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Development of intelligence-based ancillary revenues and products

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Abstract

Recent research has demonstrated that, despite the rising focus on ancillary revenues by airlines worldwide, only a few core secondary products and services have proven to be lucrative. This study investigates the benefits to airlines of using the pareto principle as a way to dedicate time and resources to the specific ancillary products that currently and potentially generate the most revenue. Combining the results of a 2015 survey of industry experts, with an application of the Pareto Priority Index (PPI), the merits of an intelligence based development of ancillary products is determined. It is found that, once the cost of investing and developing competencies in ancillary revenues are taken into account, it is often better to focus on the few core products and services that are most lucrative, although these 'core' products and services can vary by flight length (short/long-haul) and thus should be identified on a case-by-case basis.

Keywords: Pareto principle, PPI, ancillary revenues, ancillary products, airline revenues, intelligence-based management

1. Introduction

Achieving profitability in the airline industry over the last few years has improved but remains challenging. The industry has only returned marginal profitability through the decades, which can be directly attributed to its high fixed cost structure, overleveraged balance sheets, low barriers to entry, higher barriers to exit, network fragmentation, strong unions, cyclical macroeconomics, fluctuating fuel prices, a unique regulatory environment, and monopolistic/oligopolistic suppliers – which are just a small sample of the ongoing barriers that impede profitability. However, IATA (2016) reported that airlines worldwide generated net profits of US\$33 billion in 2015, which were the highest in the industry to date but the overall net margin remains quite small at only 4.6%, netting a return of around \$9 per passenger (IATA, 2016). The outlook by region is quite polarised with nearly 60% of all net profit in 2015 being made by North American based carriers alone. To add to this Latin American and African carriers actually made a small net loss showing how there are parts of the industry that are still incapable of achieving profits during the most favourable of conditions (low fuel prices, bond/loan rates and high traffic growth).

Ancillary revenues have become a key component of overall revenues for airlines worldwide and are now estimated to be worth around \$60 billion in revenue or 7.8% of total commercial airline revenue (IdeaWorks, 2015). Many parts of the airline sector have now become reliant on additional revenues in their quest to achieve positive profit margins. According to IATA airlines worldwide earned around \$15 per departing passenger in ancillary revenues in 2015. Thus without the presence of such revenues the \$8-9 dollars of net profit per departing passenger would be wiped out leaving the industry with a net loss of around \$6 dollars per departing passenger (IATA CFO Summit, 2015).

A relationship between a carrier's focus on ancillary revenues and operating profit is also emerging over time with a moderately positive correlation being found between ancillaries as a percentage of total revenues and operating profit as a percentage of total revenues. LCCs Allegiant (32% and 17%), Ryanair (26% and 14%) and Air Asia (17% and 15%) are examples of high ancillaries and operating profit margins respectively whereas the reverse is true for carriers such as PIA (1% and -18%), SAA (2% and -1%) and Korean (7% and 0%) (IdeaWorks, Oliver Wyman, 2015, IATA, 2013).

The above figures only present aggregates, however, and do not tell airlines which ancillary revenues in particular to focus on to ensure that, for individual carriers, the ancillary revenue/operating profit relationship continues to be positive. This study extends recent work by Warnock-Smith et al. (2015) and O'Connell and Warnock-Smith (2013) by introducing a Pareto principle to the identification and implementation of ancillary products and services, something which is termed intelligence-based management of ancillaries that allows time and resources to be prioritised to the specific products and services that generate the highest net revenue.

The rest of the paper is broken down as follows: Section 2 contains a fuller review of the commercial airline revenue literature, section 3 details the Pareto methodology and selection of

carriers and ancillary products/services based on the findings of the Warnock-Smith et al. (2015) survey, section 4 details the results and accompanying discussion and section 5 concludes.

2. Commercial airline revenues and the role of ancillaries

Airlines have traditionally earned the bulk of their commercial revenues through the sale of tickets for seats and freight rates for cargo. In the face of stiffening competition in the sale of these core products (De Wit and Zuidberg, 2012), airlines have increasingly looked to the sale of add-ons and unbundled products and services to both keep the base fares competitive and ensure sufficient revenue generating opportunity for each passenger.

What is seemingly, therefore, a 'win-win' situation for airlines may not actually be the case if core customers do not see any price fairness in the purchase of ancillary products and services. Price fairness, according to research carried out by Chung and Petrick (2012) and supported by Waguespack and Curtis (2013), can be delivered as long as passengers feel there is 'cognitive attribution' (e.g. unbundled fees can be justified through a very low basic fare) or if there is 'price comparison' (i.e. competing airlines are also engaged in the same products/services, charging similar rates). The idea of both studies is that if customers believe they are being 'fleeced', then it may not be worth unbundling or introducing such products and services. As stated in Waguespack and Curtis (2013), if such charges are instated (e.g. baggage fees), then the pre and post flight communication, clarity and transparency needs to be first class to avoid negative feedback.

