Packaged Foods for Complementary Feeding:

Marketing Challenges and Opportunities

Robert Porter
Lonna Shafritz

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1. Introduction

This paper examines strategies for using packaged complementary foods to improve the nutritional well being of young children in developing countries. Our specific concern is with the use of packaged foods as a complement to breast feeding. Older infants (6-12 months of age) are particularly vulnerable to growth faltering as they make the transition from breast milk to the family diet. During this transitional period breast feeding alone is usually insufficient to meet young children's nutritional needs; yet the foods traditionally given to complement breast milk may themselves be inadequate in quantity and nutritional quality. Nutritious, low cost, packaged foods offer a potentially attractive alternative to many of the first foods traditionally given older infants.

When should donor and government agencies consider support for the development and marketing of a packaged complementary food? What approaches and models should they follow in developing a packaged food project? We do not think that there is a single answer that applies across all countries, programs, and populations, but we do believe that it is possible to establish experience-based guidelines relevant to policy and program managers everywhere. Our approach in this paper is to review past project experience with processed infant foods in developing countries and summarize the basic programmatic options. We are primarily interested in marketing-oriented programs or interventions, but we are casting our conceptual net widely. We include projects involving the processing of infant foods at the community level, projects employing artisanal or craft-like modes of production, as well as large-scale efforts that market industrially processed products across very large areas. (We do not cover, however, the products and the marketing operations of transnational corporations.)

We then look more closely at the range of issues involved in producing and marketing complementary foods. What have we learned of the relative strengths and weaknesses of these different products and different marketing approaches? What potential problems do they confront, and how have they been resolved (if at all)?

2. The controversial history of packaged infant foods in the developing world

Background. Beginning in the 1960s, nutrition programs in developing countries began to focus technical and financial support on the industrial production of relatively low-cost weaning foods.[1] Many

[1] The substitution of 'complementary foods' for 'weaning foods' is a terminological shift that reflects the relatively recent scientific consensus concerning the appropriate role of infant foods during the critical transition from breast milk to the family diet. Many nutritionists now justifiably discourage the use of the term weaning to characterize the infant's first semi-solid or solid foods. However, we find it awkward -- and even somewhat inaccurate -- to indiscriminately substitute 'complementary foods' for 'weaning foods' when referring to weaning food products or projects that historically preceded this shift in the nutritional discourse.

of these products were designed, at least initially, for public sector, institutional markets -- hospitals, clinics, nutrition centers, food relief efforts. Expanding product distribution through commercial market channels was a logical and attractive next step -- revenues resulting from product sales could defray production and distribution costs and a nutritious, convenient complementary food would be made widely available to much larger consumer groups. The number of packaged and branded weaning foods in developing-county markets quickly proliferated. One study during this period (Cordero, 1972) identified over 100 commercially distributed products. Yet by the end of the 1970s, only about 30 of these early products were still on the market (Mitzner, Scrimshaw, and Morgan 1984). And now, some fifteen years later, just a handful survive.

What happened to these processed weaning foods? There are no simple answers. Few brands in any product category survive for decades, new product introductions typically suffer very high failure rates, and developing country markets tend to be fairly volatile. Thus the longevity of any specific, branded product is not really a good measure of the market success or failure of the category as a whole.

The more interesting question is why donors who were once so supportive of processed foods lost interest in them: why do processed complementary foods not currently play as central a role in nutrition programs?

1970s -- Issues of substitution and access. In the 1970s, the growing skepticism regarding packaged weaning foods centered on two kinds of criticism. The first was that processed products simply substituted for locally available foods, often to the actual detriment of children's nutritional well being. Because low-income families are on fixed food budgets, their food purchases take the form of a zero-sum game. When a family purchases a commercially-distributed weaning food they must consume less of some other, often more traditional, staple food. And, it was argued, these local staples – and the nutritious infant foods that could be prepared from them (if people only knew how) -- are almost always a better value than processed and packaged "commerciogenic" foods distributed through retail channels. The chief proponents of this argument (Popkin and Latham, 1973) admitted that there had been little research on these kinds of substitution effects and that their own cost-benefit analyses were a sort of "artificial simulation." Nonetheless, the substitution argument, even in the absence of empirical support, has appealed to many applied nutritionists, who came to view support for commercially processed and marketed foods as an inherently flawed intervention strategy.

The second, more telling (and still very current) criticism of commercially-distributed complementary foods is that these foods simply do not reach the most vulnerable population segments, due to high prices or the limited extension of commercial distribution systems into rural areas, or both. This criticism differs from the zero-sum or substitution argument, in that it does not presume that commercially processed foods are inherently dangerous to children in low income families. Quite the opposite: the problem is that these commercial products fail to reach those consumers who would benefit from them the most.

Several different issues are involved here. The first is the question of market segmentation. Attempting to target relatively high-priced offerings to rural families on the margins of the cash economy, or to the poorest of the urban poor, is simply bad marketing. We have found little evidence that early complementary food projects were guilty of this kind of obvious mistake. Most tried to match their products to populations in a position to purchase them. But the nutritional needs of populations with the purchasing power to buy complementary foods were seldom seen as a top priority of nutrition programs, which historically have been preoccupied with improving the nutritional status of the most vulnerable population segments, usually very poor and very rural. This single-minded focus on the rural poor has begun to change, however, as the health consequences of moderate malnutrition, which affect a wider spectrum of income groups, have been more clearly recognized, and as the problem of urban malnutrition increases along with the growth of rural to urban migration streams.

It is probably fair to say, however, that many processed complementary food projects have not had very clear market-segmentation objectives. One reason is that most of these projects have not had the resources to carry out systematic consumer research, and so have not known who actually purchased their products or even how prices affected product sales to specific consumer groups. (However, several projects, such as *Vitafort* in Congo-Brazzaville and *Thriposha* in Sri Lanka, which have been able to invest in consumer research have demonstrated significant sales to low-income market segments.)

Even with consumer research, segmentation and pricing decisions are seldom obvious or easy. Most social marketing programs involving packaged goods (be they in population, health, or nutrition) aim to set retail prices at levels that cover (or mostly cover) production, distribution, and promotional costs, while still encouraging purchase by consumers at the lower-income end. This can be a difficult balancing act, with little margin for error.

Marketing programs in the population and health sectors have been grappling with these kinds of pricing issues for some time. One strategy, followed in mature contraceptive marketing programs, is to extend the product line, introducing different brands at different price points for different market segments. The aim is cross-subsidization: sales of higher-priced premium brands purchased by middle-income consumers can subsidize the costs of lower-priced products marketed to lower income consumers. Similar kinds of pricing strategies are being introduced in decentralizing government health systems, where increased cost sharing (consumer fees) and means tests to establish eligibility for subsidized health services are becoming commonplace.

The issue of sustainability is one that all development programs confront eventually. But programs in which product sales are expected to cover project costs face it sooner than do programs where product- or service-related costs are hidden and cost/benefit ratios are hard to calculate.

1980s - Behavioral and community-level strategies. By the early 1980s, donors were also gravitating to more community-focused interventions centering on improvements in indigenous feeding practices using locally grown and purchased foods. These new intervention strategies emphasized behavior change communications, in some cases supported by village-based food processing cooperatives and income generating groups. And as enthusiasm for behavioral and community-based interventions increased, donor support for centrally processed foods eroded further.

A World Bank working paper (Levinson, 1991; 7-8) retrospectively summarizes this shift in the following terms:

> *The importance of education on weaning food preparations [the so called "new nutrition education"] stems in part from the now widely-acknowledged failure of commercial products to reach low-income, malnourished children, and from the more recent understandings related to the caloric density and potential enzymatic properties of certain foods.*
>
> *During the 1960s, considerable attention was given to the potential of low-cost formulated and commercialized children's foods, often based on the processing of protein from oilseeds or unconventional sources. Among the more famous were Incaparina in Guatemala and Superamine in Algeria. U.S. Government-provided PL480 Title II foods such as Corn soy milk (CSM) or Wheat soy blend (WSB) were based on similar principles. It was found, however, that for low-income, food-insecure households unable to afford adequate supplies of basic staples, any product costing more than the cost of the raw materials was, almost by definition, beyond their reach on a sustainable basis. In fact the commercial products usually sold for 8-40 times the cost of the raw materials on a nutrients per dollar basis (Popkin and Latham, 1973)...*
>
> *Accordingly, attention has shifted to weaning food preparations that can be made at home with local ingredients.*

Two projects -- one in Tanzania and one in Indonesia -- with this focus on locally-available foods and community-level interventions proved particularly influential at this point. The Iringa project, in Tanzania, centered on community participation in problem identification and intervention planning. Interventions in Iringa also attempted to reduce women's resource constraints and other barriers to optimal complementary feeding through provision of labor-saving food processing technology, improved cooking stoves, and day care services for working mothers. Tanzania has also been an important site for the development of new complementary food products, such as porridges thinned with amylase-rich flour ("power flour").

