

**THE ROLE OF PACKAGING IN CUSTOMER SATISFACTION WITHIN
THE SUPPLY CHAIN: A STUDY IN THE AIRLINE INDUSTRY**

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SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR THE
DEGREE

MASTER COMMERCII (BUSINESS MANAGEMENT)

IN THE
FACULTY OF ECONOMIC AND MANAGEMENT SCIENCES

AT THE
UNIVERSITY OF PRETORIA

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Pretoria, South Africa

April 2007

DECLARATION

I declare that:

THE ROLE OF PACKGING IN CUSTOMER SATSIFACTION WITHIN THE SUPPLY CHAIN: A STUDY IN THE AIRLINE INDUSTRY

I the undersigned hereby declare that the work contained in this thesis is my own original work, that all the sources used or quoted have been indicated and acknowledged by means of complete references, and that this thesis has not previously in its entirety or in part been submitted at another university for a degree.

.....
Cynthia De Wet

April 2007

ACKNOWLEDGEMENTS

I would like to express my gratitude towards the following people without whom this dissertation would not have been possible.

My special gratitude goes to my study leader, Professor G.H. Nieman at the University of Pretoria, whose guidance and encouragement was indispensable.

The study undertaken for this dissertation was financed by the University of Johannesburg and I acknowledge this generous support with deep gratitude.

The following people for their availability and assistance in obtaining information for this study:

- Mr Steven Dorfman: Kosher Account Manager. Air Chefs International (ACI)
- Mr. George Radnay: Operations Manager. Air Chefs International (ACI).
- Mrs. Delene Slabbert: Language practitioner.

I also wish to thank all the flight attendants of South African Airways who provided me with the information required. And finally, all the employees at Air Chef International (ACI) for their patience and co-operation while conducting the field work for this study.

And at last I want to thank my maker for giving me the strength and persistence for completing this qualification.

Cynthia De Wet

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Date

SUMMARY

THE ROLE OF PACKGING IN CUSTOMER SATSIFACTION WITHIN THE SUPPLY CHAIN: A STUDY IN THE AIRLINE INDUSTRY

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It is importance that business organisations focus on providing the best service to their customers. The survival of the organisation depends ultimately on the service provided.

This study explores the elements which affect the provision of service excellence to passengers by flight attendants at South African Airways. The study is adequately supported by a proper and detailed literature study which, in turn is founded on an empirical study on the relevant topic. A field study was conducted on the various stakeholders of the supply chain pertaining to in-flight catering to determine what specific viewpoints, suggestions and limitations there were, with regard to existing packaging, catering utensils and galley equipment used by flight attendants personal service on board the aircraft. Alternatives were considered that could result in the improvement of service provided by flight attendants.

The literature review within the scope and limitations of the study therefore concentrated on the specific nature and impact that packaging, catering utensils and galley equipment have on the quality service which flight attendants provide to passengers. The study included a detailed investigation into this part of the supply chain. The reality is that flight attendants are the front-line employees not only for the airline they are employed at, but also for all the stakeholders involved in the supply

chain of in-flight catering. By not supporting them and providing them with the right tools to execute their duties affects more than one stakeholder in the supply chain.

The empirical part of the study was conducted by interviewing flight attendants employed at South African Airways. The objective was to determine the impact that current packaging, catering utensils and equipment had on the execution of service by the flight attendants. A further survey was conducted to determine passenger perception towards packaging, catering utensils and galley equipment.

The research findings clearly indicate the problems passengers and flight attendants are experiencing. The findings indicate the impact of passengers and flight attendants and makes suggests (makes recommendations) improvements to reach the objectives of improved service delivery.

OPSOMMING

DIE ROL VAN VERPAKKING IN KLANTBEVREDIGING IN DIE TOEVOERKETING: 'N STUDIE IN DIE LUGREDERY BEDRYF

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Dit is baie belangrik dat sake-organisasies vandag daarop fokus om niks anders as die beste diens aan hul kliënte te lewer nie. Die oorlewing van die organisasie hang af van die diens wat gelewer word.

Hierdie studie is verkennende navorsing oor die elemente wat die verskaffing van diensuitnemendheid aan passasiers deur vlugpersoneel by die Suid-Afrikaanse Lugdiens beïnvloed. Die studie word voldoende gerugteun deur 'n behoorlike en gedetailleerde literatuurstudie wat deur 'n empiriese studie oor die betrokke onderwerp ondersteun word. Veldnavorsing is uitgevoer met die verskillende deelhebbers van die toevoerketting wat betrekking het op spyseniering aan boord om te bepaal watter spesifieke standpunte, voorstelle en beperkings daar is, of kan wees, ten opsigte van die evaluering van bestaande verpakking, spyseniersgereedskap en kombuistoerusting. Alternatiewe is oorweeg wat tot die verbetering van diens wat deur vlugpersoneel verskaf word, kan lei.

Die literatuuroorsig, binne die omvang en beperkings van die studie, het daarom gekonsentreer op die spesifieke aard en impak van verpakking, spyseniersgereedskap en kombuistoerusting op die verskaffing van uitmuntende diens deur vlugpersoneel aan passasiers. Die studie het 'n gedetailleerde ondersoek

van hierdie deel van die toevoerketting ingesluit. Die realiteit is dat vlugpersoneel die voorste werknemers is, nie net vir die lugredery waarvoor hulle werk nie, maar ook vir al die deelhebbers wat betrokke is by die toevoerketting van spyseniering aan boord. Deur hulle nie te ondersteun en nie aan hulle die regte “gereedskap” te gee om hul pligte te verrig nie, word meer as een deelhebber in die toevoerketting geraak.

Die empiriese deel van die studie is gedoen deur middel van onderhoude wat met vlugpersoneel gevoer is wat in diens van die Suid-Afrikaanse lugdiens staan. Die doel was om die impak te bepaal wat huidige verpakking, spyseniersgereedskap en kombuistoerusting op die lewering van diens deur die vlugpersoneel het. 'n Opname is gedoen om passasiers se persepsie van verpakking, spyseniersgereedskap en kombuistoerusting vas te stel.

Die navorsingsbevinding het duidelik die impak aangedui wat passasiers en vlugpersoneel ervaar en watter moontlike alternatiewe en veranderings aangebring kan word aan verpakking, spyseniersgereedskap en kombuistoerusting om verbeterde diens aan passasiers te verseker en dus bereiking van die doel van die toevoerketting, naamlik verbeterde diens.

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CHAPTER 1

SCOPE AND OBJECTIVES OF THE STUDY

1.1 INTRODUCTION

Air travel has become probably the most widely used transportation medium for passengers compared to sea, road and rail. Passengers are often not aware of the multitude of activities before and during their flight to ensure that they reach their final destination as safely and conveniently as possible. One of such important activity is the in-flight catering service offered to passengers on board.

The first regular aeroplane passenger service commenced in August 1919 in Europe, with flights between England and France. In-flight catering was offered from the onset (Wright, 1985:5). The first recorded full in-flight service to Air Union was instituted on 30 July 1927. Stewards were employed on board to serve hors d'oeuvres, lobster salad, cold chicken with ham, nicoise salad, ice cream, cheese and fruit. Drinks such as champagne, wine, whisky, mineral water and coffee were also offered with the meal (Franklin, 1980:16). In 1930, United Air Lines introduced the world's first stewardess, Ellen Church, who was the first woman to serve a meal on an aeroplane (Dana, 1999).

South Africa's first air service was introduced in 1929. The company was known as Union Airways, with its headquarters in Port Elizabeth. Union Airways operated scheduled services carrying mail to Johannesburg, Durban and Cape Town to connect with the mail ships in Cape Town. In 1934, the South African government bought Union Airways and renamed it South African Airways on the 1 February (Wikipedia, the free encyclopaedia - South African Airways, 2007). By 1938 South African Airways was operating daily flights between Johannesburg, Cape Town and Durban. During these days there was only one flight attendant on board an aircraft whose duty it was to look after passengers during refuelling and refreshments stops (In-Flight Service Academy, SAA, 1999a:1-4). In 1946 South African Airways (SAA) recruited the first group of air hostesses and this initiated the long and proud tradition of SAA's friendly cabin crew.

During the late 1980s the cabin staff saw South African Airways' many changes in their favour. Equality between male and female cabin staff enabled women to aspire to the previously male-dominated senior positions. The cabin crew also experienced several name changes: 'stewards' and 'air hostesses' became known as 'cabin services officers' and then 'cabin attendants'. The term now in favour is 'flight attendants' and is the term that will be used in this study (In-Flight Service Academy, SAA, 1999a:5-8). It is the 'in-flight' attendants who facilitate in-flight catering and have the responsibility of providing service for which airlines such as SAA are renowned. As a result of the extreme competition among airlines, customer service can be an area where airlines can achieve a competitive advantage.

In-flight catering is a global industry with an annual turnover in excess of US\$ 14 billion. Of this figure, approximately 30 per cent is generated in Europe, 35 per cent in the Asia/Pacific region, and 26 per cent in North America, with the balance in other countries. However, over the next three to five years, the airline industry predicts annual passenger growth rates of between 4 to 5 per cent (ITCA Education Committee, 2005:1).

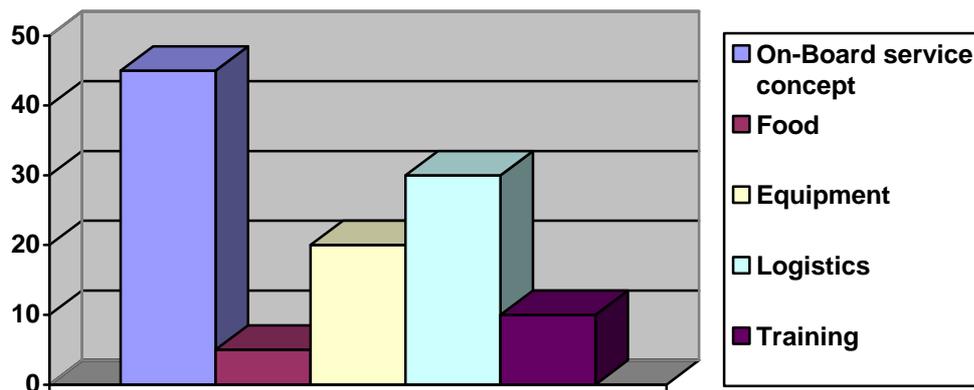
Recent years have seen significant structural shifts in the industry; with pressure on catering spent for Economy Class passengers being counter balanced by increased quality and service levels for high fare customers. Overall, analysts expect the in-flight catering industry to grow in turnover by 2 to 3 per cent per annum over the next five years. There are approximately 600 flight kitchens worldwide with the average kitchen preparing between 6 000 and 7 000 meals per day, and employing an average of 150 people per unit. However, there are a number of large kitchens employing over 1 000 people and producing in excess of 9 million meals per day (ITCA Education Committee, 2005:1).

Findings from Jones and Thomas (2003:3) clearly indicate that the airline industry concentrates on the innovation of the logistics of supply chain and operational efficiency. The term logistics, "the organisation of supplies, stores, quarters, necessary for the support of troop movements, expeditions" (Ask Oxford.Com, 2006) is deduced from the position of *Marechal General des Logos*, a new staff structure proposed for the French army in 1670. The position entailed the responsibility for the

supply and transportation of goods, selecting camps, adjusting marches, etc. (Leenders, Fearon, Flynn & Johnson, 2002:7-8).

Aspects such as on-board service delivery, food, equipment, logistics and training have come under the spotlight and the airline industry is attempting to innovatively develop them.

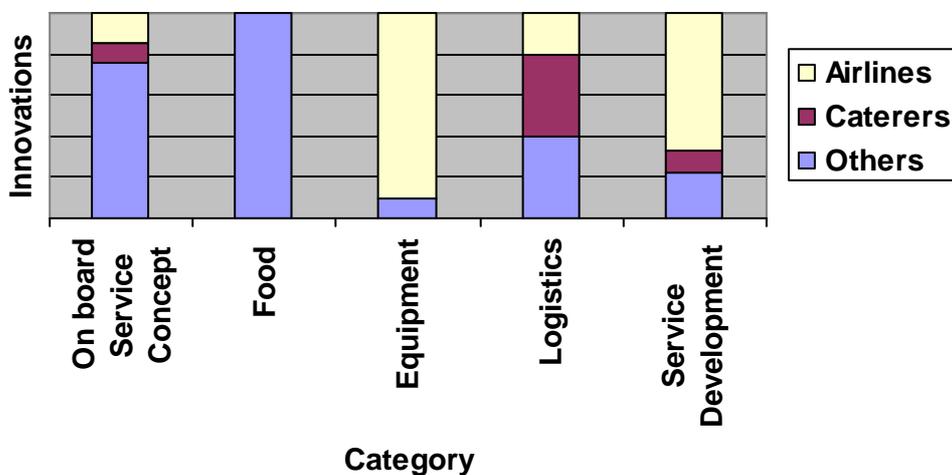
Figure 1.1: Areas where development has occurred



Source: Jones and Thomas, 2003:4

However, Jones (2004:9-10) provides evidence that in comparison to the airlines and suppliers/manufacturers, the in-flight catering companies have not shown great motivation in developing innovations.

Figure 1.2 Innovations per category by each party



Source: Jones and Thomas, 2003:4

According to Peters and Moss-Kanter as (quoted by Jones, 2004:303), constant innovation is fundamental to a company’s survival. Three definitions of innovation that are widely accepted include:

- “Innovation is the commercialisation of invention”

- “Innovation refers to the process of bringing any new, problem-solving idea into use”
- “The process of taking an invention forward into its first marketable form”. (Jones, 2004:303).

The trend in modern food service systems is to prepare the food in the catering company’s kitchens and later serve it on board. While the various sectors in the food industry may have the option to decide whether or not to do so, flight caterers do not have that option, as food cannot be prepared in-flight, and as such is dependent on the supply chain.

According to Jones (2004:17), research into flight catering innovation confirms that most innovations are modifications to existing products or services as opposed to completely new innovations.

In the 1970s supply chain management was primarily known as ‘distribution’, and focused on the integration of warehousing and transportation within the firm (Gattorna, 2000:18). However, in the 1980s, the focus of supply chain management shifted to the re-engineering of supply chain cost structures (Gattorna, 2000:18). Harrison, Lee and Neale (2003:14) define supply chain management as a set of approaches utilised to efficiently integrate suppliers, manufacturers, warehouse and stores, so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time, in order to minimise system wide costs while satisfying service level requirements. By the end of the 1980s, the focus of supply chain management shifted from reducing costs to improving customer service. The focus shift intensified during the early 1990s (Gattorna, 2000:19).

It is important to draw a distinction between service and customer service. According to Zeithaml and Bitner (2003:3-4), service can be defined in simple terms such as deeds, processes and performances, and encompass a wide range of industries. Customer service can thus, be defined as the service provided in support of a company’s core products.

The flight caterer provides in-flight catering to the airline; hence the airline is the customer, not the fare-paying passenger. Whether employed directly by the airline or

contracted out, the flight caterer works for the airline and in this respect, complies with and must respond to the airline's wishes and any wider motives that the airline may be seeking to develop (Jones, 2004:17-19). In turn, the airline seeks to establish what the 'flying customer' might require, and attempts, through the caterer, to interpret and respond to those wishes.

From a supply chain point of view, a customer is the final link within the supply chain and all the activities and efforts involved in the supply chain are directed towards providing ultimate satisfaction to the customer. In this study reference to this final link, namely the customer as the passenger, will be made. The passenger is the starting point and the end of the entire supply chain, as it is the passenger who requests a service/product from an airline. Without this link, the chain is not complete.

Another vital link in the supply chain is the team of flight attendants who offer a service to the passengers on behalf of the flight catering companies and the airline. However, these flight attendants who oversee the in-flight catering and serve the meals face a dilemma: although they have had no input into the planning or preparation of the meals concerned, they are representatives of the catering provider (Jones, 2004:18).

Driver (2001) states that the recent history of airlines shows a general tendency to seek reduction in work forces even though on average the volume of air travel is increasing. In part this is a result of above-average pay and condition packages secured in the past, which, under new competitive conditions, threaten the viability of airlines. Lately many low-cost airlines have entered the market and compete on a number of important routes. Their prices are competitive because of a lower cost base as a result of non-unionised staffing, less expensive remuneration packages and greater flexibility of operations. These, in turn, influence the cost aspirations of the larger, incumbent airlines, which must adjust to compete with their competitors.

During this time of intense competition and concern with cost, the ratio of flight attendants to passengers has been reduced (Jones, 2004:20). The ratio of 50 passengers per one flight attendant is approved by the Civil Aviation Authority (CAA) (Dippenaar, 2000:23). This means that flight attendants have to serve more

passengers faster. Logically one needs better equipment and packaging to do so more efficiently and effectively. Any obstacles preventing flight attendants to execute their duties effectively must be addressed to achieve the ultimate objective of improved service to passengers.

Understanding and responding to the needs and concerns of employees will enhance customers' level of satisfaction (Zeithaml & Bitner, 2003:93). However, the question could be asked whether the stakeholders in the supply chain – understanding that the industry has grown, that there is enormous competition in the industry and that consequently and that the delivering of great service is vital to remain viable in the market – have adjusted well enough to these changing needs. It is thus important that all the stakeholders involved work in close collaboration with one another and communicate all the problems experienced to ensure that an excellent product is delivered, and that the needs of all stakeholders involved are satisfied. The following five stakeholders are predominantly involved in the supply chain of in-flight catering: the flight caterer, suppliers, airline, flight attendants and passengers.

Tough competition from low-cost airlines necessitates major airline companies to introduce cost-cutting measures. This includes reducing the number of flight attendants, yet providing the same excellent service to customers. As the airlines are dependent on retaining customers through service excellence, the burden falls on flight attendants to sustain their performance under increasingly difficult circumstances. One possibility to improve efficiency is to analyse the current packaging, catering utensils and galley equipment. This should be done from two perspectives: firstly, as a means of reducing costs and secondly, to change the design to suit the overall supply chain better.

From the research conducted it is evident that the packaging, catering utensils and galley equipment used in the delivery of in-flight service on board is considered to be non-user-friendly/not optimal for the various stakeholders within the supply chain. Certain areas for example the suitability of current packaging, catering utensils and galley equipment in terms of the storage equipment used on board the aircraft, such as the food and beverage trolleys and the flight attendants' work environment, need investigation to ensure that flight attendants are able to provide an excellent service to passengers.

Since air travel is still expensive, good service is a prerequisite. Consequently, the supply chain needs to be understood to ensure that flight attendants provide on-going excellent service in this changing industry.

1.2 PROBLEM STATEMENT

The research argues that stakeholders within the supply chain are unaware of the difficulties that flight attendants face in their work environment. This results in the delivery of a less than optimal service to passengers. The aim of the study is to identify factors within the supply chain of in-flight catering that prohibit the delivery of excellent service to passengers on board commercial aircraft.

This study assesses the impact of selected elements within the supply chain of in-flight catering, focusing specifically on the packaging, catering utensils and galley equipment used in the in-flight service on board commercial aircraft, with the purpose to:

- ascertain if the packaging, catering utensils and galley equipment on board aircraft is sufficiently conducive in design to ensure the effective operation of the entire supply chain
- determine the impact of the elements on the stakeholders within the supply chain of in-flight catering in the execution of their duties
- determine excellent service offerings and how these elements impact on the provision of service to the final link within the supply chain, namely the passenger.

In order to achieve the stipulated aims, the following objectives are relevant.

1.3 RESEARCH OBJECTIVES

According to Gilmour (1999:1), significant research studies have focused on the characteristics of an excellent supply chain. These studies have shifted the emphasis from operational to strategic considerations. In this study the researcher attempts to focus on the strategic considerations in order to improve operations, as this is where strategies are to be implemented to ensure that the objectives are achieved.

1.3.1 Primary objective

The researcher will conduct an in-depth investigation into the supply chain of in-flight catering focusing on the impact packaging, serving utensils and galley equipment used by flight attendants for serving food and beverages to passengers on aircraft, in order to identify possible shortcomings and deficiencies in the resultant in-flight service to passengers. This investigation aims to establish a framework that could be used on an operational level to improve customer service through improved packaging, catering utensils and galley equipment.

1.3.2 Secondary objectives

Secondary objectives support the primary objectives and include a literature study of packaging, catering utensils and galley equipment used in the support of in-flight service of food and beverage. A literature study of processes involved prior, during, and after providing in-flight service to passengers together with researcher observations during fieldwork, could help to develop an understanding of the work environment of flight attendants.

1.4 RATIONALE OF THE STUDY

The airline industry is continually growing and developing; yet few changes have been implemented to change current operational activities. For this reason research in this industry is important and relevant.

This study aims to make recommendations to improve customer service from a supply chain point of view achieving the ultimate goal of any supply chain namely *excellent service to customers*. Research informs the improvement of current packaging, catering utensils and galley equipment thus developing effectiveness and efficiency in the serving of food and beverages to in-flight passengers, offering cost reductions to the various stakeholders within the supply chain and ultimately improving the work environment of the flight attendant, which in turn will help deliver good service.

1.5 RESEARCH METHODOLOGY

The research methodology is qualitative in nature. Both primary and secondary information was gathered. Primary information is the written or oral account of a

direct witness of, or a participant in, an event, or an audiotape recording of it. Secondary information is second-hand information about events. Such a source has personally not witnessed the events, but has obtained the information either from a person who did experience the events or who obtained the information from someone who had indeed experienced it first-hand (Welman & Kruger, 2001:35).

By its nature, qualitative research cannot be generalised by making it applicable to the whole airline industry. Limited literature is available on the subject of in-flight catering, although it is lucrative industry. The researcher therefore consulted with various respondents within the supply chain to obtain information, and further explored alternative information sources. Because respondents might have been reluctant to participate and therefore to withhold valuable information, a confidentiality clause is included in the discussion guide.

This study endeavours to ascertain problems experienced in in-flight catering. To further gather information, the researcher visited the Air Chefs International (ACI) catering plant and other suppliers to the flight caterers/providers. South African Airways (SAA) was approached to determine problems they experience in this regard, in order to suggest solutions.

Semi-structured interviews were conducted with flight attendants to obtain the relevant data for this particular study. A survey was conducted to determine passenger perspective pertaining to in-flight catering.

1.5.1 Data collection

Qualitative research attempts to understand and make sense of phenomena from the participant's perspective. All qualitative research is characterised by the search for meaning and understanding, the researcher is the primary instrument of data collection and analysis, an inductive investigative strategy, and a richly descriptive end product (Merriam, 2002:6).

According to Cooper and Schindler (2006:89), data is information collected from participants, by observations, or from secondary sources.

Creswell (2003:74-75) characterises qualitative research as a need that exists to explore and describe the phenomena and to develop theory. Due to the limited

available literature and research conducted on the topic of in-flight catering, the above emphasises the importance of applying qualitative data-collection methods to conduct this study.

1.5.1.1 Literature review

According to Mouton (2001:86-87), it is essential that every research project starts with a review of the existing literature for the following reasons:

- To ensure that one does not duplicate a previous study
- To discover the most recent and authoritative theorising about the subject; to find out what the most widely accepted empirical findings in the field of study are
- To identify the available instrumentation that has proven validity and reliability
- To ascertain what the most widely accepted definitions of key concepts in the field are.”

The literature focuses on various aspects pertaining to the supply chain of in-flight catering to determine the contribution it might have/not have on the implementation of good service by means of efficient, effective, functional and user-friendly packaging, catering utensils and galley equipment. It also focuses on packaging used in airline catering, and specifically the effectiveness of the packaging, the suitability of handling equipment for the packaging, as well as the convenience of equipment and packaging for flight attendants providing in-flight service on board and ground staff. The review examines recent literature on the topic of packaging used on board aircraft and certain other concepts and keywords related to the topic.

The literature review was used to develop a framework through which areas of importance could be identified and focused on. Once the literature research had been concluded, the data was obtained through interviews, observations and a questionnaire.

1.5.1.2 Interviews

Interviewing is necessary when we cannot observe behaviour, feelings or how people interpret the world around them. In all forms of qualitative research, some and occasionally all of the data is collected through interviews. The most common form of interview is the person-to-person encounter in which one person elicits information from another (Merriam, 2002:71-72).

Personal interviews were conducted with respondents to obtain the information required. The interviews were semi-structured and were conducted with the flight attendants from South African Airways. Flight attendants are the key stakeholders in ensuring satisfied customers in the end of the supply chain.

1.5.1.3 Observations

Observations were made where interviews did not elicit relevant information. In everyday life people, interactions, and events are observed. Participant observation in a research setting, however, differs in that the researcher carefully observes, systematically experiences, and consciously records in detail the many aspects of a situation (Clesne, 1999:46). Since the researcher is a qualified flight attendant and held a position at South African Airways in the past, she was in a position to undertake participant observations.

1.5.2 Data analysis

According to Cooper and Schindler (2006:90), data analysis involves editing and summarising data, and looking for patterns and applying statistical techniques to data. Data relevant for this study was analysed and a detailed description of the processes and functions of the industry provided. A comparison was drawn between the secondary information obtained in the literature search and the primary data obtained through conducting interviews and observations. The data was interpreted to establish meaningful answers to the questions addressed by the various stakeholders. For the purpose of triangulation the comparison assisted in determining whether the primary data confirms or contradicts the secondary information. Analysing data offered meaningful solutions to the problems identified through the research process, after which literature was invoked to support the findings.

Tentative solutions are offered regarding the packaging and working environment problems encountered in in-flight catering.

1.6 OUTLINE OF THE STUDY

This research study consists of seven chapters:

Chapter 1: Scope and objectives of the study

The chapter provides the background of the proposed study indicating why the study is necessary. It continues by identifying relevant questions, setting of objectives and defines the terminology used in the dissertation. It also serves as an introduction to the problem, as well as an investigation as to how the researcher intends addressing the problem. The research methodology and intended instruments for collecting data are discussed.

Chapter 2: The supply chain in the airline catering industry

This is a theoretical chapter based on the literature study regarding the supply chain and related activities and links within the chain. This includes different authors' perceptions on aspects pertaining to the supply chain. A description of the supply chain pertaining to in-flight catering is also provided in this chapter.

Chapter 3: The operation factors of in-flight catering

Chapter 3 is a theoretical chapter based on the study of the operational activities of the main stakeholders involved in the supply chain of the in-flight catering. A detailed description of the entire processes involved in providing in-flight catering from when it is initiated till the final product is provided.

Chapter 4: The packaging, catering utensils and galley equipment used in the in-flight service on board aircraft

This chapter comprises of a theoretical study based on the packaging, catering utensils and galley equipment used in in-flight catering. A detailed description is provided on the functions of packaging, catering utensils and galley equipment. Important design features are identified and discussed in detail.

Chapter 5: Research methodology

In this chapter a detailed description is given of the research methodologies applicable to the study and an explanation of the processes the researcher uses to conduct the research. The chapter also aims at the reliability and validity of the study in question and the importance thereof.

Chapter 6: Research findings

Chapter 6 explains the way in which the data was analysed and interpreted in terms of the problems pertaining to the supply chain of in-flight catering and the proposed research objectives. The data was edited to ensure consistency across respondents and to identify and isolate omissions and spoilt responses.

Chapter 7: Conclusion and recommendations

This chapter is a summary of the findings gained through the research process and recommendations made based on the data gathered and interpreted. An overview of the study is briefly stated and also portrays the final conclusions of the study as reflected by the interpretation of the data gathered. Answers to the questions stated in the interview guide are expounded in the conclusion.

1.7 ABBREVIATIONS USED IN THE STUDY

ATLAS	Air France, Iberia (which used to be known by the international code as TY) Lufthansa, Alitalia, and Sabena
ACI	Air Chefs International
ASM	Available Seat Miles
BOAC	British Overseas Airways Company
BOPP	Biaxial-oriented polypropylene
CAA	Civil Aviation Authority
CLM	Council of Logistics Management
DRD	Drawn and Re-drawn
EU	Europe
HACCP	Hazard Analysis Critical Control Points
IATA	International Air Transport Association
ITCA	International Travel Catering Association
KLM	Koninklike Lugmagredery
KSSU	KLM, SAS, Swissair and UTA
LDPE	Low Density Polyethylene
PET	Polyethylene Terephthalate
QUIDS	Quantitative ingredient declarations
RPM	Revenue Passenger Miles
SAA	South African Airways
SAB	South African Breweries
SAS	Scandinavian Airline System
US	United States
UTA	United Trans Atlantic

CHAPTER 2

THE SUPPLY CHAIN IN THE AIRLINE CATERING INDUSTRY

2.1 INTRODUCTION

The aim of this chapter is firstly to provide a detailed explanation of the supply chain concept and how it evolved. Furthermore, to describe what it entails to supplement the description of the current supply chain of in-flight catering and the effect that ineffective strategic supply chain management can have on the quality of service provided to the passenger. Finally, the stakeholders involved and the activities of the supply chain related to in-flight catering are discussed.

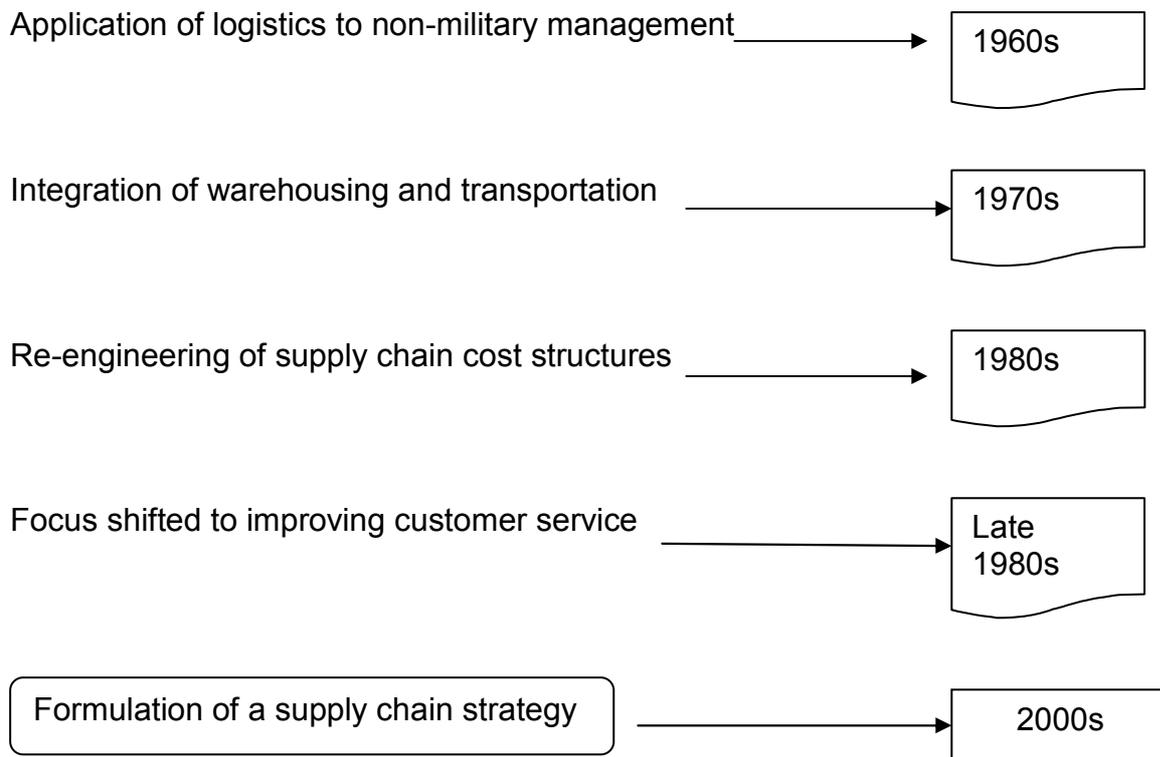
The number of passengers at use air transportation, as opposed to other means of transport, has increased exponentially. This has resulted in changing the manner in which catering has been supplied to the passenger. Jones (2004:9) points out that a large international airline company may have hundreds of takeoffs and landings every day just from their main hub. This renders in-flight catering different from any other sector in the catering industry. Although meals served on trays to airline passengers bear some resemblance to service styles in restaurants or cafeterias, the preparation of meals increasingly resembles food manufacturing, rather than a catering kitchen. In addition, food and equipment storage for on-flight catering resembles a freight warehouse, and the transportation and supply of meals and equipment closely resembles military-style logistics and distribution systems.