Things leads to the question – which ancillary products and services of the five categories mentioned in Warnock-Smith et al (2015), those of unbundled products, punitive charges, commission based revenues, Frequent Flyer Programme sales and advertising, should be focussed on and are least likely to be considered 'charges' or most likely to be considered 'value adding'. It is interesting to note Ryanair's well documented move away from punitive charges (e.g. lost ticket/boarding pass fee) as part of its Always Getting Better Programme in 2014 (Coomb's, 2014) as an indicator that even the most aggressive LCCs are putting in place checks and balancing in their ancillary revenue and marketing approaches. O'Connell and Warnock-Smith (2013) used an acceptance ranking based on passenger perceptions divulged in a 2011 on-line survey to suggest airport car parking and checked bags to be the most accepted commission based and unbundled services respectively. ¹Warnock-Smith et al (2015) took this a step further with a more recent 2014 survey, which extracted Willingness to Pay information from passengers broken down by carrier business model, flight duration and journey purpose. It was found that overall perceived 'necessity' products were valued most such as food and drink, checked baggage and seat assignment as opposed to perceived 'optional' items such as the purchase of WiFi access on board.

¹ Dated November 2014 and completed by 220 traveller respondents online using Questionpro. Further details of survey methodology can be found in Warnock-Smith et al (2015).

There are still gaps in terms of having an assessment of the full range of ancillary products and services in the other lesser studied categories (punitive charges, FFP sales and advertising) and in having a managerial process by which particular products and services can be focussed on and others dropped or scaled back. As far back as 1984 Schmalensee derived the general conditions under which bundling can be a profitable strategy. One important implication from his derivation is that bundling may be a more successful strategy when the marginal costs of providing components of the bundle are very low. This study proposes the application of the Pareto Priority Index (PPI) to help solve such managerial and conceptual notions combined with the findings from previous studies which gauged customer preferences for individual ancillary products and services.

3. The pareto methodology

The pareto principle has been widely employed by companies to identify areas to prioritize time and effort. The Pareto Priority Index (PPI) can be seen as an extension of this principle to projects that has been used by companies such as AT&T and other large organisations to assist in investment decision making processes (equation 1). The PPI creates a ratio between the savings and probability of success from a project and the additional cost and time to completion related to the same project. A result of anything above 1 indicates that a product/service investment has potential and when comparing alternative products/services then theoretically the highest PPI value should receive the most attention and investment while the second highest value should receive the second highest attention and investment and so on. The PPI does not normally cover aspects of customer satisfaction or preferences so it normally has to be combined with some market research. For the purposes of this study the PPI has been slightly modified to take account of the variables of interest in airline ancillary revenues as per equation 2 below. The consumer insight comes from the Warnock-Smith et al's 2015 survey Willingness to Pay responses and are used to estimate probability of success within the PPI equation.

$$PPI = \frac{\text{savings} \times \text{probability of success}}{\text{cost} \times \text{time of completion}} \quad (1)$$

$$PPI \text{ (Ancillary)} = \frac{(\text{savings} + \text{revenues}) \times \text{probability of success}}{\text{cost} \times \text{time of completion}} \quad (2)$$

Cost and time for completion come from a combination of industry estimates on technology integration and IT costs and time for IATA NDC/EMD process implementation either through GDS providers or bypassing them.

Estimated savings come from industry estimates on how the introductions of certain ancillary services have led to mainly variable cost savings related to handling and fuel consumption. Revenue estimates come from the survey given that respondents specify a price point in the WTP assessments of different products and services.

PPI estimates are derived from the overall sample of respondents (n=170), and are also broken down by flight duration (short-haul or long-haul) to determine if length of haul has any effect on the desirable selection of ancillary products for prioritisation. Commission based, FFP and Advertising related ancillaries lie outside the scope of the study due to data limitations but would

form the natural extension to the research to provide an overall picture of ancillary prioritisation. Airline commercial managers can use this study to assist with unbundled ancillary product prioritisation only.

4. Results

4.1. Descriptive results

Tables 1 and 2 show overall Willingness to Pay and mean average price point data for a selection of 11 unbundled products, three of which (Wi-fi access on board, airport lounge access and priority boarding) are not commonly included in the basic fare anyway with the remaining eight being classic unbundled products/services from basic fares.