In Indonesia, the Nutrition Communication and Behavior Change Component of a broader World

Bank-supported nutrition program used a research-driven, social-marketing approach to promote improved home-produced complementary food preparations (through the addition of green-leafy vegetables) along with the continuation of breast feeding [Manoff, 1984]). These more community and household oriented projects emphasized the importance of understanding consumer behavior and focused on changes in feeding practices -- strategies introduced in the early 1970s but never widely applied in the nutrition sector (CARE, 1973, Manoff, 1975). The Iringa and Indonesia projects have since been followed by many others, such as the Tamil Nadu Integrated Nutrition Project, funded by the World Bank, and the Home and Village Prepared Weaning Food Project and the Nutrition Communication Project, both funded by USAID.

New approaches. This is not the whole story, however. Where some donors and development agencies lost much of their early enthusiasm for processed and packaged complementary foods, other organizations, such as the Netherlands Royal Tropical Institute (KIT) and the World Food Program, continued to support the development of a new generation of processed food projects (Dijkhuizen 1990, and Huffman, personal communication 1997).

These projects have been much more sensitive to issues of cost and sustainability, placing a premium on:

- local manufacturing processes emphasizing familiar work patterns -- essentially domestic, craft-like, and collaborative;
- a more appropriate (modest) scale of operation, making fewer demands on local management;
- a product-development process emphasizing local tastes and affordable pricing; and,
- a business planning process that sets out specific steps towards financial self-sufficiency over a specific time frame.

The design criteria guiding this second generation of processed complementary-food projects suggest that early concerns about affordability and appropriate use could be systematically addressed through careful attention to product development, distribution, pricing, and cost management. This second generation of projects also illustrates that the production and distribution of packaged foods can be organized and implemented in a variety of ways -- at several different levels and scales. They cover the midrange of production and distribution strategies; located between large-scale, centrally-processed food projects, on the one hand, and projects focused on foods prepared in the household and community with locally available staples, on the other.

3. A typology of complementary food products and projects

Discussions of complementary feeding interventions in the 1980's typically argued the relative merits of

three principal options: (1) developing and promoting complementary foods prepared in the home from locally stocked supplies; (2) increasing the availability and consumption of centrally-processed complementary foods; and (3) donated food aid, often in the context of emergency relief programs, to address acute food shortages (Mitzner, Scrimshaw, and Morgan 1984). In the abstract these different intervention strategies can be mixed and linked in various combinations, depending on the needs of target populations. In practice, however, they have often been viewed as mutually exclusive and even competing options. Many proponents of home-prepared foods have been particularly hostile to the idea of donor support for processed, commercial foods. And in a curious twist, social marketing in the nutrition sector has come to be closely identified with the promotion of home-prepared complementary foods and household-level feeding behaviors, while food technologists have shown greater interest in working with local food industries and indigenous marketing systems.

Increased urbanization, the spread of wage labor and cash-based market exchange into rural areas, and the development of a wider range of production technologies and distribution strategies all suggest that processed foods may now have a greater role to play in the prevention of childhood malnutrition. The Thai experience (discussed in Appendix I) also suggests that nutrition programs can be fairly agile and responsive, moving from one intervention option to another in pace with broader economic development and the changing needs of consumers. In thinking about how these options fit together we need to be more sensitive to their underlying similarities and differences.

A good place to start is with the ways in which people collaborate in the various processes of producing, distributing, and consuming complementary foods. In some social settings – such as rural agrarian communities – the same actors may be involved in each process. However, in urban, market-dominated settings, processes of production, distribution, and consumption typically involve very different sets of people, engaging in activities at widely separated sites. Interventions in settings where there is considerable overlap among relevant units of production, distribution, and consumption will look very different from interventions where there is very little overlap. In characterizing these differences, it is useful to think in terms of an intervention typology based on levels of social and behavioral organization, and more particularly, on the organization of exchange relationships.

Exchange is important because it is the chief means by which goods move from one person to another. Exchange relations connect households to other households and to wider markets. But exchange also occurs within family units and households, even in agrarian households whose members produce a great deal of what they consume. The concept of exchange is also useful because it helps us think more clearly about entry points for nutrition interventions, particularly when it is combined with the concept of the food path (King and Burgess, 1993). One can think of foods traveling along paths from the places where they are produced to the people who eat them. And this movement of foods occurs through a series of transactions and exchanges. Food paths may be very short, as when household members eat the foods they produce. Or they may be very long, as when imported foods pass through many hands before they are finally consumed. Interventions at different levels of market organization focus on

different stages of the food path and on different kinds of transactions and exchange relations.[2]

The following four-fold typology moves from intervention strategies which call upon caretakers to bear a greater proportion of the labor and time costs associated with preparing a nutritious complementary food, to intervention strategies which distribute labor and time costs more widely.

Interventions at the household level (with a focus on domestically-produced foods). Complementary foods produced inside the household require locally and routinely available food stocks, cooking equipment, and the labor and practical expertise of children's care takers -- usually mothers, older siblings of the child, and perhaps other household members. Interventions that seek to introduce even simple innovations in combining and preparing available foods typically require considerable investments in research to understand feeding options available to mothers. The communication and diffusion of improved feeding techniques and behaviors can also require considerable program investments. Where direct face-to-face communications and observational learning (via nutrition counseling and cooking and feeding demonstrations) are the primary mechanisms for change, the promotional burden falls on networks of health and nutrition workers, supported perhaps by trained village volunteers and local community organizations. As this paper concentrates on packaged foods, interventions at the household level will not be a primary focus.

Interventions at the village or community level (focusing on low volume, community production units and local distribution). Pre-cooked and processed complementary foods produced *outside* the home, through a women's income generating group or a village cooperative, for example, depend on pooled resources and the organization of collective labor. They may also require a processing technology that is beyond the means of individual households (because it is too elaborate or too expensive). Processed food products also need to be adequately stored and distributed, and care givers must be motivated to purchase and use them appropriately (with some attention to hygienic preparation, active feeding, etc.). Interventions which rely on village cooperatives or women's groups offer some economies of scale, but this kind of social mobilization is still resource intensive: *it's just that communities are asked to draw upon their own resources*. These interventions also presuppose forms of traditional social cooperation or some other mechanisms for collective action, such as those characteristic of village social organization in Thai and Indonesian villages in the 1980s or grass roots NGOs today. Home preparation and appropriate feeding on the part of individual care takers is still required, of course, but village-based products can offer greater convenience and nutritional value (compared to home-prepared foods).

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[2] When we use the term 'market organization', as we do here, to summarily refer to this complex of food paths and exchange relations, we are not committing to a concept of exchange based only on a calculating economic rationality. The transactions and exchanges which move foods along the path leading from production to consumption are not always profit-motivated, even in market-dominated societies (such as our own).

Case studies of *Misola* in Burkina Faso and *Vitafort* in Congo-Brazzaville are provided in Appendix II as examples of local, small scale products.

Interventions at the intermediate level (focusing on intermediate-volume production units and regional distribution). Interventions that seek larger economies of scale and a nutritional impact across larger population aggregates may opt for processing technologies which yield higher product volumes. But here of course, the challenge is to keep production, packaging, storage, distribution and promotional costs down; while still offering sales staff and distributors sufficient incentives (in the form of cash margins) to keep product moving smoothly to retail. Intermediate-level manufacturing and distribution operations, which approximate small to mid-size businesses, may be less capital intensive and more technologically appropriate than industrial projects, but they still require sound business and marketing management.

Case studies of *Musalac* in Burundi and *Superfarine* in Benin are provided in Appendix II as examples of regional, intermediate scale projects.

Interventions at the central, industrial level (focusing on large volume, industrial production units and widespread distribution). Centrally-processed complementary food projects seek the largest economies of scale of any of these intervention options. They employ manufacturing technologies producing packaged product in considerable volume, and rely on large-scale commercial distribution networks. Typically these distribution networks are stronger and more efficient in urban and peri-urban areas, meaning that these projects often have problems penetrating rural markets. Here again, cost management in manufacturing and distribution, to keep consumer prices low, can be a major challenge, but the volume of sales (or the level of government or donor subsidization) can be such that investments in trade and consumer promotion, advertising and other marketing communications are possible.

Incaparina, a branded product developed by the Institute for Nutrition of Central America and Panama (INCAP) for the Guatemalan market nearly forty years ago, demonstrates that a central, industrially packaged complementary food can have considerable longevity, even without significant investments in brand promotion. *Thriposha*, first developed for Sri Lanka's institutional feeding programs in the 1970s, more clearly shows how a brand identity can be established through consumer familiarity, and how a public-sector product can be re-launched as a commercial product. *Superamine*, which followed a path similar to *Thriposha* (initially used in Algeria's rehabilitative feeding programs and later introduced to the commercial market), also illustrates what can go wrong in highly subsidized, centrally managed marketing projects. Brief case studies of all three are presented in Appendix II.

4. The strategic balance

Every complementary feeding intervention is concerned (sooner or later) with the end consumer – the infant or young child. Yet within a given market area the proportion of households containing children at the right age for complementary foods is small. We can roughly calculate (following Legros 1995) that an older infant only consumes a complementary food over a period of about six months before making the transition to the family diet. If households have, on average, four children, then there are only four, six-month periods during the family life cycle when parents are in the market for complementary foods. Given these assumptions, Legros estimates that at any given time the potential market for complementary foods consists of only about five percent of households in a given community or catchment area. In addition, this market is characterized by rapid turnover – households are continually entering and leaving it. These observations suggest that the market for complementary foods is typically small, diffuse, and constantly changing.

