

23 Consumer Preferences for Rice in Africa

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Introduction

Since the 1960s, African appetite for rice has increased at an average annual rate of +4%, i.e. twice as fast as in the world as a whole, to reach a total consumption level of 20 million tonnes (Mt) in 2009 (Table 23.1). Growth of rice consumption since the 1960s has been fastest in East Africa (e.g. Burundi, Ethiopia, Kenya, Rwanda and Zimbabwe), but since 2000, high growth rates are also recorded in North Africa (e.g. Algeria), West Africa (e.g. Benin) and Central Africa (e.g. Cameroon). This long-term structural trend is mainly linked to urbanization, which affects rice consumption in two ways. First, it provides women with increased opportunities to work outside the home, which increases the opportunity cost of their time for food shopping and cooking. This leads to a shift in consumer preferences in favour of a 'fast food' that can be easily cooked and needs less preparation time. Rice is a staple food that meets such needs (Reardon, 1993; Diagana *et al.*, 1999). Second, urbanization entails **urban bias**, i.e. the inefficient and systemic bias against agriculture and the rural economy in the allocation of developmental resources (Lipton, 1977; Bezemer and Headey, 2008). From a political perspective, urban dwellers are the most important voters in post-colonial

Africa. Therefore, agricultural policies have mainly favoured cheap imports of food, rather than local food production. The result is that African policy makers now face the effects of the historical urban bias in rice markets. Specifically, urban consumers in Africa have developed a marked preference for imported rice and associated purchasing and eating habits (Demont *et al.*, 2013b).

In the early 1980s, agricultural economists warned that 'the problem of consumer tastes and responsiveness to the locally grown varieties which would replace rice imports' was largely ignored in the debate on the policy and economics of rice in West Africa (Pearson *et al.*, 1981; Ross, 1983). The same criticism is raised in rice breeding, which has 'not incorporated desirable consumption attributes and non-yield production traits into new varieties' (Dalton, 2004, p. 149). More recently, USAID reiterated this call for demand-focused research in its West Africa rice value-chain report, arguing that 'support for research into consumer demand and preferences for local rice' should be prioritized (USAID, 2009a, p. iii).

This chapter discusses the situation of rice in Africa from a consumer-behaviour perspective. Consumer behaviour is defined as 'those actions directly involved in obtaining, consuming,

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Table 23.1. Evolution of annual rice consumption (thousands of tonnes) in the world and in Africa since the 1960s. (Data from FAO, 2012.)