From the above it is evident that various concepts of normal catering is not possible due to the nature of the environment in which in-flight catering is conducted and a proper study of the supply chain of in-flight catering is needed. A different mindset is required to ensure that the objective of the supply chain is achieved, namely the provision of excellent service and products to ensure satisfied customer.

2.2 THE CONCEPT OF LOGISTICS SUPPLY CHAIN

From the 1960s to today, the concept of logistics has gone through various changes and progress. Figure 2.1 depicts this historical progression of logistics to supply chain schematically.

Figure 2.1: Progression of the concept of logistics and supply chain through the past fifty years



Source: Own compilation

Before a discussion of the supply chain and its impact on in-flight catering can be pursued, it is important to define the following relevant concepts to ensure clarification with regard to this study.

Logistics

Ballou (2004:4) refers to the dictionary definition of the term logistics as “the branch of military science having to do with procuring, maintaining, and transporting material, personnel, and facilities”. This definition places logistics into a military context.

Logistics, a plural word derived from logistic, means in military science, the planning and handling and implementation of personnel, also the related material, facilities, and other factors. Thus logistics means the application of reasoning, especially mathematical analysis and synthesis, to the complex and inter-related problems of coordinating manpower and supplies (Vogt, Pienaar & De Wit, 2005:4).

The Council of Logistics Management (CLM) (2006) defines logistics as the process of planning, implementing and controlling the efficient, effective flow and storage of goods, services, and related information from point-of-origin to point-of-consumption for the purpose of conforming to customer requirements.

Supply chain

A supply chain is a global network of organisations that cooperate to improve the flow of materials and information between suppliers and customers at the lowest cost and the highest speed. The objective of a supply chain is customer satisfaction (Govil & Proth, 2002:7).

Supply chain design

Supply chain design is the process of determining the supply chain infrastructure – the plants, distribution centres, transportation modes and lanes and production processes that will be used to satisfy customer demands (Harrison, Lee & Neale, 2003:4).

Supply chain management

According to Van der Vorst and Beulens (2002:2), supply chain management is the integrated planning, co-ordination and control of all business processes and activities in the supply chain to deliver superior consumer value at minimum cost to the end-consumer while satisfying requirements of the other stakeholders.

Supply chain management is a management philosophy aimed at integrating a network (or a web) of upstream linkages (sources of supply), internal linkages inside the organisation and downstream linkages (distribution and ultimate customers) in performing specific processes and activities that will ultimately create and optimise value for the customer in the form of products and services which are specifically aimed at satisfying customer demands (Hugo, Badenhorst-Weiss & Van Biljon, 2002:29).

Strategic supply chain management

The concept of supply chain has gone through various changes in the last four decades. Gattorna (2000:2) states: "The reality is that materials and finished goods

only move through the supply chain because of consumer behaviour at the end of the pipeline or the behaviour of certain stakeholders inside a particular channel”.

Tan, Layman and Wisner (2002:615) claim that supply chain management incorporates logistics into the strategic decisions of the business. It enables stakeholders to compete as a unified logistics entity instead of pushing inventory down the supply chain.

2.3 STAKEHOLDERS IN THE SUPPLY CHAIN

A supply chain comprises various organisations and/or parties that co-operate to ensure sufficient flow of material and information to ensure that the customer receives quality products. In this study these organisations and/or parties will be referred to as stakeholders. There are five stakeholders involved in the process of ensuring that food and beverages are served on board the aircraft:

- The *airline* that requires catering services to be performed
- The *catering company* that co-ordinates the requirements needed to produce the final product to the airline such as food, packaging and catering utensils,
- The various *suppliers* of the above mentioned items
- The *flight attendants* serving the catering on behalf of the airline and the caterer to the passenger
- The *passenger* who consumes the final product.

The aim of logistics is to view the supply chain in totality and to ensure that it is optimised in the interest of all stakeholders (Vogt, Pienaar & De Wit, 2002:11). The idea behind effective strategic supply chain management is to take into account the entire supply chain involved with the delivering of the product/s to the final customer when considering determining problems or implementing changes.

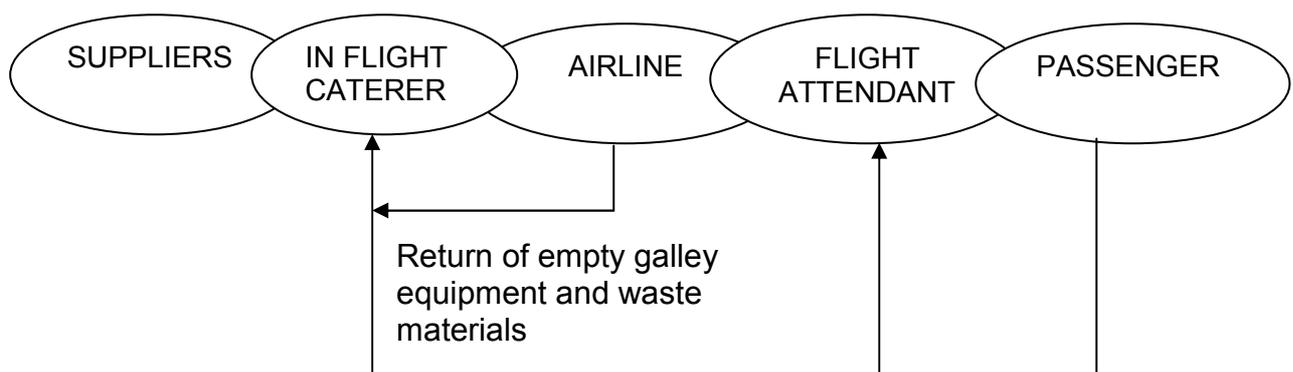
The challenge to the organisation that aspires to be a leader in service performance is to recognise the service requirements of different segments that it serves and to restructure its logistics processes around the achievement of those service requirements (Christopher & Pecks, 2003:15).

The optimum service efficiency depends on working closely with service providers in the chain for the benefit of the overall chain (Vogt, Pienaar & De Wit, 2002:13). Any chain is as strong as its weakest link and the logistics management must monitor the performance of the service provider continually to ensure that the chain operates at optimal performance (Vogt, Pienaar & De Wit, 2002:14).

Van der Vorst and Beulens (2002:3) assert that incorrect actions at one stage in the supply chain affect the performance of the complete supply chain. Furthermore, they claim that there is a need for integrated control and intensified cooperation in supply chains.

Figure 2.2 illustrates how the five stakeholders are linked to form the supply chain ensuring in-flight catering to passengers on board an aircraft. Each of these stakeholders performs important activities that are essential to meeting customer demand. For example Stock and Lambert, (2001:24) states that the handling of return goods, as well as salvage and scrap disposal, is part of the larger process referred to as reverse logistics. The return of empty galley equipment and waste materials is an important aspect that should not be overlooked.

Figure 2.2: How the five stakeholders are linked with the supply chain for in-flight catering



Source: Own compilation

The various airlines are the customers of the catering company/companies and consequently the focus of the caterer is on satisfying the needs of the airliner. In-flight service is a value-added benefit that airlines are offering to passengers when using their service. Some airlines even use in-flight catering service as a means to

gain a competitive advantage above other airlines (O'Hara & Strugnell, 2000:105). However, some airlines consider in-flight catering as an area to cut costs. Passengers view in-flight catering as a value-added benefit which they have a right to and draw a direct line between the price of the ticket and the in-flight catering service they receive (Pilling, 2003). Since flight attendants are the frontline employees, they are often blamed for serving inferior products and therefore not meeting passengers' needs.

As depicted in Figure 2.2, the process of in-flight caterers starts with the airline that must strive to satisfy the needs of the passengers. Catering for passengers is not the airline's core business and it brings little direct return. However, because of the circumstances in which the market for air transport functions, the in-flight catering for passengers has become not only an adjunct to their conveyance, but a service through which the airline can market its products.

According to Driver (2001), airlines produce available seat miles/kilometres (ASM/K) the cost of which depends on type of aircraft, with staffing and fuel costs predominating. The load factor indicates the proportion of ASM converted into revenue passenger miles (RPM). Profit is achieved if the load factor exceeds the break-even load factor, which may be expressed in number of passengers or equivalent weight. The achieved load factor depends on the demand for that route which is influenced by the characteristics of the offered service.

The catering company who considers the airline its customer has to provide products according to the needs described by the airline company. Airlines consult with catering companies for menu options. The caterer prepares a presentation of various options and the representatives then choose the options they consider will satisfy their passengers (Van Wyk, 2006-8-16).

The catering company depends on various suppliers within the surrounding area where the processing plant is located to provide the products required. The quality of the final product delivered to the passenger will largely depend on the quality product and service provided by local suppliers (Mulder, 2006). The routes to Africa or destinations in remote areas often cause the most problems to the caterer or flight provider since very few good products are available. The empty galley equipment,

waste and used meals trays are returned to the catering plant where waste items are discarded and reusable goods cleaned. The new requirements/orders are sent to the catering company (Mulder, 2006).

The passengers, representing the final link in the supply chain, are not aware of all the activities and processes that take place in the preparation and delivering of the final product to them. Most of them do not see the obstacles that have to be overcome due to the environment in which in-flight catering is offered. Yet, the demands of passengers are increasing. For example, passengers are now demanding healthier, preservative free food. These products will require packaging that provides properties for easier identification as well as increased protection and extended shelf life.

Flight attendants, who provide a service to the passengers on behalf of the airline and catering company, play an important role, as they are the frontline employees in the chain providing the service to the customer. The research places special emphasis on this point because if the customer receives poor service, the entire supply chain's effort is affected. Thus the achievement of the objectives of the supply chain that is meeting the requirements of the customers is affected. Driver (2001) points out that evidence in the United States of America forming the survey of Airline Quality Rating, found consumer dissatisfaction increasing with particular concern for their treatment by flight attendants, reservation agents and other front line personnel. This statement justifies that failing to meet customer expectations in terms of service, has an impact.

As it is unlikely that food service on board will ever be done away with completely, perhaps the time has come to review the process and implement improvement to incorporate a changing environment and the demographics of the traveller. Three decades ago, SAA's passengers mainly constituted whites. Nowadays, the number of passengers, including other cultural groups, has increased by threefold and the travellers' diverse demands have to be taken into account.

2.4 CUSTOMER SERVICE AS AN OBJECTIVE OF SUPPLY CHAIN

From the above information it is evident that the main objective of any supply chain is excellent customer service through effective management of the supply chain.

2.4.1 Customer service

According to Govil and Proth (2002:17), the objective of a supply chain is to ensure ultimate customer satisfaction by means of sufficient products and service. Customer service refers to the service provided in support of a company's core products. Customer service is a broad concept and it cannot easily be defined in a single sentence. It encompasses all points of contact between a supplier and a buyer, and includes intangible as well as tangible elements (Christopher & Pecks, 2003:32).

Hugo, Badenhorst-Weiss and Van Biljon (2004:122) define customer service as a value-adding and value-ensuring supply chain strategy and philosophy comprising of a system of activities and processes. These activities and processes are aimed at enhancing internal and external customer benefits and customer satisfaction throughout the supply chain, in such a manner that value is added in a cost effective way. Value can be seen as the progression of a product from a form that presents little or no benefit, to a form that has benefit, and for which stakeholders are prepared to exchange money.

Stock and Lambert (2001:98) view customer service as a process that takes place between the buyer, the seller and a third party. This value added in the exchange process might be short term in a single transaction or long term as in a contractual relationship. The value added is also shared, in that each of the parties to the transaction or contract gains more from the completion of the transaction than what was gained before the transaction took place. Thus, in a process view, customer service is a process for providing significant value-added benefits to the supply chain in a cost-effective way.

In the new market place, there is a strong case for arguing that individual companies no longer compete with other stand-alone companies, but rather that one supply chain now competes against another (Christopher & Peck, 2003:20). The rationale for this viewpoint is based on the fact that when organisations work independently of their up-stream suppliers and down-stream customers, inefficiencies tend to build up at the interfaces (Christopher & Peck, 2003:20). The need for collaboration between stakeholders in the supply chain has increased as the 'network organisation' becomes more common. The network organisation comprises a complex web of linkages between focused stakeholders, each of which adds value through

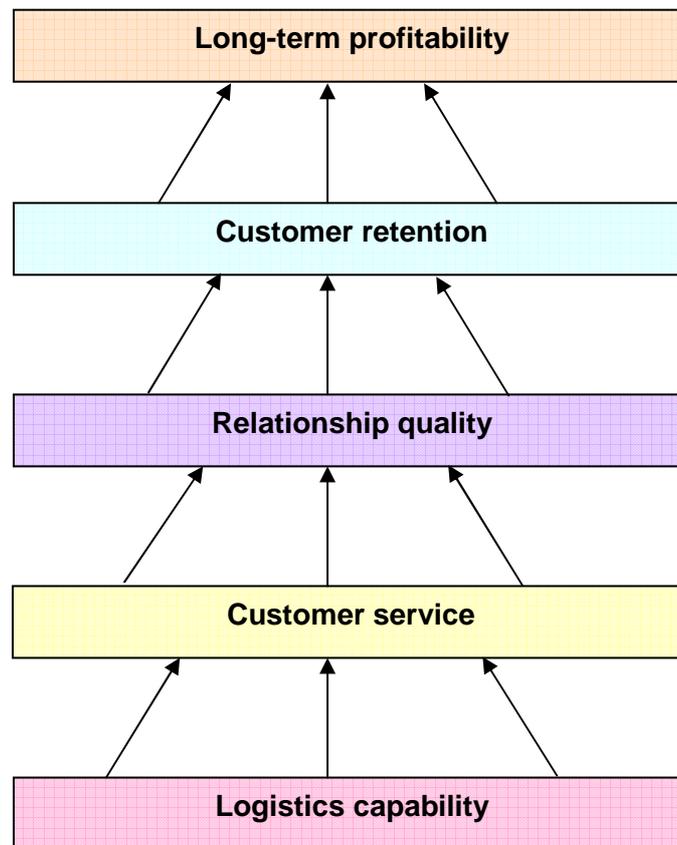
specialisation in an activity where it can provide a differential advantage (Christopher & Peck, 2003:20). This concept, lately referred to as collaboration, will work well in the flight catering industry where one company supplies more than one airline and competition is not that strong.

Löfgren (2005) identifies three characteristics of service:

- Service is processes
- Production and consumption occur simultaneously
- The customer participates in the service production process.

Customer service is seen as the new competitive battleground as it provides a significant opportunity to differentiate an otherwise standard product and an opportunity to tailor the company's offering to meet specific customer requirements (Christopher & Pecks, 2003:2). Logistics performance is clearly a critical dimension in achieving customer satisfaction and underpins the model of the service-relationship-retention linkage as shown in figure. 2.3 on the next page.

Figure 2.3: Key drivers of long-term profitability



Source: Christopher and Pecks, 2003:32

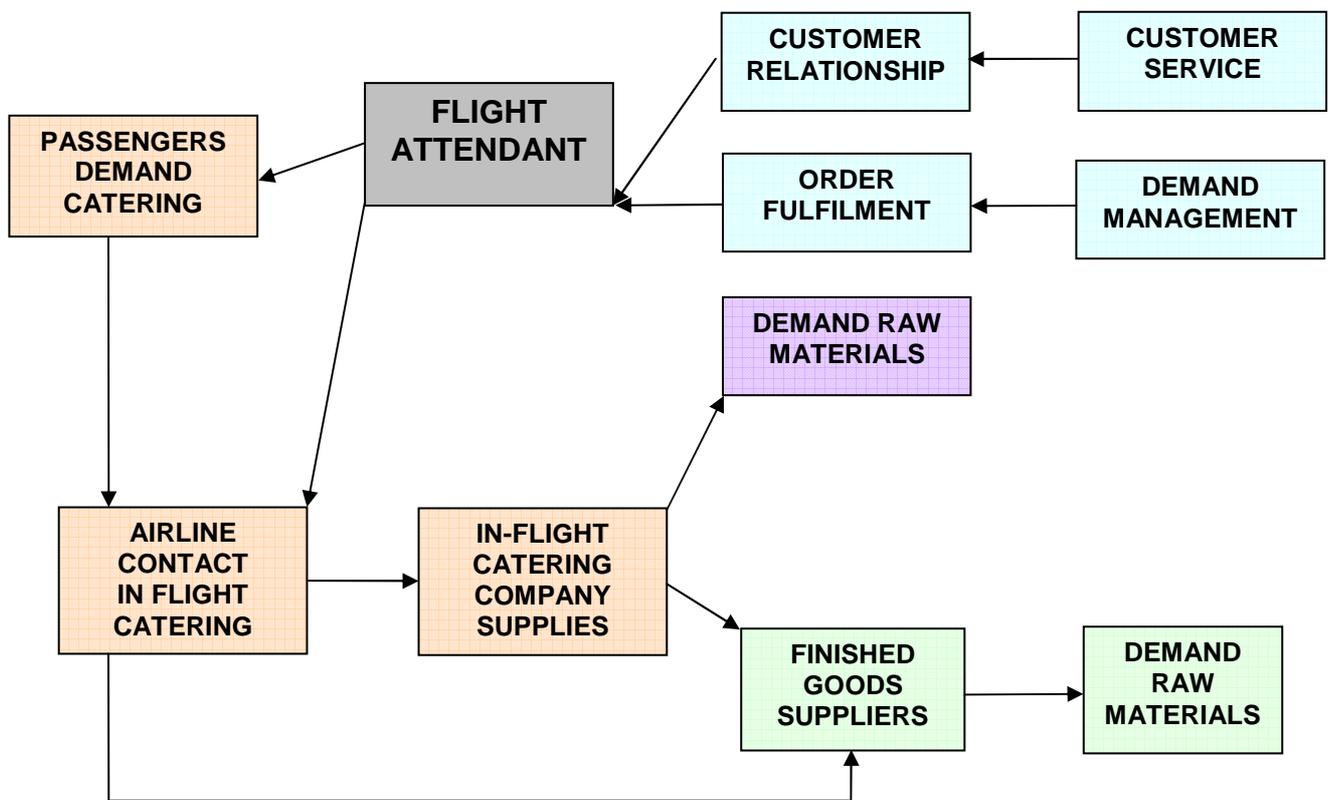
From a logistics perspective, customer service can involve service offered to the passenger and/or service offered by the suppliers to the airline.

The overall service provided to passengers is vulnerable to many negative influences, even when lavishly resourced, due to human interaction and extraneous factors. The approach is to train staff for an appropriate response to the passengers, for encounters which could be described as critical incidents, whether they arise from the airline's processes or from its environment (Palmer, 1998:152). If the packaging, catering utensils and galley equipment are of an appropriate nature, flight attendants and passengers will have less items to inconvenience them, resulting in better response to passengers.

Various services, activities and products are required in the execution of the logistics process (See figure 2.4 below). These service providers form the supply chain. They

can be internal – from departments within the enterprise, or external – from outside companies, or a combination of these (Vogt, Pienaar & De Wit, 2002:15). Logistics supply chains are designed to continually ensure that the logistics process is as efficient and effective as is possible (Vogt, Pienaar & De Wit, 2002:11).

Figure 2.4: Service/activities in the logistics supply chain in the in-flight catering industry



Source: Own compilation

McCool (1996) suggests that inventory management is one of the greatest challenges facing an in-flight caterer. Airlines operate menu cycles to ensure that frequent passengers enjoy a variety of menus. Consequently ingredients and products are changed regularly. Caterers usually have contracts with several airlines, each of which is likely to have different product specifications. These product specifications are rigid to ensure that airlines have a consistent supply of products on all their routes. For this reason substitution by a similar item is rarely possible.

From a logistics perspective, customer service can entail the service offered to the passenger as well as the service offered by the suppliers to the airline. The challenge to those stakeholders in the chain that aspire to be leaders in service performance, is to recognise the service requirements of the different customers and to re-structure their logistics processes around effective service delivery. Organisations in virtually every market sector have come to recognise that differentiation through superior customer service offers an opportunity to avoid price competition (Christopher & Pecks, 2003:20).

2.4.3 Customer service as an intangible service attribute

Grönroos (2000:13) states that goods and services have both tangible (items on meal trays) and intangible (service) aspects. Customers rely exclusively on the tangible aspects of service and this can be stressful for ill-equipped employees (Nicolaidis, 2003:7). These aspects such as contact with customers needs to be managed to avoid bottlenecks and delays in service provision. Maintaining contact with customers is an absolute necessity. A clean environment and neatly attired employees will immediately set the tone and enhance the service quality perceptions of customers (Nicolaidis, 2003:7). By virtue of their position in a business, front-line employees have the greatest customer contact. The front-line manager and his staff have the task of dealing with customers whose interest may vary considerably from those of the management of a business. The front-line employee must have the ability to relate to the customer on an emotional level (looking for cues which make customers feel under-valued or dissatisfied) and then use this knowledge to provide service to customers that meets their service expectations (Chung-Herrera, Goldschmidt & Hoffman, 2004:242).

The overall strategy of management with regard to business operations, customer care and service issues must take into consideration the limitations facing the front-line employees in the execution of their duties. In addition, most air travel is impersonal. Moreover Driver (2001) concedes that with various processes capable of being performed with minimal human interchange, providing good customer service is vital to ensure customers experience traditional human interaction. Similarly, one cannot expect excellent results from front-line employees who are not empowered or technologically equipped to provide service excellence (Nicolaidis, 2003:19).

Bamford (2005:310) notes that successful organisations include a holistic process perspective; a culture where all staff continuously review all processes to search for incremental improvement. They strive to maintain consistency in service excellence that meets the needs of every customer, maintaining the difficult balance between standardisation and customisation; a simultaneous focus on service excellence and cost/profit, pushed right out to the front line staff.

Formalised supply chain management is increasingly recognised as a critical determinant of competitive advantage. Because both total costs and customer service are heavily impacted by the structure of the supply chain and the effectiveness of its co-ordination, it is essential that greater emphases be placed upon proper management of the supply chain (Christopher & Pecks, 2003:20).

2.4.3 Customer retention

Stock and Lambert (2001:99) explain that winning customers is very expensive. Keeping customers should therefore be a paramount concern and as a result, determining what customers need in terms of service levels. Determining what customers need in terms of service levels and delivering upon those needs in a cost-effective and efficient manner should be a key concern of the logistics function.

Wyld, Jones and Totten (2005:384) claim that it costs up to five times as much to win a new customer as it does to retain an existing customer. A retained customer is more profitable than a new customer for a number of reasons:

- Firstly, the costs of acquiring new business are great and it might take time to show profit on the money laid out to attract new customers.
- Secondly, the more satisfied customers are with the relationship, the more likely they are to place a bigger proportion of their total purchase with the entity.
- Thirdly, these retained customers become easier to sell to, with consequent lower costs.
- Finally, it is suggested that loyal customers are often less price sensitive and would be less inclined to switch suppliers because of price rises.

Customer retention is a key determinant of long-run profitability and therefore, the quality of the relationship with a customer is clearly related to customer retention (Christopher & Pecks, 2003:23).

2.5 THE SERVICE QUALITY MODEL

Since quality service is a major objective of the supply chain, it is important to determine what quality is before it can be implemented in the service and thus achieve the ultimate goal of quality service. The service revolution began with the development in the 1990s with the Gaps Model of customer expectations. Parasuraman, Zeithaml and Berry (1988) developed this model also known as the SERVQUAL. They identified and analysed the 'gaps' between customers' expectation and their perceptions of how adequately their expectations were actually being met by business. The customers' responses to various statements pertaining to service were measured using a questionnaire known as the SERVQUAL.

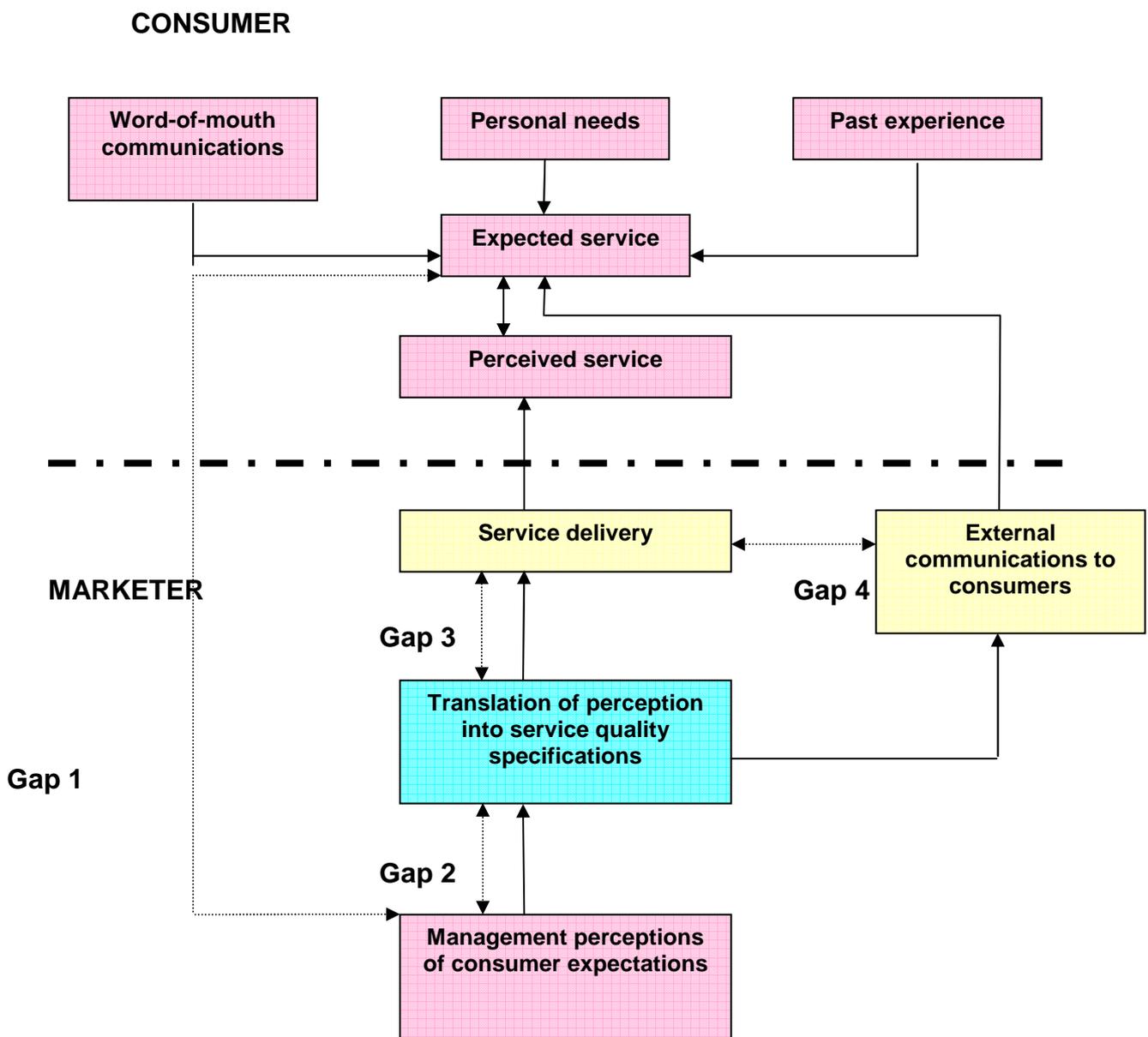
SERVQUAL, with its five dimensions (i.e. tangible, assurance, reliability, responsiveness and empathy), has come to symbolise the American perspective on service quality (Brady & Cronin, 2001:36). Martin (cited in Le Bel, 2005) adopts a more operationally driven perspective and suggests that a customer's overall impression of a firm's service is a function of two types of service: procedural and convivial. Procedural service encompasses the systems and procedures necessary to deliver functional and outcome-related service quality and thus meet customer's needs. Conversely, convivial service is interpersonal in nature. It includes, among other things, the staff's attitude, behaviour and verbal skills and involves meeting customer's psychological needs especially in terms of creating positive emotional responses.

Le Bel (2005) comments that these two types of service offer management a clear-cut and useful way to think about service quality. Naturally, these two aspects of service must be well aligned and carefully designed. Outstanding conviviality combined with poor procedural performance conveys a message that while the company is well intended, it lacks the know-how to solve customer's problems. Conversely, flawless procedural service with no conviviality results in a cold and

impersonal experience. Problems with either of these aspects of service can not only cause dissatisfaction among consumers, but also lead to consumer defection.

While efficient procedural service is necessary, customers most often attend to and care about convivial service. Airlines must thus ensure that flight attendants adopt a convivial attitude and demeanour (Chan, 2000:519).

Figure 2.5: Model of service quality gaps



Source: Zeithaml & Bitner, 2003:31

The first gap: between the consumer expectation and management (airline) perception

Nicolaides (2003:22) confirms that there is a disparity between what the service provider perceives as important, and what the consumer expects from a service. This problem is evident in organisations where there are too many levels of management and as a result, inadequate communication takes place from bottom structures to top level.

The second gap: between management (airline) perception and service quality specifications

This gap occurs when there is a discrepancy between what management perceives to be consumer expectations and the actual service quality specifications established. Management might not set quality standards, or such standards may not be very clear ones, or they may be clear but unrealistic. In addition, management may not be committed to enforcing the appropriate quality standard. This gap may be even more pronounced where service is contracted out (Jones, 2004: 52). Specific service quality goals need to be developed. There is also an inadequate tasks standardisation, which makes poor service standards more likely. To attain service excellence requires that tasks are standardised (Nicolaides, 2003:22).

The third gap: between service quality specifications and service delivery

This is due primarily to ambiguity with an employee's role or when an employee has conflicting roles. It is also apparent when employees do not have adequate technology to enable them to accomplish a task. Even where guidelines exist for performing the service to certain standards, service delivery may not be of the appropriate quality owing to poor employee performance. Indeed, the employee plays a pivotal role in determining the quality of a service (Jones, 2004:52).

The fourth gap: between service delivery and external communications

Consumer expectations are affected by the promises made within the service provider's promotional message. Markets should pay close attention to ensure consistency between the quality image portrayed in the promotional activity and the actual quality offered (Jones, 2004:52). This is due to a severe lack of horizontal communication in an organisation. The advertising and marketing departments in businesses in which this gap exists, do not communicate adequately with the

operations side of the business. Effective communication between advertising, marketing, sales and operations is paramount if the customers' expectations of service delivery are to be met and exceeded (Nicolaidis, 2003:23).

The fifth gap: between perceived service and delivered service

Customers' perception of their service may be different to the actual service they receive. Today's traveller has higher expectations than previously and airlines have to compete by constantly improving passenger comfort and services (Frost and Kumar, 2000:358). The three possibilities in this gap are that the perceptions of the customer will be either greater, equal to, or less than his expectations. The customer evaluates the service by what he or she sees. All customers hope to see reliability of service and that employees respond to their needs and wants (Nicolaidis, 2003:24).

The airline creates a specific image. While image is important, the delivery of actual services through personal contact is not totally under the control of the airline. An examination of the research that takes place in relation to the assessment of airport-related service provides a clue to what is considered important. This includes categories such as staff who are attentive and ready to help, politeness of staff, competence in dealing with any eventuality, level of tact displayed by staff in difficult situations, staff that appear to enjoy dealing with people, availability of airline staff, response to individual needs, being treated as an individual, approachable staff, staff who are warm and friendly, and lastly being greeted with a smile (Jones, 2004:53).

The length of time waiting for a service is an important consideration, as unoccupied time is perceived to last longer than occupied time. According to Diaz and Ruiz (2002), the waiting period experience is likely to affect the perception of the quality provided.

While the in-flight service provision is of low priority, it is significant in the decision-making process of airline selection by the passengers. As such, it is an important aspect of the passenger's flying experience as passengers expect a satisfactory meal and service, with the winning points of the best flight service including down-to-earth service, food that is consistently reliable, promptness, and efficiency (Jones, 2004:54-55).

2.6 THE GAPS MODEL OF SERVICE QUALITY

According to the research, passengers are still unaware of how the logistics system works. From the research and own experience passengers often expect the same service on-board as they would receive in a normal restaurant, but fail to realise that they are in a totally different environment where it is impossible to match the service offered in a restaurant.