These market demographics are characteristic of those confronted by other child health products and services -- ORS, childhood immunization, and so forth. But the market for complementary foods is also "fragile" *(ibid*.), in the sense that establishing product loyalty and repeat usage can be particularly difficult. In deciding on the foods that are best for her infant, a young mother may be influenced by her husband, her parents, friends and neighbors, community workers, doctors, pharmacists, as well as various forms of product advertising. Her own criteria for selection may be further conditioned by the reaction of the child to the product, his growth pattern, the frequency of diarrhea episodes, the product's taste and appearance, its nutritional quality, and the price -- with price often being the decisive factor in the purchase decision (Legros 1995). It should also be evident that where packaged foods are available and affordable, they seldom are the young child's only transitional food; rather, they enter into the wider repertoire of other available foods given to breast-feeding children as they make the transition to the family diet.[3]

These market characteristics pose challenges to all types of complementary feeding interventions, irrespective of whether the intervention strategy centers on changing traditional weaning practices and diets or on introducing pre-processed and packaged complementary foods.
The four-fold typology of intervention strategies introduced above already suggests something of the relative merits of each approach. Now we want to further explore the strengths and weaknesses of centralized, regional, and smaller scale, local level projects.

A successful marketing project, whatever else it does, must be able to achieve a rough balance in matching product supply with market demand. And if the project is to be financially sustainable, revenues from product sales must be sufficient to cover variable costs as well as a significant portion of the project's capital and fixed overhead costs. Figure __ summarizes the marketing mix-

[3] The key point here is that the opposition between packaged and locally available foods is usually an abstraction from everyday diets and feeding behavior; packaged foods are typically used along with other foods, significantly complicating attempts to unravel their independent contribution to children's nutritional status.

characteristics that are the key to sustainability.

This listing amounts to a normative guide for project design. It identifies project sustainability as an important precondition for longer term nutritional impact. The case studies in Appendix II illustrate how different programs have approximated this ideal. Together they also suggest a more fundamental set of market entry strategies and project design principles that are summarized below.

KEYS TO PROJECT SUSTAINABILITY

DEMAND SIDE **The right product for the market**	**SUPPLY SIDE** **The right product for the producer**
• ***The product meets a defined market need***	• ***There is a clear rationale for both the product and the target market***
• ***Consumers approve of product formulation and characteristics (taste, texture, etc.)***	• ***Product ingredients are low cost, their supply is consistent, and production processes are flexible***
• ***The price is affordable and competitive***	• ***Sales revenues cover variable costs, while contributing significantly to overhead and other fixed costs***
• ***The product is widely available and easy to find***	• ***Distribution systems use multiple channels and stock outs are minimal***
• ***Consumers are aware of the brand, understand product benefits, and know how to use it correctly***	• ***Product promotion is carefully designed and targeted***

5. Lessons for project design

Work within existing market systems.

Incaparina (Guatemala) and *Thriposha* (Sri Lanka) illustrate different strategies for entering the commercial market. Each makes good sense within local market and health programming contexts.

INCAP, a regional nutrition institute (based in Guatemala) first developed *Incaparina* in the 1950s, and then, through licensing agreements, handed the product over to a local manufacturing and distribution firm. INCAP has concentrated primarily on getting the product formula right and in conducting basic research (clinical trials and longitudinal studies) to assess both its short and long term nutritional impact.

Incaparina has survived in the Guatemalan market as a result of steady (if modest) consumer demand, but it does not appear that this demand was actively created by aggressive marketing. Rather, *Incaparina* was simply made available through pre-existing processing and distribution systems. This is a rather passive, if relatively risk free, strategy: INCAP's role, as a catalyst for product development, played to its technical strengths, but the institute did not attempt to take the lead in actual product marketing, leaving this to its commercial-sector partner. This meant that investments in promotional support for *Incaparina* (advertising, sales and trade promotions, etc.) have been limited by sales revenues and profitability. It might be argued that a more aggressive promotional strategy at the beginning targeting lower income households would have led to greater impact in preventing malnutrition. On the other hand, additional investments in marketing communications have to come from somewhere: if not from sales revenues, then from government or from international donors. In the absence of this kind of subsidy, *Incaparina* appears to have done rather well, both as a commercial and a social product (using sales to poorer households as an indicator).

Thriposha, however, was initially developed for use in large scale, government-financed and managed take-home feeding programs. Only later was it introduced to commercial retail channels. As such, *Thriposha* illustrates a case of market-entry similar to situations now confronting other countries in South Asia. In India, for example, government nutrition programs include a large feeding component, just as Sri Lanka's nutrition program did in the 1980s. With well developed manufacturing capabilities, strong retail distribution systems, and with a sizable public sector market already established, prospects for developing (or re-positioning) a packaged children's food that can also be marketed through commercial retail channels look very attractive. Here *Thriposha* was the pioneer.

For a packaged food product to be commercially viable means, however, that marketing managers must have the latitude to position it in ways that address the needs and tastes of a variety of market segments, and not simply the poorest or youngest. Public health nutritionists, understandably concerned with populations most vulnerable to malnutrition, have been reluctant, at least in the past, to embrace commercially distributed products that are also attractive to (and are purchased by) other market segments. *Thriposha* gained wider consumer popularity in part because of its use in the home preparation of a widely consumed snack food *(aggala)*. More recently, India and the World Food Programme are collaborating in developing a fortified product, *Indiamix*, that be can used to prepare nutritious complementary foods, as well as cakes, puddings, and cookies that are attractive to the entire

household -- as well as the vulnerable younger child. The programmatic benefits, as well as the market potential, of foods that are nutritious, taste good, and appeal to wider market segments are now being recognized and explicitly promoted.[4]

Superamine, in contrast, illustrates how heavy-handed control by government, most apparent in pricing decisions, eroded the product's market base at just the time when it began to face competition from more expensive, imported infant cereals of higher perceived quality (as judged by consumers). The fate of *Superamine* suggests that greater investments should have been made in improving product quality and product image, and that these investments could have been covered, at least in large part, by more realistic (if higher) retail price levels. Greater investments, however, in maintaining *Superamine's* market base may only have postponed the inevitable.

In any case, the lesson is not that *Superamine* should have been sheltered from foreign competition. Rather, for a product to succeed in a competitive market, it must meet consumer needs and tastes. Marketing managers must be attuned to market possibilities, know their customers and be allowed to give them what they need and want at a (reasonable) profit. If these conditions cannot be met, partnerships with the commercial sector are not likely to succeed.

Look for institutional customers at project start up to establish a base market, but don't get trapped in a narrow market niche.

Launching new products in competitive markets is not easy. Indeed, most new products -- in any category -- fail. Here, government or other donors can help fledgling enterprises find institutional customers able to purchase products in sizable volumes over extended periods. Indeed, with the exception of *Incaparina*, all of the projects reviewed here, at every level of market intervention, relied heavily on an institutional customer in their early phases. And this early institutional market-base was clearly crucial to getting projects successfully off the ground. The challenge, though, is to move beyond this market niche. The limited reach of health services in most developing countries (relative to retail distribution systems) means that, by their very nature, their potential as a commercially viable distribution system for packaged foods is very limited. For the same reason, nutrition interventions (whether they involve packaged foods or not), must move beyond health services if they are to have any significant impact among broad population segments. But projects too closely tied to local health services may never progress to learning how to deal with a whole different set of distribution channels and channel members -- stockists, shop keepers, market women, itinerant peddlers, and so forth.

Identify opportunities to develop financial sustainability, such as cross-subsidization.

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[4] In a recent project brochure (World Food Programme 1997), *Indiamix* is described as "A tasty, varied supplementary food [that] attracts participants to regularly attend **ICDS** preschool classes, nutrition education, and other activities." In addition, "... the variety of tasty recipes that can be prepared using *Indiamix* is a major advantage."

Most nutrition projects target nutritionally vulnerable population groups. And typically these groups are vulnerable precisely because they are economically marginal. The dilemma is that it is very difficult to build a sustainable marketing program on a customer base limited to families with little purchasing power. Applied nutritionists have tended to view broader market demand for products targeting low income groups as a problem of "leakage," and have sought ways to limit this kind of spill-over consumption because it appears to undermine the nutritional objectives of the project.

If project sustainability is an objective -- and unsustainable projects are not likely to have any longer term nutritional impact -- then broader market demand is more of an opportunity than a problem. For example, family planning programs have explored price segmentation strategies through which sales revenues from higher-priced premium contraceptive products are used to subsidize distribution and promotional costs for lower-priced brands, affordable to lower-income consumers. A variety of not-for-profit development organizations, such as Grameen Bank and the Bangladesh Rural Advancement Committee (BRAC),[5] are also developing product and service lines with the explicit aim of generating revenues from middle income or elite market segments to subsidize core activities benefitting the rural poor.

