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Innovation in Flight Catering:
Who? What? And how?

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About the Travel Catering Research Centre

The Travel Catering Research Centre (TCRC) is only one of its kind in the world. It is supported by the International Flight Catering Association (IFCA). Founded in 2002, the Centre aims to generate and disseminate knowledge to academics and industrialists in support of long-term performance improvements in the international travel catering industry. This industry is concerned with the provision of meals and other on board service on aircraft, trains, cruise ships and ferries. By the year 2005 the Centre aims to have achieved these goals:

- to develop models of best practice that will enable performance improvements in all sizes of business across all sectors of the industry
- to disseminate knowledge and influence policy makers with respect to the travel catering industry
- to encourage multi- and trans-disciplinary research into travel catering

The Centre seeks to achieve its aims by:

- engaging in funded research projects
- recruiting and selecting PhD students seeking to research in this field
- conducting consultancy projects for clients
- speaking at conferences, developing case studies, writing texts, and publishing the Centre’s findings
- supporting the development and delivery of state-of-the-art management development programmes for industry managers

This report is one of a series of occasional papers produced by the TCRC.

About the Authors

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Innovation in Flight Catering: Who? What? And how?

Executive summary

This report examines the issue of innovation in the flight catering industry. Using a variety of research methods, it seeks to identify the role that the three main stakeholders - suppliers, flight caterers and airlines – play in this process. It identifies that airlines have been pre-eminent in initiating innovation and have largely been concerned with service improvements. Suppliers have focused largely on new product development. Flight caterers have been less involved.

Findings from this study also demonstrate the highly contingent nature of the innovation process in firms associated with flight catering. Little evidence emerged that service innovation was different to product innovation, but the type of product may be influential. The size of the company also affects the process. The survey of managers helps to explain this diverse practice as it demonstrated a divergence of opinion on many issues. The only factors influencing the innovation process on which there was high level of agreement was the importance of the organisation culture, the role of a product champion, and the need for market research. There was also some support for the notion that large firms have a more formal innovation process.
Introduction

Innovation has a high profile in the flight catering industry due to the International Flight Caterers Association (IFCA) annual Mercury Awards. These are seen as this industry’s equivalent of the Oscars. Firms regard winning a Mercury Award as highly prestigious. However, despite this high profile, little is known about the nature of innovation in the industry. This report aims to shed some light on this.

What is innovation?

Innovation can be defined as turning an idea into a business reality. Many experts believe they are highly innovative. A glance through any annual report demonstrates the conviction of most CEOs that a key to future success will be through new ideas, new products or new services. In reality, most firms are not as innovative as they think they are. Valery (1999, p5), states that innovation, “...is usually thought of as the creation of a better product or process. It could just as easily be the substitution of a cheaper material in an existing product, or a better way of marketing, distributing or supporting a product or service”. This shows that some innovations are not ‘new’, but modifications of existing products or services. What is more, this modification may not be original to the firm, but copied from a competitor in the same industry, or even from another industry altogether. Hence, Jones (1997) defines innovation as “anything a firm does that it has not done before”.

Innovation is typically considered as a rational and logical process. Most articles provide structured models that propose a series of steps to turn ideas into products or services in the market place (Booz Allen and Hamilton 1982). However, a number of authors have proposed models of the innovation process that suggest it may be different for products and services (Cowell 1988, Easingwood 1986, Scheuing and Johnson 1989). Studies in the hospitality and tourism field have suggested that these models do not describe innovation appropriately (Wan and Jones 1993, Jones 1996, Jones Hudson and Costis 1998). Jones (1996) proposes that the innovation process is highly contingent and varies widely according to a number of factors related to the nature of the product/service being innovated, the firm undertaking the innovation, and the firm’s environment.

Purpose of Report

The studies described in this report seek to test some of these ideas by looking at the innovation process in the flight catering industry. This is a particularly interesting industry to consider, since it consists of three very different types of firm, i.e. airlines, caterers and suppliers (food and non-food). This industry structure enables the product/service innovation debate to be explored in some detail. It also consists of some very large firms and many SMEs, which enables this dimension to be investigated. Finally, it is an industry in which little research has been conducted, so providing some insight into a little known sector.
The research focuses on the who, what and how of the innovation process within the flight catering industry. Two studies have been conducted. The first was based on a content analysis of the IFCA Review over a ten year period. It identifies the who and what elements, i.e. who initiates innovation, the airlines, caterers or suppliers; and what type of innovations they create. The process of content analysis is explained in Appendix A. The second study was based on face-to-face interviews with all the participants in the Mercury awards in 2001, supported by a survey of managers. This focused on how each of the entrants had gone about the innovation process.

‘Who’ innovates in flight catering?

The involvement in innovation of each of the three main flight catering stakeholders is identified in Figure 1.

![Figure 1: Innovations initiated by the three main stakeholders 1990-1999](image)

It is evident that airlines are the primary party in instigating innovative development, having initiated nearly half of all innovations. In comparison, caterers contributed 16 per cent of the innovations identified.

