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Abstract

Food service on a cruise ship presents some unique challenges. A review of food service in the cruise industry is presented along with some ideas on the future. The case is made for a change in traditional operations with a move toward greater use of computer-driven management techniques.

Keywords

Marcel Escoffier, Food and Beverage, Cruise, FIU

Food Service Operations in the Cruise Industry

by
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Food service on a cruise ship presents some unique challenges. A review of food service in the cruise industry is presented along with some ideas on the future. The case is made for a change in traditional operations with a move toward greater use of computer-driven management techniques.

Down through the ages, ever since mankind first set out to sea, one of the major managerial headaches associated with sailing has been provisioning the ship. The constant need to maintain adequate levels of provisions has been a key ingredient in many a sea story. It is said that the reason the pilgrims landed at Plymouth Rock instead of heading toward their planned destination of Virginia was that their provisions had run low, especially their beer!

With the rise of the modern cruise industry came an additional burden, that of maintaining provisions that most approximate land-based quality. As if this weren't hard enough, the most recent trend in cruise operations has been to include food in marketing strategies, making quantity as well as quality an important management issue. The logistical as well as strategic concerns associated with food service afloat are both interesting and somewhat unique. The ways that cruise operations could adapt modern management science principles toward solving the myriad operating problems associated with these concerns may help land-based food service managers in their efforts to increase the efficiency of their operations.

The first major emphasis on accommodating passengers' culinary expectations probably began during the start of the transatlantic steamship trade. Until that time, passengers were usually something of an afterthought. Like the modern freighter trade, passengers aboard a ship in those olden times ate what the crew ate, or at best ate what the officers ate. Certainly by the beginning of this century, the various passenger ship companies had begun to vie with one another in terms of splendor and gracious dining. The great society writer of that era, Lucius Beebe, recalled the captain's

table of Sir James Charles, commodore of the Cunard Line and captain of the *Aquitania*:

Stewards wheeled in carcasses of whole roasted oxen one night and the next evening small herds of grilled antelope surrounded a hilltop of Strasbourg foie gras surmounted with peacock fans.¹

With such an emphasis on quality, it wasn't uncommon for steamship companies to compete with one another for the freshest foods and the greatest chefs. It became common knowledge among frequent travelers that one ate the lobster only on eastbound voyages while consuming the Scottish grouse and plover's eggs on the west-bound return. In the beginning the quality strategy was confined to first class, but by the 1950s even second class dining facilities were offering quite acceptable fare.²

Quantity Is as Important as Quality

By mid-century, with the demise of the transatlantic trade, came the demise of such "splendiferous" gourmet repasts. The cruise industry, itself an outgrowth of the decline in the regular passenger trade, soon found that passengers wanted quantity as much as quality. By the 1980s, with sales strategies geared to a new class of travelers, largely those who had been introduced to cruising through popular television programs, cruises had begun to stress quantity over quality. Then in the early 1990s, as financial pressures increased, some mass-market companies lowered the quality still further.³ This trend – emphasizing quantity over quality – meant that a fundamental food service concern became one of minimizing costs through optimizing production efficiency and price-sensitive purchasing practices. Just as the cruise companies became adept at these practices, new food service strategies became necessary.

The cruise industry began experiencing a trend toward over-capacity as early as 1988. Today this over-capacity has become an issue at more than one company. The problem is being addressed in two ways: either a further reduction in costs is initiated in order to accommodate the deep discounting done by some companies, or the introduction of a differentiation strategy is attempted, emphasizing quality over quantity. In other words, food service has once again become a selling point through product differentiation.⁴ Since cost containment had already been going on for more than a decade, those companies relying on a cost strategy met with only limited success, while those lines competing on the basis of quality soon found themselves rewarded with higher profits.⁵

Number and Types of Meals Change

Some examples of the quality strategy include those cruise companies that are offering special culinary theme cruises, complete with

famous chefs.⁶ Others offer special cruise cuisine such as diabetic and other specific dietary foods.⁷ But one trend – that toward healthier cuisine – has had some mixed reviews. On the positive side, a recent article in *Restaurant & Institutions*⁸ said that cruise lines are attracting more customers by offering healthier menus, while *ASTA Agency Management*⁹ thinks the trend toward lighter and healthier food has been an attempt to cut costs by compromising quantity!