Seen in the context of sustainability, the market profile for *Incaparina* (as represented by consumer data from 1968, the most recent we were able to obtain) suggests that sales to middle and upper income segments provide a solid platform for additional investments to better reach low income consumers.[6] In this kind of market situation, product sales to middle and upper income consumers should be able to cover the project's overhead costs, leaving room to explore the feasibility and effectiveness of additional investments to expand product use by low income consumers.

How to cross-subsidize? The answer can only come from a closer look at barriers to consumption. If price is a significant barrier, subsidies for low income consumers may be the solution. (Here there are a variety of potential mechanisms -- food stamps, institutional feeding programs, product line extensions with different price structures, and so forth.) If product availability is the barrier, then the solution lies in finding additional channels for efficiently reaching low-income consumers. (For example, by adding public sector channels to the commercial distribution system.) If the primary barrier is lack of consumer interest and knowledge, the solution might lie in developing a special communication strategy targeting low income audiences.

Invest in market and feasibility research to develop/refine best approach.

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[5] Grameen Bank now has a cell phone division and has become one of Bangladesh's a major Internet service provider. BRAC has expanded into corporate real estate, conference facilities, and management training services.

[6] 29 percent of the lowest income group, 61 percent of the middle income group, and 76 percent of the upper income respondents in a consumer survey reported use of *Incaparin*a (see page __).

Identifying underlying causes of (potential) marketing problems and finding effective solutions is very difficult without systematic research. Careful collection of consumer, distribution, and pricing data to assess the feasibility of alternative project designs and marketing mix strategies are particularly important early on in the project planning process. In retrospect, many early projects failed to invest in the kinds of strategic research that would have made it possible to undertake systematic market analyses and set realistic sales objectives for specific customer segments (or to do *any* explicit segmentation planning, for that matter). During the product development process, they also failed (in most cases) to collect the kinds of information on consumer tastes, preferences, and purchasing patterns that could have improved product acceptability.[7]

Some of the second generation of projects centering on intermediate-scale production technologies appear to be taking action to avoid these mistakes. They are not engaging in large scale consumer research, but rather, appear to be following a project planning and implementation process that takes a very hard-headed and practical stance towards project sustainability, and are carrying out systematic market audits, supplemented by small-scale, focused consumer research (product, name, and message testing) prior to product launch.

Implement rigorous management accounting and business planning procedures from the very beginning.

Collecting appropriate cost data is essential, both in project design and throughout the entire course of project implementation. Informed cost management decisions depend on very specific kinds of data and data analyses. Data gathering does not need to be very elaborate, but accurate record keeping is crucial. However records are kept, they need to provide management with information on both variable and fixed costs.

Fixed costs are simply the costs of being in business, irrespective of how much product is manufactured or sold. Fixed costs include equipment, rent, salaries, and administrative expenses. They may be tied to some fixed investment (such as the purchase of equipment) or a specific time period (such as a year's rent) but they do not vary directly with manufacturing or sales volumes. Variable costs are costs directly associated with the manufacturing, distribution, and sales of products; and variable costs (in contrast to fixed costs) *do* vary directly with the volume of product that is manufactured and distributed. As the amount of product manufactured increases, the total cost of raw inputs (a variable cost) also increases; as distribution expands, the costs of transport (such as gasoline expense based on miles driven) also increases.

The central point – without going further into the details of management accounting – is that financial

[7] Early infant cereal projects receiving technical assistance from USAID in market planning (such as *Thriposha*, in Sri Lanka, and *Cerex* in Guyana) are notable exceptions.

sustainability is possible only if revenue from product sales is greater than the variable costs of the product. This difference, or margin, between sales income and variable costs is then available to cover fixed and other indirect costs, such as equipment, salaries, advertising, consumer education, and other business or operating expenses.

Only if project managers are able to classify and track both variable and fixed costs can they make effective financial management decisions. Key questions include:

- What sales volume is required to break even?
- What sales volume is required to earn a desired profit?
- What profit can be expected from a given sales volume?
- How would changes in selling price, variable costs, fixed costs, and/or output affect profits?
- How would a change in the mix of products sold affect the break even point and target income volume?
- And how would changes in price affect the ability to reach different market segments?

Collecting and organizing the data to answer these questions is crucial to making sound pricing and price segmentation decisions. Without management information based on appropriate cost accounting and reporting procedures, managing projects for cost recovery is difficult, if not impossible, and strategies for cross-subsidization simply cannot be implemented effectively.

Exploit the communication potential of brands.

The contribution of packaged foods to improvements in the nutritional status of young children is mediated by feeding and other care taking behaviors, among a number of other factors. The advantages of packaged food projects, as nutrition interventions, lie primarily in their potential for supplying care givers with a high quality, convenient-to-use product, through already existing distribution channels. In addition, *packaged* foods also are vehicles for communicating with consumers.

Packaging serves two purposes; it protects and preserves foods, but it can also be a kind of brief and often powerful advertisement in its own right. In this sense, as a vehicle for generating and communicating meaning (a product identity or image), it is part of the brand.[8]

All products carry and communicate intangible (yet very real) social meanings. These meanings may by relatively trivial and pass unnoticed by most consumers most of the time, or they may operate quite openly and publicly. Certain foods, for example, serve as markers of special occasions or signal the

[8] Historically, the first purpose of branding was to confirm the legal protection afforded by the inventor's patent. The second was to guarantee product quality and homogeneity after sellers and buyers had lost face-to-face contact. Increasingly, however, branding is used to invest products with additional values and meanings, beyond their performance or functional features.

social status of consumers, and this marking function can be central to purchase decisions and consumption behavior. These kinds of meanings, and many others that draw upon our personal experience with foods (including meanings which can be associated with them through advertising) are the cultural materials out which brands are built.

A brand is a product that provides functional benefits plus *added values* that *some* consumers value enough to buy. A successful brand must perform well (in a technical sense) but it must also provide some additional benefits if it is to stand apart from alternative products.

Added values beyond these core, technical functions or benefits are:

- *Added values that come from experience with the brand*. These include familiarity, known reliability, the reduction of risks. Though experienced based, these consumer assessments are essentially subjective.

- *Added values that come from the sorts of people who use the brand.* These user associations may be fostered by advertising, but they also result from more direct observations and associations. Free or donated foods distributed to the poorest of the poor, for example, may take on a certain stigma as a "charity food"in the eyes of other socioeconomic groups (as observed among better off farmers who refused to accept food supplements donated through the Poshak Project, rural India [Golpada et al. 1975:181].

- *Added values that come from a belief that the brand is effective.* Perceived efficacy can sometimes contribute to product performance. There is evidence, for example, that the branding of proprietary drugs works like an ingredient on its own. In a study of analgesics, "Double blind trials demonstrated that branding accounts for a quarter to a third of pain relief. That is to say branding works like an ingredient of its own, interacting with the pharmacological active ingredients to produce something more powerful than an unbranded tablet." (Lannon and Cooper 1983:206 -- see also Bandura on the role of perceived efficacy in health behaviors and Kleinman on placebo effects in therapeutic practice.)

- *Added values that come from the name and appearance of the brand*. This is the prime communicative function of product packaging, or in the case of services, 'atmospherics'. The atmosphere in which a service is performed, the nature of the relationship between a service provider and a client, the name and appearance of product packaging, all offer surrogate cues which aid consumers in forming a judgement about the functional, benefit- delivering features of the brand. Surrogate cues are characteristics of the product that may provide no direct benefits, but in use have the power to convey a message about the brand's functional features. (See the *Thriposha* case in Appendix II).

Find systematic ways to inform and educate consumers.

Brands are important marketing communication tools, but they are only a part of the communications mix. In addition, instructions regarding correct use should be provided through labeling and package inserts. It must be recognized, however, that less-than-optimal food preparation and feeding behaviors cannot be easily altered by packaged instructional materials alone. At best, labeling and inserts (complemented perhaps with brochures, point of sales materials, and so forth) are rather passive behavior change tools. These forms of communication should, ideally, be combined and supplemented with a variety of other promotional and educational activities -- product demonstrations and other forms of direct consumer promotion.

Generally speaking, public sector or not-for-profit NGOs have the mandate and the resources to engage in the kinds of effective grass-roots educational and counseling activities that have proven effective in improving food preparation and complementary feeding practices. A clear lesson, from both early packaged food projects and more recent community-level interventions, is that sustained changes in complementary feeding practices typically requires nutrition education and counseling – services that are best provided through community volunteers, women's groups, or local health workers. Mass media can play a lead role in introducing certain key concepts, such as when to introduce solid foods. However, detailed guidance on the kinds of foods appropriate for specific ages or the timing and frequency of feedings are generally difficult to communicate through mass media. This kind of customer-specific advice is best suited for interpersonal communications.

At the same time, it is not realistic to expect commercial manufacturers or distributers in developing countries to design and implement these more intensive, and expensive, forms of consumer education. In most cases they neither have the experience nor the capability, and in any event it is not likely that sales revenues will generate the kind of margins that allow for significant investments in widespread and effective, face-to-face consumer education.

6. Conclusions: Prospects for Packaged Foods

Much of the literature critical of packaged food projects centers on ways in which price barriers may limit access to complementary feeding products and thus blunt their nutritional impact. It is argued that because the costs of processing, packaging and distribution are considerable (relative to the costs of locally available unprocessed foods), retail prices for packaged foods must often be set at levels that are too high for lower income, nutritionally vulnerable households. This is an important argument. But it tends to over simplify and over generalize, and needs to be examined in context -- or rather a series of contexts .

