.4%</td>
<td>1.3%</td>
<td>56.7%</td>
<td>38.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>3</td>
<td>33,567</td>
<td></td>
<td>0.0%</td>
<td>0.6%</td>
<td>0.0%</td>
<td>64.3%</td>
<td>33.9%</td>
<td>0.0%</td>
</tr>
<tr>
<td>4</td>
<td>59,560</td>
<td></td>
<td>1.0%</td>
<td>0.1%</td>
<td>0.3%</td>
<td>59.3%</td>
<td>38.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td>5 (highest)</td>
<td>276,698</td>
<td></td>
<td>14.9%</td>
<td>0.1%</td>
<td>1.3%</td>
<td>48.9%</td>
<td>30.8%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Overall</td>
<td>79,079</td>
<td></td>
<td>4.4%</td>
<td>0.3%</td>
<td>0.7%</td>
<td>56.4%</td>
<td>35.7%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

---

Fewer than 1 in 20 Ksh spent on fresh produce is spent in supermarket chains …
### Market shares of various retail outlets in sales of *fresh fruits and vegetables*, Nairobi, October 2003

<table>
<thead>
<tr>
<th>Per capita Income Quintile</th>
<th>Mean Per Capita Income (Ksh)</th>
<th>Market Outlet</th>
<th>Supermarket Chains</th>
<th>Small supermarket</th>
<th>Duka/shop Open Market</th>
<th>Kiosk</th>
<th>Butchery</th>
<th>Other Minor Outlets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (lowest)</td>
<td>7,407</td>
<td></td>
<td>0.0%</td>
<td>0.1%</td>
<td>0.2%</td>
<td>53.3%</td>
<td>42.9%</td>
<td>0.0%</td>
</tr>
<tr>
<td>2</td>
<td>19,199</td>
<td></td>
<td>0.0%</td>
<td>0.4%</td>
<td>1.3%</td>
<td>56.7%</td>
<td>38.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>3</td>
<td>33,567</td>
<td></td>
<td>0.0%</td>
<td>0.6%</td>
<td>0.0%</td>
<td>64.3%</td>
<td>33.9%</td>
<td>0.0%</td>
</tr>
<tr>
<td>4</td>
<td>59,580</td>
<td></td>
<td>1.0%</td>
<td>0.1%</td>
<td>0.3%</td>
<td>59.3%</td>
<td>38.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td>5 (highest)</td>
<td>276,698</td>
<td></td>
<td>14.9%</td>
<td>0.1%</td>
<td>1.3%</td>
<td>48.9%</td>
<td>30.8%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Overall</td>
<td>79,079</td>
<td></td>
<td>4.4%</td>
<td>0.3%</td>
<td>0.7%</td>
<td>56.4%</td>
<td>35.7%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

*Fewer than 1 in 20 Ksh spent on fresh produce is spent in supermarket chains …*

*… and nearly ALL of this occurs among the wealthiest 20% of the population*
### Market shares of various retail outlets in sales of *fresh fruits and vegetables*, Nairobi, October 2003

<table>
<thead>
<tr>
<th>Per capita Income Quintile</th>
<th>Mean Per Capita Income (Ksh)</th>
<th>Supermarket Chains</th>
<th>Small supermarket</th>
<th>Duka/shop</th>
<th>Open Market</th>
<th>Kiosk</th>
<th>Butchery</th>
<th>Other Minor Outlets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (lowest)</td>
<td>7,407</td>
<td>0.0%</td>
<td>0.1%</td>
<td>0.2%</td>
<td>53.3%</td>
<td>42.9%</td>
<td>0.0%</td>
<td>3.6%</td>
</tr>
<tr>
<td>2</td>
<td>19,199</td>
<td>0.0%</td>
<td>0.4%</td>
<td>1.3%</td>
<td>56.7%</td>
<td>38.0%</td>
<td>0.0%</td>
<td>3.6%</td>
</tr>
<tr>
<td>3</td>
<td>33,567</td>
<td>0.0%</td>
<td>0.6%</td>
<td>0.0%</td>
<td>64.3%</td>
<td>33.9%</td>
<td>0.0%</td>
<td>1.1%</td>
</tr>
<tr>
<td>4</td>
<td>59,580</td>
<td>1.0%</td>
<td>0.1%</td>
<td>0.3%</td>
<td>59.3%</td>
<td>38.3%</td>
<td>0.0%</td>
<td>1.0%</td>
</tr>
<tr>
<td>5 (highest)</td>
<td>279,698</td>
<td>14.9%</td>
<td>0.1%</td>
<td>1.3%</td>
<td>48.9%</td>
<td>30.8%</td>
<td>0.0%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Overall</td>
<td>79,079</td>
<td>4.4%</td>
<td>0.3%</td>
<td>0.7%</td>
<td>56.4%</td>
<td>35.7%</td>
<td>0.0%</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