The size of airline companies could provide an explanation for their innovativeness, as they have the resources for a research and development (R&D) department and can maintain a formal focus on idea development (Jones, 1996). A second reason for innovative thinking could be that in the supply chain the airlines are the closest to the consumer. “Pressure from passengers to get value from their money and competition among carriers to boost sales and maintain customer loyalty, keep airline and marketing executives thinking up new or better ways to attract business. Food is one” (Sheridan, 1998). Jones (1995) seems to be in agreement, “New products and services have always been an important element of competitive strategy in the airline industry”. McCool (1995) adds “…competition is still a strong motivating factor impacting the configuration of services offered to the different classes of airline passengers”. This closeness to the customer not only aids idea generation from customer feedback, but would also influence the promotion of a ‘service innovation’ approach (Jones 1995).

Suppliers/manufacturers displayed a greater innovative effort than the caterers, possibly as a consequence of their relative size. Large food and drink companies can support R & D efforts across many markets, whilst small
specialist suppliers to the industry have often established a niche position based on their innovation. A second factor may be forward integration. Many suppliers are vertically integrating in the supply chain, and taking on previous in-flight catering responsibilities, e.g. with the supply of complete meal trays. This trend is set to continue as suppliers are more aware of the implications their products can have on the operational efficiency of in-flight kitchens.

Over the period of this study, many of the in-flight caterers were small in comparison to airlines, and therefore may not have had the capital to invest, or the expertise to support a R&D department. There is some evidence to suggest that this has changed since the period under review (1990-1999), due to the development of two global catering firms with 55% market share between them. Recent visits to caterers’ units all over the world suggest a high level of process innovation. It may be that this tends to be under-reported in the trade press as it takes place ‘behind the scenes’.

‘What’ innovations have been developed?

The areas where the main developments have occurred are identified in Figure 2.

![Figure 2: Number of innovations per category](image)

It is evident that the on board service concept is the main area for innovation. The on board service concept is considered as a key strategy for airlines to differentiate their product. In the airline industry most airlines offer similar products, such as classed seating to accommodate varying customers, ticket prices, flight schedules, flight duration and safety procedures. Similar products on offer make it difficult for customers to distinguish and choose between airlines, therefore making competition extremely fierce. Therefore, the service provided is an important differentiating factor. Through understanding what their regular customers want from the service, the airline can continuously make changes and develop new ideas.
In comparison with the great emphasis placed on the development of the onboard service concept, is the area of food and beverages. It is apparent that food has not been a main area for new product development (NPD). This is surprising as it has been suggested that food is one key competitive strategy for airlines to differentiate their product (Sheridan, 1998).

With regards to flight caterers some believe the focus is now on logistics, but others argue the focus still remains with food. An article entitled ‘Airline catering is more about logistics than about food’ (IFCA, 1997), outlined the debate. Fischer argued for the notion where, “…there is no food on board anywhere without a reliable logistic system” (IFCA 1997). In disagreement with Fischer is Fayol, who argued “…we don’t eat logistics. They are no more or no less than a tool to perform food production and delivery”. At the end of the debate results showed that 20 % of delegates agreed, 38 % disagreed, and 42 % said they were of equal importance. A more recent source indicates that food still plays and important role today. “Food used to be regarded (by the airline industry) as just a meal” (Kurth, as cited in Sheridan 1998). However, figure 2 clearly shows the industry is placing greater effort on the innovations of the logistics of the supply chain and operational efficiency.

‘Who’ did ‘what’ regarding innovations in the flight catering industry.

Figure 3 shows the role each stakeholder played in the development of different categories of innovation.

![Figure 3: Innovations per category by each stakeholder](image)

The assumption was made previously that suppliers/manufacturers may have covered the responsibility of NPD for the caterer (refer to figure 2). Figure 3 confirms the evidence to suggest this is the case. Although innovations in the food category are limited (figure 2), it has been the suppliers alone that have
developed these food and beverage products. It should also be noted that the suppliers/manufacturers had great influence in the category of equipment innovation.

As expected, this graph shows the airlines are most influential in the on-board service concept. As indicated previously, airlines are the closest party to the consumer, which Jones (1995, p24) stated will influence the innovations in the service area. Figure 2 showed that out of all of the five categories, the on-board service concept has received the majority of innovative focus and now it is apparent that airlines are initiating NSD in this area. Figure 3 also shows that airlines are very much focused on providing new methods of training for their staff (category five, service development). This is in line with enhancing their on-board service.

In comparison to the airlines and suppliers/manufacturers, the in-flight catering companies have not shown great motivation in developing innovations. However, there is a substantial amount of innovation in the area of logistics (category 4). Operational complexity may encourage developments in this area, instead of food and beverages, as the caterer is trying to create a more efficient system.

The Innovation Process

Typically, innovation is divided into three types of process:

- New product development (NPD)
- New service development (NSD)
- Process development (PD)

Further data analysis was conducted to establish which type of development each party was concerned with. Figure 4 below shows what the innovations are, according to which development group they fit into. From this graph it is evident that airlines are primarily focusing on NSD. This was noted earlier, and is a direct result of being closer to the end user than any other party. Airlines may be responding to their customers’ needs, through their feedback. This NSD approach is therefore directly linked with the on-board service concept. It is imperative for airlines to focus their developments towards the satisfaction of their customers, due to the competitive nature of the airline industry. A second reason for this NSD approach identified by Jones (1996, p87), is that the development of services is complicated, and therefore greater effort is required.

