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Airline in-flight entertainment: the passengers' perspective

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Abstract

Following relaxation of economic regulation in many aviation markets, the competition amongst airlines has intensified in recent years. This has resulted in improvements in airline products, especially in the in-flight services. One of the areas on which airlines have focused their attention is the provision of personal in-flight entertainment (IFE). In 1998, airlines spent $1.8 billion on IFE. However, the industry is faced with a number of questions in relation to such levels of investment: Are the investments justified? Does IFE influence passengers' choice of airline? Does IFE have a revenue-generating potential? What does the future hold as far as the IFE services are concerned? This paper addresses these questions based on a passengers survey and literature review. The results indicate that while IFE is not amongst the primary factors affecting passengers' choice, it contributes greatly to passengers' satisfaction with airline services. While provision of IFE can currently act as a differentiating factor, in the future it will become part of passengers' expectations. It has also become apparent that, while IFE has the potential to generate some revenue, it would not be enough to cover the total costs associated with the installation and running of IFE systems. The impact of IFE would be felt, indirectly, through increase in passenger loyalty which should have a positive impact on airline revenues. © 1999 Elsevier Science Ltd. All rights reserved.

Keywords: Airline passenger preferences; In-flight entertainment; Product differentiation

1. Introduction

With the increase in the level of competition in most air transport markets, airlines are continuously seeking ways of differentiating their product from one another. In recent years, one of the areas for product differentiation has been the development of in-flight entertainment (IFE), in which airlines are investing a huge sum of money. The increase in the IFE expenditure has been due to airlines moving away from the old overhead distributed services to video and audio systems which are installed in the back or the armrest of individual seats. Table 1 shows a sharp increase in airline industry expenditure on IFE and related communications in recent years.

In early 1990, airlines were spending $1800 per seat for their IFE systems whereas in 1998 $6000. In the year 2000, the expenditure per seat on IFE is expected to reach $10,000 (Airline Business, 1999). Airbus estimated that IFE accounts for 2% of overall costs of aircraft. It must also be borne in mind that such investments are typically written off over 3–5 yr period.

IFE is also a considerable weight factor, as it has been estimated that over the last 10 yr 6 kg have been added to every seat in aircraft equipped with such systems (Kelly, 1999).

Airlines generally develop product and services to achieve three goals: (a) to satisfy customers' needs and requirements; (b) to meet the company's corporate objectives, or in other words satisfy shareholders by producing profits and (c) to out-perform the competitors through product differentiation. Therefore, such a heavy investment by airlines in IFE systems raises a number of questions in relation to the role and the impact of IFE in the total airline product, which are as follows:

- How important is IFE in passengers' choice of airlines?
- Do passengers really appreciate IFE?
- Does IFE increase passengers' loyalty?
- Does IFE have a revenue generating potential?
- Are passengers prepared to pay for IFE?, and, if so, how much?
- What about the reliability of IFE systems and its impact on passengers?

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Table 1
Airline investments in IFE, 1992–1998

	(US $) billion
1992	0.40
1993	0.60
1994	0.80
1995	0.84
1996	1.20
1997	1.37
1998	1.75

Source: World Airline Entertainment Association (WAEA, 1999).

- What are the implications of not having an IFE?
- What about the future role of IFE in airlines' product plan?

This paper addresses the above questions based on a passenger survey carried out in the UK in summer of 1998 and extensive literature survey on the subject. Unlike most other literature on the subject, the paper reflects passenger views on IFE rather than airline or supplier views. As mentioned in the Inflight Annual Handbook (1999), it is not very clear whether the technology is driving the demand for the systems, or demand dictating the technology in the area of IFE development.

To address the above questions, the paper is divided into three parts. The first part provides a brief overview of current IFE systems, the second or the main body of the paper analyses the passenger survey results, and finally in the third part conclusions are drawn about the role of IFE in airline product design.