Year ^a	1960s	1970s	1980s	1990s	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Growth since 1960s ^c	Growth since 2000 ^d
Algeria	6	11	22	38	54	25	96	60	65	51	66	70	66	73	+14%	+25%
Angola	15	28	57	63	57	68	73	80	84	85	83	85	95	98	+10%	+6%
Benin	6	12	42	98	66	102	130	154	193	246	290	272	269	296	+16%	+19%
Botswana		1	4	10	10	19	14	19	21	22	24	27	26	19	+14%	+11%
Burkina Faso	22	31	94	186	239	263	282	214	236	266	263	191	260	408	+9%	+9%
Burundi	2	4	11	25	30	36	35	33	39	39	49	49	45	52	+22%	+7%
Cameroon	15	38	84	131	158	283	289	319	355	395	447	422	461	581	+11%	+17%
Cape Verde	2	4	7	13	17	17	17	22	22	25	24	24	23	26	+8%	+5%
Central African Republic	3	7	9	10	16	19	20	21	14	23	26	28	30	30	+9%	+10%
Chad	19	22	30	64	74	68	81	66	68	76	66	63	103	78	+7%	+3%
Comoros	14	20	33	40	40	39	46	42	42	44	46	48	48	49	+3%	+3%
DR Congo ^b	5	4	8	28	37	41	45	33	30	31	32	30	31	32	+12%	-1%
Côte d'Ivoire	171	314	606	764	817	879	871	941	1,083	1,061	1,098	1,230	1,224	1,303	+6%	+5%
Djibouti	4	7	15	27	30	31	31	31	33	32	34	37	37	37	+6%	+2%
Egypt	734	1,057	1,309	2,356	2,684	2,680	3,070	3,005	2,905	2,641	2,859	2,960	3,227	3,077	+3%	+2%
Ethiopia	2	1	15	14	13	15	18	29	26	26	40	53	39	47	+52%	+19%
Gabon	2	5	12	37	46	47	48	50	51	51	50	49	55	51	+10%	+1%
The Gambia	27	37	63	73	53	64	57	44	48	57	66	85	92	102	+4%	+9%
Ghana	58	71	97	229	301	449	481	460	476	488	551	572	603	640	+8%	+10%
Guinea	154	229	407	680	759	798	809	780	779	810	857	909	955	1,032	+5%	+4%
Guinea-Bissau	35	48	82	119	123	126	130	135	120	113	107	116	131	147	+4%	+2%
Kenya	11	25	49	61	139	167	168	218	268	261	298	285	274	315	+17%	+10%
Liberia	111	182	257	134	163	179	180	160	161	191	256	255	314	369	+5%	+10%
Libya	10	30	49	74	81	83	84	83	84	83	84	83	84	84	+6%	+0%
Madagascar	723	981	1,157	1,271	1,508	1,603	1,684	1,713	1,784	1,850	1,913	1,983	2,043	2,123	+3%	+4%
Malawi	4	33	21	34	48	46	47	51	53	54	61	65	76	86	+12%	+7%
Mali	86	118	197	361	520	528	565	552	609	643	670	707	780	835	+7%	+5%
Mauritania	10	28	81	116	128	72	72	78	88	96	109	103	102	103	+7%	-1%
Mauritius	62	67	70	68	66	68	63	58	68	62	62	63	66	65	+0%	+0%
Morocco	9	9	18	26	26	26	19	12	20	28	22	31	32	38	+13%	+10%

Mozambique	50	84	127	126	165	162	179	228	264	294	376	428	407	433	+6%	+12%
Niger	12	25	70	96	125	150	236	244	257	301	221	198	154	124	+9%	+3%
Nigeria	148	449	1,347	2,251	2,699	3,120	2,862	2,976	2,929	2,840	3,019	3,275	2,987	3,222	+12%	+2%
Rwanda	1	3	10	15	9	34	25	29	30	51	54	55	62	99	+25%	+49%
Senegal	204	261	421	536	722	654	739	775	774	784	778	877	895	866	+4%	+2%
Sierra Leone	211	301	343	360	407	378	405	405	434	452	486	493	517	530	+3%	+3%
South Africa	66	97	205	441	550	560	659	745	743	754	788	959	628	737	+7%	+5%
Sudan	6	11	33	25	33	47	35	42	71	88	129	70	28	50	+9%	+16%
Togo	13	14	32	67	110	85	99	98	154	144	121	127	121	124	+8%	+3%
Tunisia	2	2	5	12	14	10	11	18	14	17	24	17	19	9	+4%	+2%
Uganda	9	14	19	63	114	88	113	125	124	142	125	144	138	147	+14%	+4%
Tanzania	81	189	344	442	616	638	647	773	801	764	811	831	890	873	+9%	+4%
Zambia	3	7	10	13	15	20	25	35	33	27	34	18	30	35	+14%	+15%
Zimbabwe	5	5	10	20	14	16	14	12	22	24	25	42	36	33	+29%	+14%
Others	5	8	13	26	35	35	38	43	46	51	48	47	45	44	+5%	+3%
Africa	3,157	4,926	7,973	11,720	14,015	14,933	15,720	16,122	16,614	16,675	17,707	18,606	18,668	19,646	+4%	+4%
World	142,939	195,283	256,010	297,974	322,991	323,654	326,065	328,069	333,956	339,399	343,128	345,370	353,613	354,603	+2%	+1%

^a1960s, 1970s, 1980s and 1990s are 10-year averages.

^bFormerly Zaire.

^cAverage annual growth rates since the 1960s.