Table 1: Willingness to Pay (WTP) and Stated Price Point data for a selection of unbundled products

Overall WTP and Stated Price Point		
Unbundled product/service	Average WTP frequency (%)	Average WTP amount (£)
Inflight hot meal	40.6	7.29
Inflight non-alcoholic drink	36.2	2.09
Checked-in luggage	35.85	7.88
Seat with extra legroom	35	12.74
Seat assignment	30.3	5.34
Wi-Fi internet on board	23.8	23.04
Inflight alcoholic drink	23.2	17.09
Inflight cold meal	17.65	3.59
Inflight entertainment	14.7	4.65
Access to the airport lounge	12.05	6.25
Priority boarding	10.3	4.76

Source: Warnock-Smith et al. (2015) ancillary revenue survey

A simple pareto analysis of the overall results would suggest airlines could generally benefit from focussing on charging for Inflight hot meal, soft drinks and checked bags as these are the three product categories that received the highest WTP frequency among the survey respondents, Though seats with extra legroom lies outside the top 20% the WTP percentage is only marginally lower than that of checked bags and soft drinks suggesting that focussing on this product category could also reap rewards. When broken down by flight duration (Table 2), then inflight hot meal, seat with extra leg room and checked bags become the priority products for respondents in that order for long-haul respondents, while paying for soft drinks, seat assignment and checked bags are the stated priority areas for short-haul respondents. Due to the greater lengths of time spent on board and at destination for long-haul, WTP for the top three ancillary products were notably higher than for short-haul respondents. Both tables also summarise the stated mean price point that respondents stated they would buy each given unbundled product. To take the descriptive pareto analysis a step further the selected unbundled products can be sorted by overall revenue generating potential (WTP percentage x average price point) leading to some different results.

Overall the priority products would become Wi-fi access on board due to the relatively high price point per sale that a small percentage of respondents were willing to pay, followed by seats with extra legroom and inflight alcoholic drinks. The top 3 for short haul would be the same as the overall result with inflight alcohol achieving a higher potential revenue than seats with extra legroom. The long-haul outcome was identical to the overall picture again driven by high average stated price points.

Table 2: Willingness to Pay (WTP) and Stated Price Point data for a selection of unbundled products by Flight Haul

Overall WTP and Stated Price Point by Flight Haul				
	Short Haul		Long Haul	
Unbundled product/service	Average WTP frequency (%)	Average WTP amount (£)	Average WTP frequency (%)	Average WTP amount (£)
Inflight hot meal	24.7	6.14	56.5	8.43
Inflight non-alcoholic drink	35.3	2.07	37.1	2.11
Checked-in luggage	28.8	4.16	42.9	11.59
Seat with extra legroom	24.7	10.78	45.3	14.71
Seat assignment	29.4	4.34	31.2	6.33
Wi-Fi internet on board	18.8	21.49	28.8	24.59
Inflight alcoholic drink	18.8	16.55	27.6	17.63
Inflight cold meal	21.8	3.52	13.5	3.65
Inflight entertainment	4.1	2.99	25.3	6.30
Access to the airport lounge	8.8	6.01	15.3	6.49
Priority boarding	12.4	4.65	8.2	4.86

Source: Warnock-Smith et al. (2015) ancillary revenue survey

4.2. PPI results

Once estimated time and cost penalties from ancillary product implementation as well as estimated operational cost savings were factored in a different picture emerges. A fixed 18 month implementation period was assumed based on the mid-point of an A4A (2014) 12-24 month estimate for building ancillary capability into GDS and non-GDS systems. Implementation and on-going commission costs were estimated at a fixed 2.5% of revenues, which is the upper end of a range provided by Amadeus executives on the amount typically charged to airlines for the development of ancillary capability (FlightGlobal, 2012). Operational savings were based on figures stated by Ryanair in 2006 (BBC News, 2006) in relation to airport handling and fuel savings stemming from the reduced number of checked-in bags resulting from baggage charges (£20mn per annum). The annual estimate was scaled down to fit the scale of the survey sample and was assumed to be the same for four other handling and fuel incurring products (inflight soft and alcoholic drinks, cold meals and hot meals). The remaining categories of unbundled product were

set to zero in terms of operational cost savings due to their lack of fuel and handling saving opportunity.

Sample revenue potential (WTP percentage x stated mean price point) and probability of success (WTP percentage) were both taken from the Warnock-Smith et al. (2015) survey respondents with the benefit of having a modified PPI that can actually gauge customer feedback within the index as reflected by stated Willingness to Pay data. The overall and disaggregate results are shown in Tables 3-5.