For suppliers/manufacturers, innovation efforts are focussed on NPD, emphasising their interest in food and equipment (refer to figure 2).
So far the data show that in-flight caterers are not markedly innovative in comparison with airlines and suppliers. Figure 4 indicates that new process development is of a greater interest to the caterer than any other type of development. Again, this is possibly due to operational intricacy and the identified trend on a systems flow focus.

What is the typical innovation process?

A review of the literature (Cowell 1986, Easingwood 1988, Scheuing and Johnson 1989) identifies a number of different models of innovation from which a total of 16 separate elements in the innovation process can be identified. These are shown in Figure 5.
Figure 5
Stages in the New Product or Service Development process

These 16 elements can be combined into the following four main stages:
1. Formulate Ideas

The first stage of successful innovation focuses on how new ideas are generated and developed (steps 1 to 4). These apply to both new product and new service development.

**Objectives and strategy.** The development process must begin with a precise formulation of the objectives and strategy concerning the effort. A well-designed strategy drives and directs the entire innovation effort and imbues it with effectiveness and efficiency. Many companies claim to have specific company objectives that mention innovating new products and/or services. However, research in both the international flight catering industry (Jones, 1995) and U.K. restaurant sector (Wan and Jones, 1993) found that relatively few were able to identify a specific example of such innovation taking place in the previous twelve months.

**Structure.** As well as having a clear strategy for innovation, companies must ensure that they have organised themselves in such a way to enable innovation to take place. In large companies, this may involve setting up a Research and Development (R&D) department. Research in the hospitality industry suggests that only a small number of companies, i.e. approximately 10% - 20%, have a specific department responsible for research and development. Such departments tend to generate totally new ideas. However, in many cases it is the Sales and Marketing department who may be given responsibility for generating new ideas. This department does not tend to generate new ideas, but rather adapt ideas from other sources. Kelly and Storey (2000), in their study of service firms, found that “the marketing department is the source of a large percentage of ideas for new services”. They also emphasise the need to develop an appropriate culture, as well as structure, in which to generate new ideas.

**Idea generation.** New ideas can be drawn from external sources, or internal consultation and brainstorming can add to the idea pool. Where there is a structure, the department most likely to generate new ideas in many firms is the sales and marketing department. In the majority of firms however, ideas are likely to be generated in an ad hoc way, either from listening and talking to customers, or the brainwave of an individual. This is especially true of smaller firms. Often the most powerful idea source is customer feedback. Robinson and Stern (1997) have found that successful innovative firms establish systems and procedures for stimulating idea generation on a long-term basis. On the other hand, Kelly and Storey (2000) found that service firms do not have formal mechanisms for idea generation and only 25% of firms in their sample of 43 banking, telecommunications, media, transport and insurance companies searched for ideas on a continuous basis.

**Idea screening.** In some cases, especially if developing a new service, it may be necessary to screen ideas to ensure that only those that seem feasible are processed. The Kelley and Storey (2000) study showed that screening was carried out “more systematically than idea generation”. The criteria firms use, are mainly financial (profit, sales, revenues, market share), despite the
difficulty of forecasting outcomes, as well as the difficulty of allocating costs across departments and the rather subjective nature of the analysis. There is
a lack of qualitative evaluation such as the potential impact on the firm’s
image, ethical considerations, and the impact it will have on the firm’s ability to
develop new services.

2. Decide on Go/No Go

The idea formulation stage may be followed by four stages that enable the
company to decide if it will proceed with the new development (steps 5 to 8).

**Concept development** requires that the surviving ideas are expanded into fully
fledged concepts, especially if there is a significant service element. Such
development should normally be in conjunction with the company’s own
customer contact personnel, since it is these front-line staff who are an
invaluable source of knowledge regarding customer needs and wants. A
typical concept statement would include a description of the problem, the
reasons why the new product or service is to be offered, an outline of its
features and benefits and the rationale for its continued development and/or
purchase.

**Concept test.** This is a research technique designed to evaluate whether a
prospective user understands the idea of the proposed product or service,
reacts favourably to it and feels it offers benefits that answer unmet needs.
This can be done by talking directly to the users or to those closest to the
user, i.e. customer contact staff. Kim and Mauborgne (2000) advocate
adopting a “buyer utility map” for evaluating products. This is a six-by-six
matrix which identifies six utility levers, including environmental friendliness,
fun and image, risk, convenience, simplicity, and customer productivity; as
well as six stages of the buyer experience cycle; i.e. purchase, delivery, use,
supplements, maintenance, and disposal.