^dAverage annual growth rates since 2000.

and disposing of products and services, including the decision processes that precede and follow these actions' (Engel *et al.*, 1995, p. 4). From a micro-economics point of view, much emphasis has traditionally been placed on consumer decision-making and choice behaviour, building on demand and utility maximization theories. Most of the presented schemes are so-called 'stage models', which assume that consumers move through a problem-solving process, ranging from the recognition of needs, over information search and the evaluation of alternatives, to reach the final stage of choice or purchase.

After realizing a need, consumers can start searching for information about potential solutions to satisfy the need that has been recognized. Both internal and external sources of information can be consulted. Internal sources typically pertain to previous experience and memory, whereas external sources include commercial or non-commercial stimuli in the consumers' environment. The following step is the evaluation of alternative solutions on criteria that are relevant for the individual consumer in the specific situation. Such criteria are referred to as **attributes**, about which consumers hold specific beliefs. Beliefs about attributes, combined with attribute-importance weights, result in product preference, which is further translated into purchasing intentions.

Rice Attributes from a Consumer Perspective in Africa

Consumer surveys in Côte d'Ivoire and Nigeria show that rice has become an ordinary good for urban consumers. Rice is regularly consumed by all socio-economic groups (Lançon *et al.*, 2003, 2004), but the view of rice as a uniform commodity is clearly out-dated. The West African rice market consists of individual country markets that differ greatly in terms of their size, importance of rice in food consumption and consumer preference patterns.

Attributes are product characteristics that are either **intrinsic**, like taste, texture or colour, or **extrinsic** to the product, like packaging, brand or label. Another attribute classification distinguishes between **search**, **experience** and **credence** attributes. Search attributes are available for

product evaluation before purchase. Typical examples are price, appearance, brand and packaging. Experience attributes can only be evaluated upon product experience, thus after purchase or product use – examples are taste and texture. Credence attributes are attributes that consumers cannot evaluate or verify themselves. Instead they have to put trust in people or institutions, like government controls or industry claims. Attributes relating to production, processing and product contents are typical examples of the credence-type attributes (Nelson, 1970, 1974; Darby and Karni, 1973).

Search attributes

Relevant search attributes for rice in the African market include: rice type, price, financial service and cleanliness, each of which is discussed in the following paragraphs. On the West and Central African market there are five major rice types: (i) long-grain white rice with an intermediate level of starch; (ii) broken rice; (iii) parboiled rice; (iv) aromatic (mostly jasmine) rice; and (v) round-grain (*japonica*) rice (USAID, 2009b).

Table 23.2 provides an overview of consumer preferences for alternative rice types in West and Central Africa.

Long-grain white rice dominates the markets in most of West Africa, except for those markets that prefer parboiled or broken rice. Broken rice is a by-product of rice processing. In international markets, broken rice is considered an inferior product and is therefore much cheaper than whole rice. However, urban Senegalese, Gambian and Mauritanian consumers have developed a marked preference for broken rice (Brüntrup *et al.*, 2006). Most imported rice is either broken or milled rice, and is consumed more in the coastal regions, especially in the larger cities. In countries where the primary urban centre is also a port, with easier access to food imports than food grown in the country's hinterland, the food purchases of this non-agricultural population are typically biased towards imports (Saverimuttu and Rempel, 2004).

In some parts of Africa – such as south-west Mali, Guinea, Sierra Leone, northern Côte d'Ivoire, parts of Benin, Liberia and Nigeria –

Table 23.2. Consumer preferences for alternative rice types in West and Central Africa. (Adapted from USAID, 2009b, based on own observations.)