Actual changes in passenger preferences argue in favor of the idea that the change to healthier foods is probably not done out of cost considerations. For one thing, healthier food is often more expensive. One chef noted that on his ship 10 years ago, only 19 percent of guests ate fish; now 40 percent of passengers on Caribbean cruises do.¹⁰ Chef Wasshausen, who has been a cruise ship chef for 15 years, said in a recent interview¹¹ that he is using more fresh herbs, and catering to special dietary needs. Kosher, low-sodium, low-cholesterol, and vegetarian meals are now provided.

Another recent trend which argues against the cost cutting theory is the offering of even more opportunities to eat. One author notes that some cruise lines are now offering more than eight meals a day.¹² Also, ships such as the *Horizon*, *Crystal Harmony*, and others are now offering specialty restaurants in addition to the main dining room fare. This further increases the variety of foods which must be purchased and prepared. The concept has its limitations, however. The *Seaward*, for one, had tried to offer a menu with more expensive items. Reasoning that passengers would pay extra for extra-special fare, the line initiated a very reasonable surcharge. They had to abandon the extra charge specialty restaurant concept and now simply serve additional menu items at no added cost.

All of these trends, when successful, mean increased costs to purchase the basic provisions as well as an increase in the variety of foods which must be kept in inventory. It must be remembered that food costs increase as follows:

- when we switch from cheaper items, like ground beef, to more expensive items, such as most fish.
- when we order in smaller quantities; 10,000 pounds of beef is cheaper per pound than 1,000 pounds.
- when we have a wide variety of items and spoilage becomes a factor.
- when leftover control becomes more complex, an outgrowth of the wider variety of menu items as well as a decrease in the quantity of each item used.
- when the consumer becomes full and then picks only those items which appeal to him to eat.¹³

These rules apply to food service operations both on land and at sea. One can hardly accuse the cruise lines of trying to lower costs when they are so active in their attempts to increase the quality of the guest experience.

Scope of Food Service Operations Is Varied

Today's cruise ships are perhaps the ultimate example of volume feeding. No land-based operation offers the variety of cuisines and quality coupled with the limited production facilities found on board a ship. The efficiency of the production facilities aboard a ship has risen along with the variety and quality. Table 1 shows the food production personnel employed on several cruise ships. A ratio of personnel to passengers is included, but analysis of these selected ships, and of other ships, shows that there is only a tenuous relationship between this ratio and food quality. In other words, a relatively small staff, thus, a high passenger/worker ratio, can produce very good food when directed to do so. If quality is not the determining force, then some other reason compels some cruise ships to have more food service personnel than others.

It can be argued that operating restrictions, such as lack of pre-production storage space, contribute more to an unfavorable ratio than does any perceived need for more personnel in order to produce higher quality food items. A more detailed analysis reveals that the ratio of food service production personnel to passengers has declined steadily as newer ships incorporate better designs for their food production facilities. Some in the industry have felt that since the cost of labor was cheap, it was not important to conserve on this resource. However, the direct cost of workers is a poor number to be used when making this decision. Workers cost money not only in terms of salary and direct benefits, but also in terms of decreased efficiency, since efficiency is almost always greater in operations with fewer workers, and increased management time.