2. Current in-flight entertainment systems

Entertaining passengers, especially on long haul flights, is not a new concept. As there are some evidence that IFE, in 1930s, included live singers, musicians and fashion shows (Kelly, 1999). However the technological revolution in IFE has taken place in the last decade. With the arrival of miniature TV screens in the consumer market, the idea of providing them during the flight was initiated. The first personal screen video system was tested on a Northwest Airlines' Boeing 747 in June 1988. The pioneering airlines in providing personal IFE tend to offer these services in their first and business class cabins. However Emirates was the first airline to offer IFE in all passenger classes in 1992. Virgin Atlantic and Singapore Airlines also provide personal IFE in all their cabins.

The current IFE systems include screen-based, audio and communication systems. The *screen-based* products include *video systems* enabling passengers watching movies, news and sports. This system has progressed into *video-on-demand*, allowing passengers to control when they watch the movies. *Air map display* is another product, allowing passengers to locate their flight en route. *Exterior-view cameras* also enable passengers to have the pilot's forward view on take-off and landing on their personal TV screens. Other screen-based facilities includes *gambling*, *computer games*, *destination information*, *financial services*, and *shopping catalogues*.

Audio systems includes different types of *music channels* and special programmes recorded for the airlines, such as interviews with public figures, authors and celebraties.

Communication systems includes mainly business facilities such as *telephones*, *facsimile* and *in-seat power supplies*.

The IFE suppliers and manufacturers are continuously working on developing new systems. Most recent developments includes the provision of the digital versatile disk (DVD), which would improve picture, sound quality and provide greater capacity and durability, compared with tapes. This system is supposed to be more reliable, compact and lighter than traditional tape players (Flight International, 1999). For more information in relation to future technological development in IFE systems see Whelan (1999).

One of the key factors in provision of IFE is the reliability of the systems. In mid 1990, airlines experienced serious reliability problems with the systems. Currently, the suppliers of the systems offer 98% reliability which means on average the remaining 2% passengers would have a problem with their IFE system. This could mount to a relatively large number of unhappy passengers on a wide body jet aircraft carrying 400 people, over a period of time.

Having highlighted the current products offered by airlines in their IFE programme, the next chapter discusses passengers perception of such systems.

3. The passenger survey

A sample of 100 passengers were surveyed by means of postal questionnaires and interviews. The questionnaire was designed to establish the passengers' travel behaviour and their experience with current IFE products and services.

The rest of this section discusses the results of the survey in order to address the questions raised in Section 1, by focusing on three most important areas discussed above.

3.1. Passenger perceptions of IFE

As discussed in Section 1, one of the objectives of providing a service or product is to meet the customer

needs. In that context it was important to establish to what extent IFE affects a passenger's choice of airline.

The results of the survey indicated that, while the most influential factors affecting business passengers were reliability, punctuality, seating comfort and schedules, for leisure passengers price was the most important factor. Although IFE was one of the amongst factors influencing the choice of passengers it was not regarded as one of the most important ones (Fig. 1).

The findings were very much in line with the IATA's Corporate Air Travellers Survey illustrated in Fig. 2. As shown, IFE does not feature as a strong influencing factor amongst other factors.

A similar survey, carried out by SPAFAX Consulting for both business and economy class passengers, also gives IFE a lower priority in factors affecting airline choice (PIER, 1998). Clearly it is hard to imagine that passengers would give a high priority to provision of IFE in their choice of carrier. If everything is equal, perhaps IFE could play a role to tip the balance towards a competing carrier with such systems.

Sometimes it is argued that what passengers actually state as their preferences are not the same as their revealed preferences. In other words, passengers may enjoy IFE but when their opinion is sought about it, they give it a low priority. To establish whether passengers actually regard IFE as an important in-flight product feature on long haul flights, they were asked about their most preferred activities during the flights. The results are illustrated in Fig. 3. As can be seen, relaxing is the most preferred activity. This is in line with an American Express survey, 1999, which indicated that 54% of business passengers like to relax while flying while 26% work during the flight. The most preferred activity after