Country	Rice market characteristics
Benin	<ul style="list-style-type: none"> Primarily an importer of high-quality white rice, but also buys aromatic rice and some '25% broken rice' (mix of 25% broken rice and 75% whole-grain rice). High-quality white and aromatic rice are preferred in urban areas. Some consumers also prefer parboiled rice, especially in rural areas.
Burkina Faso	<ul style="list-style-type: none"> Mainly 25% broken rice. Rice is not an essential staple food, but is becoming more popular. Rice is mostly consumed in urban areas, whereas rural populations consume local cereals (millet, sorghum and fonio) in addition to rice. Although local rice is currently cheaper than imported rice, urban consumers prefer imported rice. Local rice is believed to be of good quality, but harder to access in urban areas than imported rice.
Cameroon	<ul style="list-style-type: none"> Imports 25% broken rice, but also significant quantities of high-quality white rice.
Chad	<ul style="list-style-type: none"> Market for 25% broken rice.
Côte d'Ivoire	<ul style="list-style-type: none"> The overall market is dominated by 25% broken white rice, followed by high-quality white rice, aromatic broken and aromatic 100% whole-grain rice (an emerging product category). Imported 25% broken rice is mostly sold on rural markets. In urban areas, the preference is for white long-grain 100% whole-grain rice, including aromatic rice. Local rice is mostly consumed in rural areas.
The Gambia	<ul style="list-style-type: none"> Price-conscious market; consumer preference is for 100% broken rice. Some 25% broken white rice is imported as well. Local rice is available only at the retail level but is sold at a price premium relative to imported rice.
Ghana	<ul style="list-style-type: none"> Rice is not an essential staple food. Consumer preference is for high-quality white and aromatic rice. Aromatic rice is sold at a premium and Ghana is Africa's largest importer of aromatic rice. Some aromatic broken rice is imported as well. In the north, consumers used to prefer parboiled rice, but fieldwork by USAID (2009b) revealed that preferences have shifted to white rice. Local rice is sold at a lower price than the cheapest imported rice.
Guinea	<ul style="list-style-type: none"> Imports are mostly low-quality 25% broken rice. Rural consumers prefer locally parboiled rice. Some varieties of local rice are popular and sold at a premium to imported rice.
Guinea-Bissau	<ul style="list-style-type: none"> Rice is the key staple food, but consumers readily switch between local and imported rice.
Liberia	<ul style="list-style-type: none"> Consumer preference is for round-grain Chinese rice and low-quality parboiled rice.
Mali	<ul style="list-style-type: none"> Consumer preference is mostly for 25% broken rice, but imports also include broken rice, both white and aromatic. Rice is not a key staple food, but it is becoming more popular. Some varieties of local rice (e.g. Gambiaka) are popular and sold at a premium to imported rice.
Mauritania	<ul style="list-style-type: none"> Consumer preference is for 100% broken rice, both aromatic and white. Some consumers prefer local rice.
Niger	<ul style="list-style-type: none"> Consumer preference is for white 25% broken rice and for locally parboiled rice. The market is split equally between these two types of rice.
Nigeria	<ul style="list-style-type: none"> In northern Nigeria the preference is for rice flour (97% share), as opposed to grain. In the southern part, the preference is for high-quality parboiled, mostly imported rice.
Senegal	<ul style="list-style-type: none"> Consumer preference is for 100% broken rice, both white and aromatic, but there is a slow trend towards whole-grain rice. Rice is a staple food. In rice-production areas, local rice is preferred. In urban areas, consumers prefer imported rice; aromatic 100% broken rice is preferred in Dakar.
Sierra Leone	<ul style="list-style-type: none"> Price-conscious market, imports 25% broken rice and white broken rice.
Togo	<ul style="list-style-type: none"> Primarily imports high-quality rice, both white and aromatic rice, but also 25% broken rice.

parboiled rice is preferred. Parboiling is a transformation process that enhances the physical, chemical and organoleptic (involving substances that influence taste) qualities of rice. It falls into two categories: high quality (with a golden tinge) and low quality (with a dark colour and sometimes an off-flavour or off-odour). Nigeria is one of the largest importers of fully milled, high-quality parboiled rice and Liberia is one of West Africa's top importers of low-quality parboiled rice. Aromatic rice is an emerging and growing rice market segment that commands premium prices and is increasing in popularity throughout urban West Africa. Imported aromatic rice comes mainly from Thailand and Vietnam, and Ghana was one of the first countries to adopt aromatic rice. Round-grain rice is the preferred rice in Liberia and is used for making porridge because the grains stick together when cooked (Table 23.2; USAID, 2009b).