Cruise ships stock about seven pounds of food per passenger and crew member per day of sail.¹⁷ Another interesting facet of modern cruise operations is the amount of food stored for consumption. The *Sagafford*, an older ship, can accommodate 400 tons of provisions, while the *Queen Elizabeth II* can hold up to 900 tons. The amount of food is huge by land-based food service standards, but the variety is equally astonishing. Published data indicate that the *QE2* can sail with up to 1,600 items on her inventory list.¹⁸ Such an extensive inventory is unusual, but not uncommon. It is interesting that a hotel offering complete food service can often operate with fewer than 500 different items in inventory.¹⁹

Yet with all this variety of items and all the tons of food produced, reports indicate that the waste is often less than 5 percent of inventory.²⁰ While this may be dismissed as being a testament more to the midnight buffet than to good production management, such a conclusion is ill-advised. Many ships use a complex set of cyclical menus which allow for both the use of one inventory item in more than one recipe and the use of leftover cooked items as the basis for new dishes, like the much-maligned beef bourguignonne being made from leftover roast beef. As most land-based food service managers will agree, developing a set of menus which makes full use of all

Table 1
Food Production Personnel and Passenger Size Comparison

	France¹⁴	QE2¹⁵	Seawind Crown¹⁶
Kitchen Staff	180	139	40
Passengers	1,400	1,800	624
Ratio (pass/staff)	7.8	12.9	15.6
Ship Type	transatlantic	Early cruise design	Modern cruise design

inventory items and allows for production through the use of left-overs is not a simple task.

Logistics of Food Service Are Formidable

One problem rarely faced on land is the physical receiving of goods. Most land-based operations are content just to know which day a purveyor plans to make a delivery. The cruise ship is in port for only a few hours. Its comings and goings are definitely not at the whim of the food service manager! Given the large food service crew, the huge amount of food used, and the vast scope of the inventories, it is amazing that the ships can load 120 or so tons of food in the six to 12 hours available to them while in port. This feat is done, week in and week out, because of logistical procedures developed over time.

As Brown puts it in his report on cruise ships:

The logistics for loading a ship with provisions are precise, honed during decades of cruising. Much of the advanced planning and ordering is done two months prior to a ship's departure. As soon as passenger luggage is removed, forklifts are used to bring the food aboard and take it to refrigerated, freezer, and pantry storage space. There's no leeway for a supplier to arrive two hours late at the pier. Fresh fish, vegetables, and fruit are delivered at ports of call during the cruise.²¹

Given the size of the problem, and the constraints of shipboard provisioning, it is obvious that purchasing must often be done months in advance. While some ships take on provisions along their route, most fully supply their ships at the port of origin. It is important for health reasons as well as for quality control that the foods meet standards usually associated with major industrial nations. Cruises often leave these nations for ports in less developed parts of the world, where food purchasing can be much more problematic. This concern is evident on board the *QE2*, which flies

provisions out to various ports for re-supply during its around the world cruises.²²

Reliance on local suppliers invites disasters due to the unreliability of supply and questionable sanitation conditions. Naturally, buying on the spot market is done only in extreme emergencies, if at all. But the logistical problem doesn't end at the time of embarkation. Planning where to stow the provisions on board is another problem in shipboard logistics.

Storage Presents Unique Challenges

Although most cruise ships have a variety of storage areas throughout the ship, storage is always at a premium; ship's designers compound the problem by seemingly placing the food storage areas as an after-thought. Because of these space and location restrictions, the food must be stored in the reverse order of use, i.e., items to be used first must be stored last. Also, items must be stored in some logical order so the crew can find the items as needed. Some ships are so short of storage space that they use the cooler space as it becomes available in order to store dirty linen and refuse for unloading back at the home port. This means that coolers must be freed up in sequence, all the provisions being used in one cooler first in order that the cooler space can be used for the returning items. While these constraints are largely overcome through trial-and-error, the learning period can be traumatic. One cruise to the Caribbean which had recently inaugurated a new set of menus actually ran out of bananas by the third day out! Once the storage problem has been solved, not all of the logistical problems are at an end.

The next problem faced aboard the ship is to prepare and serve the food as efficiently as possible. Space aboard a ship is always limited. Most ships have kitchens the square footage of which is tiny when compared to land-based operations. The kitchens aboard a cruise ship often produce more than one meal per square foot of kitchen space per day.²³ Taking this ratio and applying it to land-based operations, a popular land-based restaurant open for lunch and dinner would have its kitchen shrunk to about the size of a tourist-class cabin! In order to increase efficiency, most cruise ships use their kitchens for 20 to 24 hours a day. They pre-prepare and bake their breads in the early morning hours and then work around the clock until the midnight buffet goes out the door. One could imagine the chaos that would ensue were all 139 food service crew members to be in the kitchens of the *QE2* at the same time!