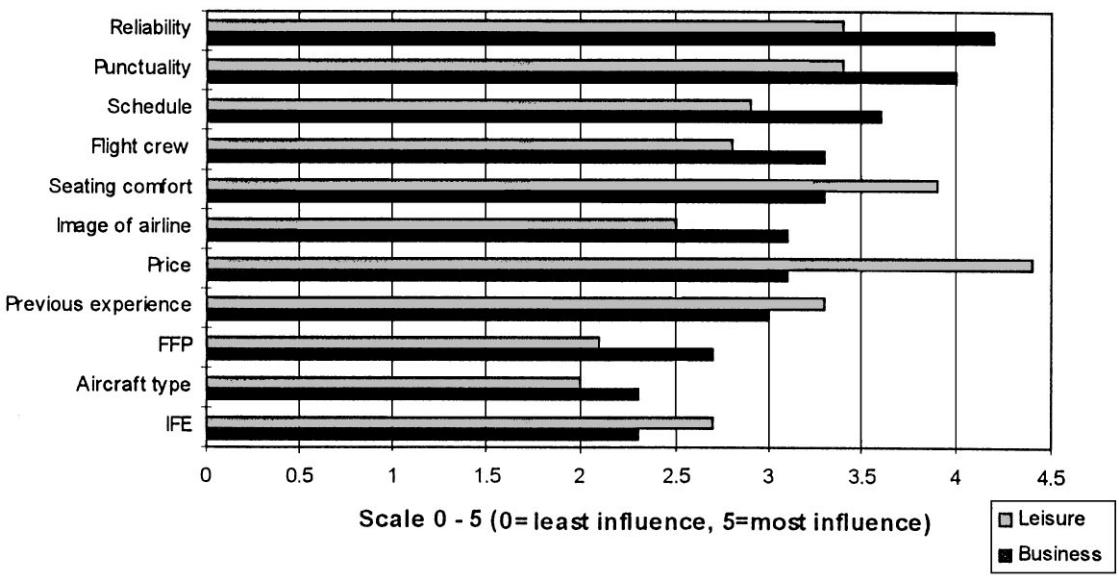

Fig. 1. Factors influencing passengers choice of airline.

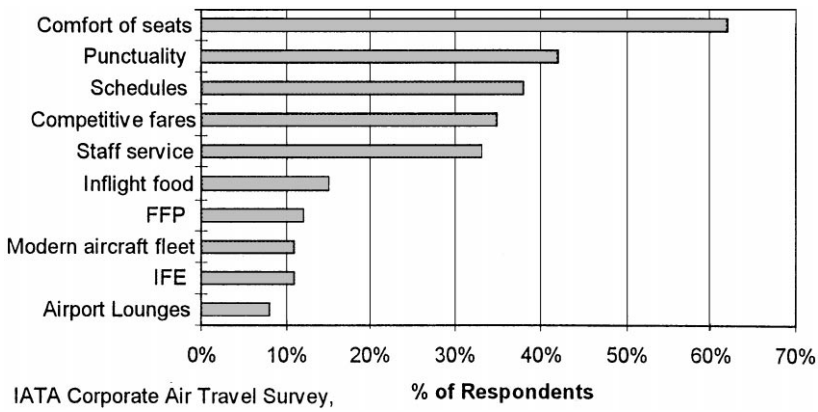

Fig. 2. Important aspects of the long haul business product.

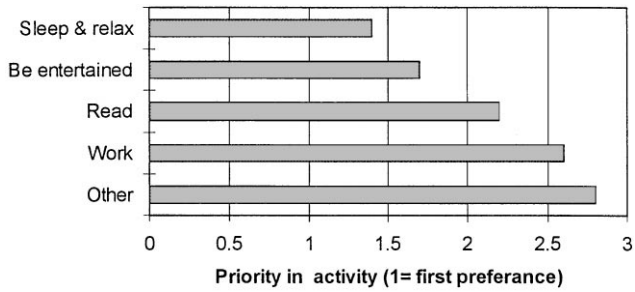

Fig. 3. Prefered activities on long haul.