A second search attribute is price. It is important to analyse how consumers respond to price changes of rice. A large body of literature indirectly addresses this question by analysing the effectiveness of price policies in reversing the trend from traditional local grains to wheat and rice (Reardon, 1993; Kelly *et al.*, 1995; Reardon *et al.*, 1997; Akindes, 1999; Diagana and Reardon, 1999; Diagana *et al.*, 1999; Singare *et al.*, 1999). The devaluation of the CFA franc in 1994 provided a unique test case to observe the impact of a doubling of imported rice prices on consumption. However, instead of reducing imported rice intake, consumers responded to the devaluation by de-diversifying their consumption patterns due to the larger importance they attributed to non-price attributes such as availability and ease of cooking. Both Senegal and Côte d'Ivoire (the biggest rice importers) actually increased rice imports after devaluation; only Burkina Faso and Mali (both small rice importers) had small reductions in or stagnation of rice imports (Diagana *et al.*, 1999). The conclusion from this body of research was that price policies did not work due to the low responsiveness of West African rice consumers to price changes, especially in countries where rice is the main staple crop. More recent consumer-preference studies of Fall and Diagne (2008) and Lançon *et al.* (2004) confirm this conclusion.

A third search attribute is services associated with the purchase of rice, such as credit, or

delay-payment mechanisms. A consumer survey in Côte d'Ivoire showed that this criterion is much more important than price (Lançon *et al.*, 2001). These services are often provided by retailers of imported rice and, less frequently, by dealers of local rice.

A fourth search attribute is cleanliness and market presentation of rice. The historical switch of urban consumption from local coarse grains to imported wheat and rice instead of local rice can be explained by consumers' perception that local rice is of inferior quality. Owing to a large percentage of foreign matter and low levels of postharvest grading and sorting, local rice fails to meet expectations concerning reduced workload and time spent on sorting and cooking rice, and hence falls short relative to imported rice in this convenience dimension. Several consumer-preference surveys in Benin, Burkina Faso, Côte d'Ivoire, Nigeria and Senegal confirm this (Lançon *et al.*, 2001, 2003; Konkobo *et al.*, 2002; Lançon and Benz, 2007; Fall and Diagne, 2008; Demont *et al.*, 2012, 2013a,b). This critically explains why imported rice is preferred in many countries over local rice, with Mali, The Gambia and Guinea as exceptions (USAID, 2009b).

Experience attributes

Experience attributes can be verified only after use of the product – for rice the most important ones are sensory characteristics, swelling capacity and cooking time. From a marketing perspective, lack of consistency between pre- and post-consumption evaluations can significantly affect satisfaction and repeat-purchase decisions. The evaluation of taste is subjective and taste preferences differ among countries, regions, households and even for types of meals. Consumer-preference studies show that taste is an important attribute that tends to favour local rice, but it is not the most decisive attribute in many cases (Lançon *et al.*, 2001, 2003; Konkobo *et al.*, 2002; Lançon and Benz, 2007; Fall and Diagne, 2008; Moseley *et al.*, 2010; Demont *et al.*, 2012).

In some countries, there are local rice varieties with unique taste characteristics that are particularly appreciated by consumers. For example,

'Ofada' rice in Nigeria is liked by consumers of all income classes for its distinct taste and aroma (PrOpCom, 2007). In Guinea and Mali, local rice is preferred for its taste and freshness (USAID, 2009b). In Senegal, sensory tests provide evidence of the existence of a market segment (14%) of older and less-educated consumers with a preference for traditional local rice (Demont *et al.*, 2013b). In Ghana, Tomlins *et al.* (2005, 2007) similarly observed that although the majority (86%) of consumers prefer imported raw and parboiled rice to that produced locally, due to the poor quality of local rice, there is a niche market segment (14% of consumers) that mostly prefers traditional local rice. Apart from the above-mentioned studies, sensory studies dealing with rice in the African market are scarce.