**Business analysis.** This should represent a comprehensive investigation into
the business implications of each concept. It should include a complete
market assessment and the drafting of a budget for the development and
introduction of each proposed new product/service. A key element of this is
establishing the sales volume and the price at which the new product or
service will be sold. To establish sales volume, Kim and Mauborgne (2000)
suggest that “all companies look first at the products and services that most
closely resemble their idea in terms of form”. However, especially with
disruptive innovations, they advocate understanding the price sensitivities of
customers who will not necessarily be comparing the new product or service
within the same boundaries as thought of by the firm. This is because some
innovations perform the same function as existing products or services but
take another form; whereas others take both different form and function,
although their objective is the same. In the latter instance the innovation may
steal market share from non-traditional competitors, such as a new
entertainment complex reducing customer spend not just in other such
centres, but also restaurants, bars and other forms of leisure time venue. Kim
and Mauborgne (2000) propose that pricing will depend on three factors,
namely ease of imitation, i.e. “the degree to which the product or service is protected legally by patents or copyright, and the company’s ownership of some exclusive asset such as a plant or brand name”. Price will need to set low to discourage other entrants if there is high ease of imitation, no legal protection and no exclusive assets, and vice versa.

Project authorisation. This step occurs when top management commits corporate resources to the implementation of a new idea. In an industry comprising many small companies, it is likely that 90% of companies have only one person/ or department in the company to authorise all innovative projects. This is usually the Managing Director or the ‘committee leader’. The ad hoc way in which new ideas are generated is also reflected in how funding is agreed for projects and research for new services/products is carried out.

3. Test the Design

Once the go ahead has been given, the detailed design and implementation of the innovation is carried out (steps 9 to 12).

Design and testing. Next is the conversion of the new concept into an operational entity. This requires design and testing. For products this may largely centre around a specialist team. However, for services, this activity should involve both the input of prospective users and the active co-operation of operations personnel who will ultimately be delivering the service.

Process and system design and testing. This stage is applicable to both products and services. For products it may be necessary to design new production processes, develop new equipment or make new dies or mouldings. For services, this stage refers to the totality of the delivery process, not just the element experience by the customer. This often involves back-of-house process engineering.

Marketing program design and testing. The introductory marketing program should be formulated and tested in conjunction with prospective users. Especially with services, it is best if the marketing program is devised in conjunction with the service development. In product development, the marketing program may often be entirely separate from the development process.

Personnel Training. This applies mainly to service development. To complete the design phase, all employees should be familiarised with the nature and operational details of the new service. Research in flight catering showed that 91% of airlines engaged in personnel training opposed to 68% of food manufacturers. This reflects the fact that airlines mainly engage in developing services, whilst manufacturers engage in product development.

4. Evaluating the Innovation

The evaluation of a new innovation involves a four step process (steps 13 to 16).
Product/Service testing. This should be used to determine potential customer acceptance of the new product or service while a pilot run ensures its smooth functioning. All firms agreed that operations personnel need to be involved in testing new innovations. Once developed, nearly all companies claimed to carry out 'pilot runs' to test new products/services. This can either be carried out internally, using in-house personnel, or by trialing the new product or service in the market place.

Test marketing. This examines the saleability of the new service and a field test should be done with a limited sample of customers.

Launch. With the delivery system and marketing plan in place and thoroughly tested, the company should initiate the full-scale launch, introducing the product/service to its entire market area. Different sectors tend to evaluate new services/products once on the market in slightly different ways, for instance fast food operators use market surveys, whereas foodservice contractors rely more on after sales for feedback. All companies claimed to monitor customer satisfaction on a constant basis.

Post-launch review. This final step should be aimed at determining whether the strategic objectives were achieved or whether further adjustments are required.

Even Jones (1996) who argues that the process is not as systematic as these models may suggest, does not disagree that that any of these stages may be incorporated into the development process of any given product or service, but not necessarily. He argues that innovation is contingent. Firms may both eliminate some of the stages and they may change the sequence of activity. Jones (1996) proposes that the precise process followed will be affected by a number of variables related to the nature of the product or service being developed, i.e. the firm doing the development, and the firm’s environment. On this basis, for this study, we tested a number of propositions highlighted in bold below.

Product Features

Firstly, the originality of the product or service may be a factor. A distinction can be made between products that are 'new to the company' and those which are 'new to the world.' Roughly about 10% of products fall into the 'new to the world' category. What companies consider to be 'innovations' are in fact usually rather modest product improvements, cost reductions, product line extensions, or repositioning or repackaging of existing products. It is therefore likely that fewer than sixteen stages of the innovation process will be followed with 'new to the company' products or services.

Secondly, different products may have different levels of "protection" from competitors. In services, patent protection is the exception rather than the rule. Most hospitality industry innovations may have some copyright protection, e.g. a logo, but little else. The less protection there is for a new product, the more likely that competitors will enter the marketplace. Hence
the development process may be shortened without protection from competitors in order to get to the market first.

Thirdly, the level of capital investment may vary widely from one innovation to another. The more capital required the greater the likelihood that innovation will be systematic.

Innovation will also vary with regard to the range of professional expertise required. Some products or service depend on the expertise of relatively few people. However, many depend on a wide range of professional expertise. The greater the range of expertise needed, the more likely it is that the process will involve more stages.

Not only may the innovation depend on the expertise of a number of different people, there may also be a number of stakeholders. The more stakeholders involved in the process, the more complex the innovation process will be.