2.6.1 The customer gap

The central focus of the GAPS model is the customer's gap, the difference between customer expectations and perceptions. Expectations are the customer's point of reference when entering a service experience; perceptions reflect the service as actually received. Ideally, firms will want to close this gap between what is expected and what is received in order to satisfy their customers and build long-term relationships with them (Zeithaml & Bitner, 2003:532).

The full conceptual model shown in Figure 2.5 conveys a clear message to managers wishing to improve the quality of service. The key to closing the customer gap is to close the provider gaps and keep these gaps closed. Should these provider gaps continue to exist; customers will perceive service quality shortfalls (Zeithaml & Bitner, 2003:539).

2.6.2 The provider gap

There is an assumption that services are, if not identical, at least similar enough to goods so that they are chosen and evaluated in the same manner. Service's unique characteristics require different consumer evaluation process from those used in assessing goods:

- *Search quality attributes* that a consumer can determine before purchasing a product
- *Experience quality attributes* that can be discerned only after purchase or during consumption (flight to a destination)
- *Credence quality attributes* include characteristics that the consumer may find impossible to evaluate even after purchase and consumption.

Flight catering is high in credence qualities as the customer may be unaware or lack sufficient knowledge to appraise, whether the service offering satisfy, given wants or needs, even after consumption. Because services are experiences, moods and emotions are critical factors that shape the perceived effectiveness of service encounters. Airlines should be aware of the moods and emotions of customers and service employees, and should attempt to influence those moods and emotions in positive ways (Zeithaml & Bitner, 2003:44).

2.7 CONCLUSION

The flight attendant is the key person who indirectly affects and is affected by the processes of the supply chain. Passengers do not always understand the logistical process involved in the provision of the catering and make unreasonable demands on flight attendants. However, as flight attendants serve the final product to the passenger, they should also listen to complaints from passengers as a way of maintaining good customer relations on behalf of the catering company and the airline, who are both dependent on the passenger's business.

It is evident from the chapter that efficient customer service is only possible through the proper design and strategic management of the supply chain. As the supply chain consists of various stakeholders and involves various processes, activities and components discrepancies need to be identified and well managed to ensure that the overall objectives are met. The strategic objectives can only be reached when implemented on operational level. In the following chapter a literature study will be provided on the operational activities of the supply chain of in-flight catering.

The importance of supply chain in the successful operation of any firm has changed over the decades. Logistics is defined as a military science, as it was in the military were the importance of logistics originated. Today we built the importance of the supply chain into the strategy of the company. The objectives of companies which are improved service through excellent customer service will not be possible without proper designed and managed the supply chain.

Customer service is defined as a value-adding and value-ensuring supply chain strategy and philosophy comprising of a system of activities and processes that are

aimed at enhancing internal and external customer satisfaction throughout the supply chain, in such a manner that value is added in a cost effective way.

The chapter concludes with the service quality model designed by Parazuraman in 1988. This model intends to identify and analyse the gaps between the customer's expectations and their perceptions of how adequately their expectations were actually being met by business.

In Chapter 3 the operational factors pertaining to in-flight catering are discussed. The various processes involved in ensuring in-flight catering on board as well as industry background will be included to support this study.

CHAPTER 3

THE OPERATIONAL FACTORS OF IN-FLIGHT CATERING

3.1 SIGNIFICANCE OF IN-FLIGHT CATERING

Strategic logistics has become the focus of various stakeholders in the in-flight catering industry. It is the aim of this study to highlight the importance of implementing these strategies on operational level to ensure objectives are being met. However, it would not be possible to implement changes if a thorough study of the specific industry is not undertaken. In this chapter background information on the in-flight catering industry will be given.

The level of actual food production for in-flight catering in comparison to logistics has declined from 90 per cent in the early 1980s to only 10 per cent of total activity (Pilling, 2001; Seeman, 2002). At present, airline catering kitchen operations largely depend on modern cooking technologies (e.g. cook-chill, *sous-vide* and cook-freeze) and greater use of buy-in-ready-to-use products in seeking enhanced efficiency. This accounts for the 80 per cent reduction in food production (Verge in Jones, 2004; McCool, 1995; Kirk & Laffen, 1996; Pilling, 2002). The movement towards a logistics-driven business has required dichotomous work in the catering kitchens: de-skilled and en-skilled/re-skilled work/practices.

The in-flight catering industry is unique in that the manufacturers must sell their products to the flight caterer and the airline. In many instances, airlines wish to use various products as part of their branding strategies and are therefore involved at an early stage in the selection of suppliers and manufacturers (Van Wyk, 2006). The airlines might also wish to negotiate larger discounts, or where they have other subsidiary interest, ensure that those interests have a higher priority and are used in preference to others. This means that many flight caterers are required to work with products that have been developed and selected by other companies/caterers – products they often would not normally prefer or choose (Radnay, 2005).

According to Jones (2004:86), the main problem, which restricts greater productivity and reduced wastage, is the lack of standardisation among the different airlines. Different airlines that contract with flight caterers to produce meals can differ greatly

in their requirements. Some will stipulate every component that makes up the meal. This includes the recipes, where to purchase, what suppliers to use, size of tray, type of cutlery, china, etc. Such differences introduce yet further difficulties into the planning process, and the subsequent standardisation of systems of production.

An airline must consider many factors when it comes to the process of planning in-flight catering. This includes the nature of the product in relation to the flight destination. In general, the airline would be strongly advised to take cognisance of the dominant political, religious and cultural influences of the region in which flights occur. Therefore, to have specialised customised equipment tends to complicate service delivery.

According Carmichael (2005), in-flight service manager at ACI, food service is one of the two ways an airline cuts costs. Nowadays the trend is to reduce the frequency of meal service and the content of what is being served. However, no matter which way the industry decides to cater to their customers, food and liquor in some form or another will always be a part of commercial airline service.

Meeting product specifications will be part of the flight caterer contract; consequently stock-outs may lead to penalty payments or even loss of the contract. On the other hand, holding too much stock adds costs to the business and is detrimental to the cash flow. Airlines purchase some items directly from the manufacturer and pay the caterer to store them in the flight production unit and as a result, stock has to be held separately to enable stock checks (Jones, 2004:219).

Within the constraints of the logistics of providing meals for aircraft passengers, the systems designer does have a few choices. Hot food can either be chilled or frozen and then reheated at the time and place of serving. A variety of packaging materials and techniques, chilled or frozen holding equipment, delivery and transportation means and thermal reconstitution methods are available to the system designer. Although many options are available, few are actually appropriate for the use of the in-flight caterer (Jones, 2004:87).

3.2 SOUTH AFRICAN AIRWAYS AND AIR CHEFS INTERNATIONAL

Before proceeding to the discussions pertaining to the operational processes the following information is included to support the discussion. South African Airways and Air Chefs International are the two companies where the bulk of the research for the study will be conducted.

3.2.1 Air Chefs International

Catering companies in general cater to both local and international airlines. In Johannesburg, two companies dominate the market namely, LSG Sky Chefs and Air Chefs International (ACI).

During October 2002, The Tsebo Group sold its 49 per cent share in Air Chefs International to South African Airways. ACI provides the in-flight catering requirements for more than 30 airlines from units in Johannesburg, Durban, George, Port-Elizabeth, East London and Bloemfontein. Approximately 180 000 meals are prepared by over 1300 people (Anon. 2003).

According to Radnay (2005), the operations manager of ACI, there is no standard specification for equipment and meal tray set up. Each carrier designs their equipment around the basic dimensions of the aircraft and catering equipment what they think their customers require.

Radnay (2005) further concludes that a customer supplier relationship is considered a problem in the in-flight catering business. In the past SAA tried to reduce costs by changing the generic meal tray set layout with a disposable option consisting of a opaque plastic package with individual compartments for the various items and a transparent lid. But then Air Chefs International (ACI) were faced with an increased logistical problem. The distribution of all these packages to the various catering kitchens around the world was problematic. This idea was increasing the costs, since the logistics involved with providing different meal options on various sectors and destinations was extremely complicated, resulting in increased costs.

3.2.2 South African Airways

South African Airways is the national airline of the country, and is a government-owned enterprise. South African Airways has a fleet of 59 planes serving more than

700 destinations throughout the world, it carries more than 6.5 million passengers each year and serves 34 cities in 26 countries on six continents. Employees number are close to 12 000 people worldwide, which include 3 600 technical staff, 2 800 flight attendants and more than 800 pilots (www.flysaa.com).

According to a study conducted by Burgess-King (2006) and featured in a television programme on SABC 3, SAA is in trouble in the public's eye about rude and indifferent service offered by both ground and flight staff. In the programme, Mr. Khaya Kgquala, Chief executive officer of SAA, confessed that he is concerned about the negative image that has been communicated about SAA.

The main complaints about SAA is flight delays and the lethargic and indifferent attitude of SAA personnel (Cheals, 2006). Cheals runs a website, hellopeter.com, which more than five million people access per month. About 1 500 complaints per day are about poor customer service from SAA personnel.

During the first half of the financial year of 2006 SAA has shown a loss of 286 million rand. They are also facing a continuous increase in the already high oil price and staff strikes that have affected the company in a negative way. By 2007, SAA will be moved from Transnet to the Department of Public Enterprises and all losses will be carried by the tax payer.

The above information supports the reasons for undertaking this particular the study. It further supports the necessity to meet strategic supply chain objectives in order for airlines of this magnitude to survive in the competitive international market they are trading in.

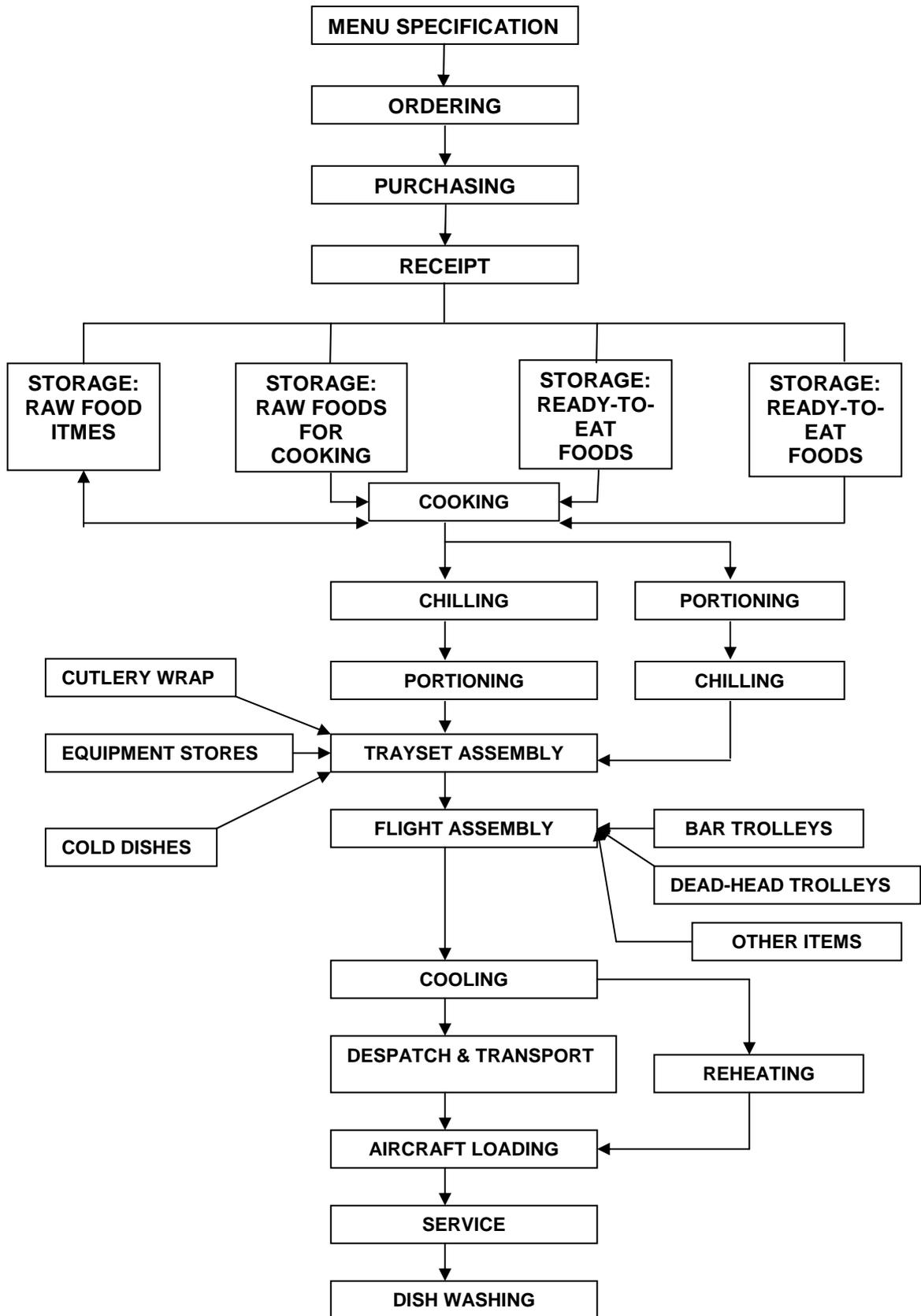
3.3 OPERATIONAL PROCESSES OF IN-FLIGHT CATERING

A specific aspect of the flight-catering industry is that both airlines and flight caterers order from external suppliers and nearly all products are delivered to the caterer's production facility. It is then the caterer's role to deliver both processed products and finished products to the aircraft. Airlines have different service levels, e.g. first class, Premium Class and Economy Class. For each service class, different types of cutlery, crockery, packaging or tray layout are used. The operational process at the catering plant works on a 24-hour cycle and the plant is divided in two areas, one for

the cooking and packing of the meals and the other area is for tray set up according to a specific airline's requirements service.

Figure 3.1 on the next page indicates the layout of the all the processes occurring at the catering plant required to provide catering for a particular flight. A detailed discussion will be provided to illustrate the complexity of the logistical system required to ensure in-flight service to the 20 different airlines that ACI is contracted to.

Figure 3.1: Process flow diagram of operations at Air Chef International



Source: Own compilation

A menu planning team is responsible for drawing up the dish specification and standard recipes. Their input into the purchase specification is also sought from time to time. The team is further involved in-flight attendant training, as it is essential to develop in the service staff a culture that promotes good tray presentation when handling the total menu product to the passenger. So, at all stages in the catering cycle, there are specifications drawn up to ensure that the customer receives what was originally planned and designed by the menu planning team (Jones, 2004:86-87).

During an on-site visit to ACI in April 2005, the following observations were recorded: Airlines sign a contract with ACI specifying their requirements and identifying all items that ACI must provide and all items that the airline will supply. Some airlines supply the caterer with special products, since these products might not be available in the country of the particular catering kitchen. The current system entails the preparation of meals according to rotating menu cycles that are normally determined by each individual airline, for example, SAA's menu cycles run over a period of three months. Meals are prepared well in advance, colour-coded according to the day of preparation, placed in the meal trolleys or containers from which the meals are served on board, and kept under cold storage conditions until needed.

According to Dorfman (2005) the menu options of the various airlines do not remain the same. ACI operates according to menu cycles, with each airline specifying whether they want to use two or four cycles. Every three months, some airlines change their menu ideas with representatives from the various airlines selecting the options from the meal presentations prepared by ACI.

The different airlines place their order by fax. The first order (forecast) is submitted 48 hours in advance to ACI. The second order (prelim) is placed afterwards and the final order (final figures) is placed a few hours before the aircraft departs (Dorfman, 2005). A copy of this order is sent to the following departments: Stores, Production (Kitchen), Tray set up, Kosher Kitchen, and Halaal Kitchen.

ACI purchases all required goods from local suppliers, unless the particular airline specifies differently with orders placed via e-mail. The total number of different items used at the ACI Johannesburg plant, for example, can run up to 1 616. ACI purchases the goods required for most airlines for the catering service on board, but some airlines

such as Air France, ship most of their stock either by air or ocean freight to South Africa. These items are stored in a special storage area specifically allocated for this airline (Dorfman, 2005).

All required items are delivered to a separate delivery section at the catering plant that is used to unload goods from delivery vehicles. The bay has a high-level platform to allow direct delivery from the back of delivery vehicles. This area leads into a goods reception area that allows for the temporary storage, checking and unpacking of all delivered items before these are allocated to the appropriate storage areas or directly to a production area. The receiving clerk checks correct quantities. All items are then delivered to the various storage sections within the catering plant. Dry items for example are stored in the dry storage section and perishable items are stored in the cooling stores at the plant (Dorfman, 2005).

According to the stores manager Duvenhage (2005), the various food and non-food materials are stored in the specialised storage areas such as an area specifically allocated to raw vegetables, raw foods for cooking, ready-to-eat foods and bond stores. For products such as liquor, which an airline purchases directly, caterers only charge for the handling and storage of the product. These products are kept in the 'in bond' and are subject to customs control at any time. The bond license is issued to the individual airline and not to the caterer (Jones, 2004:180). Stored in this specialised storage area are also goods shipped for use on other airlines either by sea or airfreight. Some airlines, especially Air France supply their own beverages, specific food items and packaging. This is stored in the bond store since these are not taxed (Duvenhage, 2005).

Every airline has its own equipment such as non-disposable flight crockery and cutlery known as 'rotables'. Rotables refer to the strong plastic crockery used in Economy class which can be washed and used again. Some airlines keep buffer stock (disposable packaging) in case there is a strike in their airline. Full stock takes for this section are conducted every month. The basic equipment list includes: meal trolleys, bar trolleys, ovens racks, cutlery, crockery, meal trays, stainless steel tea ware and coffee jugs, etc. (Naidoo, 2005).

First and Premium Class uses expensive ceramic or porcelain crockery depending on the airline and class to be serviced. Cutlery is usually heavy stainless steel to create the image of class and prestige.

Food is prepared in various kitchens. Food items not ordered from suppliers are prepared in the main kitchen but many food items such as desserts are bought from outside suppliers. The cook-freeze system implies a method of preparing food and storing it in freezers until required. Reconstitution is necessary prior to serving. Because of short holding periods for prepared meals, cook-freeze systems are inappropriate and caterers depend on a cook-chill system to provide the necessary holding conditions. Many adaptations of cook-chill methods exist. Some are well structured and organised while others are primitive and insufficient (Baxa, 2005).

One such organised and effective system is the Regethermic System, a food reconstituting system that enables cooked meals to be held in cold storage for up to four days, and then be reconstituted by special infrared ovens and served at the point of distribution (Baxa, 2005). The essential and unique property of Regethermic is the increase in complementary energy, i.e. Irradiation by infrared rays. Regethermic has been able to significantly shorten the reheating process and consequently eliminate the adverse effects of steaming or re-cooking and loss of flavour (Baxa, 2005).

For religious reasons, Kosher and Halaal foods are not allowed to be prepared in the main kitchen but are prepared in special kitchens. A number of religious rituals are involved, particularly with the Jewish faith, involving a rabbi making regular visits to the kitchen. All Kosher meals are prepared in a Kosher kitchen which prepares between 550 and 600 trays per day, and a Jewish employee oversees the whole process (Naidoo, 2005).

According to Jewish religion, milk and meat products are not allowed to be in contact with each other. For this reason, the preparation of these products takes place in the Parve, which is the non-dairy non-meat section. Two sets of meal trays are also loaded for this reason. Further more, all Kosher meals must be thoroughly sealed and only opened by the passenger. ACI does all the Kosher meals for Sky Chefs as well. This kitchen also has its own dishwashing section, since the equipment for milk and meat products must also be cleaned in two different sections. If an airline does not follow the

cleaning rules as in the case of SAA (where only a few Kosher meals are ordered), then tray equipment must be brand new and discarded afterwards. After preparation of the hot meal, the food items are put together in the tray set-up area. Some airlines, for example El Airlines require that trolleys are packed and sealed under supervision of a Jewish employee and a security guard specifically employed by the El Airlines (Dorfman, 2005).

The Halaal kitchen is situated in another plant on the airport grounds away from the Kosher and Main Kitchen. This plant ensures that all Halaal meal preparations are in accordance with the religious rules as requested.

The Regethermic system has many advantages, such as the holding of chilled meals, which allows food to be prepared in advance and therefore eliminates peak periods in the kitchen. Further, kitchen staff are able to work steadily throughout an eight-hour day, preparing and cooking food up to four days in advance. Strict portion control is another advantage of this system.

The difference between the cook-chill method and conventional methods is that the prepared food is placed onto a trolley and moves through a refrigerated tunnel or is placed in special refrigerators. The meals are rapidly chilled to a temperature of 4°C and are kept at this temperature until needed. Heating is achieved, as mentioned, by infrared rays (Baxa, 2005).

After the food has been prepared, it is portioned. Packaging of hot breakfast and main course items is carried out using a conveyor system that transports empty containers (foil or china) past a filling station. Food is dispensed into the container using a variety of techniques including the manual transfer of foods to serving dishes using tools such as plastic disposable gloves or tongs, manual ladling of liquid or semi-liquid foods such as stews and soups (or the use of semi-automated dispensing hopper) (Jones, 2004:155).

After portioning, all the items required for a passenger meal is assembled in the tray assembly area where all of the requirements for a meal, based on the specifications provided by the airline are assembled. This area is divided into two sections of which the one is the assembly for premium and Economy Class meals and a separate assembly section for first class meals. The portioning staff is provided with a picture of

the completed tray to ensure that all trays look identical and that no items are excluded. The detailed tray settings are different according to the specific airlines requests and passenger class that will be served (Dorfman, 2005).

Once the various meals have been prepared, the items needed for tray assembly are taken to the tray set up area. This section has a number of conveyor lines, with assembly points located on either side of the belt. Each assembly point has a container holding a specific tray component and a staff member places this item onto the tray in a specific location. At the end of the belt, trays are loaded directly into the appropriate type of trolley for the flight and labelled accordingly showing the type of meal, the flight number, the days of the flight and the stowage position (Jones, 2004:86).

Trolleys, into which the completed trays are loaded for in-flight catering, are kept in refrigerated storage units to keep the contents fresh until required for the flight. At this stage, the trolleys are loaded with dry ice in order to minimise the temperature rise between the time they leave the refrigerated store and the time they are loaded into the galley (Observations recorded, 2005).

Assembly of the trays and trolleys begins about two to three hours before the scheduled flight departure. The many individual items that make up the full inventory for a flight are grouped together in a defined physical location within the assembly area. Sufficient space is allocated to allow materials for each flight to be marshalled separately and the area is equipped with a loading bay at the correct height for offloading into special high lift trucks. Trolleys are loaded into a high lift truck and taken to the aircraft where it is loaded into the galley of the aircraft (Observations recorded, 2005).

After a flight, all trolleys are taken to the sanitation section where they are emptied and disposable items are separated from rotatables. Used trays are unloaded from trolleys within hours of landing, and transferred by hand onto conveyor belts associated with the ware washing system which has special wash tunnels for trolleys, as well as for crockery, trays, and other equipment. Upon emerging from the washers, trays and ware are stacked in special baskets and taken to storage locations on trolleys or via the automated transport system (Jones, 2004:277).

Cleaning areas are designed to allow for spray jet or foam, contain large commercial machines required to wash the large number of separate items such as rotables, trays and trolleys after each flight. Trays are loaded by hand onto a conveyor. Items of ware such as trays, cups, glasses, etc. are then removed by hand and placed on special trays, or mobile dish racks. These then pass through a tunnel washer onto a conveyor. The tunnel washer sprays the ware successively with a hot detergent solution and then with heated rinse water. Finally the ware is dried in a stream of hot air.

The specific items of each airline is then stored in the specific storage are allocated to each airline till required for the next flight (Jones, 2004:277).

According to Baxa (2005), production manager at ACI, the various tray and catering utensils of each airline contribute to the cost and logistical complexity. He suggests that standardisation of a all these items will be more cost effective to both the airline and the caterer.

3.4 IN-FLIGHT SERVICE

3.4.1 Civil aviation requirements of flight attendants

Appelbaum and Fewster (2004:1) contend that the strategy in the aviation industry is premised upon two fundamental drivers – a growing global concern for safety and an ever-increasing consumer expectation of a broad service choice and service excellence.

Although customer service is important to an airline, it must be kept in mind that the main responsibility of the flight attendant is to act as a ‘safety officer’ for the airline. Flight attendants undergo extensive safety training, which includes the use of safety equipment on board, procedures to follow in an emergency situation and first-aid training to assist passengers and fellow crew (Dippenaar, 2000:25).

The flight attendants’ first responsibility when they come on board is to check the expiry dates on the safety equipment within the specific workstation allocated to each flight attendant. By law, each aircraft must have a minimum number of flight attendants according to the type of aircraft so that flight attendants man exit doors in the case of an emergency situation (Dippenaar, 2000:22). All flight attendants must obtain a Civil Aviation Authority (CAA) license as all airlines focus on a high degree

of safety training. Civil Aviation Authority representatives conduct random inspection checks world wide from time to time. Should any discrepancies be discovered in the workstation allocated to each flight attendant during an inspection, the specific flight attendants will be dismissed from duty immediately and his/her license removed (Dippenaar, 2000:25).

3.4.2 Flight attendants' work environment

For many passengers the determining factor for choosing a specific airline is the service provided. Physical design will determine some of the constraints on the degree of personal service, which can be enhanced by the number of flight attendants available and the attention given to the training of the flight attendants.

The usual maximum number of passengers per flight attendant is 50:1 (50 passengers per flight attendant). However, some airlines fly with one flight attendant per 30 passengers and indeed many other airlines fly with more than the minimum number. However, it should be recognised that those operators who fly with additional flight attendants usually do so for reasons of service as well as safety (Muir & Thomas, 2004). The proportion of flight attendant to passenger is greater in first class and Premium Class than in Economy Class. More flight attendants are needed to provide additional services to passengers (Jones, 2004:261). In South African airways, aircraft operate with the minimum number of flight attendants as prescribed by the Civil Aviation Authority, which results in 50 passengers being served by one flight attendant. From a safety point this ratio is adequate, but many more attendants are required to ensure satisfactorily service on board.

In addition to safety training, flight attendants are trained in specific duties relating to food and beverage service, behavioural/cultural aspects, language training, and interpersonal and personal appearance. However, about 30-40 per cent of the induction training will involve in-flight related services (Van Eeden, 2006).

3.4.3 A working day in the life of a flight attendant

Flight attendants arrive at the crew centre 45 minutes before departure, sign on for the flight on a computer system, and make their way to the briefing room where all the flight attendants for the specific flight are introduced to each other. The purser,

normally a senior flight attendant who leads the flight, does the pre-flight briefings. During such a meeting, important issues regarding the flight are discussed and each flight attendant is allocated to a specific workstation, where after the flight attendants proceed to the transport depot. After moving through a security check, the flight attendants are transported by minibus to the aircraft (Dippenaar, 2000:60).

After entering the aircraft, the flight attendants are introduced to the flight deck crew consisting of the pilot, co-pilot and flight engineer. The flight attendants then proceed to their allocated workstations where all safety equipment such as fire extinguishers and oxygen bottles, are checked to ensure they are in working order. Thereafter they move to the galley (kitchen on the aircraft), which falls under the specific workstation allocated to them. Upon entering the galley, they firstly check that the main control switch for galley electricity is switched on, and then that all the electrically operated equipment is in working order (Dippenaar, 2000:6).

During this time the loading truck of the flight catering company arrives and loads the goods into the galley. It is the responsibility of the flight attendants to check that all the goods are loaded in the galley allocated to them. Flight attendants also count the meals to check that the correct quantities are loaded and both flight attendant and loading staff put trolleys and storage bins into the correct locations (Dippenaar, 2000:6).

After loading, the flight attendants do the following pre in-flight service preparations. Firstly, all the plastic strips from the oven rack, which secures the hot meals in the rack, are cut off and the racks replaced in the ovens. Then they make the coffee in the hot flasks provided and finally, they ensure that every thing is stowed away and secured properly for the impact of take off and landing (Dippenaar, 2000:7).

Passengers board the aircraft and flight attendants proceed to the cabin to assist the passengers. Duties include helping with stowing luggage in overhead stowage, directing passengers to their seats, and generally making the passengers comfortable. New aircraft are equipped with television screens on which safety demonstrations are showed to passengers but on the old aircraft or in the case of television screens not being operable, flight attendants do the safety demonstrations. After passengers are seated, the purser requests the flight attendants to take their

safety demonstration positions. Flight attendants, with their safety kits, proceed to the relevant positions and conduct the safety demonstrations. Once completed, the flight attendants have to secure the demonstration kits and move through the cabin, checking that passengers' seats are in an upright position and that safety belts are fastened, and all movable items are stowed away. On the demand of the captain, flight attendants proceed to their chump seats, where they strap themselves in. The lights in the cabin are dimmed and the aircraft takes off (Dippenaar, 2000:25).

The service procedure will vary from flight time and time of the day, but during the day the service will consist of a snack and beverages served from the beverage trolley. For breakfast and dinner, a full service is provided which can consist of beverage service followed by a meal service and another beverage service before they have to 'strip the cabin', a term which is used to indicate the removing of all catering items from passengers and securing the cabin for landing.

If it is a short flight, flight attendants will switch on the ovens on the ground. The problem with this arrangement is that should there be a problem and the flight is delayed, once heated, the food cannot be allowed to cool down and be reheated again.

Take off and landing is the most critical time of any flight and crew members need to be prepared should there be an emergency. After reaching the required altitude, the flight deck crew switch on the lights and sound a bell, at which time the flight attendants start the service. The beverage trolleys are removed from the stowages. The beverage/bar trolley, has an average top surface size of 20cm by 50cm. Flight attendants line the top of the beverage trolleys with a clean cloth, of to prevent other goods from slipping. The flight attendants then fill ice buckets with ice, and place the 'prepping' baskets on top of the trolleys. Tea and coffee are made in steel pots and poured into the flasks provided. Wine and rummer glasses are also taken out and placed on top of the trolley. Drinks are then served to the passengers (Observations recorded, 2005).

After the service of beverages, the flight attendants return the beverage trolley to the allocated stowage space in the galley, and secure all items on top. Hot meals in foil containers are loaded onto the food trolley after it is lined with a dishcloth. The flight

attendants then take out the meal tray, on which all the extras such as cutlery, cups, cheese and biscuits have been placed on top. The hot meals normally consist of two varieties. The flight attendants take out the meal trays and put a hot meal onto the trays after asking the passenger which meal they prefer. After the service, the cabin is stripped. Meal trays are stowed in the meal trolley and in addition, a garbage bin is used to collect items that did not fit into the meal trolleys (Observations recorded, 2005).

As trolleys have to be wheeled around the cabins, they are located at floor level. This location for storage of foodstuffs would not be ideal in a traditional kitchen, but mobility on board, is the key issue. Flight attendants therefore have to do much bending to dispense food trays to passengers (Jones, 2004:255).

3.5 SERVICE POLICY

Some airlines have developed an on-board service policy, outlining their service requirements and on-board policy starts with the service concept adopted by the airline (Radnay, 2005). The policy determines the procedures that will be followed during any flight. However, there are many constraints under which food and beverages are served on board such as the type of seat and spacing, which will affect the type and style of meal service possible (Jones, 2004:260).

There are many more aspects to consider than simply food and beverage services during a flight. However, food and beverage services are probably the most important aspect from the perspective of most passengers, and technically one of the most difficult for airlines to achieve. Therefore this is an area that involves a great deal of planning and staff training (Jones, 2004:264). Once on board, the food and beverage products and their service become the responsibility of the flight attendants. In effect, they become just a part of the total flight service programme.

The service policy may differentiate between the services offered to different sectors, long or short haul flights. Most policies are not blanket policies but make allowances for different needs on different routes. Whenever possible, service is kept within normal parameters. Staff is highly trained in several service types, and each of their services is supported by extensive documentation for the flight attendants to follow. Any change to the normal service would involve the production of new guidelines,

tasks lists and cards, and other support material and documentation. In addition, retraining of all the flight attendants would be required and this would be a major task even for a relatively small airline (Mahomet, 2001:1).

A key factor in determining the type of meal service is the aircraft type. The two basic types of aircraft vary with respect to design and interior. Narrow-bodied aircraft have a single aisle with passenger seats on either side or galleys at the front and rear, adjacent to the doors. Wide-bodied aircraft have twin aisles and three sets of seats, with as many as seven separate galley areas located near access doors. In South Africa, on both the narrow and wide-bodied aircraft, the flight attendants move the food and beverage trolleys along the aisles delivering trays to passengers as required. Careful planning and thorough staff training mean that it is possible for 400 passengers on a 747 to be serviced with cocktails, a three/four-course main meal with wine or other beverage, and a hot drink in about 90 minutes (In-Flight Service Academy, SAA, 2002:3).