Swelling capacity is related to the physical and chemical (starch content) properties of the grain. Rice that swells more satisfies a larger number of consumers in terms of satiety for a given weight of rice because of its potential volume increase. This is an important experience attribute for large families with financial constraints (Lançon *et al.*, 2001, 2003; Dalton, 2004; Fall *et al.*, 2007; Fall and Diagne, 2008). The swelling capacity of rice is not only characteristic of the rice variety, but it is also influenced by the management of postharvest operations. While (according to rice breeders) there is a relation between paddy variety and swelling capacity, food technologists explain that the high swelling capacity of imported rice is due to its longer storage period (up to one year or more). In contrast to imported rice, the bulk of local rice is usually traded within months after the harvest (Lançon *et al.*, 2003). Storage of milled rice (ageing) affects rice quality: it leads to lower cohesiveness, drier grain surfaces, higher swelling capacity and firmer texture during cooking. Finally, cooking time also tends to become longer with increased storage time.

Credence attributes

Credence attributes generally gain importance as evaluative criteria in food-purchasing decision making. As indicated above, credence attributes are characteristics that are not directly

revealed by experience and consumption, and where the consumer is reliant on third-party or external information to evaluate the attribute in the product. The market provision of quality is notoriously fraught with difficulties under asymmetric information: when producers cannot credibly signal the quality of their products, consumers' choices are predicated on the perceived average quality on the market, and this pooling equilibrium leads to market failures. Labelling and branding can be used to counteract the effects of quality uncertainty, as it not only indicates quality but also gives consumers a means of retaliation if the quality does not meet expectations (Akerlof, 1970). It has been established that origin and quality labelling entail market differentiation potential, which might be noticeable for consumers depending on what the labels appeal to (e.g. health, safety, taste differentiation) (Verbeke and Roosen, 2009). Country-of-origin labelling (COOL) can therefore serve as an extrinsic cue that supplements the use of intrinsic quality cues to form quality expectations (Verlegh and Steenkamp, 1999).

Batra *et al.* (2000) found that among consumers in developing countries – for reasons that go beyond brand quality assessments – brands perceived as having a non-local origin are attitudinally preferred to brands seen as local. This suggests that COOL not only serves as a quality cue, but also possesses an additional dimension of foreignness that contributes to attitude formation and liking for status-enhancing reasons. The greatest challenge for rice marketers in West and Central Africa will be to reverse this trend, especially in urban markets. Recent evidence in this research area is promising. Tomlins *et al.* (2005) found evidence for COOL effects in Ghana in that consumers tended to like rice types that came from their own region. Demont *et al.* (2013b) show that under experimental conditions, urban Senegalese consumers are willing to pay an average price premium of 35% – relative to the price of traditional local rice – for enhanced-quality local rice and further added 6% if the latter was labelled and branded as Rival® (a trademarked COOL launched by the Oxfam-funded PINORD platform in 2007) (PINORD, 2009). This suggests that COOL has the potential to increase consumer acceptance of a food product by translating a typical credence characteristic (origin) into a searchable characteristic (an origin label).

Conclusion

Historically, strong urbanization and urban bias have marked urban markets in West Africa with strong consumption preferences for imported rice. Understanding consumer preferences for rice in Africa will become increasingly important for reversing this trend in order to increasingly meet the growing demand for rice with local rice and reduce the import bill. The available evidence shows that rice is far from a homogeneous commodity in West and Central Africa – different market segments can be identified, based on search, experience and credence attributes. Beliefs about attributes result in product preference, which is translated into purchasing intentions. Although consumer preferences are deeply embedded in societal norms and market behaviour, they are not unalterable. Credence attributes can increase acceptance of a food product, if they can be successfully transformed into search attributes.

As argued by Tollens *et al.* (Chapter 1, this volume), consumer research on rice in Africa should be part of an optimal mix between supply-shifting and demand-lifting research and development. The information generated by this research can be used by policy makers and stakeholders to tailor domestic rice value chains to market standards, in order to increase competitiveness of the domestic rice sector to imported rice, illustrated by Demont and Neven (Chapter 24, this volume). Experimental economics is a particularly useful tool for conducting consumer research as it allows testing of alternative marketing strategies in real or laboratory market conditions. In 2008, Africa Rice Center (AfricaRice) started a series of experimental auctions in Benin, Burkina Faso, Cameroon, The Gambia, Mauritania, Senegal and Uganda, and is planning similar experiments to assess consumers' willingness to pay for rice quality and marketing attributes in African markets (Demont *et al.*, 2012, 2013a,b).

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