The potential product life cycle of the innovative product or service will also influence the extent to which a formal, systematic process is adopted. The shorter the life cycle, the less formal the development process.

Organisational Characteristics

The size of the company is a factor in the innovation process adopted. Many operators in the hospitality industry are relatively small. They cannot support the overhead of a research and development department. The trend towards partnerships and joint ventures reflects the fact that innovation may often require capital investment and necessitate sufficient economies of scale to keep unit costs down to an acceptable level. For small firms, effective linkages with either manufacturers, suppliers or other operators is one way in which to generate the funds needed to support a new idea, as well as to ensure it sells at sufficient volume to keep costs down. Small companies are more likely to have an informal approach to innovation.

On the other hand, there is evidence to suggest that small, start-up companies are often developed as a result of an innovative idea or concept. Innovation as a concept and a process may also be embedded in an organisational culture. It is proposed that the right organisational culture is essential.

The degree of in-house capability will also affect how developments are carried out. The more external consultants are used, the longer and more complex the innovation process. Christensen and Overdorf (2000) argue that teams should be established to reflect not only the complexity of the innovation, but also the degree to which it is disruptive. Thus, a sustaining innovation that fits with the company’s existing processes and values demands no new capabilities, so it can be managed by what they call a “lightweight functional team”. This team may need to be more “heavyweight” if such an innovation requires process development too.
In addition, firms themselves are increasingly developing ways in which creativity and innovation can be fostered. The research referred to above indicated that many firms do not have formal R & D departments. Instead they tend to rely on the creative entrepreneur, or hiring innovative personnel, or generating a culture in which new ideas are encouraged. It is not unusual for all three of these to exist within the same firm. Thus, it is not necessary to have an R & D department to successfully innovate.

Environmental Factors

Both the nature of innovation and scale of innovation will vary according to the maturity of marketplace. In growth markets, firms may be growing so rapidly that innovation is not a major factor. In mature markets however, as competition increases and margins decline, firms will engage in innovation as a means of gaining competitive advantage and/or cost reduction. Hence, firms in mature markets are more likely to innovate.

The nature of the supply chain will also affect innovation. In some sectors of the hospitality industry there is limited backward integration, especially in the hotel sector. Such integration means that it is much more likely for suppliers to have to think about the service implications of new products than they may have to have done in the past. Supply chain integration increases the likelihood of firms being innovative.

Innovation may also be influenced by industry association sponsorship. As well as formal links and partnerships, firms in the hospitality industry are also using more conventional ways to develop and promote new ideas. The IFCA trade show is a classic example of this. In addition, some companies have developed their own exclusive "trade show" to which they invite their customers and potential customers. The interaction generated by trade shows and workshops is obviously a major source of new ideas and stimulates creative thinking. Other sources of information are the trade press, association newsletters and subscription services.

Increasingly it is recognised that most firms aim to achieve ‘sustaining’ innovation and are very poor at so-called ‘disruptive’ innovation. Christensen and Overdorf (2000) state “sustaining technologies are innovations that make a product or service perform better in ways that customers in the mainstream market already value”. Whereas disruptive innovation is a significant development that often changes the rules of the game. Industry leaders are good at sustaining innovation and have routinised the processes that lead to new products and services. But they are bad at developing a disruptive innovation because such innovation is infrequent, “nearly always promise lower profit margins per unit sold [initially], are not as attractive to the company’s best customers, and they’re inconsistent with the established company’s values”. Whilst a disruptive innovation may involve different product/service characteristics, this is an organisational issue because it requires firms to think about innovation and organise itself in different ways. Indeed, Christensen and Overdorf (2000) argue that the only way to truly cope with a disruptive innovation is to create new organisational structures within
the firm, or start an independent organisation attached to the firm, or acquire a firm with the necessary capability.

**How do flight catering firms innovate?**

The methodology and sample for this study is explained in Appendix B. Firms examined varied in size from 6 employees up to several thousand employees. 24% had fewer than 50 employees, 24% were medium sized enterprises (50 to 1000 employees), and 52% had more than 1000 employees. There was a fairly equal split between airlines (38%), caterers (32%) and suppliers (30%). The majority of respondents (80%) were male and two-thirds were employed in the operations or marketing function. Typical job titles of respondents were Managing Director, In-Flight Service Director and Account Manager.

The type of innovation was also almost equally split between food product (36%), non-food product (32%) and service (32%). Without exception these were identified as ‘sustaining innovation’ rather than disruptive. Examples of the innovations presented for an award at the trade show were:

- An oxygenated spring water;
- A multi-function plug for disposable earphones;
- A hot beverage trolley producing boiling water without electricity;
- A process for recycling and repacking passenger ‘kits; and
- A new style first-class cabin.

**Stages in the Innovation Process**

In order to understand the relative importance about each stage in the innovation process, respondents were asked to describe the innovation process. Each was then asked a specific question about each possible stage in this process.

60% of respondents were aware of their company having a *mission statement*, but many of these were vague as to precisely what it was. Of those that had such a statement only, a quarter believe this to make explicit reference to innovation. However, most respondents were clear that their firm did have *objectives and a strategy* in relation to innovation, even if it was not in the mission. As one said “there is no explicit reference to innovation…[but] to be the undisputed world leader in the travel market [means] a high degree of innovation must take place….”. Another said “[our mission statement says] providing superior solutions to the food service operator…. [which] has something to do with being innovative”.