Urban versus rural.

One context is *where* packaged food projects are located. Projects in urban areas clearly confront fewer obstacles than do packaged food projects in rural areas. The purchasing power of urban

households is greater, as is consumer access to packaged goods (of every kind). The spatial concentration of urban populations also means that time-geographic barriers are less: urban distribution channels are shorter, associated project costs are lower, and the potential for wider market penetration and coverage is greater. Few urban households directly produce the foods they consume -- the vast majority already rely on market exchanges for household provisioning. And the time and labor costs involved in home preparation of raw staples (purchased in the market) work in favor of a processed and packaged alternative (also purchased in the market) that offers greater convenience and time savings. (See the Thai case, Appendix I) .

Sustainability.

A second context for thinking about packaged foods involves questions of project sustainability. The market failure of many packaged weaning food products in the 1970's underscores the point that cost-efficient project management is difficult, particularly during a period of inflationary increases in the costs of essential inputs. The new generation of intermediate-scale projects (such as those of the World Food Program) is particularly sensitive to cost management and most explicitly aim for financial sustainability, recovering most of their costs through sales revenues. Yet projects (or donors) that place their primary emphasis on cost recovery may, in effect, be designing and implementing projects that only indirectly have a nutritional impact on young children. That these intermediate-scale projects have not, as yet, been able to invest in evaluation research that would demonstrate nutritional impact one way or another puts them in the company of most other nutrition interventions.

In the meantime, these projects can be justified, quite convincingly, as good investments in small business development, or as gender-in-development projects (by strengthening the entrepreneurial and business skills of women), or as supply-side interventions to improve food security. In some cases, they have also effectively supported rehabilitative nutrition services. The general point is that donors and government sponsors need to be clear about what they are aiming to accomplish in supporting specific intervention strategies, and what they are expecting, exactly, as the return on their investment. The advantage, of course, to putting sustainability objectives first, is that projects built on cost recovery use less in the way of limited development resources, and thus make it possible to invest in other nutrition intervention strategies requiring higher subsidies (i.e., those targeting the poorest of the poor).

Subsidies

The marketing of packaged foods may not be the intervention of choice for improving the nutritional status of young children in poorer (especially rural) households, *unless* it is accompanied by targeted subsidies. The question of subsidization, however, is not limited only to rural projects or to projects involving packaged goods -- it is a policy issue relevant to the provision of *any* public good.

Cost and effectiveness.

Sustainability and subsidization questions should really be framed in comparative terms: That is, will packaged food projects have a better (or worse) chance of sustainability than other intervention strategies? Do they require more or less in the way of subsidies and management burden than do other program options? Will purchased foods be more or less effective at reducing mild or moderate malnutrition in the vulnerable 6-12 month age group than other interventions? Evidence-based answers will require information on the cost and effectiveness of each alternative under consideration, and these data may be hard to come by. And in the case of complementary foods, there are a number of issues that need to be clarified before cost-effectiveness analysis can be used meaningfully.

Defining and measuring effectiveness. Ideally, the measure of effectiveness would be a health outcome such as cases of child malnutrition avoided. Since data on this are not available and are unlikely to become available, a second choice would be reduction in a risk factor (for malnutrition) as the effectiveness measure. If the relative risk of malnutrition attributable to this risk factor is known, the reduction in malnutrition can be calculated. Risk factors that might serve this purpose include various measures of dietary adequacy. These are difficult to measure in programs, however and the benefits in terms of health outcomes may be difficult to substantiate.

Quality. With micronutrient fortification, the packaged food can be formulated to provide a near-perfect complement to breastmilk in a way that would be difficult to accomplish in most households using home prepared foods. This presents a further challenge to effectiveness comparisons because an adjustment needs to be made for quality when comparing the formulated complementary food with the home prepared version.

Targeting to maximize effectiveness. If the full cost of a packaged complementary food is significantly greater than the cost of the raw ingredients a large subsidy would be needed to reduce the economic disincentive enough to make the packaged food attractive to poor households. Otherwise, the households that are able to afford the food and are likely to purchase it are probably only going to benefit in terms of convenience, not nutrition. Subsidies are therefore needed to achieve significant improvements in nutritional outcomes. With market segmentation, a cross-subsidization strategy can be used to lower total costs to the donor while improving access to the product by households more likely to benefit from it.

Alternatives. The "competing" strategy with which packaged complementary foods are most often compared is the promotion of home-prepared complementary foods. Evaluations of interventions promoting improved home-prepared foods offer a very mixed picture. In many cases, gains in feeding practices have eroded (Piwoz 1996) once relatively intensive project inputs (in technical, human, and monetary resources) were withdrawn. However, in most contexts packaged foods would probably complement, rather than compete with, home-prepared complementary foods. The question is therefore not which single strategy is most cost-effective, but what combination of both is most efficient? This is a much more complicated cost-effectiveness question because the range of potential combinations is virtually infinite. The analysis is further complicated by the need to account for

economies of scale, market segmentation and optimal strategies both within and among households.

Who pays? Cost-effectiveness measures can include costs incurred by various sources and can capture the perspective of any or all of them. The decision reached is therefore dependent on the perspective chosen. For example, the donor subsidizing the production and distribution of a packaged complementary food may be interested only in the cost-effectiveness of subsidization versus that of promoting home-prepared foods. This perspective may not consider the cost-effectiveness of these strategies from the point of view of the household (although clearly this will determine the household's behavior). Another perspective might be to include the full costs to both donor and household, including hidden and non-financial costs.

This discussion is not intended to discourage the use of cost-effectiveness analysis in helping decide on an appropriate mix of program strategies. Although the complexities discussed together with a lack of data make it unlikely that straightforward cost-effectiveness analysis will be used to determine the optimum investment strategy, drawing attention to and clarifying these issues should help policymakers and program managers include cost-effectiveness considerations in their decision making.

Towards truly complementary products.

Just as an infant's first solid foods should complement breast feeding and not substitute for breast milk, the commercial sale of packaged foods should *not* substitute for other essential nutrition services; such as, nutritional education and counseling, rehabilitation of malnourished children, or nutritional supplements for vulnerable groups. Clearly, packaged complementary foods are not the total solution. Yet in retrospect, much of the early debate surrounding packaged foods treated alternative intervention strategies as a kind of zero sum game: packaged foods were seen as substituting for more appropriate local foods, or commercial marketing projects were seen as draining away scarce development dollars from other, more effective options Packaged foods projects of 20 or 30 years ago did have problems. Yet with improvements in product development, more efficient and less resource intensive manufacturing technologies, better approaches to cost management, and increasing interest in addressing the nutritional needs of children in urban and peri-urban households, these problems (both real and perceived) now appear less daunting. The challenge now is to develop intervention strategies that build on what has been learned about sustainable product marketing, in nutrition as well as other public health fields. The aim should be to combine sound marketing management with the consumer-oriented communication tools pioneered by projects working to improve feeding behaviors at the household and community level.

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Création et gestion d'ateliers de fabrication de farines infantiles Olivier Legros

APPENDIX I

The Case of Thailand

The case of Thailand is instructive for two reasons: It demonstrates how a mix of intervention strategies combining nutrition communication, community action and processed foods can work together successfully. The Thai experience also suggests how different interventions come to play different roles at different moments in the course of a country's socioeconomic development.

In the early 1980s, the early introduction of semi-solid weaning foods was a widespread cause of protein energy malnutrition (PEM) among young Thai children in both rural and urban families, although children in urban families were affected at a younger age due to the early cessation of breast feeding. Over the last fifteen years, however, the level of protein energy malnutrition in Thailand has decreased dramatically. PEM prevalence among Thai children has declined nationwide from 45 percent in 1982, to 25 percent in 1986, to only 12 percent in 1995 (Chavasit and Tontisirin, 1996). Factors associated with this steady decline include more effective nutrition behavior-change strategies focusing on breast feeding (particularly in urban areas) and complementary feeding, the growing availability and use of improved complementary foods, higher incomes for food purchasing, and improved infrastructures in transportation, distribution, electrification, and communications.

Thailand's nutrition program has focused on the production and preparation of complementary foods at three levels; within the household, in the community (for local distribution and sale), and at the industrial or central level. Initially (in the early 1970s), the program placed a significant emphasis on developing centrally-processed complementary food mixtures for government feeding programs (Scrimshaw 1982). Despite the technical feasibility and consumer acceptability of these products, they did not prove very helpful in preventing malnutrition among the rural poor. Government feeding programs relying on packaged foods focused only on more severely malnourished children, giving these packaged products a strong curative bias. And in rural areas, changes in complementary feeding practices were "...made even more difficult by the limited availability of convenient and nutritionally appropriate weaning foods" (Nondasatu 1983).