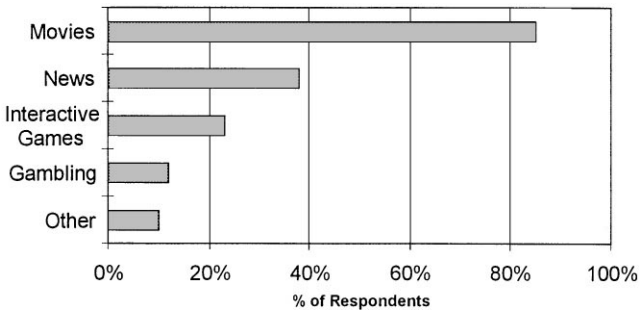

Fig. 4. Prefered types of in-flight programme.

relaxing and sleeping was being entertained. The result is in line with the trend in public attitude towards entertainment. The entertainment industry is amongst the fastest growing industries. Therefore, it is not unrealistic to assume that people not only like to be entertained on the ground but also in the air, especially during long haul flights. Being entertained in economy class during long flights is even more important. This is due to seat configuration in most airlines' economy class cabin which makes it difficult to sleep or relax.

When the respondents were asked what is their most preferred type of in-flight programme, movies were ranked by over 80% of passengers as the most popular one (Fig. 4). This explains the trend in airlines offering of up to 22 video channels, with an average of 52 film titles per year on screens of up to 36 cm in size. Singapore Airlines offers the largest TV screen in the industry in their first class.

The preference for various IFE features were recorded in an IATA survey of business passengers. As can be seen in Table 2, power sockets for computers, e-mail and internet are given priority. To ensure that the business passengers survey of most desirable IFE facilities is in line with what they really prefer, airlines can assign a small number of their cabin crew to pay special attention to business passengers behaviour in relation to their activities during flights. There is some anecdotal evidence that while business passengers state that they would like all the business facilities possible in the air, in reality they

Table 2
Most desirable IFE facilities

Facilities (0 = not interested, 5 = very interested)	Mean score
Power sockets for computers	3.59
E-mail	3.23
Internet	3.09
In-flight phone	3.06
In-flight fax	2.80
Live TV	2.74
On-line connection to database	2.66
On-line reservation to car hire, connecting flights	2.44
Live Radio	2.04
Catalogue Shopping	1.12
Gambling	0.77

Source: IATA Corporate Air Travel Survey (199 data).

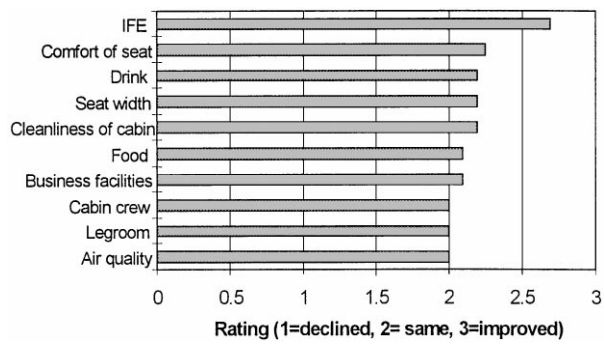

Fig. 5. Passengers' perception of in-flight product.

prefer to relax and watch movies. Therefore, it would be very useful to compare their stated preference with their revealed preference in a systematic and structured way.

The respondents were also asked which aspects they felt were improved most amongst all the in-flight products, in recent years. The results are summarized in Fig. 5. It could be seen that IFE was perceived by passengers as the most improved feature of in-flight products.

The results of passenger perception of IFE indicates that while IFE is not one of the crucial factors affecting their choice of airlines, they appreciate it during the long haul flights. Also IFE appears to be addressing passengers' needs in relation to their preference for relaxing and being entertained during long haul flights.

3.2. *Passengers' willingness to pay for IFE services*

As stated in Section 1, the second objective of provision of any products or services is to meet shareholders requirements which is generating sufficient revenue not only to cover costs but to generate additional profit. In order to establish whether IFE has the potential to generate revenue from passengers, the respondent were asked if they were prepared to pay to watch movies.

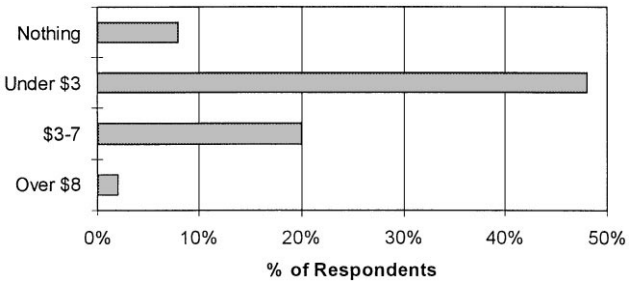

Fig. 6. Passengers' willingness of pay for movies.