With regard to *organisational structure*, respondents were asked if their firms had a R & D department. Only 20% had such a department, of which the majority were large firms. In some cases the R & D department was technically based either with respect to engineering or food production, in other cases it was market research based reporting to the Sales or Marketing Director of the company.
Since all respondents were from firms that had innovated, all had experienced the idea generation stage. The most common form of this was through internal consultation and brainstorming, often stimulated by customer feedback. One caterer reported “We have a weekly forum where everybody gets together to talk”. In five instances, the innovation resulted from the “inspiration of a single individual”. One equipment manufacturer stated “I got the idea from a flight attendant”. In most cases such inspiration was in small firms. Some respondents mentioned that trade shows or travelling led to the idea. One representative from an airline said “We go to trade shows [or] see some nice things in a restaurant and think maybe we can adopt this to our business”. Only one cited a supplier as providing the original idea.

Just over half (54%) of respondents identified some form of idea screening. The most common approaches to such consultation were with other people within the relevant division or department of the firm and/or with customers. In some cases, the factors taken into account were technical feasibility, practicality, time span and cost. For example, an executive from an airline said “Each idea is evaluated for its effectiveness – cost, practicality, what regulatory approvals are needed. They go through a series of steps”. However, the nature of the innovation may affect this screening process even within the same firm. Another airline executive identified that “It depends on the scale of and scope of the ideas. When you talk about a complete new service it’s different from a product item…For a large impact idea we go back to the customer and use our frequent flyers as a consumer panel. When it’s a smaller idea…we try it out, introduce it for half a year and see if it’s OK”.

As the example above illustrates, concept development and testing may be carried out on an ad hoc basis. Two thirds of respondents reported that prior to development, their innovation was externally reviewed in some way. In nearly every case, such review was conducted by customers. An American airline manager stated “We work closely with a consumer advocacy group. They are invited at all stages to give their views”. In a very small number of cases, the concept was considered by suppliers and by technical experts. But some firms are reluctant to broaden consultation too widely – “if ideas were to leak out, our competitors would find out about them. A good idea can be easily copied” (airline representative) and “it was kept pretty quiet. I didn’t talk to anyone until it was patented” (equipment manufacturer).

Most firms, 70%, included some form of business analysis in their innovation process. This was usually in the form of a financial appraisal that identified some degree of payback on investment. And 60% had to have project authorisation for the innovation to proceed. In small enterprises, this was often not necessary as the person carrying out the innovation was also the owner of the company. In larger firms, approval was often at board level (for major innovations) or at senior executive level, such as Vice President Foodservice Division or Marketing Director.

Once approval has been granted for the project to go ahead, the innovation process can vary quite widely both in terms of time span and complexity. One airline’s innovation “took a couple of months”, whilst another’s “[took] a long
time – about two years from idea to implementation”. This reflects the wide range of different innovations that were included in the sample.

In most cases (62%), firms recognised that training of personnel was required. This applied especially to service and process innovations, but even product innovations may have required shop floor employees to be re-trained. However, in very few cases (15%) was a marketing programme developed in conjunction with the innovation. This is probably because so much of what was done was on a business-to-business basis rather than directly aimed at consumers. The low importance of marketing effort in relation to the innovation, also implies that there was very little test marketing.

A very high proportion of firms (82%) engaged in testing the innovation. One airline “did some in-flight tests with the prototype”; another reported “there was a trial period”. For some products the testing was not done with flight caterers or airlines. One drinks manufacturer said “testing took place in a London hospital”; a wine shipper “gave samples to customers in supermarkets”; and a food manufacturer has “a panel of twelve people who taste it on a score chart”. However, respondents were unable to distinguish between the various types of testing referred to in Figure 5.

Firms adopted a wide variety of approaches to the launch of the new product, service or process. Some launched a press release, others advertised, and others exhibited at trade shows. The IFCA trade show was specifically mentioned by 18% of respondents. However, in some cases the launch was very low key. One charter airline said “there was nothing big”.

Post launch review for most firms seems to take place immediately, although it is not at all clear how systematic such review is. In effect, most review is not specific to the innovation but wrapped up in routine customer feedback. As one airline said “it comes through from customer comments”; another stated “we get feedback from the people on the ground, cabin staff and customers too”.

Influences on the Innovation Process

In addition to describing innovation and how the innovation process was conducted, respondents also answered a survey questionnaire on what they thought influenced this process.

With respect to the originality of the product or service, only 28% agreed or strongly agreed that the greater the level of originality of the new product or service the more complex the process. However, only 19% disagreed with the statement that patent protection allows a company to develop a new product in a systematic way. There was no clear consensus as to the influence of capital investment – 40% agreed, some strongly, that the higher the investment the more formal and systematic the innovation process. 43% disagreed and 17% neither agreed nor disagreed. Market research on the other hand was seen as very influential. 32% agreed and 51% strongly agreed that it was essential in developing a new product or service.
Professional expertise influenced the innovation process according to 45% of the respondents, but only 19% thought the life cycle was influential. A very high proportion (89%) regarded the right organisational culture as an essential element in successful innovation, whereas 69% agreed or strongly agreed that having a R & D Department was not necessary. Only 17% of respondents thought that using external experts slowed down the innovation process. 60% agreed or strongly agreed with the statement that "large firms have a formal innovation process". Only 4% disagreed with the idea that a product champion is essential for an innovation to succeed.