It is not possible to offer the same level of service as experienced by first- and business-class passengers because of the greater number of passengers in Economy Class. Trays are stored in and distributed from trolleys, which are moved along the aisles. At the onset of service, trolleys are moved to the appropriate locations so that service can start simultaneously from the back row of the section moving forward and from the first row of the section moving backwards.

On some aircraft, two flight attendants will work from a single trolley, but commonly there would be four trolleys in use. The attendant pulling the trolley will hand out trays and the one pushing it will offer beverages. The flight attendants need to coordinate and assist each other so that no passenger is kept waiting for either their tray or drinks. Sometimes a half-size trolley is used by a single flight attendant. This method allows service to start at eight places rather than at four and helps to reduce the waiting time for the last passenger served (In-Flight Service Academy, SAA, 1999a:26).

3.6 CONCLUSION

The stakeholders in the in-flight catering industry must consider many operational factors during the planning process of in-flight catering. Each airline has their specific

requirements pertaining to the in-flight service that must be provided to meet the demands of their passengers. Caterers such as ACI has a total of 30 different airlines whose requirements must be fulfilled.

Airline kitchens depend on buy-in ready-to-use products to reduce food production to meet supply chain demands. Airlines have great input in buy-in ready-to-use supplier selection. The result is too many production options and reduced standardisation, which is essential for this operation to be successful.

The lack of standardised operations is one of the main obstacles that prevent the achievement of the strategic objective of any supply chain, namely improved customer service. In order to recommend changes to ensure better customer service the environment of each stakeholder is analysed in detail.

ACI cater to both local and international airlines. A change in a product option has major logistic implications, for example, the disposable meal option that was the replacement of the generic meal tray. SAA holds a 49 per cent share in ACI. According to surveys conducted SAA currently does not meet customer demands and profit margins are not what it can be.

The operational processes of ACI were described in detail, from determining the menu options to the last step of the process, which includes dish washing. The duties and responsibilities of flight attendants were explained to illustrate the complexity of the environment in which the flight attendant must perform their duties.

Although customer service is important to an airline, the main responsibility of the flight attendant is to act as a 'safety officer' for the airline. After the completion of the so-called safety duties, flight attendants take up the responsibility of providing in-flight service to passengers in an a very complex environment with insufficient packaging, catering utensils and galley equipment to ensure satisfactory customer service.

The aim of this chapter was to uncover the complications of implementing changes to a supply chain by analysing all the operational processes. Chapter 4 will investigate and identify the packaging, catering utensils and galley equipment used in the operational process that have an impact on the proper functioning of the supply chain.

CHAPTER 4

PACKAGING, CATERING UTENSILS AND GALLEY EQUIPMENT USED IN THE IN-FLIGHT SERVICE ON BOARD AIRCRAFT

4.1 INTRODUCTION

In this chapter, the components on operational level which are under study, namely the packaging, catering utensils and galley equipment used in the execution of food and beverage service on board, are described and discussed. Findings from Dunbar (1994:10-11) clearly indicate that customer research shows concern for appropriate food conforming to national, regional and cultural standards. Equally important are presentation, hygiene, environmental consciousness and responsible packaging as well as choice and novelty.

Although businesses today increasingly focus on product customisation to achieve a competitive advantage this often proves difficult to achieve in the in-flight catering industry as a result of the complexity of the overall supply chain. A modular product approach could offer a solution to this problem. With a modular approach products and/or components thereof can be standardised, shared and reused in a range of products. In this way new products could frequently be launched by combining and interchanging different qualified modules from the existing designs with a short lead time.

Service levels on aircraft vary widely, based on the level of competition, flight time, aircraft type, and class of service. Airline products should be seen as a constellation of services matching, to a greater or lesser extent, the consumer's requirements (Driver, 2001). Most of the airlines have reduced the level of service provided to passenger on short-haul flights. All these developments have impacted on flight service levels and on galley configurations and design. As catering requirements decrease, and the proportion of Economy Class passengers increase, this will affect the space allocated to special catering equipment (Jones, 2004:246).

4.2 PACKAGING

Packaging is an important trade in the industrialised part of the world and is becoming more important for logistic purposes in developing countries (Rundh, 2005:1). The value of the global packaging market is estimated at 500 billion US dollars, accounting for 1-2 per cent of the gross national product (GNP) (Packforsk, 2001). The food industry is the largest single end-use market accounting for 35 per cent of the global packaging industry (The Packaging Federation, 2004).

According to Löfgren (2005), as the expectations of customers increase, packaging becomes more important because it can be used to provide different service dimensions (for example, information and functions). From a service perspective, to understand packaging requires firstly a focus on customer requirements rather than on product requirements. The total offer, from a service perspective is composed of three parts: the physical packaging, prerequisites for service, and the content of the packaging. The intangible information and functions of packaging can also be understood as prerequisites for service. For example, instructions could be written for passengers explaining how to use products.

4.2.1 Packaging defined

The words package and packaging have different meanings, intended to convey different images. The package is the physical entity that actually contains the product. Packaging is the integration of the physical elements through technology to generate the package (Brody & Lord, 2000:153-154).

Packaging can be defined as “those activities in the product decision which pertain to the design, manufacturing and filling of the container or wrapper with the product item, in such away that the product item can be protected, stored, handled, transported and identified effectively and marketed successfully” (Strydom, Jooste & Cant, 2000:216).

According to Vogt, Pienaar and De Wit (2005:134), packaging is the material in which a product or a group of products are wrapped and consists of the containment, protection, apportionment and unitisation of goods. It adds to the convenience of customers and provides them with the necessary information regarding the packed

goods. Packaging further enhances the handling and appearance of goods, which leads to an improvement in the flow of goods through the logistics channel.

4.2.2 Packaging categories

In this study, packaging includes all packaged items represented to the passenger in in-flight catering service. Levy (2000:54) identifies three main categories of packaging, namely primary, secondary and tertiary packaging.

- Primary packaging of a product is the first and main line of protection – the material which is in direct contact with the product. It represents the barrier between the product and the ‘hazards’ of the external environment.
- Secondary packaging may or may not also be part of the product which is sold to the customer and there may be more than one layer of secondary packaging – each carrying out a specific function in the distribution chain. Secondary packaging unitises the primary packaging providing both the retailer and consumer with a more convenient means of handling the product. It can also help to protect the primary packages from another, and thus protect the product (Rundh, 2005).
- Tertiary packaging (distribution packaging) ensures the safe and efficient delivery of products from their point of manufacture to the next point in their distribution chain which may be a warehouse, distribution centre, the retailer or even the customer.

The first two categories include mainly consumer packaging, on which this study focuses. An effective package must have the ability to meet the physical demands of the distribution and end user (Twede & Parsons, 1997:23). Consumer packaging used in the retail sectors use aspects such as appearance and graphics to compete against other brands. In this sector packaging has to fulfil the role of the silent sales man, and extend the shelf life of products. Rundth (2005) explains that packaging has the function of displaying the product on the shelf and attracting the customer’s attention to make a choice among many competing products.

This begs the question whether the above features are necessary in in-flight catering since passengers do not have the opportunity of exercising a choice. Given the

environment in which flight catering takes place, it can be reasoned that costs can be reduced considerably by using alternative packaging since the packaging used in in-flight catering does not have to conform to the standards in terms of branding and display required from retail packaging.

The packaging used in in-flight catering should be designed with a different mind set to what is required when designing packaging for the retail sector. Attributes important for retail packaging, for example branding, has to stand out clearly against any other information on the pack. The pack shape, colour and graphics are important (Stewart, 1996:70). The unit pack has to be designed to adhere to merchandising requirements such display- and shelf utilisation.

Twede and Parsons (1997:23) point out that throughout the logistical system, packaging design should be integrated to optimise cost, maximise productivity, and minimise damage and handling. The more complex the system, the greater the need to study the system, including its handling methods, facility dimensions, damage source and communication needs, before designing package, in order to facilitate integration.

Much of the retail packaging used on board does not suit the environment in which it is used. On-board passengers have to accept what is given to them. The environment does not allow for variety; customisation and branding are not as important as in the retail sector. Many passengers are from foreign countries and are not familiar with the popular brands of South Africa.

Buy-in ready-to-use products and the packaging of these products are not designed to fit the galley equipment on board. These products are therefore not convenient to handle by the flight attendant and passengers in the environment on board.

4.2.3 Packaging and the supply chain

Packaging plays a significant role in the food supply chain and it is an integral part both of the food process and the food supply chain. Food packaging facilitate, easier distribution. It protects food from environmental conditions, such as light, oxygen, moisture, microbes, mechanical stresses and dust. Other basic tasks include adequate labelling to provide information to the consumer, and ensure convenience

to the consumer, e.g. easy opening, re-closable lids and a suitable closing mechanism. Basic requirements are good marketing properties, reasonable price, technical feasibility (e.g. suitability for automatic packaging machines, seal-ability) suitability for food contact, low environmental stress and suitability for recycling or refilling (Ahvenainen, 2003:5).

Ahvenainen (2003:5) further points out that a package has to satisfy all the above requirements effectively and economically. He states that some requirements and demands are contradictory to each other; for these reasons a modern food package should be optimised and integrated with the food supply chain.

Today, there is an increasing tendency to regard packaging as part of a larger integrated system involving stakeholders throughout the whole supply chain – a system consisting of the different packaging levels and other logistics activities such as warehousing and transportation, materials handling and inbound logistics operations (Johnsson, Lorentzan, Olsmats & Tilander, 1999). By adapting logistics and packaging activities to each other, the packaging becomes more efficient in fulfilling its logistics role (Bowersox & Closs, 1996). For example, it is claimed that good packaging interfaces well with the organisation's materials handling equipment and allows efficient utilisation by both storage space and transportation cube and weight constraints (Stock & Lambert, 2001:462).

De Kruijf, Van Beest, Rijk, Paseiro, and De Meulenaer (2002:143) identify two packaging systems, namely active packaging and intelligent packaging. Active packaging changes the condition of the packed food to extend shelf-life or to improve safety or sensory properties, while maintaining the quality of the packaged food. Intelligent packaging systems monitor the condition of packaged goods to provide information about the quality of the packaged food during transport and storage.

Product design, packaging and logistics are highly interdependent, and together they have a great impact on supply chain activities. It has been recognised that the product design can make excellent logistics possible or impossible since it strongly affects logistics in terms of modularisation, staking, handling, packaging manufacturing, transportation, etc. (Bowersox, Close, Bixby & Cooper, 2002:25). Gladde, Hakansson, Jahre, and Persson (2002) argue that product designers should

consider the physical infrastructure in product development, since the design affects logistics activities in the supply chain. Hatch and Badinelli (1999:77) state that product design must include consideration of the impact that design decisions will have on operations, maintenance, transportation and supply.

Changes to a supply chain can only be implemented if problems are identified and analysed. In this study, the following variables/components on operational level namely packaging, catering utensils and galley equipment will be discussed.

4.2.4 Packaging supply chain

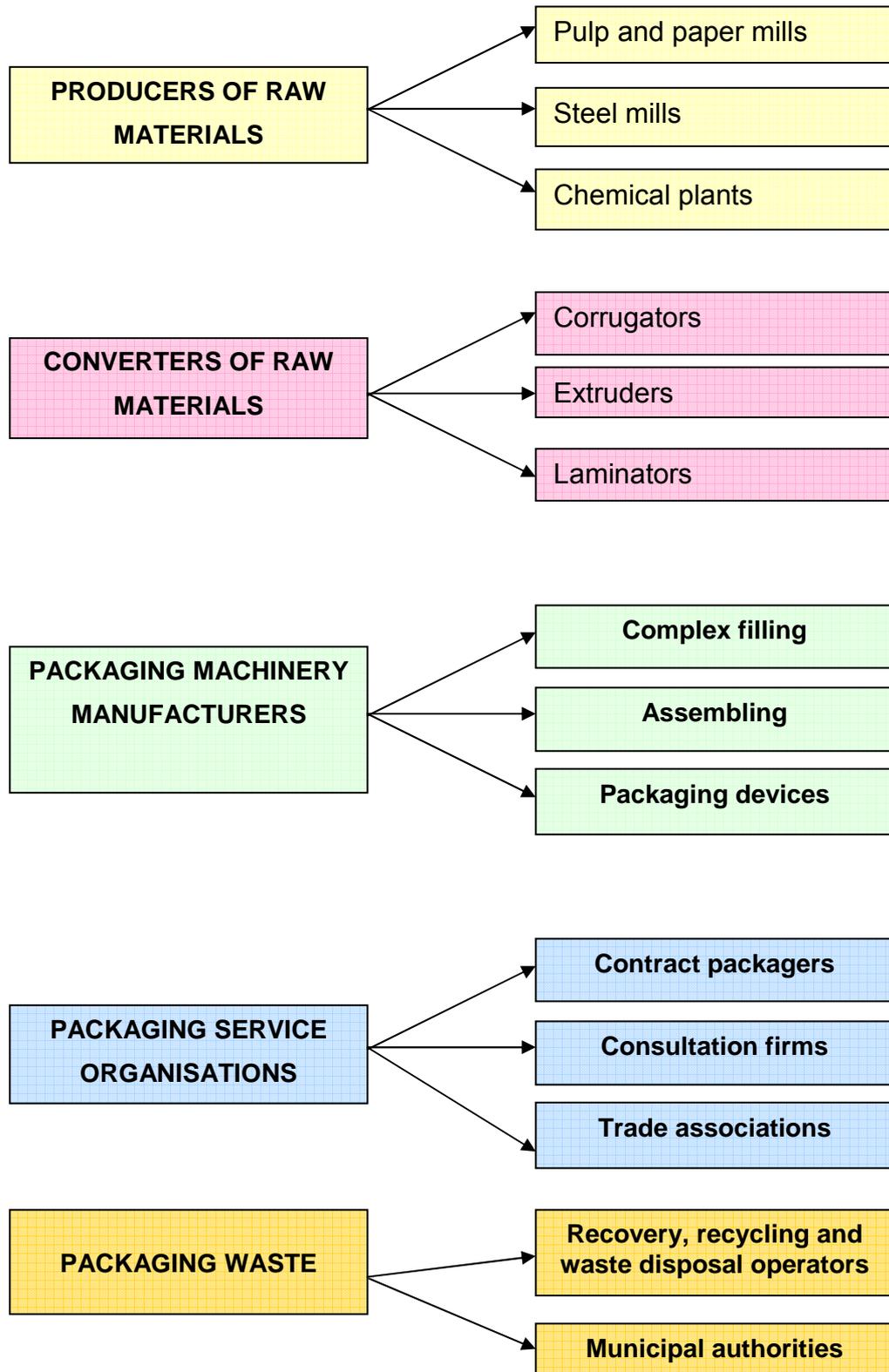
Levy (2000:11) points out that a packaging chain exists, encompassing all the economic operators that extend from the raw material suppliers to the packaging manufacturers and converters to the packaging users – packers and fillers – to the distribution, wholesale and retail trade. In reality, this chain extends to all those who have an economic interest in packaging and its output, including local or municipal authorities as well as recovery, recycling and waste disposal operators.

Rundh (2005) explains that the core of the packaging industry is the manufacturer of packaging materials and packaging machinery. However, in the business network there are also sub-contractors, depending in which industry the products are sold. The main customers are the companies who pack or fill their own products. A lot of development work is executed to design the appropriate packaging for the fillers. This development work is either done by the suppliers of packaging material or be an independent sub-contractor in close relationship with the buying company and their packaging experts. Suppliers have also created their own packaging design studios in order to develop efficient packaging solutions in relation to requirements from buyers and end customers.

Changing the packaging currently used will be a major process involving various stakeholders within the supply chain. Figure 4.1 on the next page is a schematic outlay of the packaging chain illustrating the various stakeholders involved in the manufacturing of packaging. This figure is included to illustrate how involved the changing of a specific package can be.

The packaging chain can be segregated into the following major segments:

Figure 4.1: The packaging supply chain



Source: Own compilation

4.2.5 Functions of packaging

According to Lee and Lye (2003:2), three quarters of all finished goods require packaging, with the food and drink industry making up 90 per cent of that packaging market. Product packaging is the science, art and technology of protecting products for the purposes of containment, protection, transportation/storage and information display.

The various functions that a package must fulfil is identified and discussed below.

4.2.5.1 Protection and preservation

Brody and Lord (2000:154) claim that protection is the most important function of packaging. Protection means the establishment of a barrier between the contained product and the environment that competes with man for the product. The choice of suitable packaging involves a number of considerations:

- Will the package provide the optimum protection for the content throughout the distribution and shelf life?
- Will it contain the product adequately – keeping harmful outside influences out, and the product in?
- Will it adequately describe and market the product? (Levy, 2000:53).

Packaging is important as protection with regard to micro-biological safety. As foods are spoiled principally by the action of micro-organisms, packaging should provide protection. Jones (2004:173) states that micro-organisms or living creatures found in spoiling food multiply, mature, and die, and during their life cycle, 'eat' nutrients and 'excrete' waste products which can be beneficial or harmful to humans. Thermal processing destroys the micro-organisms that cause harmful food spoilage when food is held at room temperature. Some organisms (yeast and moulds) are killed at temperatures below the boiling point of water. Others are extremely heat-resistant, even to the point of forming dormant spores under adverse conditions. These spores do not multiply, but can survive extreme conditions. When the environment again becomes favourable for growth, the spores regenerate to normal viable cells. To kill spore-forming organisms requires temperatures in excess of that of boiling water.

The logistical system is designed around aircraft schedules, and microbial safety is most threatened in the event of aircraft delays. Catering suppliers will check the temperature prior to dispatch and upon loading onto the aircraft. Once flight attendants has signed for the receipt of meals, the responsibility for microbial safety becomes the airlines (Jones, 2004:203).

4.2.5.2 Containment

According to Brody and March (1997:307), the basic purpose of packaging is to contain the product. Packaging permits products to move from their source to the customer, supplying use value to products that are otherwise useless to the customer, who is usually remote from the source. Paine and Paine (1992:5) further note that packaging must keep its contents secure between the end of the packaging line and the time when it is consumed.

The sealing methods of various packages are a means of providing containment (Brody & March, 1997:210).

4.2.5.3 Cushioning

Cushioning may be required to protect the product from shock. Such protection is effected before packaging by surrounding the article with a compressible material which absorbs part of the energy of any external impact. The residual energy transmitted to the article is insufficient to cause damage. A second option to cushion the product is to distribute the shock over the whole surface of the article so that shock loading at any one point is below that level likely to cause damage. This is achieved by constructing the package in the form of a contour pack, closely following the outline of the product. A third option is to arrange cushioning so that any shock is taken only by the most robust portion of the contents (Byett, Bruyens, Glover, Oakley, Smithard & Tinkler, 1997:64-65).

4.2.5.4 Sanitation

Packaging helps to maintain the sanitary, health, and safety integrity of contained products. Processing and packaging are intended to stabilise food products against degradation during distribution. One purpose of packaging is to reduce food spoilage and minimise the environmental losses of nutritional or functional value of the product

(Brody & Lord, 2000:155). However, packaging can contain dangerous micro-organisms which could contaminate the contained product.

4.2.5.5 Unitisation

Unitisation denotes several unit packs which are consolidated into a larger handling unit and together with a securing medium, form a bundle. The securing medium may add strength to the individual units in the bundle. When the bundle is designed for one handling, the bundle is referred to as a unit load. The process of building up and securing a unit load is termed unitising (Brody & March, 1997:434).

Klevås (2005) argues that package design and the possibility of unitisation are greatly influenced by the product design. The aspects of minimising air in the primary packaging, reducing weight or shipping items unassembled are directly dependent on the product design, and have to be considered early in the product development process.

4.2.5.6 Communication

Stewart (1996:6) comments that identification in terms of packaging includes more than just the identification of the product. It must establish brand identity, the provision of information on how the product is used, and the promotion of its sales.

Various packaging served to passengers on board are different from the normal retail packaging. There are certain packages that either have no information or limited information with regard to the contents and ingredients.

4.2.5.7 Labelling

An important factor in packaging is labelling. The term label refers to any written, printed, or graphic matter on the container. Labelling includes the label and any other written, printed, or graphic matter accompanying the product in commerce. Most label information is required to appear on either the 'principal display panel' Encyclopaedia of Food and Culture (2006).

Food labels serve many purposes. The label identifies what the product is and how much of it there is, alerts individuals to the presence of allergenic ingredients, and

provides nutritional information to enable consumers to make healthy dietary choices Encyclopaedia of Food and Culture (2006).

In terms of labelling, the use of symbols instead of language to indicate ingredients or how packaging should be used could be considered. Many of the regulations governing food labelling are extremely detailed, often specifying the placement and minimum type size of required information.

A new regulation has been drafted for food labelling, replacing R2034 of October 1993. In future, all mandatory compositional standards will be subject to the conditions for nutrient content claims. One of the most outstanding features of the new legislation is the number of nutritional principles interwoven into regulations dealing with claims. Suppliers will have to realise that marketing decisions that marketing decisions should be subjected to the authority of scientists. Technical staff (dietitians and food scientists) should have greater input and authority, especially where health and nutritional claims are made on labels (Loubser, 2005c:17).

Government will stipulate serving sizes as a separate appendix to prevent manufacturers from manipulating serving sizes to create false impressions. It is specified under which circumstances and at which levels the addition of water to a product has to be declared on the label. In the past the regulation only specified that more than 5 per cent added water had to be declared (Loubser, 2005c:18).

Date marking will be determined by the type of product, whether to use the 'best before' or 'use by' method of marking. The 'use by' method of marking places the toughest restriction on the manufacturer, as it implies that after this date the product is not fit for human consumption. The 'best before' date is more of a guideline for consumers, and does not necessarily imply that the product cannot be consumed (it is left to the consumer's discretion). To avoid confusion, the month should be written in letters (not numerals). Imported foodstuffs on which the marking has expired will no longer be allowed into South Africa (Loubser, 2005c:19).

4.2.5.8 *Dispensing and dispensing*

The advantages resulting from the use of an easy-opening and closing devices when required have both tangible and intangible benefits. Tangible benefits are measured

in terms of potential rand savings through faster speed of box opening, content removal, price marking and coding, reduction in damage to contents in opening, and the opportunity to develop convenient fractional sales units with resultant packing savings. Intangible benefits assist in maintaining and creating consumer goodwill and acceptance through ease of opening and possible display features. Other intangibles include elimination of inconvenience through return of merchandise damaged in opening, reduction of injury to personnel in case of opening, and the availability of usable box section for store use (Friedman & Kipnees, 1997:20).

4.2.5.9 Tampering

Brody and Lord (2000:158) point out that the intentional opening of packages to taste-test, smell, or examine the contents is not uncommon and is obviously unsanitary. Tamper-evident-resistant packages are not required by law or regulation for foods, but many food packages nevertheless incorporate such features to deter intentional unintentional tampering.

This important feature is not applied to most of the packaging utilised in in-flight catering. In some instances it is common practice to open the package to observe the contents and touch the contents to determine the temperature.

4.2.5.10 Environmental soundness

Ergonomic and environmental issues are of the utmost importance to be competitive in the international market (Rundh, 2005). Packaging-related environmental issues have received wide-spread media attention. At the most altruistic level, to preserve the planet, it is necessary to minimise the amount of packaging used, and eliminate its use where possible. Cost savings can be achieved through the careful use of materials, in response to the perceived needs of a more environmentally aware market (Stewart, 1996:6).

Packaging is composed of materials ultimately derived from the earth. Most packaging is used only once and discarded, converting the earth's natural resources, to less available or useful products (Brody & Lord, 2000:162-163). Because there is no purpose for further use, packaging is discarded in the environment. The cost of

removing litter from the environment is usually borne by the tax payer and the consumer.

The design and choice of packages has become an essential strategy for the reduction of waste in order to reduce negative environmental impact (Jahre & Hatteland, 2004). Making packages more environmentally friendly does not necessarily make it more difficult to protect or handle the product, or make the package less appealing to consumers (Prendergast & Pitt, 1996:69).

4.2.5.11 Convenience

A correctly designed package must have customer-convenience features, which take into account the end user and the environment in which the product is going to be used (Stewart, 1996:59). Thus, it is important to consider the work of the flight attendant, and as such the packaging should provide the right level of protection for the product, while at the same time permit the product to be readily accessible, particularly in the confined spaces of the aircraft cabin. It needs to contain the product in a convenient quantity, that is easy to handle by the flight attendants and passengers alike, and which satisfies but at the same time avoids unnecessary waste.

4.2.5.12 Legalities

Packaging must adhere to the legal requirements applicable in countries. The use of certain packaging materials might be prohibited in specific countries. The contents of the label may be governed by various regulations under the Food stuffs, Cosmetics and Disinfectants (Byett, et al. 1997:113).

Since the packaging used in in-flight catering is transported to various countries around the world it is important to take the legal requirements into consideration when deciding on such packaging.

4.2.5.13 Disposal

The ability of packaging to be disposed after use is an important feature that is often overlooked. Customer and flight attendants are often frustrated by unsuccessful attempts to dispose of the empty package. Plastic-film materials, in particular, resist

disposal in the bin by expanding rather than being compressed (Stewart, 1996:60-61). It is thus important for packaging materials to have dead-fold properties, enabling the disposal process to take place easily.

4.2.5.14 Cost effectiveness

Brody and Lord (2000:162) claim that there are many components of packaging such as materials and equipment etc, that contribute to increased cost of packaging. At the outset, the cost of packaging may be greater than the cost of the product without packaging.

One of the most effective methods of achieving greater profit is that of reducing the overall packaging costs, and in particular reducing the packaging materials costs (Stewart, 1996:109). Most companies focus on increasing brand share, developing new products, and reacting to competitive challenges by adding special features to the packaging.

However, true energy costs are notoriously difficult to calculate, and they are often not taken into account. Of greater significance is the capacity of the transport mode to carry maximum cargo. Thus, convenient lightweight packaging will result in increased efficiency of distribution and savings in fuel costs, and for the manufacturer vehicle costs (Stewart, 1996:149).

4.2.5.15 Handling ability

According to Byett et al. (1997:52), hazards for the product during loading and unloading aims not only at dispatch and receiving points, but also at intermediate transshipment points in the distribution cycle. The main hazards in loading and unloading are drops and impacts, while packs are often pierced or torn by the forks of forklifts and similar handling conditions. Attention to internal handling methods and equipment can minimise hazards which are under the packaging company's control. However, most hazards in the distribution cycle are not controlled.

The way products are handled in the supply chain of in-flight catering are different in many ways that the handling activities to which products are exposed in the normal supply chain.

4.2.5.16 Visibility

In some instances the contents must be visible to the user. Flight attendants need to determine what the contents are that they are going to serve to the passengers.

Brody and Lord (2000:164) argue that packaging encloses the product the consumer cannot directly touch, test, feel, smell, or taste the product. Thus, the consumer cannot obtain sufficient information on the nature of the product to make an informed purchase decision. Various packaging used in-flight catering do not have proper labels for identification and/or the packaging itself are not equipped with visibility features for identification of contents.

4.2.5.17 Machine ability

The majority of modern retail packages and transport packages are erected, filled, closed and collected on machinery operating at speeds of 1 000 units and more per minute. The equipment must therefore perform without too many stoppages, or the process will be wasteful of materials and uneconomical to the producer. This will affect the cost to the end user. (Paine and Paine, 1992:6).

The selection of packaging materials require that the characteristics and capabilities of the forming and filling machines be identified and these matched with the characteristics and capabilities of the packaging materials.

4.2.5.18 Aesthetics

The package's overall features can underline the uniqueness and originality of the product. In addition, quality judgments are largely influenced by the product characteristics which packaging reflects. If the packaging communicates high quality, consumers assume that the product is of high quality. If the package symbolises low quality, consumers transfer this low quality to the product itself. The package communicates a favourable or unfavourable implied meaning about the product (Silayoi and Speece, 2004). Underwood, Klein, and Burke (2001:402) suggest that consumers are more likely to imagine aspects of how a product looks, tastes, feels or smells when they look at a picture of a product on the package.

To produce high-quality packaging requires expensive machinery and materials which implies large financial outlay. It is questioned whether the mentioned features are important for the products used in in-flight catering.

4.2.5 Criteria packaging needs to satisfy

Certain criteria are important when designing consumer packaging.

Requirements of the various stakeholders have to be considered when designing packaging for the in-flight catering industry. According to Jones (2004:48), 'airline packaging' or retail packaging is the packaging destined for the aircraft and which the passenger will use. Airline packaging must satisfy the following criteria:

- Firstly, the materials used should have no harmful or sensory effects on the food and be suitable for storage at chilled and ambient temperatures, or heated, if required.
- Secondly, besides legal requirements that labels must adhere to, labelling needs to be effective and informative. Labelling should correctly identify the product and not be misleading but moreover provide instructions for use.
- Thirdly, products must look attractive and fit in with the overall marketing strategy of the airline. Fourthly, the image conveyed by the packaging must conform to the overall image being developed and portrayed by the airline.
- Finally, consumers want packaging that is easy to open and dispense from. Many manufacturers persist in ignoring the consumers' need for making the product easier to use (Stewart, 1996:58).

4.2.6 Designing successful packaging

According to Vogt, Pienaar and De Wit (2002:114), it is important to take cognisance of the locations where a product will be found during its lifetime when designing packaging. For this study, locations include areas such as the catering plant, loading vehicles, and the aircraft galley as well as the passenger seat. The airline industry is a mature market which has sophisticated and experienced customers who perceive little difference between different offerings, and who are also sensitive to prices.

4.2.7.1 Product assessment

The initial stage in the design of packaging requires a through analysis of the product the packaging is required for. During the designing phase of packaging various aspects have to be considered:

- The nature of the product – materials from which it is made.
- Size and shape of the product:
- The effect of moisture and temperature changes on the product, and whether it will absorb moisture or corrode, etc. (Paine & Paine, 1992:8).

According to Rundh (2005), packaging can be considered an integral part of the product. Depending on where in the supply chain the business is conducted packaging can either be in the form of a sales or primary packaging which constitutes a sales unit to the final consumer. For many consumer products a secondary packaging is used for distribution purposes. In most cases a transport or tertiary packaging is used.

The environment in which in-flight products are consumed and used and the nature of some products are different than those used in normal circumstances. The effect between product and the package, effect between package and environment has to be determined.

4.2.7.2 The hazards of distribution

The hazards in the supply chain that will and can affect the condition of packaging must be identified. Paine and Paine (1992:8) point out that it should be determined what happens to the package on its journey to the consumer. It is necessary to know the method of transport, the probable storage conditions, and the duration of both journey and storage.

Once the hazards are identified it is important to design packaging in such a way that it can protect the product throughout the supply chain. For instance packaging must be strong enough to be stacked on top of each other in while in storage (Stewart, 1996:15).

According to Klevås (2005) nearly all logistics activities are affected by packaging. Utilities, effective distribution and materials handling require a proper packaging solution. But packaging is usually not considered until the product design has been decided upon, which limits the packaging design. This may hamper possible logistics solutions throughout the supply chain.

4.2.7.3 Marketing requirements

According to Jeen-Su Lim and Vonderembse (2005:180), packaging services the marketing function through promotion, providing product information, and allowing customers to use the product conveniently. They further argue that many manufacturers and their distributors have fallen behind in improving internal processes to increase efficiency and customer satisfaction, especially when it comes to implementing technology. Rundh (2005) points out that the packaging of the product represents the products for the company. As mentioned before, the package has taken the role of the 'silent salesman'.

This is an important feature in the retail sector where the product is placed on shelves among many competing products. Here the packaging may be the only distinguishing factor. However, where in-flight catering is concerned, the flight attendant presents the products to the passenger, therefore requiring less focus on marketing through packaging.

4.2.7.4 Production methods

The method/s of production play a major role in the selection of packaging. It must be determined whether the packaging materials can be handled on existing machinery or sometimes even whether an existing machine will do the entire job. There is also the question of how efficient the packaging line will be if a particular size and/or shape of package are chosen. The degree of skill required by the packaging line operators may also be an important factor (Paine & Paine, 1992:17).