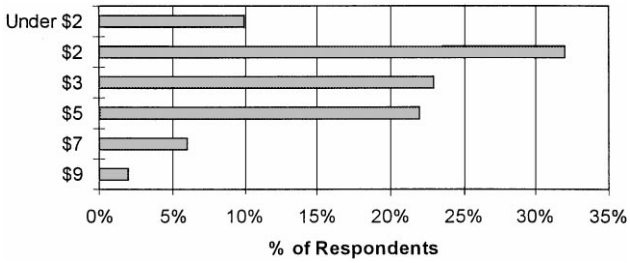

Fig. 7. Reasonable telephone charge/min.

Movies were felt to be the programme with most potential to generate revenue, as it was the most preferred IFE programme by the passengers (see Fig. 4). The majority stated that they are prepared to pay to watch a movie. While nearly 50% of respondents were happy to pay under $3, only 20% stated they would pay between $3 and $7. Based on the cost of installing IFE and the fact that they are written off over a period of 3–5 yr (as discussed in Section 1), unless the majority of passengers are prepared to pay more than $3, the scheme could actually increase the costs to airlines due to need for the collection of money and the required administration (Fig. 6). Swissair for example recently experimented with a charge for movies, but with limited success.

Respondents were also asked if they consider $10/min as a reasonable charge for a telephone call on-board an aircraft. Almost 80% of passengers stated that it is not a reasonable charge, the rest felt it is reasonable only in an emergency. When they were asked what is a fair charge, it appeared that $2–$3 is what the majority were prepared to pay/min (Fig. 7). It appears that, by lowering the call charges, more passengers will use the telephone for a longer period of time. This would be very much in line with people's behaviour in relation to the usage of mobile phones on the ground. As the price of call by mobile phones dropped over the past years, its usage increased greatly to the extent that a large proportion of population in developed and even developing countries have a mobile phones. Therefore, it is not surprising that JetPhone has reduced its telephone charges for Air France's passengers towards the end of 1998. It introduced a simplified pricing structure by charging for domestic calls 10FF/min, 20FF/min for European calls and 30FF/min for the rest of the world (Inflight March, 1999).

The results of the survey with regard to the revenue generation potential of IFE for two most popular IFE products, movies and telephones, indicates that it cannot be considered as a source of revenue to the extent to cover the full costs of the system, including a profit. Although it has been mentioned that advertising and gambling could have a better potential for generating revenue, gambling does not appear to be very popular amongst a large proportion of passengers (see Table 2).

3.3. *The role of IFE as a differentiating tool*

The third objective of any product provisions, as stated in Section 1, is to out-perform the competitors. Currently there are three groups of airlines in relation to their attitude to the provision of IFE. One group consist of those airlines which consider IFE as a very strong differentiating tool. These airlines have invested heavily in such systems. A prime example would be Singapore Airlines which has been nominated as the best provider of IFE in the industry (World Business Class Survey, 1998). SIA's most recent development in their IFE, called Kris World, includes the provision of cinema quality sound with standard stereo headphones (Outlook, 1999). Other carriers which have used IFE to differentiate their products from the competition include Emirate Airlines, Virgin Atlantic, Malaysian Airlines, Swissair and Lauda Air.

Another group of airlines consists of carriers that are undecided about the strength of IFE as an effective differentiating factor.

The third group of airlines includes those that are currently focusing on other areas of product provision to catch-up with more progressive airlines. Therefore, IFE is by no means on the top of their list of product development or improvements.