Consequently, the program emphasis shifted to the community or village level. Seven different formulae for complementary foods based on legumes and rices were developed and tested for consumer acceptability. They could be produced by village cooperatives using relatively simple roasting techniques, manual or electric grinders, and heat-sealed plastic bags (of varying sizes) for packaging. These products were then distributed by village workers free of charge to mothers with severely malnourished children and sold to other mothers whose children did not (yet) show signs of growth faltering. In some projects, food-processing villages sold their product to neighboring villages not able to establish their own complementary feeding cooperatives. In some villages revenues from local product sales were used to set up community funds for investment in improved health and sanitation services; other villages preferred incentive schemes in which sales profits were shared among

cooperative members (primarily women) on a rotating basis.

In many Thai villages, complementary food processing and sales were supplemented with nutrition communications employing a variety of media -- ranging from interpersonal counseling to use of educational videos and films. And these combined interventions (communications plus product distribution) appear to have had a greater nutritional impact than either intervention alone (Scrimshaw 1982).

But the nutrition program in Thailand was never locked into a single intervention strategy -- rather it was committed to assessing the efficiencies and impact of food processing technologies at different levels. Home-prepared foods were tested against cooperatively processed and locally distributed foods, and these community-based approaches were evaluated against packaged foods processed in more centralized production facilities for province-wide distribution.

This experimentation occurred against a backdrop of rapid socioeconomic development which today has linked all but the most remote rural communities into a broader cash-based, market economy. Many rural women in Thailand are now in the wage-labor work force and many others have moved to urban areas in search of employment. With more time spent working (outside the home) and commuting to work, urban and many rural parents have ever less time for child care. As a result, the home preparation of appropriate weaning foods is "...becoming impractical, especially among low and medium income groups;" and with the "...migration of young laborers to the city and thus a reduction in the community manpower necessary to produce supplementary foods," village-based food cooperatives have declined or, in many areas, ceased operations altogether (Chavasit and Tontisirin 1996).

Rather than try to revive these moribund village-based projects, nutritionists at Mahidol University are once again turning to centrally-processed foods.

> *Through nutrition education, parents should be able to select [raw] materials and prepare a suitable weaning food for their infant at an affordable price. However under Thailand's current socio-economic climate, many Thai parents and other direct child care givers do not have enough time and knowledge for such activities. Consequently, quickly and easily prepared weaning foods are necessary. The industrially-produced complete type is one of the best choices, since it can be inexpensive, conveniently stored and prepared, and provide enough nutrients for the infant's requirements. The cost of weaning foods can be lowered and made more affordable even further if they are domestically produced using locally available raw materials...* (Chavasit and Tontisirin 1996).

Chavasit and Tontisirin [the Director and Deputy Director, respectively, of the Institute of Nutrition at Mahidol University] go on to recommend instant, cereal-based foods -- widely available in the Thai

market -- as a good option for many parents (*ibid*.). These products include milk powder and soybean powder (for protein), vegetable oils (for fat), and are micronutrient-fortified. They are industrially-processed using drum driers or cooker extruder technologies, and are packaged in either metal cans or aluminum bags. Although a single transnational corporation accounts for the major share of market sales, at least three factories in Thailand and a government nutrition research institute also produce these instant, cereal-based products.

APPENDIX II

A Sampling of Projects

The following brief cases illustrate how different projects, at different levels of market organization, have grappled with the twin concerns of sustainability and nutritional impact. Cases have been chosen based on the availability of project documentation as well as on how well they represent a diverse set of approaches. With the exception of *Superamine*, they all suggest approaches which are working. (*Superamine* is included as an example of the early generation of centrally managed projects that came to be the object of such widespread and often vitriolic criticism).

Central, Industrial Scale	**Regional, Intermediate Scale**	**Local, Small Scale**
Incaparina (Guatemala)	***Musalac (Burundi)***	***Misola (Burkina Faso)***
Thriposha (Sri Lanka)	***Superfarine (Benin)***	***Vitafort (Congo)***
Superamine (Algeria)		

***Incaparina* (Guatemala)**

Incaparina was developed by INCAP (a Guatemala-based research institute serving Central America and Panama) in the late 1950's. Originally it was not a specific weaning food formula but a concept for combining any well-processed oil seed and a cereal in a ratio of 1:2, fortified with vitamins and minerals. The product concept, established in the early R & D phase of the project was that the food should take the form of a flour, it must be compatible with local tastes (and was to have a corn-like flavor) and dietary practices, and was to have a protein content and quality on a par with animal proteins. The product was to be stable and have an acceptable shelf life -- about four months under tropical conditions -- and had to be cooked before consumption. This product concept has since served as a model followed by nutrition programs in other countries in developing their own commercially or centrally processed complementary foods with locally available oilseed meal and cereals.

The resulting formula and the brand name were licensed by INCAP to a large brewery corporation,

which then manufactured and distributed the packaged product to retail outlets through its fleet of beer trucks. Now, over four decades later, *Incaparina* is still on the Guatemalan market, and market sales have slowly if steadily increased over the years.

A 1969 survey of *Incaparina* consumers indicates that *Incaparina* was purchased by a significant proportion of low income families.

GUATEMALAN FAMILIES CONSUMING INCAPARINA BY INCOME GROUP

Monthly income	Estimated number of families	Percentage of income group
$20 or less	75,000	29%
$21 to $100	205,000	61%
$101 or more	65,000	76%

Source: Icaza 1969, in Jensen 1979 (see also Heimendinger, Zeitlin, and Austin, 1981)

Two things are worth noting about this data. First, it has been used to argue that commercially distributed complementary foods -- even such a flagship brand as *Incaparina* -- fail to reach low income groups. Yet a 29 percent penetration of this low-income market segment would be considered quite a success by managers of social marketing programs in other health sectors (i.e., family planning).

Today *Incaparina* retails for U.S. $0.50 a pound, up from $0.26 per pound in the ‘60s and ‘70s when this consumer survey was conducted (Bressani 1996). INCAP views this price increase as problematic, noting that it reflects increases in the costs of ingredients, packaging materials, labor, energy and distribution. Nevertheless, it would appear that a doubling of price over a period of twenty-years plus is simply the result of broader inflationary pressures -- pressures which would have a similar affect on the operational costs of any nutritional program operating in Guatemala over the same time span.

Nevertheless, consumer demand appears to be growing. The company that produces and distributes *Incaparina* has recently launched two other complementary feeding products -- *Vitatol* and *Innovarina*. Although we have little information (at this writing) on promotional activities carried out in support of *Incaparina* or these newer products, they appear to be fairly modest, largely limited to point of purchase advertising

***Thriposha* (Sri Lanka)**

Thriposha, a complementary food developed and marketed in Sri Lanka, illustrates how performance benefits, packaging, and other added values combine to create a distinctive brand.

> *Walk down a street in Colombo and ask any man or woman if they have heard of CARE or the United States Agency for International Development (USAID) and you will probably be met with a blank stare. Ask if they know what Thriposha is and the chances are excellent that a smile of recognition will follow. Thriposha is a household word to virtually all Sri Lankans. Its name is synonymous with good nutrition and its value as a food for children is well understood* (Hornstein 1986: 1)

In 1972, *Thriposha* was first introduced as a specially packaged, take-home weaning food for use in Sri Lanka's public sector feeding programs. In 1980 it was successfully relaunched as a commercial product distributed through retail channels (by Lever Brothers). Its success as a commercial product is largely attributed to its long standing acceptance and use by Sri Lankan consumers. And much of this acceptance rested on early investments in creating a positive brand image, primarily through packaging. "[The packaging] provides value and dignity to the recipient and also relieves the already overworked medical and clerical staff at the clinics of the burden of having to measure and handle an unpacked commodity" (*ibid*: 7). Consumers also saw *Thriposha* as a labor saving, nutritious food that was especially "good for children" (but could also be used as a pre-cooked base for preparing *aggala*, a traditional family snack).

A distinctive name, well designed, attractive packaging (to shield *Thriposha* from the stigma of a "poor man's food"), and many years of widespread public-sector distribution established *Thriposha* as a distinctive brand enjoying a dominant position in the Sri Lankan market. Consequently, Lever Brothers could relaunch *Thriposha* with a minimum of promotional support; advertising was limited to point of purchase displays, posters, and leaflets.

Thriposha also illustrates a more general argument: Added values arise primarily from consumers' experience with the brand, and to some (usually lesser extent) from packaging, advertising, and other forms of marketing communications. Old and successful brands, like *Thriposha* in the 80's, build up added value in the good will of their users. Manufacturers of a new brand cannot call upon this stock of consumer good will, and new products must rely almost solely on functional characteristics for initial survival. Advertising, or sampling programs, can give a short-term boost to new products by stimulating consumer trial. But then the brand must function as promised.

Because added value stems from the use of the product plus packaging and advertising, building this value takes not only time but money. But the consumer price of products has to be reckoned in terms of

relative costs and benefits -- what the consumer gives up in exchange for the benefits, functional and subjective, of a product.

Pricing decisions and cost management determine the ease with which a product can be obtained and used by consumers. With commercial weaning foods, the conventional wisdom is that the added costs of quality control, packaging, promotion, and distribution -- costs which must be (largely) covered by retail sales revenues – create pricing barriers which poorer consumers often cannot overcome. In one early assessment of commercially processed weaning products this retail price (in a small sample of products) appeared to vary from 1.8 to 4.4 times the average price of the basic commodities (Orr 1972, in Jensen 1979: 236.) And much of this markup is attributed to processing and packaging costs.