If it is not possible to manufacture the chosen packaging on existing machinery, additional machinery would be required. This would result in significant capital outlay.

4.2.7.5 Selection of packaging material and machinery

A determining factor in the selection of packaging depends on the ability of the packaging material and packages to 'perform' during all stages of production. The packaging materials must feed properly into the forming section of the machines. The materials and package designed must have the ability to enclose the product adequately and be sealed efficiently. The final packaged item must then be collated and placed into a transport container, and finally into a unit load or into a freight container for despatch, without the production of large quantities of waste (Paine & Paine, 1992:22).

Stewart, (1996:16) mentions that aspects that have to be considered include the capability of the material and final package to be sufficiently formed in to a package, sealed, labelled, canned, wrapped at high speed on packaging machinery.

According to Paine and Paine (1992:8), compatibility of the packaging material is important. It has to be considered whether the product is likely to be affected by any of the possible packaging materials.

4.3 CATERING UTENSILS

For the purpose of this study all the additional items that do not fit into the definition of packaging or galley equipment, but that is offered to passengers during in-flight catering or used by the flight attendants in the execution of the service, will be referred to as catering utensils.

A brief description of some of the catering utensils used will be provided. The different types of utensils can be placed into the following categories.

4.3.1 Silverware and flasks

Silverware refers to all the stainless steel items such as tea and coffee pots, milk and water jugs, and ice buckets. The durability and cost effectiveness of stainless steel items make it a popular choice for in-flight catering. The silverware arrives on the aircraft in a polyethylene plastic bag and is then loaded in a metal bin in the galley, before and after use (In-Flight Service Academy, SAA. 1999b:48).

Coffee and tea are made in the stainless steel pots and then transferred to the plastic flasks loaded. The flasks are made of a durable plastic with a square shape to facilitate easy storage. The content is sealed by a lid (In-Flight Service Academy, SAA. 1999b:48).

4.3.2 Service gear

Service gear refers to items mainly used during the beverage service and include such items as ice tongs, bottle openers, swizzle sticks and drip mats. Most of these items arrive on the aircraft in their original packaging. In most instances items must then be removed from the original packaging and re-packaged into the containers used during the beverage service (In-Flight Service Academy, SAA. 1999b:51).

4.3.3 Crockery

Crockery refers to all plates, side plates, pudding bowls, cups and saucers' etc. Non-disposable flight crockery and cutlery are known as 'rotables'. Crockery may be made of melamine-formaldehyde copolymer (a durable plastic which is less prone to breakage). However, crockery is increasingly manufacturer of a ceramic material such as porcelain, which has a more favourable image, and mostly used for service in the premium and Economy Class on board (Jones, 2004:277).

4.3.4 Cutlery

Cutlery items including knives, forks and spoons consist of either disposable plastic or stainless steel. Although the disposable cutlery is mainly used for the Economy Class service, stainless steel cutlery is the preferred option in Premium and First Class (In-Flight Service Academy, SAA. 1999b:50).

4.3.5 Trays

All food and non-food items are placed on a serving tray, which is then transferred to the meal trolley. During the service the flight attendants remove the trays from the trolleys and hand it over to the passengers.

The trays and the utensils on the trays are referred to as the tray set generics and the various airlines around the world have their own distinct designs, size and colour of tray set generics. The tray sets also varies in Economy Class and Premium Class.

In Economy Class all the utensils on the meal tray are made of plastic. In Premium Class the trays are larger than in Economy Class and all utensils are either made of a ceramic or porcelain material. Cutlery consists of steel knives and forks (In-flight Service Academy, SAA. 1999:50).

According to Radnay (2005), there are no standard dimensions to which airlines must adhere to when designing the tray sets.

4.4 GALLEYS ON BOARD

Galleys started off as simple storage areas for equipment needed on flights. Today, these areas have been systematised through the use of trolleys and innovative equipment so that they provide the maximum of utility in the minimum space (Jones, 2004:245).

The kitchens, or galleys as they are referred to, differ considerably from normal catering kitchens. A typical aircraft galley will act as a focal point for flight attendants' service delivery to the passengers. These areas, therefore, will have to provide storage of food items, hollowware, liquor, retail goods, entertainment items, customer comfort items and amenity kits. A galley is a combination of storage area; regeneration kitchen and service section are for the use of flight attendants (Jones, 2004:52).

4.4.1 Galley configuration

Like any kitchen, a galley has to provide storage areas for holding food at safe temperatures. Galleys house equipment such as regeneration ovens, refrigerators, water boilers, and stowage bins for various food and non-food items.

All galleys are designed to receive modular trolleys and equipment according to the specifications of the airlines. There are two common standards known as KSSU and ATLAS (Jones, 2004:248).

ATLAS is an acronym which stands for Air France, Iberia (which used to be known by the international airline code of TY) Lufthansa, Alitalia and Sabena. Many years ago these airlines decided to standardise the dimensions of their meal trays and later, following on from this, to all use the same trolleys and other kitchen installations such

as ovens, water boilers refrigerated compartments. This agreement, in the form of an extensive catalogue, was intended to enable reciprocal catering as air traffic increased and more meals, drinks and consumer goods were required (Gründer, 2006).

A second standard, the KSSU agreement, came into being once the airlines KLM, SAS, Swissair and UTA agreed to standardise certain dimension of equipment (Gründer, 2006).

The specific galley design in each aircraft is determined by the purchasing airline. It is based on factors such as the passenger capacity of the aircraft, the aircraft range, its intended use, and the catering policy of the airline. For example, a typical ATLAS standard single-width oven will accept 32 entrée dishes, and therefore a 90-seater aircraft would need three such ovens if a hot meal service is being provided. Meal trolleys have a capacity determined by the tray size. A small snack may only require a one-third sized tray, while half- and full-sized trays would be used to accommodate full meals (Jones, 2004:250).

Due to the weight problem, aluminium is widely used in the construction of galleys. A major part of any galley consists of spaces or inserts to receive items such as food trolleys, coffee machines, ovens, and refrigerators and ovens. The manufacturers of such equipment therefore will ensure that their products weigh as little as possible, while offering the durability required by aircraft, and meeting the design and safety standards set by the Civil Aviation Authority (CAA). Each subsection of a galley has a predetermined and carefully marked maximum load capacity and these will be considered when the airlines brief suppliers on their requirements (Jones, 2004:249). Some equipment, such as sinks, water boilers and ovens, may be permanently installed, but in other cases, an airline may choose to adopt a modular system, which will give some potential flexibility of use (Jones, 2004:249).

4.4.2 Galley equipment

To facilitate the stowage and subsequent delivery of products to passengers, a system of trolleys or carts and storage bins was developed which forms the basis of the service system.

In line with the terminology used in the transportation sector, the storage of goods is commonly known as 'stowage'. Items are not simply placed in storage units but also made secure to protect their movement during transportation in the supply chain (Jones, 2004:245).

4.4.2.1 *Regeneration ovens*

Ovens are provided on the aircraft for heating meals. The centre of any hot meal provision is the regenerating ovens. These usually use a system of forced air circulation. As service levels have generally been designed to offer a service to all passengers simultaneously, the passenger capacity of the aircraft determines the oven capacity required. A standard ATLAS oven holds 32 entrées. As all meals are served together, this determines number of ovens required. An oven will normally take 25-35 minutes to heat an entrée to the service temperature, depending if the product is chilled or frozen. It can then be set to hold meals at that temperature until required (Jones, 2004:254).

4.4.2.2 *'Butterflies'*

'Butterflies' are oven racks which are brought on board by ACI and placed directly in the oven. Oven racks can be constructed of either aluminium or stainless steel sheets of various thicknesses. In both versions, the front side of the racks is framed by a solid extrusion and equipped with reinforcement strips on both side panels to form a rigid unit. The rear panel cut-out fits the oven fan and will accept the oven temperature sensor location of the oven. Integrated oven tray runners inside the unit accommodate eight oven trays. The oven trays are designed to carry standard size casserole dishes and to fit any size oven rack (In-Flight Service Academy, SAA. 1999b:47).

4.4.2.3 *Refrigerators*

The need to hold foods high in protein at low temperatures is greater within an aircraft environment than in any other catering establishment.

The duration of long-haul flights is sufficient for passengers to suffer the effects of an excess intake of harmful micro-organisms through their food consumption. Hence such foods have to be held at safe temperatures. Most caterers will supply foods at

or below 5°C and then a variety of methods will be used to hold the food at or below this temperature (Jones, 2004:252-253). On board SAA aircraft some galleys are equipped with refrigerators. Due to space constraints refrigerators cannot be installed on the smaller aircraft. Instead, plastic bins with ice are loaded to maintain the temperature of various food items.

4.4.2.4 Boilers

Boilers are provided to supply hot water for tea and coffee services, rinsing pots and jugs. Flight attendants are expected to ensure that boilers are always filled with water, as the elements may burn out and become damaged when left empty while switched on (In-Flight Service Academy, SAA. 1999b:52).

4.4.3 Catering equipment on board

Catering equipment needed on the aircraft varies according to the service provided on a specific flight. The types of equipment required in general and the used for it is briefly will be briefly discussed below.

4.4.3.1 Trolleys

All the requirements for in-flight service such as food and beverages are loaded into the trolleys at the supplying outlet; trolleys are then transported to the aircraft and stored in special insert bays in the galleys (Jones, 2004:246).

According to Franklin, (1980:17), the first folding-type trolley was introduced on the Stratocruiser. These trolleys had the facilities for carrying wine and liquor during a meal service. British Overseas Airways Corporation (BOAC) used an economy trolley developed by Stan Bruce, which initially consisted of two tray boxes bolted together, one on top of the other, affixed with four wheels on the side. Since then 99 per cent of the airlines have introduced this type of trolley for their economy meal service.

The Association of European Airlines, based in Brussels, determines all specifications for trolleys. Below is an example of a technical data sheet for an ATLAS meal trolley supplied by 'JET'.

Table 4.1: Technical specifications of an ATLAS meal trolley

Criteria	Specification
Sizes	Height 1.030 mm
	Length 0.810 mm
	Width 0.305 mm
Capacity	28 ATLAS trays
	14 ATLAS drawers
Structure	Aluminium sandwich panels of phenolic resin with insulation foam.
	Laminates in agreement with the internal decoration of aircraft.
	Aluminium frame with rounded corners to avoid injuries.
Door latches	1 up to 3 fixing points or basic
Brake system	Push 1 or 2 pedals actuated and released on both sides of trolley.

Source: Jones, 2004: 246

Due to the nature of flight service, all trolleys must be able to be locked into position in the galley, and fitted with foot-operated braking systems so that they do not represent a hazard during normal flight manoeuvres. Trolleys are subjected to extreme handling during the process of loading and unloading, and are therefore likely to be damaged. The nature of the construction therefore becomes important, as the airline will already have sets in the aircraft which were off-loaded at the arrival airport, and are waiting to be loaded at the destination airport. This is a large capital investment and any time-out for repairs will mean further investment in spare trolleys (Jones, 2004:246).

4.4.3.2 Types of trolleys

Various types of trolleys are carried on board. *Meal trolleys* carrying the meal trays, are equipped with rails welded onto the side panels onto which the meal trays are slid. *Beverage trolleys*, used for the storage of alcoholic beverages and non-alcoholic beverages including soft drinks and minerals, are equipped with drawers where the beverages are packed in. *Tea and coffee trolleys*, have drawers in which cups, saucers and teaspoons are packed. *Service trolleys*, are fold-up trolleys and is mainly used for tea and coffee services in Premium Class.

In order to generate additional income, airlines sell items such as perfumes, gifts, chocolates to passengers. These trolleys known as *duty free trolleys*, are meal trolleys equipped with drawers into which items are packed (Jones, 2004:247).

4.4.3.3 Waste storage

Waste consisting of non-consumed food items and used packaging, is stored either in specialist trolleys known as waste trolleys. In some cases, it is placed in plastic bags and stored at various locations throughout the aircraft where space is available, or placed in the void under the floor of the main cabin. The aircraft cleaning service personnel may have to collect waste from up to eight different locations within the aircraft, and thus increase turnaround times for the airline (Jones, 2004:254).

4.4.3.4 Storage bins/stowages

The standard ATLAS container (galley bin) is the ideal stowage facility for service items on board. The galley bin is made of aluminium and has a handle on top, making it easy to carry to and from the aircraft, and a handle on the front for easy storage and removal from the designated storage space. The standard bin has a robust aluminium shell and can be locked, providing safety and security to products (Jones, 2004:254).

The galley bins are used to store various consumable items such as baby food, tea and coffee and non-food items such as spare tray sets. Items such as coffee, tea, sugar and condiments, are stored in bins referred to as 'dry stores'. Storage bins are numbered so ensure employees place bins into the allocated storage space in the galley. Galleys are equipped with latches attached to the frame where bins are moved into for storage. The latches are pushed in an upwards position, thus blocking the bins from dropping forward and out of the designated storage space during take off and landing. (Jones, 2004:254).

4.5 CONCLUSION

This chapter comprised a detailed description of the packaging, catering utensils and galley equipment used in in-flight catering was discussed. In order to achieve the strategic objective of a supply chain, the operational aspects must be addressed since it is in these areas that problems arise.

Packaging in general can be divided into broad categories, which include both primary and secondary packaging. All packaging must have certain fundamental elements in order to ensure that the final product reaches the passenger in an acceptable condition.

Functions that packaging must perform include for instance providing protection, ensure transportation of the product and play the role of the silent sales man. Before attempting to design a package, certain requirements need to be fulfilled: product analysis must be done, material selected, shape designed, etc.

Galleys are performing an important function, but this is often overlooked. Various kinds of storage facilities and electrical equipment make up the use of galleys.

Catering utensils used in in-flight catering was identified and importance with respect to the supply chain was explained. The galley and related equipment specifications was identified and their various functions and descriptions given.

In the next chapter the methodology followed in this study will be discussed. Topics of discussion include the research objectives, research design, data collection methods followed, as well as methods and procedures followed in the application of relevant data.

CHAPTER 5

RESEARCH METHODOLOGY

5.1 INTRODUCTION

This chapter provides an overview of the research design and methodology. The basic methodological techniques and methods used during the study and how these were applied are explained. Furthermore, the purpose of these techniques and methods to obtain the relevant data is given. Various aspects relating to the particular research methods and techniques are investigated so as to determine whether it would be adequate within the broad framework of this research study.

The terms 'research' and 'methodology' first require clarification. The study of methodology is concerned with the acquisition of knowledge. It is therefore practical in nature and focused on specific ways and methods that can be applied to better understand the field and scope of study (Locke, Silverman & Spirduso, 2004:22). In the case of this study, the field and scope refer to the various methods and principles used within the general research process

Research, according to Locke, Silverman and Spirduso (2004:22), "the history of a particular study, including what the researcher wanted to find out, why that seemed with discovering, how the information was gathered and what he or she thought it all meant". According to Leedy and Ormrod (2005:2), research is a process through which we attempt to achieve systematically and with the support of data to answer a question, to resolve a problem, or achieve a greater understanding of a phenomenon.

Since this study is conducted within the business context, a definition of business research is appropriate. According to McDaniel and Gates (1998:10), "business research is the planning, collecting and analysis of data relevant to business decision-making and the communication of the results of this analysis to management".

Characteristics of this process, which is frequently called research methodology, include research originating with a question or problem and requires clear articulation

of a goal. A specific plan or procedure is developed and usually the principal problem is divided into more manageable sub-problems. “Research is guided by the specific research problem, question, or concepts and certain critical assumptions, and requires the collection and interpretation of data in an attempt to resolve the problem that initiated the research and is by its nature, cyclical: or more exactly, helical” (Leedy & Ormrod, 2005:2-3).

5.2 RESEARCH OBJECTIVES

5.2.1 Primary objectives

The researcher will conduct an in-depth investigation into the supply chain of flight catering. The main focus is on the impact of packaging, serving utensils and galley equipment which flight attendants use for serving food and beverages to passengers on aircraft, in order to identify possible shortcomings and deficiencies in the resultant in-flight service to passengers. This investigation hopes to establish a framework which can be used on an operational level to improve customer service through improved packaging, catering utensils and galley equipment.

5.2.2 Secondary objectives

Secondary objectives support the primary objectives and include a literature study of packaging, catering utensils and galley equipment used in the support of in-flight service of food and beverage. A literature study of processes involved prior, during, and after providing in-flight service to passengers in combination of researcher observations during fieldwork, will help to develop an understanding of the work environment of flight attendants.

The aim of the study is to determine the actual problems that flight attendants experience in the execution of their duties in in-flight service with regard to the packaging, catering utensils and galley equipment. Based on the findings obtained through research, suitable and effective packaging, catering utensils and galley equipment can be designed and produced to suit the changing needs of in-flight catering.

The theoretical framework developed through the literature study and results obtained through field work is used to qualitatively test whether the current

packaging, catering utensils and galley equipment utensils used in the execution of in-flight service on board aircrafts have been adjusted to the changes pertaining to the industry today.

A final objective is to develop an understanding of the difficulties that flight attendants face regarding current packaging, catering utensils and galley equipment used, in providing effective in-flight catering, individual interviews were conducted.

5.3 RESEARCH DESIGN

The purpose of this section is to review the research methodology followed in this study with the theoretical framework developed in the literature guiding the researcher in the next stage of the study and the development of a research design. Welman and Kruger (2001:46) state that research design is the plan according to which research participants (subjects) are recruited and information collected from these participants. In the research design, the researcher describes how the participants would be identified and approached with a view to reaching conclusions about the research problem (Welman & Kruger, 2001:46).

A case study can be defined as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (Yin, 2003:13). Case studies are, therefore, used when context surrounding a phenomenon or process becomes important – when it becomes difficult to distinguish or when there are more phenomena that are of interest than there is data available (Yin, 2003:13). In such investigations, conventional quantitative approaches fail to create the necessary understanding of the context and the embedded processes, thus requiring more approaches.

A case study is one possible research design that is flexible, direct and systematic. The flexibility and main strength of the case study lies in the fact that it allows for a greater number of research methods and reference sources to be used. If the results generated from these various methods and sources are triangulated, and the research methods are transparent, then the case study can be reliable and valid as any of the more quantitative research designs (Yin, 2003:32-38).

The purpose of the case study methods is to obtain information from one or a few situations that are similar to the research's problem situation (Zikmund, 2003:91). The purpose of this study is to record the impact of packaging, catering utensils and galley equipment in the provision of excellent in-flight service by flight attendants. A case study would therefore be a suitable research design and, more specifically, a case study of a descriptive-explanatory nature. Through the case study method, the experience and difficulties faced by the flight attendants will be documented.

5.4 QUALITATIVE RESEARCH

The nature of the data dictates the methodology. If the data is verbal, the methodology is qualitative, if it is numerical; the methodology is quantitative (Leedy & Ormrod, 2005:94). Since the methods of collecting data for this study included such methods as fieldwork, observation and interviews, the researcher deemed a qualitative approach most suitable for this study.

According to Malhortra and Birks (2006:132), qualitative research is an unstructured, exploratory research methodology based on small samples that provide insight and understanding of the problem setting. According to Eisner (1998:141), a qualitative study:

1. Tends to be field focused.
2. Considers the self as an instrument. The self is an instrument that engages the situation and makes sense of it.
3. Is its interpretive character. Interpretive here has two meanings:
 - a) Inquirers try to account for what they have given an account of.
 - b) Qualitative inquirers aim beneath manifest behaviour to the meaning events have for those who experience them.
4. Displays the use of expensive language and the presence of voice in the text.
5. Considers attention to detail important.
6. Becomes believable because of its coherence, insight, and instrumental utility.

The researcher visited the ACI catering plant in Kempton Park over a period of two weeks to observe all the operational processes involved in ensuring catering on board. Furthermore, she joined flight attendants on a flight to Cape Town and observed them during execution of their duties. Importantly, the researcher has had first-hand experience in this field as a flight attendant in 2000.

Flick (1998:42) is of the opinion that researchers, because of their own fears, expectations or indications, remain blind to structures in the field which makes them and the research, lose discovery of the new. For example, when collecting data for the study, it became evident that additional sources of information would enrich the understanding of the phenomenon. Interviews were then scheduled with individuals who would significantly influence the results.

5.5 DATA-COLLECTION METHODS

According to Cooper and Schindler (2006:100), information sources can be classified into three levels: primary sources, secondary sources, and tertiary sources. The data collected for this study included primary, secondary and tertiary data.

5.5.1 Primary data

Welman and Kruger (2001:35) hold that a primary source is the written or oral account of a direct witness of, or participant in, an event, or on audiotape, videotape or photographic recording of it. Primary data is originated by the researcher for the specific purpose of addressing the research problem (Malhotra & Birks, 2006:41).

The researcher collected data to answer research questions by means of fieldwork during her observations at the production operations at ACI. In addition to the interviews conducted during the flight to Cape Town, individual interviews with flight attendants employed at SAA were conducted over a period of one month from 1/11/2006 to 30/11/2006, and valuable data was obtained for the study.

5.5.2 Secondary data

Encyclopaedias, textbooks, handbooks, magazines, etc. are considered secondary data. All reference materials fall into this category (Cooper & Schindler, 2006:101).

Various textbooks and trade magazines such as the *Packaging Review* and *Flight Catering Magazine* was consulted to obtain the data for this study.

According to Welman and Kruger (2001:35), a secondary source provides second-hand information about events. Such a source has not self witnessed the event, but obtained the information either from someone else who experienced the event, or who has self obtained the information from a person who had indeed experienced it first-hand. Secondary data is data collected for some purpose other than the problem at hand (Malhotra & Birks, 2006:41).

This data was collected from flight attendants who offered extended information obtained from conversations with other flight attendants from both SAA and other airlines. Informal conversations with passengers, and especially their comparisons with other airlines they had flown with, also contributed to the information gathered.

5.5.3 Tertiary sources

Cooper and Schindler (2006:102) state that tertiary sources may be interpretations of secondary sources, but generally are represented by indexes, bibliographies, and other finding aids (e.g. Internet search engines).

Various search engines such as Emerald and Ebsco Host was used to obtain data for this particular study.

5.5.4 Methods of qualitative inquiry

The following core methods of qualitative inquiry were used to gather the primary information required:

5.5.4.1 Participant observation

Observations is a controlled recording either of events or, when applied to individuals, of people's behaviour. The means of observation may be personal or mechanical (Blankenship, Breen & Dutka, 1998:145-146). Participant observation is to some degree an essential element of qualitative studies. It demands first-hand involvement (Bresler, 2001:204), providing contextual information, facilitating analysis, enabling validity checks and triangulation, and it allows for a wide range of data and participants. Immersion in the setting, by visiting the plant at ACI (Air Chefs

International) for two weeks in March 2005, allowed the researcher to hear, see and begin to experience the reality of the catering industry. According to Marshall and Rossman (1999:106), immersion allows the researcher to become a participant observer and offers him/her the opportunity to learn directly from his/her own experience of the setting.

Direct observation enables the gathering of a large amount of data in a short period of time in a natural setting. According to Cooper and Schindler (2006:251), the strengths of observation as a data collection method include securing information about people or activities that cannot be derived from experiments or surveys and avoiding respondent filtering and forgetting. Observation secures environmental context information, optimising the naturalness of the setting, and reducing obtrusiveness.

5.5.4.2 Interviewing

Interviewing as a data collection tool fosters face-to-face interactions with participants (Marshall & Rossman, 1999:135). It facilitates the discovery of nuances and is useful for uncovering participants' perspectives. Furthermore, interviewing facilitates immediate follow-up for clarification. Interviewing varies in terms of a priority structure and in the latitude the interviewee has in responding to questions.

Interviews are categorised into four general types, namely the informal, unstructured, semi-structured, and structured interview. For this study, semi-structured interviews were conducted.

5.5.4.3 Semi-structured interviewing

Bernard (2000:191) contends that semi-structured interviewing is used in situations where the researcher will not have more than one chance to conduct the interview. According to Welman and Kruger (2001:161), semi-structured interviews may be used when the topics are of a very sensitive nature or when the respondents come from divergent backgrounds. Experienced and expert interviewers are available for conducting the interviews.

This method of interviewing is based on the use of an interview guide, which is a written list of questions and topics that have to be covered in a particular order

(Bernard, 2000:191). According to Gray (2004:217), semi-structured interviews allow for probing of views and opinions where it is desirable for respondents to expand on their answers. This is vital in a phenomenological approach where the objective is to explore subjective meanings that respondents ascribe to concepts or events. Probing may also allow for the diversion of the interview into new pathways, which while not originally considered as part of the interview, help towards meeting the research objectives.

Phone numbers from various sources and phoned flight attendants were obtained to schedule interviews, explaining the reason and the objective of the study to the respondents and to set a time, date and place for the interview. Permission was asked to audiotape the interview. This device was used in interviews where the respondent was comfortable with being recorded.

5.5.4.4 Unstructured interviewing

According to Burns (2000:425), unstructured (open-ended) interviewing takes the form of a conversation between informant and researcher. It focuses, in an unstructured way, on how informants perceive themselves, their environment and their experiences. There is no standardised list of questions.

In this study, unstructured interviewing was conducted.

5.6 DISCUSSION GUIDE

Even though the discussion with individual flight attendants was fairly informal and spontaneous, the following broad guidelines were followed.

An introduction of the interview and a brief indication of the purpose of the study initiated the discussion. This was followed by an identification of possible respondents, to ascertain compliance with the selection criteria. The respondents were contacted and a meeting date and time scheduled.

At the meeting the researcher explained the following format of the discussion.

“This is an informal discussion ... a research study ... you can relax ... just express your feelings and opinions. The information given by you is confidential; I will not make you personal details available to your employer. There is not correct answer

only our opinions and feelings... You are speaking for yourself. The questions may seem somewhat vague, but it is because I do not want to put words in your mouth by asking leading question ... Any questions? ... Let us begin."

To ensure that all relevant data was obtained, the leading question was supported by a discussion guide (See Appendix A).

Permission was asked to take notes and audiotape the conversation, and respondents were thanked for their willingness to make a contribution to the research study.

A discussion guide was developed to guide respondents in the desired direction when they started deviating from the question. The guide also ensured that the relevant data required was obtained.

5.6.1 Introductory and transition questions

The researcher asked the following introductory questions to build the respondents confidence. *Number of years experience as a flight attendant? Have you worked for other airlines or only for SAA? What other work/career related experience do you have?*

The following broad open question was asked, to afford respondents the opportunity to supply their views and to identify areas/problems not explored by the study.

What are the problems you have/are experiencing in in-flight catering pertaining to the packaging, catering utensils and galley equipment?

The main objective was to provide respondents with the opportunity to reflect the problems experienced as well as positive points concerning the packaging, catering utensils and galley equipment used in the execution of in-flight service on board the aircraft. The respondents were allowed to mention other areas of concern, so that the researcher could determine further areas of research.

Flight attendants are the front line employees providing a service on behalf of the airline, catering company and various suppliers. Flight attendants are the first link to receive feedback from the passengers. As already mentioned, this is the critical link within the supply chain that can have a major impact on the service provided.

5.7 SAMPLING

According to Coldwell and Herbst (2004:74), sampling is the act, process or technique of selecting a representative part of a population for the purpose of determining parameters or characteristics of the whole population. A population is a group of individual persons, objects or items from which samples are taken for measurement (Colwell & Herbst, 2004:74).

A sampling frame is a complete list on which each unit of analysis is mentioned only once. Unless such a sampling frame is kept in mind, it is impossible to judge the representativeness of the obtained sample properly. The sample should be representative of the sampling frame, which ideally is the same as the population, but which often differs due to practical problems relating to the availability of information (Welman & Kruger, 2001:47-48).

According to Leedy and Ormond (2005:207), sample size depends largely on the degree to which the sample population approximates the qualities and characteristics of the general population. Three factors should be considered in making a decision on sample size: Firstly, the degree of precision that is required between the sample population and the general population; secondly, determining the variability of the population; and thirdly the method of sampling that should be employed (Leedy & Ormrod, 2005:207).

Purpose or snowball sampling was used to find respondents for unstructured interviews. Often, preference is given to key informants who, on account of their position or experience, have more information than regular group members and/or are better able to articulate this information (Wellman & Kruger, 2001:189).

Three types of non-probability samples were used: accidental or incidental samples, purposive samples and snowball samples, of which accidental sampling was employed initially. Accidental sampling is the most convenient collection of members of the population (units of analysis) that are near and readily available for research purposes (Welman & Kruger, 2001:63). This type of sampling was used to obtain the data from flight attendants through conducting unstructured interviews while they were either waiting for their specific flights or during the in-flight service on board.

The second type of sampling was snowball sampling. In the first phase of snowball sampling, a few individuals were approached from the relevant population. These individuals then acted as informants and identified other members (for example, acquaintances or friends) from the same population for inclusion in the sample. The latter may in turn identify a further set of relevant individuals so that the sample, like a rolling snowball, grows in size till saturated (Welman & Kruger, 2001:63).

The snowball sampling type was considered appropriate for obtaining respondents in the supply chain who had an effect on the final results.

5.8 RECORDING, SORTING, ORGANISING AND EDITING THE DATA

The process of documenting the data comprises mainly three steps: recording the data, editing the data (transcription) and constructing a new reality (Flick, 1998:168).

Gray (2004:320-321) explains that unlike quantitative data, qualitative data is rarely accessible for immediate analysis, but require a processing stage often involving the editing of notes and transcribing of tape recordings. An important first step is to codify notes that are taken in the field. Such field notes often contain remarks or reflections of the researcher, taken whilst in the field. Analysis does not necessarily occur sequentially after data collection, but simultaneously with it and involves the teasing out of patterns, themes and groupings in the data. This is a part of the process of data reduction through which the sheer volume of data is reduced and made not only more manageable but more coherent. Data obtained through observation is included in Chapter 6 where the findings are explained. The researcher clearly indicated which data was obtained through observation, interviews, and which data was obtained through conducting interviews.

Although permission is sought from respondents to audiotape interviews, the researcher should be ready to write down the answers where respondents are reluctant to be recorded. If this is the case, Cooper and Schindler (2006:228) suggest that the researcher should first record responses as they occur. If there is a time constraint, the interviewer should use some shorthand system that will preserve the essence of the respondent's replies without converting them into the interviewer's paraphrases. Another technique is for the interviewer to repeat the response while

writing it down. This helps to hold the respondent's interest during the writing and checks the interviewer's understanding of the response.

Data from all interviews, whether audio taped or recorded in writing, was transcribed verbatim and converted to a Word document. In interviews where respondents preferred not being audio taped, the researcher took notes and wrote a report soon after the interview to ensure all data was recorded.

Cooper and Schindler (2006:491) explain that editing detects errors and omissions, corrects these when possible and certifies that minimum data quality standards are achieved. They further asserts that the editor is purpose is to guarantee that data is accurate, consistent with other information, uniformly entered, complete, and arranged to simplify coding and tabulation.

The data obtained from interviews conducted was transcribed verbatim. After this process the data was then analysed and sorted under appropriate headings that became apparent during conducting the research.

5.9 ANALYSIS AND INTERPRETATION OF DATA

Coldwell and Herbst (2004:123-124) point out that qualitative data cannot be statistically analysed and is generally difficult to measure. In assessing the validity of unstructured data, two points must be considered: Firstly, *plausibility* which refers to the extent a claim is consistent with knowledge that this is beyond doubt and secondly, *credibility*, which refers to the extent to which the study was carried out according to known and accepted research procedures.

Gall, Borg and Gall, (1996:139) describe three approaches to analysing case study data:

- *Interpretational analysis* refers to examining the data for constructs, themes, and patterns that can be used to describe and explain the phenomenon studied.
- *Structural analysis* refers to searching the data for patterns inherent in discourse, text, events, or other phenomena, with little or no inference made as to the meaning of the patterns.

- *Reflective analysis* refers to using primarily intuition and judgement to portray or evaluate the phenomenon.

Fieldwork is typically a part of the data-collection effort because it enables the researcher to engage in informal conversations with the participants and to observe and understand the phenomenon as they experience it. A case study researcher should analyse data while collecting it because what is learned from data collected at one point in time is often used to determine subsequent data-collection activities (Welman & Kruger, 1997:158).