Fewer than 1 in 20 Ksh spent on fresh produce is spent in supermarket chains …

… and nearly ALL of this occurs among the wealthiest 20% of the population.

---

### What about rural areas?

- Survey of 2,300 smallholder households
- Over 90% purchased FFV last month
- 40% of the national fresh produce market is in rural areas
- Supermarkets have essentially no share in this market
Growth scenarios

- To reach a 20% market share in 10 years, supermarket FFV sales would have to grow, *in real terms*, 31%/year over the decade
- 22%/year to reach a 10% market share
- Neven and Reardon report that *total* supermarket sales have grown 18%/year over past 5 years
  - Fresh produce sales have grown more slowly than this
- Uchumi announced that it would close 7 stores this year

Characteristics of shoppers

- Highly diverse shopping habits
  - 94% used at least 3 outlet types last month
  - 75% used at least 4
  - This was true across the income spectrum
    - 15% of the poorest households (bottom quintile) visited a supermarket last month
    - 77% of the richest (top quintile) visited a Duka/small shop or an open air market
    - 62% of the richest visited a kiosk
Characteristics of shoppers (2)

- Supermarket shoppers:
  - Older
  - More educated
  - Larger households
  - Female-headed
  - Much wealthier (mean incomes >3x higher; median income >2x higher)
  - Much more likely to own a car (45% vs. 5%) and a refrigerator (50% vs. 8%)

*Education, female-headedness, income, and ownership of car or refrigerator hold up in regression analysis*

Characteristics of shoppers (3)

- Bottom two-thirds of the income distribution:
  - One-quarter of all shoppers in supermarket chains (N&R report one-half)
  - One-fifth of total food expenditures in supermarket chains (N&R report one-third)

- The top 10% of earners
  - 40% of all shoppers
  - One-half of all expenditures

*Our data suggest that supermarket chains remain highly dependent on high income shoppers*

*Prices on comparable FFV items are 60% higher*
Implications

- All these results point to the persistence for the foreseeable future of a highly diversified system, especially in FFV
- Supermarkets will be one part of this
  - A small part in most African countries’ FFV systems
- Supermarkets in Kenya will have, at most, 10-20% of the FFV market in 10 years’ time
  - Less in less urbanized and poorer countries of Africa
- Remember that in Latin America (with exception of Argentina and Brazil), supermarket FFV shares are all 20% or lower
Implications (2)

- We come back to the need to focus on the traditional marketing system
  - Modernize the whole supply chain
  - Role of traditional market intermediaries
  - Wholesale, retail, and assembly market places
  - Vertical linkages up and down the chain
  - How to establish an *on-going decision making process*
    informed by applied research

Implications (3)

- Market information, grades & standards, packaging
  - Extension throughout the chain
- Training and increased access to capital for traditional market intermediaries
- Invest in wholesale and retail (and assembly?) market places
  - Keep them clean
  - Traffic flow
  - Simple value-added (washing, slicing & dicing, packaging)
Implications (4)

- Invest in a *decision making process* informed by applied research
  - Supply chain development task force with permanent analytical staff
  - Applied research and outreach
  - Involve municipal authorities
  - A *partnering approach* with public officials, traders, farmers, donors, NGOs