It is difficult to know quite what to make of these numbers, however. For instance, a more detailed breakdown of product costs from the *Thriposha* project, estimated the cost of a two week ration -- one 750-gram packet -- at U.S. $0.35 (in 1981). This included the cost of:

- raw materials, $0.30;
- packaging, $0.02; and,
- processing, $0.03.

Thus packaging added about seven percent to the cost of the basic ingredients, and processing added another 10 percent. Subsequently, Lever Brothers relaunched *Thriposha* as a commercial product. Lever Brothers initially subsidized the costs of distribution itself, and then incrementally increased the retail price to cover distribution and its additional (albeit modest) promotional support.

Available data on *Thriposha*'s customers suggest that a significant proportion were from the lowest income groups. At a time when *Thriposha* was selling for 5.5 rupees (45 cents) per pound, 40 percent of rural households purchasing *Thriposha* had an estimated monthly cash income of 750 rupees (about $37.50 in 1980 dollars), and an additional 19 percent of purchasers had an income of 500 rupees or below. The eligibility requirement for government food stamps in Sri Lanka at that point was 400 rupees per month. (An interesting footnote to this is that 38 percent of rural purchasers also continued to receive *Thriposha* free of charge through the public sector take-home feeding program.)

Superamine **(Algeria)**

Superamine was on the Algerian market for 15 years -- a good run for any brand. Nevertheless it illustrates some classic mistakes in marketing management. It also shows how the various elements of the marketing mix (product, price, distribution, packaging and promotion) are closely intertwined. A failure to address difficulties in one area of the mix (cost, in this case) resulted in a cascade of unmanageable problems in distribution, quality control, and poor market performance.

First developed in 1963 for use in a nutritional rehabilitation center, an Algerian pasta factory began

producing this high-protein mixture (21% of total weight) in 1969 for commercial distribution. Primary ingredients were hard wheat meal (28%), lentils meal (18%) chick pea meal (38%), skim milk (10%), saccharose (5%) with Vitamins A, D3, B2 and calcium carbonate. Instructions for both exclusive use and for complementary feeding were provided for children at different ages.

In the first project year, annual production was 800 tons. By the mid-1970s, with the addition of another production line, product volume reached 3,000 tons a year. *Superamine* was discontinued in 1984 for a variety of reasons.

- *Increases in the cost of raw ingredients*. Legume production stagnated, then declined, and the project was forced to rely on more expensive imports for the bulk of product ingredients. The same problem occurred with hard wheat, and also for skim milk after World Food Programme provisions were cut in 1980.

- *Unrealistic pricing.* Government insistence on low retail pricing -- the sale price per packet (.80 DA) was significantly lower than the production cost (2.4 DA) -- led to losses for the manufacturer, who diverted *Superamine* production lines to the processing of profitable products such as pasta and couscous.

- *Poor quality control systems* and a shortage of specialized personnel led to Salmonella contamination of certain lots, contributing to frequent breakdowns in the distribution system.

- *Competition from attractively packaged, imported, instant cereal products* (with normal protein levels), led to brand switching and a steady erosion in *Superamine's* customer base. *Superamine's* price competitiveness was not sufficient to stave off foreign competition, and (artificially) low prices and unsophisticated packaging probably contributed to the growing consumer perception of poor product quality.

In retrospect, *Superamine* was a victim of several interlocking problems. The product formulation was not based on a consistent supply of locally available ingredients, and thus was hostage to global inflationary pressures. Financial sustainability never appears to have been much of a priority (at least of government), and pricing decisions were made by bureaucratic fiat, with little understanding of market conditions or consumers' willingness to pay. Product packaging was not competitive and consumers came to question product quality. Though willing to set limits on *Superamine's* retail price, the government was not willing to shelter the product from foreign competition. We can understand, consequently, why the project's private- sector partner would rather be making pasta/couscous.

Regional, intermediate scale projects

***Superfarine* (Benin)**

Superfarine evolved out of early work (in the 1970s) on weaning-food recipes for community level interventions in Ouando (Benin). Two formulas were developed, one for 3-6 month-olds (corn, sorghum, rice and sugar) and one for older infants over 6 months (with 2 different recipes - corn, sorghum, beans, peanuts and sugar or corn, sorghum, soy and sugar - probably depending on availability/price constraints) using locally available foods and simple preparation methods. Initially the approach was to popularize these early home-prepared weaning foods through community outreach and nutrition education.

An artisanal production unit was established at Ouando to produce a more convenient, pre-processed food, for employed women who did not have time to prepare these recipes for their children. This production also served to provide packaged foods to rehabilitative feeding programs. Improvements in processing technologies, permitting greater production volumes, followed from increased demand. Semi-industrial equipment was donated to the project by the Netherlands, and annual production increased to about 100 tons by 1984.

A project evaluation and feasibility study led to the installation of a *Superfarine* factory in Ouando, financed by the Italian government through an Italian NGO. This facility follows the same basic formula but uses a processing technology based on extrusion. Production rose to 150 about tons/year.

Project managers attributed the steady increase in demand for *Superfarine* to several factors. First, development of the manufacturing process was guided by local food preferences and habits; for example, roasting of raw ingredients is not only to improve hygiene, but to create taste and aromas well known to consumers. Second, is ease of product use. *Superfarine* products are easy to prepare, following methods almost identical to the preparation of traditional *bouillies*. Third, product distribution has been supported by local promotional activities. At the beginning, mothers thought *Superfarine* was a medicine for malnourished children, but this perception was countered through education, discussions, and health worker counseling.

Initially, project personnel, water and energy costs were subsidized by the government. There has been, however, a gradual evolution towards retail prices which should permit the enterprise to become financially self-sufficient and, in the long-term, profitable.

At the beginning, distribution systems reached only into market areas nearest to production centers, but additional distribution points have been progressively added in other departments. As of 1995, there were about 200 distribution points, 120 in Cotonou alone. Distribution channels include:

- Medical and paramedical outlets, (10% of total distribution). These were the only distribution points originally.
- Pharmacies and pharmaceutic depots, (40%.of total distribution). These points of distribution appear to have improved the image of *Superfarine* products and helped to diminish the importation of infant weaning products.
- Supermarkets, kiosks, grocery stores, door-to-door sales (50% of total distribution)

Product sales are primarily to urban markets, with 71 percent in Atlantique province, home of the capital city. Although actions have been taken to keep the price to consumers low, the purchase power of the rural populace is so weak that it is difficult for many rural families to purchase these products. Consequently, the project took 3 actions to improve the situation:

- progressively creating points of sale in all regions of the country for those with means to purchase the product;
- began to publicize the recipe for Superfarine and to allow mothers to prepare it themselves from raw staples, and;
- intensified nutrition communication activities to assist families to use available resources to improve feeding.

***Musalac* (Burundi)**

Musaga is a zone of Bujumbura (the capital of Burundi) with about 60,000 inhabitants. In 1985, responding to popular demand, the Musaga health council began implementation of a nutrition project involving development of a pre-formulated complementary food (a *bouillie* or porridge), named *Musalac*. The product was intended to rehabilitate malnourished children and was also meant to be more widely marketed in order to prevent malnutrition more generally.

Musalac is composed of corn (48%), sorghum (22%), soy (20%), sugar (8%), and skim milk (2%). The chemical composition is: water (7%), proteins (14%), fat (8%), fibers (2%) and ash (2%). Energy content is 417 Kcal. per 100 grams and the proteins have a digestibility of 71 percent with a chemical index of 90. For reasons of digestibility, it is only recommended for children over 6 months.

In addition to the production unit in Musaga, five satellite production units have been established (as of 1994) in other regions, linked to the project through franchise contracts. Two additional units were scheduled for start up in 1995. Production units in the interior are managed by associations, such as hospitals, cooperatives or organizations serving the handicapped. Surplus sales revenues are used to subsidize primary health care services in local communities.

The processing and packaging of *Musalac* involves simple, known technologies, that allow for rapid start up and permit local management and quality control. Capital costs are also relatively modest. The original production unit started during very difficult economic times, and for the first for three to four

years relied on bank loans to purchase raw materials and pay for routine maintenance and repairs. Since then, however, production has continued to climb, from an artisanal level (40kg/month) in the beginning (January 1985), to over 40 tons of product per month (as of 1995). Production units are financially self-sufficient, breaking even or generating surpluses.

The project employs a multi-channel distribution system that include retails shops, pharmacies, local markets, and health centers. The project operates *Musalac* kiosks, located next to health centers, offering free product samples (a cup of *bouillie)* to all children visiting the center. In addition to this kind of sales promotion, the project works closely with health care providers in conducting a variety of nutrition education activities. [In 1990 the *Musalac* project received the WHO Liguria Prize of Rome for health education within primary health care.]

The project has had a national impact: In 1986 Burundi imported infant foods at an annual cost of about 30 million Fbu, but imports decreased to less than 10 million in 1988. The retail price of *Musalac* is 150 Fbu/kg, 12 times less expensive than similar imported products. Cost savings and low consumer prices are possible through use of a simple production process and direct purchasing of raw ingredients from local farmers.