Data obtained from interviews and observations was grouped into four main groups: firstly, data relating to the packaging, secondly, catering utensils and thirdly, galley equipment. Lastly all other information provided by the flight attendants that might be relevant to the study was grouped under the heading of other areas. The important features pertaining to each group relevant to the study was then identified and all the data was listed under the relevant headings.

5.10 VALIDITY AND RELIABILITY

5.10.1 Validity

Guba and Lincoln (1998:195) state that the problem of how to assess qualitative research has not yet been satisfactorily resolved. Qualitative research has no single stance or consensus on addressing traditional topics such as validity, reliability and generalisability, and consequently, these authors distance themselves from it. These conventional benchmarks of rigour and stability are not applicable as stability cannot be assessed for inquiry into a phenomenon if the phenomenon itself can change, and objectivity cannot be achieved because there is nothing from which one can be distant.

Leedy and Ormrod (2005:92) point out the following types of validity.

- **Face validity:** This type of validity relies upon the subject judgement of the researcher. It asks two questions, which the researcher must finally answer in accordance with his or her best judgement: Firstly, is the instrument measuring what it is supposed to measure? Secondly, is the sample being

measured adequate to be representative of the behaviour or trait being measured? (Leedy & Ormrod, 2005:92).

- **Criterion validity:** Criterion validity usually employs two measures of validity; the second, as a criterion, checks against the accuracy of the first measure. The essential component in criterion validity is a reliable and valid criterion – a standard against which to measure the results of the instrument that is doing the measuring. The data of the measuring instrument should correlate highly with equivalent data of the criterion (Leedy & Ormrod, 2005:92).
- **Content validity:** This type of validity is sometimes equated with face validity. Content validity is the accuracy with which an instrument measures the factors or situations under study, i.e. the ‘content’ being studied (Leedy & Ormrod, 2005:92).
- **Construct validity.** A construct is any concept, such as honesty, that cannot be directly observed or isolated. Construct validation is interested in the degree to which the construct itself is actually measured (Leedy & Ormrod, 2005:92).
- **Internal validity:** Internal validity is the freedom from bias in forming conclusions in view of the data. It seeks to ascertain that the changes in the dependent variable are the result of the influence of the independent variable rather than the manner in which the research was designed (Leedy & Ormrod, 2005:92).
- **External validity:** This type of validity is concerned with the generalisability of the conclusions reached through observation of a sample to the universe. Or, more simply stated: Can the conclusions drawn from a sample be generalised to other cases? (Leedy & Ormrod, 2005:92).

To ensure the **validity of the study**, the research endeavoured the following:

- The measuring instrument and the sample intended to be measured was first analysed and approved by the ethical committee at the University of Pretoria.

The data obtained would not have been possible if the measuring instrument was ineffective.

- A discussion guide to support the research question was developed to ensure content validity with regard to how accurately the question asked tends to elicit the information required. The question guide was analysed by various sources which included three senior lecturers at the University of Johannesburg.
- To ensure the validity of the data, students accompanied the researcher during the interviews. Only data that was confirmed by more than two or three respondents was recorded in the final document to ensure construct validity of the data.

5.10.2 Reliability

Reliability refers to whether the same answer is obtained by using an instrument to measure something more than once (Bernard, 2000:47). According to Cooper and Schindler (2006:352), reliability is concerned with estimates of the degree to which a measurement is free of random or unstable error. They further note that reliability instruments are robust and work well at different times under different conditions. This distinction of time and condition is the basis for frequently used perspectives on reliability such as stability, equivalence, and internal consistency.

Neuman (2000:171) is of the opinion that reliability is necessary for validity and is easier to achieve than validity, although reliability is necessary in order to have a valid measure of a concept.

When finally drawing conclusions from the data, the researcher attempts to find consistency in themes and patterns to compare generalisations with the relevant body of constructs and theories for verification Gray, 2004:321).

After conducting the first few interviews the researcher noticed that the same information was confirmed from the respondents. It was possible to form headings under which data relevant to the heading could be listed. Observations recorded at various instances confirmed relevance of data.

5.11 LIMITATIONS OF THE STUDY

According to Cooper and Schindler (2006:23-24), the development of scientific method in business research lags behind similar developments in the physical sciences. Physical scientists are more advanced in their theory development than are business scientists. Physical research is normally conducted under controlled laboratory conditions; business research seldom is. Business research normally deals with topics such as human attitudes, behaviour, and performance. People are of the opinion that they know these topics and are not easily accepting of research findings that differ from their opinions.

Description and explanations involved selective viewing and interpretation; they cannot be neutral, objective or total (Mason, 1996:6). Qualitative researchers should apply critical self-scrutiny or active reflexivity, taking cognisance of their role in the research process and subject it to the same critical scrutiny as the rest of their data. The researcher cannot be detached from the knowledge and evidence generated – qualitative evaluation is subjective.

Qualitative research is biased. Because interpretation produces understanding which is shaped by class, gender, race, ethnicity and culture, objective interpretations are impossible (Denzin, 1998: 328). The perspective is always partial, and the findings represent only a temporary and limited view (Maltured, 1998:329-330).

Yet, the individual qualities of the inquirer are indispensable in constructing meaning. Qualitative methods rely on the intellectual, adaptive and judgmental abilities of the human inquirer as the primary gatherer and interpreter of meaning, with hermeneutic understanding and interpretive logic of justification (Greene, 1998: 385-390). Greene (1998:323-324) argues that the age of objective description is over; we are now in the age of inscription. Writers create their own versions of the realities they describe. A thin description simply reports facts; a thick or rich description gives the context of an experience, and states the intentions and meanings which organised the experience. Out of this process arises a text's claim for truth, or its verisimilitude. Reality resides neither with an objective external world, nor with the subjective mind of the knower, but within a dynamic transaction between the two (Greene, 1998:348).

If the results of the investigation pose a problem to the stakeholders concerned or if they are aware of problems and regard them as insurmountable, they may withhold information, or refuse the researcher access to the facilities and persons involved. The researcher must look at the global airline industry in order to draw conclusions. The researcher will have to ensure respondents of the confidentiality of the information supplied by them in order not to jeopardise the process.

5.12 ETHICAL CONSIDERATIONS

Cooper and Schindler (2006:166) explain that ethics are norms or standards of behaviour that guide moral choices about research behaviour. The goal of ethics in research is to ensure that no one is harmed or suffers adverse consequences from research activities.

Ethical concerns have become a very important concern in research. The researcher had to comply with the various request from the Ethical Committee at the University of Pretoria. All relevant documentation was received as requested.

5.13 CONCLUSION

In this chapter research methods and techniques were described which have been used to investigate the role of packaging, catering utensils and galley equipment in ensuring customer satisfaction in the supply chain.

However, research involves different methods and techniques for different studies because they have different aims. In this particular study, relevant and applicable methods and research techniques were used in order to investigate and test the research problem and objectives. The various methods and techniques' where used, were clearly discussed within the scope of this particular chapter. The techniques used in qualitative research included a semi-structured interviews and observations.

It was further illustrated that it is not always possible to obtain data through the use of qualitative techniques. Qualitative research is an effective approach to obtain information which could have a valuable impact in the decision making of various companies. In the study the various stakeholders involved with supply chain of in-flight catering was contacted and studied. The aim is to enable the stakeholders to be able to make effective decisions in the future pertaining to supply chain.

The universum was identified, from which a suitable sample was derived. The next step was to determine the research question and then to develop a discussion guide. The objective of the discussion guide was to ensure that the relevant data for this study was provided by the respondents in the end. The relevant data was captured by the researcher conducting interviews with the flight attendants employed at South African Airways. The data was recorded, sorted and finally analysed.

During the research study, a total of 25 flight attendants at South African Airways were interviewed. The relevant data was then captured on computer, edited and finally analysed and interpreted.

The research explained the design and methods used so that the reader can judge whether the research is adequate and can be utilised in decision making.

In the next chapter the empirical findings of this particular research study are discussed in detail.

CHAPTER 6

RESEARCH FINDINGS

6.1 INTRODUCTION

In chapter 2 and 3 background information supporting this study was discussed in detail. The roles of stakeholders and processes on operational level were explained. In Chapter 4, packaging, catering utensils and galley equipment regarding customer satisfaction in the supply chain was discussed. In this chapter the research endeavours to determine the impact experienced by flight attendants pertaining to the packaging, catering utensils and galley equipment in providing in-flight service to passengers. The data for this particular study was obtained from interviews conducted, with flight attendants employed at SAA. An interview guide was developed to ensure that respondents provide relevant information that could support the objectives of this study. Data obtained through observations has been included.

The first part of this particular chapter deals with the background information regarding the respondents interviewed and how the sample was selected. Characteristics of the sample that might have an impact of the final results are addressed. The second part of this chapter deals with the research findings in respect of the impact on packaging, catering utensils and galley equipment have on the execution of in-flight service. All relevant results of the findings are provided in tabular format as to make understanding and the interpreting of results easier and more understandable.

6.2 OTHER SOURCES OF INFORMATION

Observation was a further method used to obtain the relevant information required for the study. The researcher is a qualified flight attendant holding a CAA licence and worked as a flight attendant prior to 2001. Observations were recorded by the researcher during her career as a flight attendant. Furthermore, the researcher, in the capacity as a passenger, undertook flights as part of this study, and gathered information on the topic.

To gain understanding and information on the logistical supply chain of in-flight catering, the researcher visited the catering plant at Air Chefs International (ACI) in

Kempton Park. The suppliers of ACI were also contacted and plant visits were scheduled to gain knowledge and understanding of the processes they are exposed to. Furthermore, suppliers not currently supplying to ACI were also contacted and plant visits scheduled to gain information necessary to make recommendations to the current situation. The product and service development manager, Mr. S. Van Wyk from South African Airways (SAA), was contacted to gain insight into the processes that the airline is involved. Various departments involved with in-flight catering were contacted and visited. Interviews were conducted with managers and employees to gain an insight into the study.

6.3 SAMPLING

The population selected for this study included a sample of employees employed as flight attendants at SAA and has worked at SAA as a flight attendant for more than one year. South African Airways is South Africa's national carrier, which operates domestically regionally and internationally. Flight attendants thus travel to numerous destinations world wide. As a result of the nature of their work schedule, not all flight attendants were available to be interviewed.

The cell phone number of one flight attendant was obtained and from this first respondent, additional numbers were obtained and so the process was repeated. The researcher obtained the number of the product and service development manager of SAA, Mr. S. Van Wyk, who arranged that flight attendants who were on standby duty at the Crew Centre in Kempton Park could be interviewed.

Four flights on board SAA aircraft were undertaken: Two flights to Cape Town and return to Johannesburg. A total of 10 flight attendants were interviewed during these flights.

6.4 INDIVIDUAL INTERVIEWS WITH RESPONDENTS

The respondents were interviewed at a place and date of their choice. A total of 25 flight attendants were interviewed, of which 15 were female and 10 male. A schedule detailing flight attendants' age, race, gender and experience is set out in Appendix B. The attendants were willing to provide information once they felt confident that the information would remain confidential and the purpose of the study had been

explained. The respondents mentioned that they were pleased that work-related problems which they experience were being taken into consideration, as they felt neglected by management of the company who did not always acknowledge the important contribution flight attendants make to the current supply chain.

6.4.1 Profile of respondents

The flight attendants that were interviewed were co-operable in providing information; the fact that they were articulate, made it easier. They were observant and could explain various concepts in great detail as they are exposed to various airlines across the world due to their travelling excessively both for work and leisure. This made it possible for them to compare aspects pertaining to packaging, catering utensils and galley equipment on board SAA aircraft that presented both positive features and features which needed improvement. Flight attendants were clear on the needs and desire of passengers as they deal passengers across the globe.

The flight attendants had a clear perception as to what excellent customer service entails. They identified areas of the service procedures and components which they considered insufficient and which required change.

6.4.2 Different cultures and age groups have different perceptions

The ideal service qualities of a flight attendant are perceived differently across all age groups and cultures. The profiles of the respondents are recorded in Appendix B. The profile of the respondents in terms of education and culture for example, is important, as certain respondent might not be aware that the service is not of an acceptable standard.

Respondents made it clear that with the increased work responsibilities and ineffective packaging, catering utensils and galley equipment, they are often hampered in providing excellent service on board. The flight attendants, who had at least 10 years experience but often more, made the comment that the younger generation of flight attendants are lazy and do not provide the service that is expected from them.

The more experienced flight attendants were particularly aware of the deterioration of the service over the years. They were working for the airline when the service was rated excellent and passengers were satisfied with the service they received on

board. It must be taken into account that at the time a limited number of people could afford air transport and as a result a limited number of passengers had to be catered for.

This result will have an impact on how the improvement of service is addressed. For instance, for some employees it will be obvious how changes on operational level will impact on the service. For the other employees, additional training will have to be provided. The importance of service will have to be emphasised during the additional training given.

6.5 DISCUSSION OF FINDINGS PERTAINING TO THE OPERATION COMPONENTS: PACKAGING, CATERING UTENSILS AND GALLEY EQUIPMENT

The results from the respondents and from the questionnaire clearly indicated that passengers do not consider the aesthetics of the packaging, catering utensils and galley equipment important. According to the research, they considered aspects such as the price of the tickets, frequent flyer options, seat comfort, leg space and quality of the food as more important. What was evident in the conversation with the respondents is that passengers are concerned about the quality of food they are served and that they draw a direct link between the price of the ticket and the in-flight service they receive on board. Consequently, catering is perceived as a valued-added feature.

With regard to the packaging of the various items offered during in-flight catering, respondents voiced some concerns and made certain comments (see Table 6.1). To aid the discussion of problems, the criteria that packaging must adhere to in the supply chain of in-flight catering was identified. The data obtained from respondents was transferred to written text and then grouped in to themes. Additional comments are revealed afterwards.

The various themes identified while conducting this study are given below in Table 6.1.

The researcher conducted interviews with 25 flight attendants. They identified various types of packaging that might represent a problem in the execution of their duties during the in-flight service on board. In table 6.1 the number of respondents

that perceived a problem with a certain type of packaging are indicated. The table indicates whether the packaging are being used in Economy Class or premium class. It was found that the foil container (for passengers' usage) and the plastic tube with foil lid, represented the most problems, whereas the foil container for mashed potatoes, the open-top (three-piece can) and glass or plastic containers presented the least problems.

Table 6.1: Themes regarding the packaging used in in-flight catering

PACKAGING				
	TYPE OF PACKAGING	PRODUCTS DESCRIPTION	NUMBER OF RESPONDENTS (n=25)	CLASS TYPE
6.5.1.1	Foil container (passenger usage)	Hot meals	1,8,9,11,13,14,15 (n=7)	Economy
6.5.1.2	Foil container	Mashed potatoes	18,20 (n=2)	Premium
6.5.1.3	Polyethylene plastic bag	Bread roll	3,8,15,16 (n=4)	Economy/ Premium
6.5.1.4	Polypropylene bag for snack	Bread rolls (snacks)	2,3,6,7 (n=4)	Economy
6.5.1.5	Polypropylene bag	Cutlery	8,9,18,19 (n=4)	Economy
6.5.1.6	Plastic tub with foil lid	Yogurt Orange juice	8,10,11,12,14,15 (n=6)	Economy
6.5.1.7	Two-piece (DRD) aluminium cans	Carbonated beverages	7,10,20 (n=3)	Economy/ Premium
6.5.1.8	Open top (three-piece can)	Orange juice powder	1,23 (n=2)	Economy/ Premium
6.5.1.9	Glass/plastic containers	Alcoholic beverages	2,20, (n=2)	Economy/ Premium
6.5.1.10	Glass bottles	Wine	3,13,23 (n=3)	Premium
6.5.1.11	Glue-end carton	Juices	2,7,10,11,20 (n=5)	Economy

Source: Own compilation

6.5.1.1 Foil container (used by passenger)

Package description: A foil container consists of a square base, 10 x 20 cm in diameter and 2 cm deep, and is sealed by a foil lid that has foil brackets on either side.

This is a standard container used for all hot meals for in-flight catering world wide (Radnay, 2005). The foil containers are loaded separately in an oven rack to be heated before being served to passengers. This container is sufficient for the galley equipment, since ovens and not microwave ovens (which are not the norm on board) are used to heat up food.

The foil containers are removed from the oven and stacked on top of each other on the meal trolleys before service. Flight attendants will remove a meal tray from the meal trolley and place a hot meal on the tray before presenting it to the passengers (Observations recorded, 2006).

This type of packaging requires being stacked on top of one another three to four high on a trolley during the service procedure. According to respondents, the problem with these containers is that they are not suited for stacking. During poor weather conditions turbulence occurs. This often results in the foil containers slipping from the trolley and spilling the contents on the floor. On short sector flights time for service is limited, and service starts before the aircraft has reached the required altitude and levelled out. The flight attendants therefore push the trolleys at an upward angle in the cabin to service the passengers at the front. Because the containers cannot be stacked, they slide from the meal trolleys and contents are spilled. Spilling also tends to occur when flight attendants are rushed for time and hot meals are hurriedly removed from the ovens.

Since no extra meals are loaded, flight attendants are often faced with the dilemma of insufficient meals for passengers. Worse, they may serve contaminated food: the researcher observed how flight attendants replace spilled food from the floor in the foil containers in desperate circumstances.

Respondents reported that the lids of the foil containers do not seal properly, resulting in the contents being dried out in the oven during the heating process. They also observed that passengers do not know what to do with the lid of the hot foil container after opening. The foil container has no instruction for opening or re-closing. Passengers tend to place the foil lid back onto the foil containers when they have finished the meal, not realising that the lid does not seal the container properly once it has been opened. Foil used for the lids tends to bend. Consequently, flight

attendants have problems stacking the used meal trays in the meal trolley as the lids either fall or the lid pushes upwards, making it difficult to get the second tray inside the trolley. A proper solution is to place the lid under the opened foil container.

The content of the foil containers is not visible because of the foil lid. Flight attendants mention that they often have to open these containers to view the contents. The researcher's observation of all packaged items issued to passengers confirmed that labelling of the contents on various packaging used in in-flight catering is either limited or non-existent. For instance, in the case of the foil containers for hot meals there is no label on the package to indicate the ingredients/content. Information on the package is insufficient and does not meet the minimum labelling requirements as requested by legislation (Loubser, 2005c:17). Respondents reported that passengers often request information on the ingredients/contents from them. This becomes an important feature when a passenger is intolerant or allergic to certain ingredients.

Respondents explained that not all hot meals are heated in the various re-generated ovens on board the aircraft at predetermined temperatures. The ovens do not produce heat consistently. The only method of determining whether the food is adequately heated is to open a sample of the foil containers and physically test the contents by hand. This evidently presents a health risk. The protection of food is important. Control over food poisoning, contamination and other hygiene-related complications are important issues as "passenger safety first" is the primary objective of airlines (In-Flight Service Academy, SAA, 2002:41).

6.5.1.2 Foil containers (used by flight attendants)

Package description: Small round foil container, 2 cm deep and sealed with a foil lid.

Various food items for Premium Class are delivered to the aircraft in disposable containers which flight attendants have to transfer to ceramic dishes. Respondents explain that mashed potato, for example, is delivered in a small, round foil container, suitable for oven heating. This container moulds the potato, and the heated mash should be simply popped out of the container and slipped into the ceramic dish. However, the potato often sticks to the container, preventing it from being transferred intact. Because of inadequate utensils, flight attendants often resort to using

unsuitable utensils, such as a fork, to transfer the food from the foil container. More often than not the food comes in contact with the attendant's fingers, and food hygiene regulations are transgressed.

6.5.1.3 Low-density polyethylene (LDPE) bags

Package description: A square 30 x 50 cm low-density polyethylene (LDPE) bag.

According to Brody and March (1997:750), LDPE is often used for the manufacture of bakery bags. Note that the word plastic is used interchangeably with polymer. Usually plastic refers to the finished formulated product, whereas polymer is used to describe the pure basic material (Byett et al., 1997).

Respondents explain that flight attendants must repack bread rolls into bread baskets supplied. Because of insufficient space in the galley the bread baskets are stored in the overhead stowages allocated for luggage. During the service the bread baskets are placed on meal trolleys. Attendants first hand passengers their meal tray, and then hold the bread basket for the passenger to choose a bread roll. This results in contamination when a passenger's dirty hands come in contact with other rolls in the basket.

Respondents further complain that, with limited time to prepare and serve meals as it is, transferring the bread rolls from the polyethylene bag to the baskets adds to their duties.

More that often bread rolls are stale and hard. Respondents are of the opinion that this is as a result of the type of packaging. Polyethylene is a porous material, and does not provide the protection to the product that is required. According to Levy (2000:53), the choice of suitable packaging involves a number of considerations: Will the package provide the optimum protection for the content throughout the distribution and shelf life; will it contain the product adequately; (keeping harmful outside influences out, and the product in) and will it adequately describe and market the product?

6.5.1.4 Polypropylene bag (for snack service)

Package description: Clear 10 x 20 cm polypropylene plastic bag

During the day, passengers are offered a snack of filled bread rolls on short-haul flights. Respondents report that the polypropylene plastic bag used for this snack is inconvenient as it does not have resealing properties.

6.5.1.5 Polypropylene bag (cutlery)

Package description: Clear 10 x 20 cm polypropylene bag

This package is used for catering items such as knives, forks, etc.

Respondents have difficulty in fitting the trays back into the trolley after the meal service. Once opened, this type of packaging does not have the dead-fold properties required.

Dead fold properties refer to the ability of packaging material to be flattened after opening. In many instances, in material such as plastics, molecules are distributed strategically during the manufacturing process. The molecules are under force and want to return to the original state thus, once the seals are broken it will not remain in a specific state and cannot be compressed. Plastic-film materials, in particular, resist disposal in the bin by expanding rather than having the ability to be compressed (Stewart, 1996:60-61).

6.5.1.6 Plastic tub with foil lid

Package description: Plastic tub sealed with a foil lid

The foil lid is laminated with a thin layer of polyethylene ensuring that the container is sealed after it has been heated.

Respondents report that passengers do not remove the lid completely, leaving the lid in an erect position after use. Furthermore, the lid does not have dead-fold properties as the plastic film that is laminated to the foil lid, renders it impossible to fold the lid flat. This creates problems in disposing the package on board.

The same type of packaging is also used for orange juice. Respondent's report that this type of package is supposed to be used as a cup for orange juice after removing the foil lid. The edge of the tub is rough, making it difficult for the passengers to drink from the tub. The foil is sealed tightly because the orange juice is a fluid it tends to spill when the foil is opened.

6.5.1.7 Two-piece drawn and re-drawn (DRD) aluminium cans

Package description: Two-piece DRD aluminium can. The base of the can is formed by a process of forming a metal disc into a cylinder, and sealing it by means of a double seal closure.

Shape of packaging in the retail sector is an important marketing tool since the packaging must create a brand identity and fill the function of self selling on the retail shelf (Stewart, 1996:6). When it comes to in-flight service, a limited number of product items can be made available to passengers due to limited space and the environment in which catering takes place. According to respondents, passengers do not pay attention to branding. Some of the passengers from foreign countries might not be aware of specific brands that take priority in various destinations in the world.

The shape of the unit package (aluminium can for carbonated beverage) is identical to the retail packaging, and not suited to the various storage containers/areas on-board. The shape of one beverage can limits the number of unit products that can be carried on board. Respondents commented that beverage cans have a round shape and are loaded on their sides in drawers in the beverage trolley. As soon as the stock in these drawers is depleted, additional stock must be retrieved from the galleys. This is not an easy task, requiring the attention of the attendant serving closest to the galley who then has to stop with his or her current service and attend to the attendant's request in the centre of the aisle.

6.5.1.8 Open-top (three-piece) cans

Package description: Three-piece open top aluminium can. The can is assembled with the bottom end flexed, the body added and the top left open. The can is filled from the top and the top end added last. The curl on the can contains a sealing

compound and the flange on the can's body is indexed and rolled flat, forming five folds of metal. The sealing compound between folds provides an air-tight seal.

Although all food products are ready for serving on board, flight attendants must prepare some products such as orange juice served to passengers in Premium Class.

Fresh orange juice has been replaced by a powder-based product that has to be mixed with water. Respondents report that the packaging for this product consists of a can without proper usage instruction on the container. Flight attendants mix the juice according to their own discretion, resulting in inconsistent product standards offered to passengers. The orange juice is served during breakfast in the morning. The flight attendants have to fill 300 cups with orange juice, which is time consuming, unhygienic and ineffective.

6.5.1.9 Glass/plastic containers used for alcoholic beverages

Package description: 50 ml glass or plastic bottles sealed by means of a screw-on-cap. The containers are either made from glass or injection-blow-moulded polyester, depending on the supplier.

This container is used for alcoholic beverages such as brandy and vodka, etc. Brody and Lord (2000:51) report that polyester in economic weights does not have a sufficient oxygen barrier to retain product quality for extended shelf life periods, but by increasing wall thickness and reducing distribution time requirements, it enables this type of package to be used.

Brody and Lord (2000:51) explain that these bottles are placed in the drawers of the beverage trolleys. Because of the shape of the container, limited numbers and a limited variety of unit packs can be loaded, presenting in an embarrassing moment to the flight attendant, disappointment to the passenger and a lack of sales to the supplier when the specific choice of product is not available.

When considering the size and shape of the unit package, also known as the primary package, it is important to consider the size of the tertiary packaging or transportation packaging and storage containers both in the warehouse and on-board aircraft (Stewart 1996:59). A pack form should be considered that links to storage conditions

and ensures stability through a pack design that is stable when stored. Correctly designed packs have customer-convenience features which take into account the end user and the environment in which the product is going to be used (Stewart, 1996:59). Respondents indicate that currently the alcoholic beverage containers tend to fall over when placed in the drawers of the beverage trolleys. There are no compartments in the drawer to secure the unit items.

Respondents complain that the weight of the meal and beverage trolleys is too heavy for some of the flight attendants, especially females who often find it difficult to handle. It was observed that the type of materials used for the construction of the 'stowage' equipment and packaging materials such as glass contribute to the weight. Some types of liquor are still supplied in glass bottles which contribute to the weight problem.

6.5.1.10 Glass bottles

Package description: Bottles of wine carried in Economy Class come in a 175ml glass bottle. These bottles have screw-on caps and are easy to open and handle. In Premium Class on all domestic flights 750 ml bottles of wine are carried and served in individual glasses to passengers.

Wine served on board is a means of promoting South African wine. Respondents are of the opinion that an insufficient quantity and variety of wines are carried. Furthermore, the weight of the packaging contributes to the weight of the trolley. The shape of these containers is also not conducive to carrying sufficient stock, and often flight attendants run out of a certain product.

6.5.1.11 Glue-end carton for juices

Package description: 150 ml cartons, made from a paper board laminated onto a foil layer. A thin layer of polyethylene is extruded onto the foil to ensure the container is sealed when heated. A white coating is laminated to the paper board to make printing possible and enhance appearance. Currently an expensive square carton is used which is not suitable for the aircraft environment.

Flight attendants who were interviewed, identified the following types of catering utensils that might present a problem in the execution of their duties during the in-

flight service on board. It was found that the tray liners and flask presented the most problems and the plastic cups, glass rummer glasses, polypropylene glasses and ice buckets presented the least problems (See table 6.2).

Table 6.2: Themes regarding the catering utensils used in in-flight catering

CATERING UTENSILS				
	TYPE OF UTENSIL	PRODUCT DESCRIPTION	NUMBER OF RESPONDENTS (n=25)	CLASS TYPE
6.5.2.1	Trays		6,7,10,11,22 (n=5)	Economy
6.5.2.2	Tray liners		2,6,8,9,10,12,13,14 (n=8)	Economy
6.5.2.3	Ceramic crockery	Hot meals	2,17,14 (n=3)	Premium
6.5.2.4	Ceramic salad bowl	Salad	2,7,25,19 (n=4)	Premium
6.5.2.5	Plastic salads bowls	Salad	7,15,24 (n=3)	Economy
6.5.2.6	Plastic cups	Tea and coffee	8,11 (n=2)	Economy
6.5.2.7	Paper cups	Tea and coffee	6,7,15 (n=3)	Economy
6.5.2.8	Glass rummer glasses	Beverages and liquor	24,25 (n=2)	Premium
6.5.2.9	Plastic rummer glasses	Beverages and liquor	1,4,12 (n=3)	Economy
6.5.2.10	Polypropylene glasses	Wine	13,15 (n=2)	Economy
6.5.2.11	Cutlery		1,2,12,14,21 (n=5)	Premium
6.5.2.12	Stainless steel pots	Tea and coffee	2,5,14,22 (n=4)	Premium/ Economy
6.5.2.13	Ice buckets		15,17 (n=2)	Premium/ Economy
6.5.2.14	Flasks	Tea and coffee	5,6,7,8,12,16 (n=6)	Premium/ Economy

Source: Own compilation

6.5.2.1 Trays

Utensil description: Flat trays made of a high density polyethylene.

On certain sectors where there are no catering kitchens, back-to-back catering has to take place. On these sectors smaller trays are used to save space. Respondents comment on these trays there is no space for cutlery and the bread roll which are handed to the passengers separately.

The trays vary in size on certain routes. Respondents report that smaller trays have insufficient space to fit the utensils and packaged items.

6.5.2.2 Tray liners

Utensil description: Square coloured paper liner with adhesive on the one side. In Economy Class, service trays are lined with a paper liner, which has adhesive on the one side. The purpose of the adhesive is to secure the liner to the tray, in order to enhance the overall appearance and to ensure stability of items on the tray.

The adhesive does not meet the necessary requirements. Often the adhesive side faces upwards, and does not stick well. The cutlery used in Economy Class packed in a polyethylene bag tends to stick to the tray liner. When flight attendants remove the meal tray from the trolley to serve the hot meal, they first have to remove the cutlery bag and then put the hot meal in that specific space. If the bag sticks to the tray, flight attendants will place the hot meal on top of the cutlery bag, instead of removing it first.

6.5.2.3 Ceramic crockery

Utensil description: Crockery is made of heavy ceramic or porcelain, thus creating the impression of luxury and prestige.

To enhance the overall appearance on the meal tray, crockery is provided with distinctive round shapes. The main plate is oval and other containers for salads and butter, etc. have round edges on the one side to fit together like a 'puzzle' on the meal tray. Although these crockery sets are aesthetically presentable, they pose difficulty for the flight attendant. Respondents report that catering employees do not realise that crockery sets have to be arranged in a specific way, so the salad, dessert and cheese bowls are placed in different positions on the meal tray, which affects the final appearance.

The plates are not suited for stacking, thus making it difficult for flight attendants to clear the cabin quickly and efficiently after the service. The shape takes up valuable space on the meal tray, which makes it difficult and inconvenient for the passenger that might require additional space to place their beverage glasses. These oval plates are not effective for oven use. Because of the weight of the plates, the oven

rack is unable to hold the weight. The shape also allows a limited number of plates to be placed in the oven to be heated.

It is costly for the airline to buy and maintain the crockery stock. Respondents further complain that the contents are sealed by foil wrapped around the ceramic dishes which flight attendants have to remove. As they are not provided with heat-resistant gloves, this often poses an injury problem. The food tends to stick to the foil, which presents a problem when serving the food.

6.5.2.4 Ceramic salad bowls

Utensil description: Round shaped ceramic bowl

Salads served in Premium Class are transported to the aircraft in a round polyethylene container with a polyethylene lid. Next to the polyethylene container is the ceramic dish into which salads are served. Respondents complain that it is expected of flight attendants to remove the ceramic salad bowls from the meal trays in the meal trolley and transfer the salad from the round plastic container to the ceramic dishes before serving to the passengers. This is done so that the salad ingredients look fresh when presented to passengers. Since the ceramic dish is not provided with a lid, lettuce often gets stuck in the trolleys when meal trays are pulled out affecting the appearance of the final product.

6.5.2.5 Plastic salad bowls

Utensil description: Durable plastic salad bowl is plus 5 x 5 cm in diameter and 2 cm deep. Closed with a disposable clear polypropylene lid.

All crockery used in Economy Class consists of individual dishes made of durable plastic. The salad bowl is covered with a disposable polypropylene lid. Respondents comment that lids fall off the salad container when a tray is pulled out of the trolley, or do not seal the contents properly.