One third (30%) of respondents thought that firms in mature markets were more likely to innovate. More (52%) thought supply chain integration increased the likelihood of firms being innovative. Nearly all (77%) thought some industry sectors were more innovative than others. Trade shows were thought of as major source of innovation by 58% of respondents.

Conclusions about the innovation process

There is clearly a wide variety of practice with regards to innovation. Few firms had explicit statements about innovation in their mission nor dedicated R & D departments. Those that did, tended to be larger firms from across all types of firm – food suppliers, equipment suppliers, caterers and airlines. However most firms used a variety of means of generating new ideas, in particular using customer feedback, staff feedback, brainstorming and other meetings to come up with new ideas. Individual “inspiration” was relatively rare, and almost always in the smaller firms.

Idea screening is almost exclusively restricted to discussion in house or with customers, often through focus groups. Concept development and testing is typically carried out on an ad hoc basis, also with customers. There is real concern that ideas may be copied by competitors if they are discussed too openly. The most formal stage of the whole process, and common to most medium and large firms, is in relation to conducting some form of business appraisal of the innovation, along with having the project authorised formally by senior executives of the company.

Most innovation involves some training of personnel, but very little related marketing. The latter is probably due to the nature of in-flight innovation, which is very much on a business-to-business basis. Nearly all innovative products, services or processes were trialed or tested before fully operationalised. In some cases such testing was out with the inflight industry.

The new products, service and processes examined in this study were launched in a wide variety of ways, with a review of their success being incorporated into routine customer feedback. There was very little specific review of the innovation process itself.

An analysis of the innovation process by type of firm – airline, caterer or supplier – reveals no distinctive pattern. This is because although suppliers
tended to be involved in product innovation, and airlines tended to report on service innovation, there was a fair amount of overlap between them. However, a pattern of innovation does emerge when the process is analysed by type – food, non-food product, or service. This is illustrated in Figure 6.

**Figure 6**

*Stages in the Innovation Process by Type of Innovation*

(based on 50% or more of respondents specifying the stage)

<table>
<thead>
<tr>
<th>Food</th>
<th>Non-Food</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure</td>
<td>Idea Screening</td>
<td>Idea Screening</td>
</tr>
<tr>
<td>Concept Development</td>
<td>Concept Development</td>
<td></td>
</tr>
<tr>
<td>Business Analysis</td>
<td>Business Analysis</td>
<td>Business Analysis</td>
</tr>
<tr>
<td>Project Authorisation</td>
<td>Project Authorisation</td>
<td>Project Authorisation</td>
</tr>
<tr>
<td>Personnel Training</td>
<td>Personnel Training</td>
<td>Personnel Training</td>
</tr>
<tr>
<td>Product Trialing</td>
<td>Product Trialing</td>
<td>Service Testing</td>
</tr>
<tr>
<td>Launch</td>
<td>Customer feedback</td>
<td>Launch</td>
</tr>
<tr>
<td>Customer feedback</td>
<td>Customer feedback</td>
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</tr>
</tbody>
</table>

It emerges that food products appear to go through an extremely abbreviated innovation process, without even the launch phase being included in the majority of cases. This is slightly misleading, since the four stages shown in Figure 6 reflect only those stages clearly identified by over 50% of the companies. Many food suppliers had more than four stages but with a wide diversity of types of activity. It may also be the case that the data from food companies was less reliable than from other firms due to the nature of the products being presented. In several cases the food company had developed their product for retail sales and were now engaged in market development by selling it to airlines or flight caterers. Some respondents may therefore have seen this as the innovation, rather than the original development of the product itself. It may also be the case that the respondents themselves, due to their role in their company (usually marketing), were not as familiar with the detail of the new product development process as other respondents were.

The non-food innovation process is very close to the typical model of innovation described in the innovation literature. However, there is no evidence from this study that the service process is any more complex than that of products, contrary to what is proposed in the literature. The only three activities which are common to all types of innovation are business analysis, trialing/testing, and using customer feedback to evaluate the success of the innovation.

When the size of firm is considered a different picture emerges, as illustrated in Figure 7. Larger firms have a slightly longer process on average, due to the inclusion of a project authorisation stage, not found in small and medium-size enterprises. The idea screening stage also emerges as important, along with the three stages identified when comparing the type of innovation (business analysis, trialing/testing, and using customer feedback).
The results indicate how the opinions of managers engaged in innovation have influenced the process they have followed. Market research concerning the product or service characteristics was viewed as important, but the originality, size of capital investment and availability of patent protection far less so. Having the right culture was perceived as much more important than having a formal R & D department. Central to successful innovation was the perceived need for a 'product champion'. Which industry the firm operated in was thought to influence the rate of innovation, with trade shows and supply chain integration being a useful support for this.