One of the most intriguing aspects of the *Musalac*-project approach is the creation of backward economic linkages -- most evident in the creation of a market demand for soy beans that has stimulated upstream agricultural activity (cultivation of soy in the country was quite low until 1989). In addition, construction materials, processing equipment, and labor are all drawn from local communities.

Local, small scale projects

Both of the examples provided here, as with *Musalac* in Burundi, have developed a multidisplinary management system including the health system and other players. Also, like *Musalac*, there are multiple units. But with these 2 projects, the units are locally-managed and independent, while *Musalac* uses a franchise approach. Both of these projects also use their main unit as a facility to train those who **will** become the managers of new units elsewhere**.**

***Vitafort* (Congo)**

The *Vitafort* project was initiated in 1990, in a collaboration involving the Ministry of Health, Orstom and others. The focus has been on manufacturing infant cereals from local agricultural commodities with balanced nutrients that can be prepared in the form of energy dense *bouillie*s. Initial assessments recommended developing a model production unit which could be rapidly replicated. A pilot unit was established following marketing research conducted in 1992 which determined the name and logo of a chubby baby. Given the weaning practices prevalent in the Congo, it was determined that the *bouillie* prepared from *Vitafort* should have sufficient energy density and contain enough essential nutrients so

that two feedings per day, together with breast milk, would meet the nutritional needs of children four to nine months old.

Within a year of production, the initial product was enriched with minerals and vitamins. In addition, the new formula was changed in response to feedback from urban mothers that the manioc flavor was too pronounced and bitter. (The original manioc flavor was preserved in the product formula for the rural areas.)

Formulas:	**Rural**	**Urban**
Manioc flour:	43%	-
Corn flour:	30%	74.0%
Soy flour:	19%	14.0%
Sugar:	8%	11.0%
BAN 800 MG:	28 units/100g	30 units/100g
Complement min.	0.9%	0 .9%
Complement vit.	0.1%	0 .1%

Nutrient content, per 100g of dry product:

Water	< 8g
Fibers	< 3g
Saccharose	<12g
Fats	> 4g
Linoleique acid	> 1.2g
Raw protein	>10.5g and < 16g
Amino acids	> 2988mg

If the product is prepared as instructed the energy density should be close to 120Kcal/100 ml while still having a sufficiently fluid consistency to be well accepted by children.

During processing, each type of grain is prepared and roasted separately, then combined in proper proportions with other ingredients and placed in transparent sachets of polyethylene. The package consists of two identical sachets, one inside the other, with two inserts in between (containing the product name and logo, as well as information on the production unit, product characteristics, and preparation instructions). Each sachet weighs 250 grams which represents 3 to 5 days of use. The retail price in 1995 was quite reasonable at 275 Fcfa (180 before devaluation).

Each *Vitafort* production unit can be operated by three to four people. Five units were opened and

operating in 1995, and three more operator/owners ("entrepreneurs") were in training. The central project, with its own production unit, functions as a kind of on-the-job training center. Each batch of "entrepreneur" candidates, after selection and orientation to the technical aspects of production, learns the *Vitafort* production process over a period of several weeks, and then are given responsibility for running the unit (including choice of staff and paying a regular "rent" corresponding to loan payments) for next four to six months. Following this apprenticeship, the project then helps each entrepreneur to obtain credit and open his own production unit or workshop.

The total cost of equipment and installation for each production unit appears comparable to start up costs and debt levels for a small Congolese business. Variable costs (in 1993) include the cost of raw materials (70%), sachets and labels (24%), temporary labor (4%), and energy consumption (2%). Variable costs represented about 73 percent of total costs. Fixed costs, including equipment, the workshop facility proper, and labor, represent 27 percent of total costs; a quite reasonable ratio given the financial security of the activity. [Since the enterprise is structured as a family business, the reimbursement to the owner is not included in the personnel costs.]

Monthly production is typically 8000 sachets of 250 grams, **at a wholesale price** of 225 Fcfa, which meets the needs of about 800 children aged 4 to 9 months consuming *Vitafort bouillies* as the only complement to breast milk.

During 1993, the manufacturer's margin was 20 percent of the retail sale price. Monthly income for *Vitafort* entrepreneurs, after covering both variable and most fixed costs, was 214,000 Fcfa; which is partly remuneration for the entrepreneur and partly savings for reinvestment/renovation.

Products are sold through distribution channels such as small shops and kiosks as well as through health centers.

Vitafort management suggests that the project differs from other "weaning food" production units in Africa in that it is overseen by an intersectoral committee that includes health service managers, development organizations, and researchers. This blend of organizations and capabilities has three consequences: first, products are endorsed and (in theory) promoted throughout the public health system; second, the project is able to draw on the resources of participating NGOs to provide comprehensive training to entrepreneurs; and third, decisions to improve and diversify products are informed by supporting pilot research.

The project is confronting problems in two areas. First, it relies heavily on health centers for product sampling and promotion, but health centers have been slow to implement these activities for a variety of reasons beyond the control of *Vitafort* entrepreneurs. The second barrier is price competition. *Vitafort* is competing with local weaning cereals, and because they are not fortified or processed they are less expensive. Project management, however, does not see profitability as an end in itself, but as an indispensable condition to pursue the primary objective: making a nutritious complementary food

available to the largest number of children possible.

Misola (Burkina Faso)

Misola has been manufactured since 1982 from millet, soy and peanuts. The *Misola* project was begun when international aid to the Nutritional Rehabilitation and Educational Center (CREN) of the hospital of Fada N'gourma ended, leading the hospital's pediatric team to find an alternative.

The project remains modest; as of 1991 production volumes ran at about 1 ton/month total for all four production units. The product is available in packages of 220g and 500g. The retail price is 225 Fcfa for the 500g package, compared to a price of 400 Fcfa for a 400g package of imported children's foods such as Cerelac.

The *Misola* family of products is based on three formulae with the following compositions per 100 grams of meal:

	Misola	***Misopa***	***Den-Mugu***
millet	60g	58g	60g
soy	20g	23g	-
peanuts	10g	-	-
bean	-	-	10g
powdered milk	-	30g	-
sugar	9g	5g	-
monkey bread	-	3g	-
salt	-	1g	-
iron sulfate	-	-	100mg
zinc sulfate	-	-	60mg

For all products, the energy level is in the 400-436 Kcal/100g range. Protein content varies from 13-16%, fats 8-14%, glucides 62-68%, minerals 2-3%,and water 6-8%.

The *Misola* product line exists in three forms. First, processed and packaged products are produced in autonomous production units for retail sale. Second, *Misola* products are prepared communally in health centers by mothers using traditional kitchen equipment and materials; each of the participating mothers takes a supply of *Misola* home for her child until the next health center visit. Third, *Misola* recipes are taught as part of nutrition education activities at the community level.

The primary benefits of *Misola* meals are their reasonable price, ease of preparation and their well-accepted taste. They can also be enriched after preparation with juices, monkey bread flour, fish or meat.

The production units that manufacture *Misola* for sale are decentralized and autonomous. Each local unit is: supervised by the local medical authorities who manage malnutrition programs; operated as an income generation project by a women's association (who are also in charge of marketing) and; is supported and financed by an NGO. Community-based production functions along the same lines, but more flexibly.

Misola production units receive support from the formal health system, women's groups and local NGOs. Links with health centers has two advantages; offering fairly direct access to target groups and creating opportunities for health personnel to develop a better understanding of the importance of child nutrition to health and survival. The integration of *Misola* production and distribution into the activities of health facilities also reinforces consumers' perceptions of the health benefits of the product.

Collaboration with women's groups and local NGOs also has a number of benefits. It permits the privatization of production, offers access to local markets (beyond the formal health system), and brings women's direct knowledge of local conditions into management decision making. NGO partnerships also serve as vehicles for attracting other resources, such as financing for micro credits and management skills, to the project.

In addition to product processing and packaging, the central production unit at Fada N'gourma:

- serves as a national training center for production of Misola. In its role as a national training center, the central unit trains teams for other production units in Burkina Faso as well as in neighboring countries;
- manages local distribution and sales to the commune; while also
- distributing product to 30 health facilities in three provinces and pharmacies in Ouagadougou (the capital).

The *Misola* approach relies heavily on local technologies, locally available ingredients and materials, and fairly traditional forms of labor organization. *Misola* products are based on raw ingredients whose supply is generally consistent throughout most of the year. Women from the production units are responsible for local purchasing of agricultural inputs. Processing techniques are inspired by traditional methods, and are adapted for efficiency. Since processing equipment is simple, there are few breakdowns and maintenance is seldom a major problem. Production units are generally close both to sources of raw ingredients as well as to sales outlets, reducing both the costs of inputs and product distribution.

In organizing production units to be financially self-sustainable, the project's financial objective is to

cover operating costs and generate capital for reinvestment and growth. Rigorous accounting procedures are necessary, but ordinary day-to-day accounting can be undertaken by a woman's group. Locating the production unit in a health center also permits cost-sharing (energy, building, etc.) while allowing the center to offer more tangible nutrition assistance to its clients.