6.5.2.6 Plastic cups for tea and coffee

Utensils description: Durable plastic cups

The plastic cups for coffee (forms part of the 'rotables'), are made of a durable plastic material. Respondents report that these cups crack at times and once hot beverages, such as coffee and tea is served it results in a mess.

Respondents are of the opinion that the cups are chilled before delivery to the aircraft and crack as soon as hot beverages are poured.

6.5.2.7 Paper cups used for serving coffee

Utensil description: Disposable paper cups contain 250ml contents.

Used for serving coffee and tea. The respondents made the comment that passengers are pleased with the cups, although they are large in comparison to the size of the tea and coffee flasks provided, which means the flight attendants repeatedly have to go the galley to refill the flasks. Respondents further conclude that the cup does not maintain the heat of the contents, which adds to the frustration of the passenger. Observation proved that the size of the cup is also out of proportion to the tray size.

6.5.2.8 Glass rummer glasses

Utensil description: Tin glass with a curved shape

Rummer glasses which are used in Premium Class are delivered to the aircraft face down in a drawer with individual compartments onto which the glasses are packed. These divisions ensure that glasses do not break on impact. Respondents complain that the glasses have a round edge which impedes the grip.

6.5.2.9 Plastic rummer glasses

Two types of plastic glasses known as rummer glasses are used in Economy Class.

Utensil description: One type is made of a plastic material with an opaque appearance. The bottom of the glass tends to curve around the edges. Respondents indicated that the rims of the rummer glasses are often rough and, could cause a

small injury. This glass is not stable for beverages, because the base of the glass tends to curve; this is a characteristic of the type of material that is being used to manufacture the glass. Respondents reported that glasses fall over during the slightest turbulent conditions, therefore spillage is a problem.

These glasses are also not ideal from an aesthetic point of view. They appear cheap and not finished off. The image conveyed by the packaging must conform to the overall image being developed and portrayed by the airline.

The image created here is that the airline uses the cheapest packaging available, whilst the passenger is not necessarily paying a cheaper price. The flight attendants on the other hand, need to work effectively, efficiently and fast. The airline needs to produce a service which compares to its image, as well as taking costs into account.

Finally, consumers want packaging that is easy to open and convenient to use. Many manufacturers persist in ignoring consumers' need for making the product easier to use (Stewart, 1996:58).

Utensil description: Clear polypropylene glass. These glasses tend to crack at the slightest impact because of the high gloss polypropylene. Observations recorded indicate that when these glasses are stacked on top of one another, a suction action is caused that makes it difficult to remove a glass during the service.

Respondents note that there are marks and shavings on the glasses, which is due to cheap manufacturing costs. This is not aesthetically pleasing.

6.5.2.10 Polypropylene glass for wine

Utensil description: Clear polypropylene glass

Wine glasses used in Economy Class service consists of a clear polypropylene glass. Respondents mentioned that the polypropylene wine glass has a rough edge around the edges that can cause harm during usage, and/or an inconvenience to passengers. These glasses are not easily stacked on top of one another. A suction effect is caused when a glass is removed from the stack, making handling problematic during service. This type of plastic affects the taste of the wine, therefore defeating the objective of marketing South African wines.

6.5.2.11 Cutlery

Utensil description: High quality stainless steel

Cutlery used in Premium Class is the same product which is used in restaurants. Respondents report that the handles of the knives and forks are bulky to enhance the appearance and create an image of prestige. Yet, because of the weight of the handles, flight attendants often drop knives and forks during the service

Observations made conclude that it is must be kept in mind that flight attendants have to service a number of passengers in a limited time span. Various catering items have to be handled in a rushed situation and inappropriate handling ability of catering items affect the service provided.

Utensils description: Stainless steel knives and forks. This type of cutlery is used in certain economy flights. The rest of the items on the tray are disposable items. During the stripping procedure trays are not returned to the meal trolley. The trays are taken from passengers and all items on trays are thrown into a waste trolley. Trays are stacked on top of each other on a compartment attached to the trolley. Respondents complain that removing knives and forks adds to their duties, which are labour intensive slows them down and is not efficient or effective.

According to respondents, passengers place their knives in forks in the foil container and place the lid on top of the cutlery to indicate that they have finished eating. This is the normal procedure in a restaurant but makes it difficult for the flight attendant that must now re-arrange quite a number of items before putting the tray in the trolley.

Utensil description: High density knives and forks

After the September 11 terrorist attacks in the USA, airlines were forced to use plastic cutlery. This kind of cutlery has the advantage of reduced costs, low security risk, light weight, but is inconvenient to use.

6.5.2.12 Stainless steel pots

Utensil description: Silver stainless steel pots with handles and lids.

In addition to the plastic flasks that are used to supply coffee and tea, stainless steel tea and coffee pots with lids are supplied for either making and/or serving tea and coffee from.

Respondents commented that for reasons unknown the lids of the stainless steel pots are easily broken. To maintain the heat of the tea and coffee, flight attendants have to place ceramic saucers as a replacement for the lid. This option makes handling difficult and looks unprofessional as flight attendants must struggle to hold the ceramic saucer in place when pouring tea.

6.5.2.13 Ice buckets

Utensil description: Silver stainless steel ice buckets.

Respondents mention that the ice buckets are not big enough, thus ice has to be replenished often. Because of limited space, only a limited amount of ice buckets are loaded on the aircraft. To refill ice buckets, the flight attendant nearest to the galley pours the ice in a coffee pot and fills the ice buckets of the flight attendants in the aisle, from this container. Respondents find this inefficient and unprofessional.

6.5.2.14 Flasks

Utensil description: Flasks used on board are made of plastic with a square shape. Black flasks are used for coffee and yellow coloured flasks for tea. The shape enables better storage. From an aesthetical point of view, though it is not appealing.

Respondents complain that the flasks often leak, causing inconvenience to flight attendants during the service. The flasks are considerably smaller than the beverage flasks. The paper cups loaded contains plus minus 250 ml of contents. Only a few paper cups can be filled before the flask has to be replenished.

The number and size of the tea and coffee flasks on board are not large enough to fill the required number of cups with tea and coffee during a specific in-flight service. Flight attendants must then either retrieve more flasks from the galley or make more

tea and coffee to meet customer demands. This is time consuming can passengers are often frustrated when they have to wait.

6.5.3 Respondents' perception of the galley equipment

With regard to the galley equipment, the flight attendants interviewed by the researcher, indicated that they had problems with the meal and beverage trolleys. The trash bags and boxes presented the least problems (See table 6.3)

Table 6.3: Themes regarding the galley equipment used in in-flight catering

GALLEY EQUIPMENT				
	TYPE OF EQUIPMENT	PRODUCT DESCRIPTION	NUMBER OF RESPONDENTS (n=25)	CLASS TYPE
6.5.3.1	Stowages	Tea and coffee bags newspapers, toiletries, baby food, etc.	1,2,6,8,12,14 (n=6)	Premium/ Economy
6.5.3.2	Ice bins	Ice	9,17,23 (n=3)	Premium/ Economy
6.5.3.3	Meal trolleys	Hot meals and snack service	3,4,5,6,7,15,24 (n=7)	Premium/ Economy
6.5.3.4	Beverage/bar trolleys	Liquor, water and carbonated beverages	2,4,5,6,7,14,16,24 (n=8)	Premium/ Economy
6.5.3.5	Drawers	Beverages	6,10,12,19,24 (n=5)	Premium/ Economy
6.5.3.6	Garbage bags and boxes	Garbage collected in cabin	3,9 (n=2)	Premium/ Economy
6.5.3.7	Oven racks	Hot meals	9,11,13,14,18,24 (n=6)	Premium/ Economy

Source: Own compilation

6.5.3.1 Stowage (storage bins)

Equipment description: Rigid construction of aluminium sheets fixed to aluminium extrusion profiles and has a natural anodised finish.

Corners are welded together. Deep-drawn pressed runners on the side panels serve as tray/drawer support as well as reinforcement of the carrier housing.

Stowages are numbered so that catering employees and flight attendants can place catering items such as tea, coffee and baby food in the allocated stowage of the specific item. At first new staff may find the numbering system confusing, and place items in wrong stowages. This also results in confusion and can delay the in-flight service.

Items that for there are no allocated stowages or specified locations to stores are either loaded in overhead stowages intended for passenger luggage, or stowed under passenger seats which can represent a safety hazard in an emergency.

Respondents further comment that stowages or bins are difficult to open and are also difficult to seal.

6.5.3.2 Ice bins

Equipment description: Blue and orange bins.

There are very few catering kitchens on the African international flights' requiring back-to-back catering stock. Two types of ice bins are loaded, an orange bin and a blue bin. There is no allocated stowage for the bins, and they are stowed in the overhead stowage allocated for passenger luggage. The blue bins fit in the overhead stowage but not the orange bin, the blue bins are for use in Premium Class and is slightly bigger than the orange bins used in Economy Class.

Flight attendants are faced with the dilemma that these bins need to be secured at all times before take off and landing.

6.5.3.3 Meal trolleys

Equipment description: Trolleys consist of an aluminium frame with rounded corners to avoid injuries. The braking system consists of one or two pedals activated and released on both sides of trolleys. Trolleys each accommodate 28 trays.

Respondents claim that trolleys are not maintained. A faulty braking system presents a major problem for flight attendants as they have to prevent trolleys from running down the aisle by securing the trolley with their feet, and body weight. If the trolleys is too heavy for the flight attendant, especially during turbulence, this poses a risk to the passenger.

Own observations: from an aesthetic point of view trolleys are not up to standard.

Respondents report that the panels of the meals trolleys expand constant use. Trolleys have brackets on the inside panels onto which meal trays rest. Panels expand after time and the meals tray can collapse on top of each other as the brackets are not long enough or are worn out. Flight attendants have to take time to arrange all items on the meal tray before giving it to the passenger.

6.5.3.4 Beverage/bar trolleys

Equipment description: Beverage trolleys or bar are constructed of high density closed-cell foam, reinforced and sandwiched between two sheets of aluminium for maximum insulation capacity and to get maximum structural strength like meal trolleys, these are also fitted with a foot pedal brake system.

Bar trolleys are extremely heavy due to the weight of the contents. Most wines and spirits e.g. brandy and vodka is packaged in glass containers contributing to the weight of the trolley.

Respondents explain that beverages in the bar trolley are chilled before leaving the catering plants. The smaller aircraft have no chillers. Most of the time beverages are not chilled sufficiently or if the flight is undertaken to humid destinations, beverages become warm. Separate ice bins and ice bags are loaded. Flight attendants then have to empty the ice into the ice bins provided. Beverage containers are taken out of the bar trolley, placed in this container and removed from container when chilled and placed back into the bar trolley. Respondents comment that activities like these contribute to their duties and result in them neglecting important duties such as attending to passenger needs. This activity takes up valuable time that is just not available on certain sectors.

6.5.3.5 Drawers

Equipment description: Drawers made of aluminium sheets with an anodised surface and welded and corners with completely reinforced upper sides to reach maximum strength. The drawers come with either pull handles or handle-openings.

Respondents report that aluminium drawers are difficult to pull out of the trolleys. The beverage trolleys have two drawers inside and two doors on either side to ensure that two flight attendants can work from the same trolley. Respondents argue that when only one flight attendant is serving from the trolley and the contents in the drawer from which is served is depleted, the drawer has to be removed in the aisle. The flight attendant then has to be able to reach for the other drawer, which is strenuous and time consuming.

Respondents further complain that the panels of the trolleys tend to expand outwards after multiple uses. The drawers inside the trolley tend to collapse on top of each other. The heavy drawers with contents have to be lifted by flight attendants to get to the bottom drawers. This means a delay in the service delivery. Flight attendants, may appear incompetent to passengers and it could seem that the airline does not maintain its equipment.

6.5.3.6 Garbage bags and boxes

Equipment description: Large black polyethylene plastic bag

Respondents comment that there is not enough space to store garbage. Plastic bags are not allowed to be used as they are seen as a safety hazard when filled with garbage. Most aircraft are equipped with garbage compactors. The garbage is compacted into a box. When the box is full, it is replaced. However there is no allocated space for the filled boxes and the boxes are stored anywhere space can be found. In some instances the toilets are used as temporary storage during landing.

6.5.3.7 Oven racks

Equipment description: Oven racks are constructed of either aluminium or stainless steel sheets of various thicknesses. In both versions, the front side of the rack is framed by a solid extrusion and equipped with reinforced strips on both sides of panels to form a rigid unit. Integrated oven tray runners inside the unit accommodate eight oven trays. A carrying handle is placed on top of the rack which completes the unit.

Aluminium in general tends to lose its shape after it has been used for a while. The racks often collapse as soon as meal containers are placed on them, resulting in the food containers being damaged.

Respondents perceive this as a major problem in providing efficient and effective in-flight service. Equipment is not properly maintained and damaged equipment often not replaced when necessary.

6.6 AREAS OF CONCERN AND DISSATISFACTION

6.6.1 Quality of food

Passengers consider food an important part of their flight experience and are quick to complain about the current quality of catering offered on board.

Respondents report that passengers complain that they are paying large amounts of money for air tickets, but they are not getting value for their money. SAA is cutting costs in various areas and the quantity and quality of catering offered has been reduced to meet cost objectives.

6.6.2 Management

There is no management consistency within SAA. Management constantly introduces new service concepts. Because of the nature of the business, flight attendants are out of the country most of the time, and thus not available for training on new service concepts and new products.

Research is not conducted to determine the viability of a service concept or product. Most of the time service concepts or products which are perceived by the respondents as sufficient and effective are replaced by an inferior concept or product.

6.6.3 Perception towards customer service

Nightingale (1983) confirms there is a disparity between what the service provider perceives as important, and what the consumer expects from service. This problem is evident in organisations where there are too many levels of management and inadequate communication takes place from bottom structures to top level (Nicolaidis, 2003:22).

Respondents interviewed expressed this as a real situation.

New service concepts and products are introduced every time new management is appointed. Due to their work schedules, flight attendants are not consulted. Or consulted on a limited scale as to how the new product will impact on the service they must provide.

6.6.4 Increase working responsibility by flight attendants

Catering employees often load the incorrect amount of catering items. Respondents complain that they are responsible for checking that the correct amount of catering items is loaded. Certain airlines have a 'galley slave' that performs this function.

These additional responsibilities impact on the service as flight attendants have to attend to passengers boarding, prepare the catering and do safety checks. This results in the flight attendants not being able to give their full attention to the boarding passengers needs. Pre-flight preparations not completed before take-off has to be done once the aircraft has taken off and levelled out. Flight attendants often have limited time, especially on short haul flights, to do the required preparations and complete the service, resulting in poor service delivery.

6.6.5 Deadheads from other airlines

Catering utensils to be delivered to various catering kitchens around the world are carried but not used. these are referred to as 'deadheads'. Catering equipment e.g. trays of other airlines that are similar in appearance but not identical to those of SAA are loaded by accident from time to time. The name and logo of airlines appear on the equipment including utensils. This does not present a professional and sleek operation. Flight attendants report that passengers note this from time to time and pose questions to the flight attendants about the name of other airlines on the utensils.

According to Jones (2004:18), the caterer is responsible for keeping account for equipment delivered directly to the caterer's production facilities. The challenge for caterers is that the equipment is the property of the individual airlines, which in turn contracts the caterer. Equipment belonging to one airline cannot be used by another, even if two airlines use identical equipment.

6.6.6 Allocation of items on meal tray

The food and catering equipment (plates cups, knives, forks, etc.) are properly arranged on each serving tray. Once the food has been consumed, the items on the meal trays are rearranged. The flight attendants have to re-arrange items on meal trays in such a way that meal trays can fit back into the trolleys. This is a time consuming activity.

Flight attendants sometimes have to force trays into trolleys to make sure everything gets packed away. Consequently, re-usable catering equipment is damaged. This is not cost effective.

6.6.7 Insufficient allocation of space for certain items

According to safety procedures, all items must be secured before take off and landing (Dippenaar, 2000:25). Various product options are loaded to cater for diverse passengers needs. All items are supposed to have an allocated storage space so that flight attendants know where to find items during the service procedure, including safety reasons for which all items must be secured during take of and landing. Because of all the additional product options, space has become a problem since neither the aircraft size has increased nor the space for catering equipment and storage.

Respondents complain that the additional product options cause confusion. These products are often stored anywhere on the aircraft where space can be found. In most instances flight attendants make of use overhead stowages allocated for passenger luggage to store additional products, consequently passengers complain about lack of luggage space.

No allocated space is provided for additional items that need storage e.g. newspaper, toilet paper, etc. Other items include water, linen, biscuits, juices and newspapers, and silver pots in polyethylene bags.

Respondents comment that passengers are offered too many product options, but not enough space is allocated for the various options. Respondents further say that not enough units of each variety are loaded, resulting in the passenger requests not

being met. Therefore airlines should consider reducing the variety of options and rather increase the quantity of the various options.

6.6.8 Galley layout/configuration

The last decade has seen a considerable decline in the size of the galleys on board aircraft. This is a result of the airlines having to consider increasing passenger loads to make up for the costs and running an airline.

Respondents reported that they experience difficulty as they still are required to provide sufficient service and to do their preparations properly. The current galleys are designed in such a manner that it is very difficult to work. The current size and layout is not suited for the preparations required.

6.7 CONCLUSION

During the course of the particular chapter relevant information was obtained through conducting semi-structured interviews with respondents and through personal observations made during the research. All data was analysed and the findings recorded by means of a descriptive report.

The importance of research is to make recommendations to the packaging, catering utensils and galley equipment. Themes in respect of the packaging, catering utensils and galley equipment were identified and tabulated.

The sample for the specific study was obtained from flight attendants employed at SAA who were available and willing to be interviewed. The population chosen for this study included a sample of flight attendants employed at South African Airways. The sample was drawn during November 2006 from available flight attendants who were willing to be interviewed by the researcher.

One question was asked namely “What are the problems you experience pertaining to the packaging, catering utensils and galley equipment”? Respondents also offered information on other aspects not covered in the question. Respondents were particularly concerned that management for example did not acknowledge their importance as employees who add value to the service delivery of the airline. They also mentioned that the galleys in general were problematic. Furthermore, the lack of

space hinders food preparation, and there is a need for storage space with proper markings.

Research findings and the information obtained is explained within the scope and boundaries of Chapter 6. The final results will be concluded as well as recommendations made regarding the evaluation and analysis of current designs and operational features pertaining to the supply chain.

CHAPTER 7

CONCLUSION AND RECOMMENDATIONS

7.1 INTRODUCTION

The aim of this chapter is to highlight the main findings of the theoretical research and to interpret the empirical research. The research study uncovered various aspects that have an impact on the objective of this study.

During the literature review relevant subject literature was investigated and explored in order to understand the concept and objectives of a supply chain. The next step was to explore the nature, scope and importance of packaging, catering utensils and galley equipment as well as the characteristics of efficient packaging, catering utensils and galley equipment. The study further endeavoured to identify and discuss one of the most important long-term aspects related to the subject under investigation, namely to investigate and analyse the environment of stakeholders who are affected by the inefficiencies of the current supply chain in in-flight catering.

7.2 LITERATURE RESEARCH REVIEWED

According to various articles published in the press, most passengers find the current in-flight service offered by SAA unsatisfactory. The problems identified and implementation of recommendations will have a serious effect on the airlines future that is already experiencing financial difficulty and competition by other airlines.

According to the interview held with Carmichael (2005), airlines globally are experiencing financial difficulty due to increased competition and increased fuel costs. This is evidently not the lucrative industry it was a decade ago. Various airlines have not recovered after the terrorist attack on the USA in September 11 in 2001.

The logistical aspects pertaining to in-flight catering are expensive attributes that cannot be ignored. To ensure optimal efficiency, these aspects must be analysed and managed accordingly.

Supply chain design is the process of determining the supply chain infrastructure – the plants, distribution centres, transportation modes and lanes, production

processes, etc. that will be used to satisfy customer demands (Harrison, Lee & Neale, 2003:4). Changes to the current packaging, catering utensils and galley equipment will be attempted.

In Chapter 1 background information of the proposed study was provided indicating the necessity of this study. Relevant questions were identified, objectives were set and the terminology used in the study was defined. It also served as an introduction to the problem, as well as an investigation as to how the researcher intended to address the problem. The research methodology and intended instruments for collecting data were discussed.

Chapter 2 is a theoretical chapter based on the literature study regarding the supply chain and related activities and links within the chain. This included different authors' perceptions on aspects pertaining to the supply chain. A description of the supply chain pertaining to in-flight catering was also provided in this chapter.

Chapter 3 is a theoretical chapter based on the study of the operational activities of the main stakeholders involved in the supply chain of the in-flight catering. A detailed description of the entire process involved in providing in-flight catering was provided.

Chapter 4 contains a theoretical study based the packaging, catering utensils and galley equipment used in in-flight catering. A detailed description is provided on the functions of packaging, catering utensils and galley equipment. Important design features are identified and discussed in detail.

In Chapter 5 a detailed description of the research methodologies applicable to the study and an explanation of the processes the researcher used to conduct the research. The chapter also aims at the reliability and validity of the study in question and the importance thereof.

Chapter 6 explains the way in which the data was analysed and interpreted in terms of the problems pertaining to the supply chain of in-flight catering and the proposed research objectives. The data was edited to ensure consistency across respondents and to identify and isolate omissions and spoilt responses.

7.3 ACHIEVEMENT OF THE STUDY'S OBJECTIVES

Within the scope of Chapter 1 research objectives were identified. Having examined various aspects related to the research topic under investigation, it is now possible to determine whether these objectives met.

For a supply chain to be efficient and achieve the main objective, which is excellent customer service, every link within the supply chain should function optimally. Should there be a weak link, this will have an effect on the other links within the chain and prohibit the achievements of the objectives.

The aim of the study was to identify factors within the supply chain of in-flight catering that prohibits the delivery of excellent service to passengers on board commercial aircraft. The study assessed the impact of selected elements within the supply chain of in-flight catering focusing specifically on the packaging, catering utensils and galley equipment used in the in-flight service on board commercial aircraft.

From the interviews held with respondents it is evident that from their own experience, respondents consider features pertaining the packaging, catering utensils and galley equipment to be non-effective and inefficient to the supply chain of in-flight catering.

7.4 LIMITATIONS OF THE STUDY

As a result of their work schedule, flight attendants travel abroad several days of the month. It was therefore difficult to obtain interviews with willing attendants. Furthermore, the implementation of various suggestions to improve the packaging, catering utensils and galley equipment will require substantial capital outlay by stakeholders within the supply chain.

7.5 RECOMMENDATIONS

Specific actions and recommendations are included in this chapter in an effort to contribute towards the literature study on the relevant subject under investigation. Recommendations and more clearly, specific features pertaining to design, are needed in order to determine in what way future changes can be implemented to ensure achievement of the ultimate – excellent service.

The following actions and recommendation were identified as the most important within the scope and nature of this research study. A framework was developed that could be implemented on operational level by the various stakeholders in the supply chain to improve the strategic objectives, namely improved business by means of improved service to passengers.

7.6 STANDARDISATION MODEL

The literature study indicated that studies have shifted the emphasis from operational considerations to strategic considerations. An option to achieve the strategic objectives of the supply is to standardise certain aspects on operational level.

The following statement is made “Standardisation of packaging, catering utensils and galley equipment used in-flight catering will have a positive effect across the airline industry”. Mass production will result in cost saving and improved convenience for the various stakeholders.

According to Burgess-King (2006) SAA transports about seven million passengers per year. Clearly, any business that has a contract with SAA is ensured of a clientele without having to spend much on marketing-related activities.

The question remains whether the global standardisation of all packaging, catering utensils and galley equipment will benefit the industry. A standardisation model is designed in this study, indicating the important features that packaging catering utensils and galley equipment should have to ensure that the objectives of the supply chain are met. For the purpose of this study, the model will be referred to as the standardisation model. The objectives of this model are firstly to provide the in-flight caterers/flight providers with an indication of passengers’ perception in general with regard to packaging, catering utensils and galley equipment, and secondly to provide possible solutions to the stakeholders involved. A list will be provided of the criteria which airline packaging, catering utensils and galley equipment must meet in order to be considered effective and efficient for stakeholders involved in the supply chain.

The benefits of standardisation are ultimately reduced costs through mass production. A reduction in unit cost can be expected and optimum utilisation of the storage space on board will be possible by products with dimensions suited to this

environment. Companies will need fewer employees in their product development departments. This has presented some problems in the past where insufficiently qualified employees with little experience or understanding of in-flight catering were responsible for introducing products to this specific environment. Changes implemented to products, whether sufficient or not are replaced from time to time resulting in major losses as new product ranges purchased. As the variety of items is being reduced less variety of storage system will be required, resulting in improved convenience to flight attendants as well as employees at the catering plant.

The results obtained from the survey conducted amongst passengers to determine their perception of the packaging and catering utensils indicated that passengers have on average a positive reaction towards packaging and catering utensil. This data proves the fact that passengers have an acceptable attitude towards packaging and catering utensils.

7.6.1 Standardisation model for packaging appropriate for use in in-flight catering

The following table identifies criteria on which decisions must be based when developing packaging for in-flight catering. Every packaged item that is considered by an airline to be used in-flight service must be measured against the criteria that are indicated below.

Table 7.1 Standardisation Model for Packaging appropriate for use in-flight catering

PACKAGING		
Explanations	Design features to consider	Proposed solutions*
7.6.1.1	Product analysis	1: Liquids
7.6.1.2	Supply chain	2: Hot meals
7.6.1.3	Packaging material	3: Orange juice powder
7.6.1.4	Machinery and capacity	4: Confectionary products
7.6.1.5	Weight	5: Labels
7.6.1.6	Shape and size (dimensions) of unit package	6: Tea and coffee cups
7.6.1.7	Labelling	7: Environmental requirements
7.6.1.8	Protection/ containment	8: Carbonated beverages
7.6.1.9	Handling ability	9: Containers for snacks
7.6.1.10	Legislative requirements	10: Protection from contamination
7.6.1.11	Disposal	11: Security
7.6.1.12	Aesthetics	
7.6.1.13	Environment requirements	
7.6.1.14	Stack ability of containers	
7.6.1.15	Convenience	
7.6.1.16	Visibility	
7.6.1.17	Security	
7.6.1.18	Storage	

*A detailed explanation of proposed solutions to packaging that meets specified design features follows.

Source: Own compilation

7.6.1.1 Product analysis

Before planning the package required for a specific product, the product should first be thoroughly analysed, paying special attention to features such as how the product could be affected by environmental conditions such as light, heat, oxygen, moisture, etc. What the shelf life of the product will be, and how the product could be affected by odours as a result of the type of packaging material used.

7.6.1.2 Supply chain

After analysing the physical elements of the product, the supply chain to which to product will be exposed to should be analysed. This is important as it will indicate what design features the final package must have in order to ensure that the product reaches the consumer in an acceptable condition and manner.

The entire supply chain of the product should be identified, for example, the mode/s of transportation that will be used and the characteristics of the each mode, for example vibration, heat, etc. The type of handling equipment and storage systems that will be used in the supply chain should be determined and the requirements of the warehouse environment established. The design of the final pallet loads should be finalised. Finally, all of the above should keep the demands, needs and characteristics of the final users in mind.

It should further be determined whether standard or customised shipping containers will be used. Standardised or customised shipping containers may have the advantage of achieving considerable costs reductions.

7.6.1.3 Packaging material

The packaging material must be compatible with the product/contents. There are two factors to be considered, namely the effect of the product on the package and the effect of the package on the product. For example, material and product must not have a chemical interaction or pick up odour from the material.

It is important that packaging material is readily available from reliable suppliers at reasonable cost. Material must perform sufficiently during the converting process such as the forming, filling, sealing and printing machinery for various reasons. Sufficient performance from the materials used ensures reduced machine downtime.

If the material is not compatible with the filling and sealing lines, it can result in increased waste, which in turn adds to increased costs. Cost is an important factor that requires stringent management.

The material must have the ability to be sealed. Furthermore, material must ensure protection of the product and ensure the requested shelf life of the product is being met.

7.6.1.4 Machinery and capacity

The type and capacity of machinery that are used by manufacturer of the products must be analysed by the employees responsible for product selection. In situations where mass production is required proper analysis is even more essential due to large capital outlay. Appropriate machinery to produce the product with the desired characteristics must be selected.

Machinery must also have the capacity to sufficiently meet the quantity demands of the stakeholders to whom they cater.

7.6.1.5 Weight of packaging material

Weight is a critical factor to consider in aircraft operations and the implications are serious. An aircraft has a limit to the weight of the cargo it can carry. The cargo carried by aircraft generates funds. Increased weight contributes to fuel costs. The packaging adds to the weight the overall weight of the cargo carried. Savings in weight result in additional cargo that could be carried and improved convenience to flight attendants.

The weight of the packaging material, especially glass, adds to the weight of the trolleys, presenting an inconvenience to the flight attendants that must handle the trolleys.

7.6.1.6 Shape and size of the unit package

Container shapes dictate the amount of storage space required. In limited space a well-designed shape can ensure the optimum utilisation of space. A 'square-round' container could improve the storage space in the food and beverage trolleys by 25 per cent over that for an equivalent-capacity cylindrical container. Round and

cylindrical shapes of items tend to take up space and should be avoided. With properly designed packaging according to the dimensions of storage sections on board, more product units could fit into the designated storage sections such as stowages. More products can be loaded on board which will increase sales for the supplier and benefit the scale of economy for the airline.

Before deciding on the final shape of the unit package it is important to consider the dimensions of the tertiary or shipping container, storage units or bins, handling equipment (meal and beverage trolleys) tray tables and meal trays. The pallet loads and storage equipment in warehouses require careful scrutiny. This is to ensure that the unit size and shape is designed to for maximum space utilisation.

During the packaging design phase for retail packages, the dimensions of the shipping containers should be carefully considered. The final unit packs must fit in to the shipping containers (tertiary packaging) so that optimal space can be utilised. Using standard size shipping containers is preferable since this is more cost effective and readily available. If the unit packs do not fill the shipping container completely, two scenarios could occur that require additional cost. Firstly, cushioning material is required which can be expensive and contribute to waste. Secondly, a customised shipping container (tertiary packaging) must be manufactured which requires additional cost since a special die and printing plate need to be made.

7.6.1.7 Labelling

The products offered to passengers can be categorised into two main groups namely retail products purchased from manufacturers such as Nestle, South African Breweries (SAB), etc, and products produced in-house at the catering plant and which are packaged by the in-flight caterer in packaging obtained from local suppliers. All stakeholders must adhere to the labelling requirements of both South African and international legislation.

Legislation requires that product type, ingredients and nutritional information are indicated on all packaging. A further requirement is to include instructions on how to use the product.

Passengers use often retail products, but products such as orange juice container and foil container used for mashed potatoes are used only by flight attendants (See table 7.1). Manufacturers should write instructions for use accordingly.

In some instances instructions are required for use of the product, in and other for opening the package. Packaging used by the passenger should also carry instructions for opening/handling and special markings for where it should be replaced on the meal tray to ensure flight attendants replace meal trays into the trolleys without problem. These features should especially be incorporated in the design of packaging such as the foil containers for hot meals used in-flight catering.

Close monitoring of temperature is needed, especially for 'cold trays' in trolleys for return catering. It is important that the packaging maintains the temperature required by the contents. Some packaging material provides dead air cells around the contents, thus preventing heat from escaping or entering.

7.6.1.8 Protection

The package should ensure that the product is adequately protected from potential hazards such oxygen, vibration, high temperatures, etc., as proper protection of the product from potential hazards, such as:

- *Physical hazard:* shock from dropping, side impacts, compression from top-loads and vibration in the catering vehicles and aircrafts
- *Climatic hazards:* moisture from rain, high humidity, condensation and heat and cold from tropic and arctic conditions. Oxidation, changes in atmospheric pressure
- *Biological hazards:* bacterial spoilage, moulds and fungi growths, as well as handling with contaminated hands.

7.6.1.9 Handling ability

Flight attendants must be able to handle the packaging with ease during service. By the same token should passengers be able to open packaging without a problem. Stakeholders require convenient handling of packaging. For instance, a package

must be compatible with the filling and sealing machinery. Packaging must also ensure easy handling during storage and transportation.