Conclusions

This report combines two separate studies of innovation. The first study uses the industry's own journal to highlight the reported trends during the 1990s with regard to which stakeholders were innovative and what was being innovated.

The second study demonstrates the highly contingent nature of the innovation process in firms associated with the flight catering industry, i.e. airlines, caterers and suppliers. No firm actually followed sequentially the sixteen stage innovation process illustrated in Figure 5. Little evidence emerged that service innovation was different to product innovation, but the scale of innovation may be highly influential. Very few firms had a formal R & D department. The size of the company also affects the process, but not as much as might be thought.

The survey of managers helps to explain this diverse practice as it demonstrated a divergence of opinion on many issues. The only factors influencing the innovation process on which there was high level of agreement was the importance of the organisation culture, the role of a product champion, and the need for market research. There was also some support for the notion that large firms have a more formal innovation process.

Clearly there are opportunities to further explore the innovation process in a broader range of firms. More detailed and more recent analysis of the submissions to the Mercury Awards may provide more insight.
analysis of a wider range of industry journals may also reveal a different picture. Feedback during the interview process and the lack of consensus amongst respondents about the innovation process itself indicates the difficulty in trying to conduct a quantitative survey based on a large sample of firms. It is suggested that further work needs to be done qualitatively to understand more precisely the nature and scope of different stages in the process. This in turn may lead to industry-wide studies of specific stages such as the idea screening, business analysis or product/process testing stage, similar to Kelly and Storey’s study (2000) of initiation strategies, rather than the total innovation process, which may be too complex to study in this way.
References


Appendix A: Content Analysis of IFCA Review

Content analysis has been used as a research method in consumer research, social psychology, communications research, political science and journalism. It comprises the objective, systematic and quantitative analysis of documentary evidence such as historical records, newspapers and magazines, advertisements, novels and even photographs.

For the first part of this research study into flight catering innovation the IFCA Quarterly Review was content analysed. The frame of reference was 1990 to 1999 and each publication was analysed for any information on innovations instigated by airlines, caterers or suppliers. 110 examples were found.

The information found in each edition was classified according to the categories used in the IFCA Mercury Awards at that time, which are listed below:

1. On-board service concepts – For on board service concepts focussing on passenger satisfaction, including and combination of elements such as: equipment, food and beverage, interior furnishings, entertainment systems etc.
2. Food or beverage product – For single items of food and beverage product or product ranges. Product tasting in this category is a factor in the judges' assessment.
3. Equipment or non-food product – For equipment and products used in the travel industry to enhance on board service and standards.
4. Supply chain technical development – For systems, software, equipment and technical solutions enhancing the supply chain.
5. Service development – For systems, applications or concepts in the fields of information, training, finance, personnel management, working practices, etc. designed to enhance efficiency and cost-effectiveness in all areas of the industry. (IFCA, 1999).

The data was also coded according to who had developed the innovation.

Whilst content analysis seeks to be objective and has to be carried out systematically, the method has some limitations. In this study a number of problems with the method were identified. Firstly, when searching the secondary data for relevant examples the text might not make it clear as to who instigated the innovation. For instance did the supplier produce the new product, or did the end user (the airline) specifically ask for the development of the new product? This could mean that some innovations were developed by more than one party in the chain. However this would not appear in the analysis.

Secondly, some innovations could be placed into two or more categories. For example, a new technical product which helps a smoother logistical flow, could be placed in category three (equipment), or into category four (supply chain technical development). To overcome this problem the same criteria were consistently applied across the whole sample.
Appendix B: Research Design for Study of Innovation Process

This research sets out to investigate the proposition that the innovation process is contingent. It did so both by analysing the innovation process in order to identify what stages were incorporated into the development of a wide range of products and services; and by seeking the opinions of those engaged in innovation as to factors that may affect the process.

Face-to-face interviews were conducted with 37 respondents from 32 different firms, based around a semi-structured questionnaire. For some innovations, two respondents were interviewed simultaneously as they expressed the view that they each knew about different parts of the process. In addition to the interviews, these respondents and a further 12 respondents from these firms completed a survey, based on a five point scale, asking for their opinion about key influencing factors on the innovation process.

Respondents come from a number of countries including the UK, Germany, USA, Singapore and Australia. The companies range from small entrepreneurial businesses to global companies such as Mars, Qantas and British Airways.

It was possible to interview managers engaged in or responsible for innovation by conducting the interviews during the IFCA Mercury Awards judging process. Firms who enter this award scheme and meet the necessary entry criteria are invited to present their innovation to a panel of judges, in this case in January 2001 at a hotel near Heathrow Airport. By definition the sample of respondents was self-selected, on the basis of those who had engaged in innovation in the previous twelve months. The interview asked respondents to identify exactly how they had gone about developing the specific new product or service they had entered for this competition.

A limitation of this research design was that interview results could not be verified by reference to other sources of data, such as company documents, other interviewees within the same firm, or observation of the process at work. The opinion survey was administered not only to these respondents, but also to other representatives of the firms present at the Mercury Awards.