In order to address the question of IFE as product differentiator, one needs to establish the position of IFE on passengers' map of airline product features. To do so, airline products are divided into four categories of core, expected, augmented and potential features. Core product consist of those element of airline service which makes the organisation an airline such as aircraft type, schedules and a safe and reliable transport of passengers. Expected products are those product features that are additional to the core product, and almost all traditional airlines provide them, such as provision of food and drink during the flights. Expected products are those features that add value to passengers and are beyond passengers' expectation. These are those features that are provided by a number of airlines and used as differentiating factors. Potential products are those product features which are currently planned for future provision

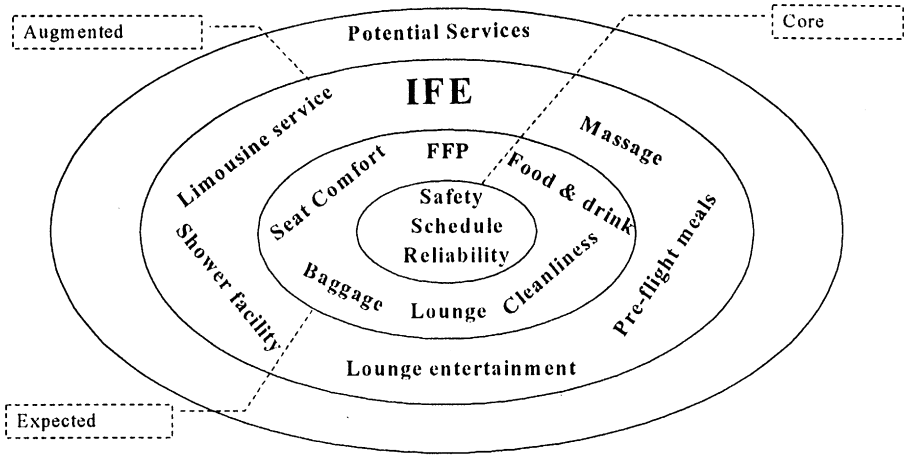

Fig. 8. Position of IFE on passengers' map of airline product.

such as shower room on board, gym, etc. As illustrated in Fig. 8, IFE could currently be placed in the augmented part of airline products. This is because there are a large number of airlines that do not offer IFE, especially in economy class.

As the number of airlines offering such systems increases the position of IFE in passengers map of airline product moves towards the expected product features. Therefore, it could be said that IFE is currently a product differentiator. As mentioned in Section 1, the reliability of the systems is very important. When the systems do not perform as expected it can in fact create a negative image in passengers mind. A flight can become very unpleasant when passengers with faulty personal IFE system see fellow passengers are enjoying different programmes offered by the system.

In the future, as stated by marketing director of British Airways (WAEA, 1999), the industry will face competition in the area of quality and range of IFE as opposed to just the provision of the system. It is also very likely that the provision of personal IFE be used as a differentiating factor in medium haul flights of between 4 and 7 h.

4. Conclusions

Based on the passenger survey and other literature on the subject the following conclusions are drawn on the questions raised in Section 1.

- IFE is not a primary factor affecting passenger choice of airlines. However, passengers appreciate the provision of IFE, especially on long haul flights. Provision of IFE will meet passengers' needs to relax and be entertained during long haul flights.
- IFE enhances the airline service, image and brand. Of course, it is not a substitute for poor services in other areas of an airline's product plan. However, if the airline core product, namely, the transport of passengers in a reliable, efficient and safe manner meets customer satisfaction, the provision of IFE could enhance the airlines' image.
- Although passengers increasingly appreciate the provision of IFE during long haul flights, they do not appear to be prepared to pay for it to the extent to cover the full costs of the systems. More over, since many airlines do not charge their passengers for IFE, it is increasingly hard for others to introduce charges.
- IFE currently provides product differentiation; however, in the future it will become part of expected product features in all classes. In that case the question in relation to IFE would not be about how much revenue it generates but how much revenue would be lost due to the lack of IFE.
- The key issues in relation to IFE are its reliability, simplicity of its operation by passengers and availability on all aircraft fleets to the chosen destinations. Unreliable IFE can damage the image of an airline, and create a poor perception in passengers' mind.

The technology will certainly drive the demand for IFE. The introduction of the digital versatile disk (DVD) is an example in the case. The majority of airlines will eventually install personal IFE in their aircraft. While, currently, the airlines with advance IFE can reap the benefit of having such systems, in the future the differentiation will come from the quality and the range of services offered by IFE systems.

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