7.6.1.10 Legislative requirements

The package must conform to standards laid down by the authorities and shipping organisations/agents pertaining to the packaging material and labelling. These standards may define labelling requirements that must be adhered to, permissible packaging materials to be used as well as pack performance required. Standards are often negated by technical and system changes which make them irrelevant.

Loubser (2005c:56) states that while source-reduction considerations dominated conversion decisions during the 1990s, future package format and materials selection decisions should consider many other factors. Stakeholders should consider key package performance considerations, such as waste disposal laws and waste deposit legislation. Packaging consumption trends and consumer trends are also important as are performance characteristics, manufacturing and cost considerations.

7.6.1.11 Disposal

It is important that packaging material has dead-fold properties. Many plastics-film materials, particularly polypropylene, resist disposal by expanding in the bin rather than being compressed after the package is opened.

In-flight packaging must be able to fold flat to facilitate disposal in an environment where space is limited. Difficulties reported by respondent when replacing used meal trays back into the trolleys clearly indicate that current packaging does not have these qualities.

7.6.1.12 Aesthetics

Although the appearance of the package does not have to adhere to retail standards, it is still important that the overall appearance of the packaging appeals to passengers.

Packaging served to passengers forms part of the image the airline wants to portray, however it is generally not used as a feature to sell the product such as with retail

packaging. Here the package performs the role of the silent salesman, but can be used as a catering utensil during the service. Taking this in consideration the colours and graphics used should be different and be more in line with the overall appearance of the final tray provided to the passengers.

7.6.1.13 Environmental issues

The consumer is aware of the environmental negatives associated with packaging, such as non-biodegradable materials. Therefore, using biodegradable material is important. The use of less packaging is also recommended because not only does this result in reduced cost, but the amount of garbage on board is also reduced.

7.6.1.14 Stackability of container

Because of the confined space, lack of working and storage space is a problem. Containers must be designed in such a way that minimum space is taken up. Furthermore, as a result of turbulent conditions during service, containers must have the ability to be stacked and remain stable in the stacked position.

7.6.1.15 Convenience

Consumers, i.e. passengers, demand products that are convenient to use and cost effective. Equally so, flight attendants require working with products that are convenient to use. This is the crux of the study, improving the working environment for flight attendants and providing a convenient product for the passengers.

7.6.1.16 Security

Jones (2004:98-101) states that future packaging may have to be designed to help ensure security.

Following the research and based on the findings, the following suggestions pertaining to current packaging is proposed:

PROPOSED SOLUTIONS FOR PACKAGING

PROPOSAL 1: Liquids

Replacing the current glass or polypropylene bottles used for alcoholic beverages by introducing a form fill seal stand-up pouch. Colour coding the top of each pack to make different types of liquor definable during the service procedure.

These containers can also be manufactured with spouts to ensure convenient pouring of the content. These pouches will be cost effect, easy to use, re-closable and versatile. This package has stand-up qualities, i.e. it ensures good visibility for product identification. It has dead-fold properties facilitating easy disposal by taking up less space in the waste bin. Less space is taken up in the waste stream, at the same time it provides a bottle that is convenient and flexible when the flight attendant conducts the stripping procedure. These pouches offer cost-savings (Loubser, 2005a:23), which will be cost effective to the airline. The plastic pouches will ensure that separate units can be stored in the current storage containers, which will result in more stock loaded on board the aircraft. It will also ensure a reduction in weight, resulting in-flight attendants delivering efficient and effective service to the passenger.

For spirits, brandy, whiskey, gin, etc, the use of a laminated sachet of high gloss polypropylene, paper, foil polyethylene liner is suggested. The laminated material is stronger than the plastic bottles presently used. The shape allows for maximum space utilisation on the passenger's tray table. Passengers often request two drinks at a time on the first beverage service. Especially in such cases it will be convenient and user friendly to the passenger.

By replacing the miniature glass bottles for liquor with the suggested form-fill seal sachet recommended, the weight of the container as well as the in-service trolley will be reduced. The problem facing the supplier is that a vertical-form-fill-seal machine is required, which will result in a capital outlay for the supplier of the above products.

PROPOSAL 2: Hot meals

The foil container used for the packaging of hot meals can be replaced by injection-moulded tubs, made form crystallised polyethylene terephthalate: polyester (CPET).

CPET is high barrier trays made from crystallised polyester. It is the most advanced form of packaging on the market today and has excellent barrier properties that aid in increasing a product shelf life. These trays retain freshness and can be hot-filled and foil sealed as necessary. In-mould labelling technology can be used

The present foil container can be replaced by introducing food trays that is made of CPET (a heat-resistant plastic material), which is suitable for conventional ovens and microwave ovens as well as deep-freezing storage. This material enables freezing to 40°C and cooking up to 220°C.

This type of container will be cost effective, as the plastic material is less expensive to produce. Foil is expensive and not suitable for use in microwave ovens, making reheating of the contents almost impossible should this be required. Furthermore, more time is required to heat a meal in an oven than in a microwave. Using CPET trays to heat meals in microwave ovens will add to energy savings on board the aircraft. Microwave ovens weigh less than the conventional ovens, which could indirectly save on the fuel costs.

The container can be sealed with steam film that allows microwave cooking without losing water. Steam film is a peelable lamination film used for the production of easily opened lidding for the packaging of food and non-food stuff in plastic containers. Co-extruded film is readily laminated to substrate to produce a lidding material of outstanding seal-peel performance and versatility. It will also seal a container that has been contaminated by the packaged product for example oils, fats and liquids) (www.foodpackagingsystems.com).

Another option is to change the design of the current packaging. By increasing the depth of the lid on the foil container the stacking ability of the containers can be improved. Another option can be to have a racking system on top of the trolley that can be installed during the hot meal service.

Due to the variety of products used two systems will have to be introduced. Firstly packaging that is supplied from suppliers will have to ensure that all labelling requirements adhere to the legislation required by South Africa legislation as well as international legislation. Secondly, for the various products produced in-house such as the hot meals, printing equipment will have to be obtained to print the labels as

required. There are various options available such as self-adhesive labels, pressure sensitive labels, etc. The labels will require the ability to withstand heat of the ovens.

PROPOSAL 3: Orange juice powder

The container for orange juice currently in use does not have instructions on how to mix the product. Proper instructions are required on packaging for orange juice to enable flight attendants to mix the powder correctly, thus ensuring that the product always tastes the same. The instructions should be written by the manufacturer, and directed to the user, i.e. the flight attendant.

PROPOSAL 4: Confectionary products

Two options are proposed for packaging confectionary products such as bread rolls.

Firstly packing the bread rolls in biaxial-oriented polypropylene (BOPP) film sachets.

The use of this film presents the following advantages:

- It has excellent mechanical features such as tear, shock, and puncture resistance. It is impermeable to moisture and steam.
- The package boasts an attractive glossy appearance due to surface quality and high transparency.
- BOPP films demonstrate high resistance to oils, fats and solvents, as well as to heat and cold, plus dimensional stability and scratch resistance.

Secondly, is to pack the bulk of the rolls in a plastic basket, and pack the basket with rolls into a BOPP film bag. The plastic basket then acts as a serving container (packaging) in itself. This will extend the shelf life of the rolls and reduce the duties of the flight attendants. It will also ensure that no contamination takes place, as flight attendants would not have to remove the rolls with their hands from the present polyethylene bags and into the wicker baskets. The BOPP bags with basket can easily solve the storage problem, as the present wicker baskets do not have to be loaded.

PROPOSAL 5: Labels

A label has been developed that has a window of half enzyme and half protein. A Ph marker is used by the kitchen staff to smudge a sample of the product with one of these labels. The smudge starts the process of the expiry time and date for end user consumption. Any smudge that is yellow is a warning. Each label lasts up to 17 hours after being smudged.

Suppliers will have to adhere to the following changes brought forward in the regulation. A table will be included which determines how to decrease type size pro rata as label size decreases. Minimum type size has been changed to 1mm (Loubser, 2005c:17).

For the various products produced in-house such as the hot meals, printing equipment will have to be obtained to print the labels as required. There are various options available such as self-adhesive labels, pressure sensitive labels, etc. The labels must be able to withstand the heat of the ovens.

PROPOSAL 6: Tea and coffee cups

A polystyrene cup would be more appropriate. Polystyrene consists of dead air cells which prevent heat from escaping or entering the cup, thus maintaining the heat of the contents. This type of container will provide the same characteristics for cold beverages, preventing the contents from being heated as a result of the room temperature or heat of hands.

PROPOSAL 7: Environmental requirements

The use of biodegradable polymers are becoming important to day for the following reasons:

- price and long-term availability of fossil resources:
- increasing calls for sustainable and environmental development
- advanced by the technology used by the manufacturers of these materials
- new recognisable and trusted standards worldwide and consumer interest in organic products and environmental issues.

Materials selected should be certified to one of the biodegradable and compostable standards EN 13432 or ASTM 6400 (Loubser 2005c,21).

PROPOSAL 8: Carbonated beverages

Flight attendants mentioned that beverage cans could be stacked straight up in the drawers instead of on their sides. This way more units can be fitted into the trolley. However, stacked straight up precludes the content type from being identified from above. To overcome this problem cans should be labelled at the top, showing the content type. This would entail manufacturers changing their labelling system for soft drinks and beer intended for flight catering, a cost implication to them that would require negotiation.

PROPOSAL 9: Containers for Snacks

During the day the in-flight catering on all short sector flights consists of a snack, presented in a high print quality box. The box usually contains a bread roll in a polypropylene bag, a chocolate or packet of crisps and a serviette. These boxes fit well in to the trolleys and flight attendants find them convenient to handle. The presentation, quality and type of contents were acceptable to the passengers. The aim of presenting passengers with various food items, is intended to keep passengers occupied during the flight, which supports the fact that flight catering is not only there to feed, but also to ensure that passengers are entertained during a flight.

PROPOSAL 10: Protection form contamination

A heat-indicating strip should be used to indicate if the food has reached the appropriate heat. This will enable the flight attendant to see when the food has been heated sufficiently without touching it, minimising food contamination. This method is also time effective and results in a professional service to the passenger. Another option would be for the catering company to provide heating instructions on the packaging, indicating the temperature and the time it would take to reach the required heat.

PROPOSAL 11: Security

Jones (2004:98-101) states that future packaging may have to be designed to help ensure security. For instance, see-through materials would allow the contents to be seen at a glance to ensure only the right items are loaded on board. Likewise packages have to be sealed to show that they have not been tampered with.

7.6.2 Standardisation model for catering utensils appropriate for use in in-flight catering

Every packaged item that is considered by an airline to be used in in-flight service must be measured against the criteria that are indicated below:

Table 7.2: Standardisation model for catering utensils appropriate for use in in-flight catering

CATERING UTENSILS		
Explanations	Design features to consider	Proposed solutions*
7.6.2.1	Product analysis	1: Ceramic containers
7.6.2.2	Handling ability of packaging	2: Meal trays
7.6.2.3	Supply chain	3: Disposable roll mats
7.6.2.4	Materials	4: Cutlery
7.6.2.5	Shape and size of utensils	5: Salad bowl
7.6.2.6	Protection	
7.6.2.7	Convenience	
7.6.2.8	Aesthetics	
7.6.2.9	Weight	

*A detailed explanation of proposed solutions to catering utensils that meets specified design features can found in the text.

Source: Own compilation

7.6.3.1 Product analysis

The actual product or contents to be containerised should be analysed. For example, establish whether the utensils will be affected by heat, e.g. cups and sauces on meal trays. Certain foods can discolour plastic, e.g. re-usable utensils which are neither aesthetically pleasing, nor acceptable.

The following factors will determine what kind of materials will be required:

7.6.3.2 Handling ability of packaging

An average meal contains approximately 10 items, consisting of the actual tray, a cup, salad bowl, dessert bowl, bowl for butter, biscuits, the hot meal, knives and forks and a tray liner. These items are not stable on the meal tray, and move around during take off and landing. Flight attendants have to spend valuable time arranging these individual items on the tray before presenting it to the passenger.

From a logistics point a view all the re-usable items such as trays and dishes (rotables) have to be cleaned after each flight and sent to the storage locations allocated to each airline at the catering plant. The deadhead requirements of each catering kitchen must be determined and it must be ensured that the various catering kitchens stock levels of deadheads are maintained. The trays and dishes (rotables) that have to be cleaned and stored before and after each flight, take up space and the handling of these items takes up time during the in-flight service.

A standard utensil range should be introduced that can be used by various airlines. This would eliminate all the additional storage locations allocated to each airline and the catering kitchens, managing and maintaining stock levels for each airline will be reduced. Currently airlines are financing the catering utensils. With the recommended standardisation, the in-flight catering company should be responsible for the procurement of utensils.

7.6.3.3 Supply chain

After considering the physical elements of the products, a proper analysis must be conducted of the supply chain to which to product will be exposed to. This is important as it will indicate what design features the final package must have in order to ensure that the product reaches the consumer in an acceptable condition.

The entire supply chain of the product should be identified, for example, the modes of transportation that will be used, the type of handling equipment and storage systems that will be used in the supply chain. The warehouse environment, such as storage equipment and handling equipment should be considered. Demands, needs and characteristics of the final users should not be overlooked.

7.6.3.4 Materials

The final material that will be used must be analysed against certain criteria such as:

- Is the material durable enough to withstand washing equipment?
- Will the material withstand refrigeration?
- Do the utensils add a considerable weight of the galley equipment?
- Is the material durable enough when handled by flight attendants and passengers?

7.6.3.5 Shape and size of utensils

A proper analysis of the storage and handling equipment in the supply chain is important as this will have an impact on the final product. Does the shape of the utensil ensure maximum utilisation of space on board the aircraft? Factors to consider during the design phase, includes the dimension of the trolleys and tray set.

7.6.3.6 Protection

In various instances products/contents require protection at some stage in the supply chain. It is important that appropriate provision for protection is made.

7.6.3.7 Convenience

Will flight attendants and passengers find the equipment and utensils easy and convenient to handle? For instance, are the utensils such as salad bowls with lids easy to open and close. Are the current disposable items such as knives and forks durable enough?

The cups used for hot beverages have a small handle that makes handling difficult for a passenger with large hands.

7.6.3.8 Aesthetics

Is the individual utensil aesthetically appealing to the overall appearance of the meal tray provided?

7.6.3.9 Weight

The weight of glass and ceramic items needs to be considered from two perspectives. Firstly, the weight of items contributes to the overall weight of the meal and beverage trolleys. This can be both inconvenient and present a health risk to flight attendants.

Secondly, the additional weight contributes to the overall cost to the airline.

PROPOSAL 1: Ceramic containers

Weight of glass containers will have repercussions on the transport costs. Plastic, such as polyethylene terephthalate (PET), which is much lighter, is a viable alternative.

PROPOSAL 2: Meal tray with compartments

Various airlines have introduced the use of a lunchbox with a plastic inner consisting of individual departments for the various items. This package is usually a disposable, but the actual costs are high. An option would be to introduce a similar, re-usable tray with permanent compartments with individual sections into which e.g. salad bowls could be placed. This will result in the items being stable on the tray, optimum space utilisation, less loss of stock and handling for the flight attendant would be much easier.

PROPOSAL 3: Disposable roll mats

Replacement of the trays with disposable roll mats that is wrapped around the products, once opened the wrap becomes the 'table-cloth' for the meal. This concept will ensure reduced in-flight service delivery and collection time. This will free space which could be used for other items

PROPOSAL 4: Cutlery

The steel cutlery can be replaced with rigid polypropylene with a magnetic strip in the plastic. This will prevent the cutlery from sliding of the tray. A magnetic ring can be placed under the cups so that the cups stick to the magnetic liner of the tray.

PROPOSAL 5: Salad bowl

The salad bowl used for serving salads in Premium Class requires a lid to secure contents before serving. This will ensure freshness and reduce contamination.

7.6.4 Standardisation model for galley equipment appropriate for use in in-flight catering

All galley equipment is designed according to the requirements as set out by the aircraft manufacturers. Equipment can be varied but certain features cannot be changed for safety and fitting requirements.

Table 7.3: Standardisation Model for galley equipment appropriate for use in In-flight catering

GALLEY EQUIPMENT		
Explanations	Design features to consider	Proposed solutions*
7.6.3.1	Product analysis	1:Appearacne of trolleys and bins
7.6.3.2	Supply chain	2:Operable drawers
7.6.3.3	Operational activities	3:Inductive heating
7.6.3.4	Containment	4:Thermal sleeves
7.6.3.5	Identification	5:Beverage reservoir
7.6.3.6	Material	6:Garbage compactor
7.6.3.7	Handling	7:Sealed trolleys
7.6.3.8	Maintenance	8:Labelled stowages
7.6.3.9	Consistency	9:Maintencance plan
7.6.3.10	Aesthetics	10:Refregeration options
7.6.3.11	Durability	

*A detailed explanation of proposed solutions to galley equipment that meets specified design features can found in the text.

Source: Own compilation

7.6.4.1 Product analysis

The shape of packaged stored or carried in trolleys should be considered during the design phase. Space is wasted in trolleys and storage bins because some products are too high to fit in standard drawers. Such products cans and bottles claim space in trolley drawers.

7.6.4.2 Supply chain

The supply chain to which galley equipment such as trolleys and stowages are exposed to needs to be considered. Stowages and trolleys require considerable handling by various stakeholders.

Durability and convenient handling features should be considered during the design phases of galley equipment.

7.6.4.3 Operational activities

The ovens on board require lots of expensive power supply, space and weight, causing handling of food items at dangerous temperatures to be difficult. The current ovens require heating periods of 10 to 30 minutes. These extended heating periods differ between ovens in different aircrafts. Flight attendants heat food according to their individual perceptions resulting in inconsistent temperature of food offered to passengers.

Too many new product and service concepts have been introduced in the last years. Flight attendants and catering employees are forced to take initiative if proper working equipment and service procedures are not provided. Service procedures and methods of operations should be analysed and standardised. Standardised equipment such as ovens should be installed on all aircrafts.

7.6.4.4 Containment

Storage and handling equipment on board must provide a safe storage environment for packaging and catering utensils. Equipment is required to keep food and beverages cooled or warmed up as required.

After packing of the meals in the trolleys or the oven racks, packaged meals are normally kept cool by using dry ice. Keeping food cool is a top priority, especially in

hot regions where food is not allowed to be heated and cooled twice in a row as the food then becomes contaminated. Dry ice is an expensive option.

It is recommended that trolleys and stowages be manufactured with e.g. a polystyrene layer between the panels of trolleys and stowages. The polystyrene consists of dead air cells that keep heat from escaping or entering.

7.6.4.5 Identification

All trolleys and storage bins are numbered to indicate the contents, but confusion results as new flight attendants and catering employees are not always aware of the allocated location of product storage.

7.6.4.6 Material

The weight of all handling equipment on-board presents both an inconvenience and health hazard to flight attendants on board. All handling equipment should be manufactured in material that is light in weight. Aluminium is mostly used for the construction of handling equipment such as trolleys and storage bins.

Although aluminium is mostly used for the construction of handling equipment such as trolleys, there are still parts of the equipment that are of heavy material, contributing to the weight.

7.6.4.7 Handling

Equipment must be manufactured in such away that it is easy to be handled by employees. Factors to be considered should include the ability to open and close the drawers of the trolleys.

7.6.4.8 Maintenance

Handling and storage equipment must be maintained at all times. Successful companies tend to have a proper maintenance plan in place. Equipment is examined and then replaced should it be necessary.

7.6.4.9 Consistency

Electrical equipment such as ovens must be consistent in operations.

All equipment should have a consistent operational capability. Standard product and services would not be possible if consistency is not ensured.

7.6.4.10 Aesthetics

Trolleys and storage bins make up part of the overall galley appearances and passengers are exposed to. Passengers are exposed to the galleys. Most aircraft design is of such that passengers have to pass through the galley when entering the aircraft, or using toilet facilities.

7.6.4.11 Durability

Equipment such as trolleys and storage equipment are exposed to continuous usage. The importance of durability becomes important.

PROPOSAL 1: Appearance of trolleys and bins

To contribute to a more pleasant atmosphere on board the appearance of the galley should be considered. The drawers of the trolleys and storage bins can be replaced by better looking material such as coating doors of trolleys with a plastic layer to enhance the overall appearance of the cabin.

PROPOSAL 2: Operable drawers

The Vario System optimisers (drawers) can be placed both hanging and standing on a runner in the trolley or storage bins. As a result optimising loading is guaranteed (In-flight hospitality, 2005:33).

PROPOSAL 3: Inductive heating

The induction heating units use approved technology, featuring contact less inductive heating. The correct preparation temperature for different meals is chosen automatically by the control system. The oven must be plug compatible and can be integrated in a superior control system while logging according to Hazards Analysis Critical Control Points (HACCP). Excellent quality is the result of combination of induction heating and implemented steam directly on the meal's surface (In-flight hospitality 2005:33).

PROPOSAL 4: Thermal sleeves

An alternative to dry ice is the use of a thermal sleeve which is designed to trap the cold air around chilled oven racks and prevent warm air from warming the meals through conduction and convection.

PROPOSAL 5: Beverage reservoir

Permanent fixtures containers inside the trolley for carbonated drinks that could be drained out of a tap.

Installing a reservoir for the basic carbonised drinks (Coca Cola, soda water, lemonade) in the beverage trolley. The contents must be supplied in 5 l containers that can fit snug in a dry storage unit and be replenished during the flight. Beverages are presently supplied in the standard round tins, which take up a lot of space. Flight attendants give passengers a tin and a plastic glass during the service. This system will ensure:

- a reduction in space used
- increase the quantity carried
- less waste in the cabin and the environment
- reduced costs for the airline, less product items to be handled by the flight caterer and flight attendant
- Less handling and inconvenience for the passenger due to less space taken up by the tin.

The name of the manufacturer can be displayed on the trolley. Manufacturers can also pay for advertising of their logos on the cups glasses used, which will result in additional revenue generated for the airline.

PROPOSAL 6: Garbage compactor

Alternatively, as considerable space is used for the stowage of waste materials, an airline may decide to invest in a waste compactor to reduce the space requirements for this essentially useless by-product. These are available in full- or half-trolley sizes which come in two main types. First, those in which all types of waste are put and

then compacted by a single hydraulically operated compacting plate. The compacted waste is stored in special liquid-proof containers and can be reduced to one-tenth of its original volume. The second type of compactor allows for recycling as well as compaction in that waste can be sorted into three separate sections, such as cans, glass and plastic, as the trolley is wheeled along the aisle during the collection of the passengers' waste. In this case the galley compression plate, which is fixed to the galley, can move backwards and forwards to compress each section of the trolley load in turn. Normally, ground service personnel may have to collect waste in up to eight different locations within an aircraft (Jones 2004; 254). This will be reduced by the on board implementation, which reduced the work for the flight attendant, saves space and indirectly has a cost saving impact for the airline e.g. fuel costs.

PROPOSAL 7: Sealed trolleys

After the meal service flight attendants gather meal trays and replace them in the trolleys, which are stored in the galleys. Odours from used meal trays can be unpleasant to everybody on board. It is suggested that trolleys should be equipped with a proper sealing system to prevent the diffusion of food odours.

PROPOSAL 8: Label stowages

Allocated space should be assigned for various goods such as newspapers, toilet paper, etc, with a specific label on each stowage or bin to reduce the confusion amongst crew and to ensure that the cabin is neat at all times. This would not infringe on the space specifically available for the passengers luggage.

PROPOSAL 9: Maintenance plan

A proper maintenance plan should be incorporated, introduced and implemented. A stakeholder in the supply chain could outsource certain functions. If the maintenance were outsourced to a company that owns, maintains and replaces all handling equipment, fewer problems would be experienced. At this point, no ownership of equipment is taken by anyone, resulting in equipment being abused.

PROPOSAL 10: Refrigeration options

To overcome the problem of beverages that are not chilled and then have to be transferred to ice containers and back to the beverage trolleys, the following is suggested.

Redesigning the trolleys, to either have in the panels a material that keeps cold in and the heat out. A second alternative is to have a refrigerator on board. The loaded beverage trolley is pushed into the refrigerated unit.

7.7 GENERAL SERVICE ATTRIBUTES

7.7.1 Proper training of flight attendants

Flight attendants must be trained in stripping the cabin in a standard way. Not all flight attendants have the experience or know how to do this specific task that is seen as an unimportant activity in the training process. The neglect of the task results in used meal trays being stowed in storage bins. This increases the workload of the employees of the catering company that must separate the content of the trolleys during the sanitisation processes at the catering plant.

Respondents made it clear that they are, at times, confronted by passengers to answer questions on processes and aspects pertaining to the airline, and in-flight catering supply chain. Generally, flight attendants do not have this information, and may therefore seem un-informed. It is suggested that proper training and field trips are conducted to the various stages in the supply chain, plants and departments of both the airline and in-flight catering plant to educate flight attendants on all processes. This will improve the work ethic and morale of attendants and other employees and promote ownership amongst all employees as well as responsibility for equipment and the operation as a whole.

7.7.2 Educating the passengers

There is a specific way in which various catering items should be used and how the meal tray is supposed to be arranged before being issued to the flight attendants. After the emergency procedures have been featured electronically a feature can be included showing and educating passengers how to use and repack the meal tray. In

aircrafts not equipped with a television screen a booklet/user guide can be placed in the seat pockets.

7.7 OUTSOURCING

According to Jones (2004:120-121) 'production units' are getting smaller as a major trend in the in-flight catering industry is outsourcing production of food items to food manufacturers.

The reason is that the manufacturers have developed a wide range of cook-chill or frozen meal products, usually for retail distribution, through supermarkets to the domestic consumer. However, the flight catering industry could equally use such products. The large-scale manufacturing of these items, based on economies of scale, often means that their unit price is lower than that achievable by caterers if they produce these products in-house. In addition, by purchasing cook-chill entrees, vegetables, desserts, and so on, there is less need for investment in blast chiller, kitchen equipment, and other related infrastructure, and less need for skilled labour. It would further also reduce the risk of contamination.

This policy is also consistent with trends in the airline industry in general, which has adopted the general business principle that a firm should concentrate on its core business. For flight caterers, their core business is increasingly seen as logistics rather than food production.

Many products used on board the aircraft are purchased from suppliers that cater to both the airline and the retail market. The same marketing mindset used for the retail market is applied to the airline products. However, passengers have little choice of products on board, so branding and overall product image is not that important. Attention should be paid to flight attendant and passenger needs and the confined space of the aircraft.

Packaging can result in a major contribution to a company's profits through the reduction of costs. This does not mean cheap packaging, but different use and application of packaging that fulfils its role at the optimal overall cost to the airline.

7.8 FUTURE RESEARCH

A potential success will signify the move towards a multilateral aviation framework and perhaps the creation of a Transatlantic Common Aviation Area, following an open-skies agreement between the US and the EU. This will probably have a snowball effect in other countries that will seek to replicate liberal policies. Because of subsequent privatisation, mergers and acquisitions, a truly global airline industry may then emerge characterised by the prevalence of few trans-national carriers. Therefore, the competition authorities should be alert to avoid collusive behaviour or abuse of market power by the dominant airlines (Papatheodorou, 2002:24).

According to Jones (2004:104-105) food and drink manufacturers must continuously seek to develop and expand their business if they are to survive, and this can be achieved in a number of ways. Firstly, they could extend their customer base with additional outlets. Secondly, they could retain the existing number of customers while at the same time extend the market share of their products offered. Thirdly, they could adapt both courses of action. In the latter two course of action, food and drink manufacturers must develop new product lines or modify and improve existing product ranges. This can be done in isolation and offer the new or revised products to the flight caterer and airline. However, for the manufacturer this is potentially risky, as the airline or caterer may not like the product; it can also be very expensive.

7.9 CONCLUSION

The research suggests that the overall strategy of all stakeholders in the supply chain needs to be aligned. Although businesses today identify the importance of an aligned strategy, they seemingly fail to identify the core components that should be focused on and implemented to ensure objectives being met.

Critical points need to be addressed by businesses in the supply chain to ensure strategic objectives are achieved. Businesses should maintain a good balance between innovation and standardisation. Although focus is placed on customisation to improve customer service, this is not possible in the airline catering industry due to the complexity of the supply chain.

The aim of any airline is to provide excellent service by improving packaging, catering utensils and galley equipment through implementing the suggested

standardisation model, the in-flight catering service of SAA may stand to benefit. Flight attendants' duties could be streamlined and service made easier, to achieve greater customer or passenger satisfaction.

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APPENDIX A

DISCUSSION GUIDE

Critical questions concerning the packaging, catering utensils and galley equipment.

The following questions are more specific to the areas/problems identified by the researcher. These questions included:

General :

- Impact of time spent on catering on time available to deliver other services.

Packaging:

- What are the problems you have observed that passenger experience with the packaging used in catering
- To what extent does the packaging use space optimally/avoid space wastage?
- Are the packaging suited to the storage equipment used on board the aircraft such as the food and beverage trolleys – where it is packed in and from where it is served?
- What information in terms of usage and ingredients is required on packaging?
- Does the packaging reflect this information
- Does the packaging protect the content from light, infestation, evaporation, vibration and spilling of the contents during loading and use by passenger
- To what extent does the packaging protect the contents from odour, contain odour, preserve colour, taste and
- To what extent is the packaging convenient to handle? Give examples
- Does the packaging allow you to effectively identify the content
- Does the packaging provide space for instructions how to use the content?
- How effective in terms of protection is the packaging used in the airline industry.
- What are the most problematic packaging in your opinion

Catering utensils:

- How worker/user friendly is the packaging, catering utensils and galley equipment for the flight attendants that serve the food and the drinks?
- To what extent does the packaging and catering utensils and contribute to the image of a specific airline, can it be used as a “marketing tool”.
- Would it be possible to standardise equipment or components therefore.
- Would you say that the current design of the packaging, catering utensils and galley equipment negatively influence the service provided by the flight attendants.
- Are the packaging, catering utensils and galley equipment used on board the aircraft appropriate for the environment in which it is used?
- What do you think about the equipment such as the food and beverage trolleys used.
- To what extent is the catering utensils adequate/appropriate/practical?

Galley equipment:

- What is your opinion of the:
 - Space allocation of equipment on board
 - Galley configuration and design.
- What would be the advantages and disadvantages and for whom?
- To what extent is the galley equipment adequate? Or appropriate (practical)
- What limitations do the galley equipment represent? Give examples.
- To what extent is the packaging, catering utensils and galley equipment compatible? Is it easy to retrieve and store?
- Can food be kept cold/chilled to the extent that is required?

Closing questions suggestions and final thoughts

The main objective of this section was to elicit anything else respondents might have wished to share. The researcher wanted to take the opportunity to identify other areas of research.

“Taking into consideration our discussion, do you think we have missed anything?”

ANNEXURE B

RESPONDENT PROFILE

Respondent	Date Interviewed	Age	Race	Gender	Respondents Desingation	Years Experience
1	1-11-2006	33	White	Male	Flight attendant	10
2	2-11-2006	63	White	Male	Purser	28
3	2-11-2006	27	Coloured	Female	Flight attendant	7
4	3-11-2006	30	White	Female	Flight attendant	10
5	6-11-2006	25	Black	Female	Flight attendant	5
6	7-11-2006	25	Black	Male	Flight attendant	5
7	8-11-2006	28	Black	Male	On board leader	4
8	8-11-2006	26	Coloured	Female	Flight attendant	7
9	9-11-2006	40	White	Female	Purser	15
10	10-11-2006	43	White	Female	Purser	23
11	13-11-2006	30	Black	Male	Flight attendant	8
12	15-11-2006	29	Black	Male	Flight attendant	5
13	15-11-2006	38	White	Female	On board leader	18
14	16-11-2006	30	White	Female	Flight attendant	6
15	20-11-2006	22	Coloured	Male	Flight attendant	2
16	20-11-2006	33	Black	Female	Flight attendant	15
17	21-11-2006	27	Black	Male	Flight attendant	6
18	22-11-2006	25	Black	Female	Flight attendant	4
19	23-11-2006	28	Black	Female	Flight attendant	10
20	24-11-2006	35	Chinese	Female	Purser	5
21	24-11-2006	40	White	Male	Purser	15
22	27-11-2006	34	White	Female	Flight attendant	8
23	28-11-2006	30	Coloured	Female	Flight attendant	10
24	29-11-2006	27	White	Female	Flight attendant	7
25	30-11-2006	55	White	Male	Purser	24