All these logistical problems have traditionally been solved using a hit-and-miss approach or, "after being honed over decades of cruising." But several problems with this method immediately come to mind. First, with the introduction of new ships becoming more frequent, it will no longer be practical to have one- or two-year periods of less efficient operation. Some cruise lines have attempted to circumvent this by ordering a series of identical ships. But consumer

preference in diversity of food items carries over to general ship design preferences as well; companies with many look-alike ships find it harder to keep the cruise passenger coming back. It would be best if the logistics could be worked out on paper prior to the inaugural sailing.

Secondly, the old hit-and-miss approach is ill-advised given the decision to compete on the basis of quality. The wide variety of dining experiences includes a wide diversity of menu items. Travelers may be less than thrilled if, on their return voyage aboard the ship some months later, they find the same menu items. Quality cruise operations often change their menu twice yearly, and each change means the same massive effort to build efficient menus must be performed. Clearly a substantial part of the industry must adopt new ways of doing things.

Land Management Techniques Must Be Implemented

With the increase in the cruise industry, managers will find that the problems associated with keeping up with current food service trends will be magnified. It is becoming increasingly obvious that cruise ship management will have to adopt many of the newest management techniques now being implemented by their land-based brethren. It will be particularly hard for the cruise ship manager to do this because, like all shipping industry managers, they are traditionalists at heart. Assuming the cruise ship manager is willing to adopt these new tools, just what are they?

Current trends in management can be discussed within the broad topics of management science (MS) and total quality management (TQM). One new tool used successfully in many land-based operations is increased control of operations through the use of process management software. At its most fundamental, process management software applies various mathematical concepts, such as linear, integer, and goal programming, etc., toward solving the various problems frequently found in the supply, inventory, and production of food items.

Many of the more user-friendly programs are to be found in the project management field. In this field, project engineers use software which incorporates these formulas in very visual, very intuitive programs – often working in the Windows environment. Those readers in the cruise industry who are interested in an on-site demonstration of this kind of software need only visit the shipyards where new ships are designed and built. All use some kind of project management software.²⁴ Programs such as the Primivera® series or TimeLine® can be used to schedule the loading operation and work out the production schedules.

While the time frames for most programs are in terms of days, many can be used to plan loading operations, for example, in minutes. What do they do for the manager? By entering the tasks which need to be accomplished, the time each task will take, usually as a confidence interval – no less than nor more than a certain time, and any

constraints, such as if one task must be performed before another, the manager can then ask the program to create a diagram, or critical path model, of what needs to be done and when.

Food Control Software Is Available

Another MS-based series of programs beginning to be adopted by cruise lines is the various food control software. FoodCo® and other food costing programs have been used by land-based food service operators for some time now. They allow the manager to create menus based on a series of standardized recipes. When projected usage figures are entered, these programs can print out inventory requirements. With the entering of on-hand inventory figures, many of these programs can then produce a purchase report. As items arrive, their actual costs can be entered with new anticipated food cost reports and purchase/delivery variance reports being produced. The power of these programs to effectively manage a large operation is considerable.

A company-wide TQM program can be useful as well. The TQM process would promote increased efficiency on those ships already in operation, but, more importantly, it would give the company's managers a guide for the kinds of troubles to expect aboard the new ships. A practical guide to TQM is available. Since many cruise lines have adopted a quality strategy, it seems only fitting that they adopt TQM as well. Certainly the increase in employee awareness concerning the need for efficiency is itself an invaluable reward.

Cruise lines have been quick to adopt computer-based point-of-sale and property management (hotel operations) systems. They have seen how this technology promotes efficiency through greater management control. It remains to be seen how soon they will adopt the "back-of-the-house" computer systems which will propel them into the 21st Century.

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