Table 3: PPI results overall data for selection of unbundled products

Unbundled product/service	Revenue potential (survey) £	Operational savings £ (ratio to survey responses)	Probability of success (WTP percentage)	GDS proportion cost/estimate (£)	Project duration estimated (months)	PPI index
Inflight hot meal	502.82	80	40.6	12.57	18	1.046
Inflight non-alcoholic drink	128.62	80	36.2	3.22	18	1.305
Checked-in luggage	479.94	80	35.85	12.00	18	0.929
Seat with extra legroom	758.33	0	35.	18.96	18	0.778
Seat assignment	274.81	0	30.3	6.87	18	0.673
Wi-Fi internet on board	932.20	0	23.8	23.30	18	0.529
Inflight alcoholic drink	674.03	80	23.2	16.85	18	0.577
Inflight cold meal	107.57	80	17.65	2.69	18	0.684
Inflight entertainment	116.08	0	14.7	2.90	18	0.327
Access to the airport lounge	128.03	0	12.05	3.20	18	0.268
Priority boarding	83.26	0	10.3	2.08	18	0.229

The overall results suggest the priority areas for unbundled products should be catering for inflight hot meals and soft drinks once a full range of revenue, cost and risk (customer WTP) factors are taken into consideration. Checked bags are almost worth prioritising but not before considerable management focus and attention is placed on potentially more lucrative catering products. The overall PPI results are not dissimilar to the simple pareto ranking using WTP percentages only, suggesting that the PPI places more emphasis on the risk involved generating purchase intention in the first place rather than the price point at which sales can take place.

Table 4: PPI results by short-haul respondents for selection of unbundled products

Unbundled product/service	Revenue potential (survey) £	Operational savings £ (ratio to survey responses)	Probability of success (WTP percentage)	GDS proportion cost/estimate (£)	Project duration estimated (months)	PPI index
Inflight hot meal	257.82	80	24.7	6.45	18	0.719
Inflight non-alcoholic drink	124.22	80	35.3	3.11	18	1.290
Checked-in luggage	203.67	80	28.8	5.09	18	0.891
Seat with extra legroom	452.65	0	24.7	11.32	18	0.549
Seat assignment	216.91	0	29.4	5.42	18	0.653
Wi-Fi internet on board	686.82	0	18.8	17.17	18	0.418
Inflight alcoholic drink	528.94	80	18.8	13.22	18	0.481
Inflight cold meal	130.45	80	21.8	3.26	18	0.782
Inflight entertainment	20.84	0	4.1	0.52	18	0.091
Access to the airport lounge	89.91	0	8.8	2.25	18	0.196
Priority boarding	98.02	0	12.4	2.45	18	0.276

Table 5: PPI results by long-haul respondents for selection of unbundled products

Unbundled product/service	Revenue potential (survey) £	Operational savings £ (ratio to survey responses)	Probability of success (WTP percentage)	GDS proportion cost/estimate (£)	Project duration estimated (months)	PPI index
Inflight hot meal	809.70	80	56.5	20.24	18	1.380
Inflight non-alcoholic drink	133.08	80	37.1	3.33	18	1.320
Checked-in luggage	845.26	80	42.9	21.13	18	1.044
Seat with extra legroom	1132.82	0	45.3	28.32	18	1.007
Seat assignment	335.74	0	31.2	8.39	18	0.693
Wi-Fi internet on board	1203.93	0	28.8	30.10	18	0.640
Inflight alcoholic drink	827.20	80	27.6	20.68	18	0.673

Inflight cold meal	83.7675	80	13.50%	2.09	18	0.587
Inflight entertainment	270.963	0	25.30%	6.77	18	0.562
Access to the airport lounge	168.8049	0	15.30%	4.22	18	0.340
Priority boarding	67.7484	0	8.20%	1.69	18	0.182

For short-haul journeys, the shorter flight duration makes it tempting for passengers to avoid making any additional purchases beyond the basic fare. For this reason only one unbundled product achieve a PPI index of above 1, that of in-flight soft drinks. While the average stated price point for a soft drink was comparatively small (£2.07), the fact that this product received the highest WTP percentage combined with operational cost savings through reduced handling and fuel consumption makes this a critical product to make available on short-haul flights. Though not covered specifically in this study it can be assumed that focussing on the range, availability on choice of soft drinks would be preferable before other potentially less lucrative unbundled products are developed and refined. The long-haul PPI results show that as four of the 11 selected products are worth prioritising as on-going investments those being inflight hot meals, soft drinks, checked bags and seats with extra legroom in that order. Interestingly the top 4 products have stayed the same as those suggested by the simple pareto analysis (Table 2) but the order has changed with soft drinks ranking second while not even being on the pareto list in Table 2 and checked luggage and extra seat legroom swapping places when assessed as overall investments versus simple WTP percentage estimates.

5. Conclusion

The PPI methodology used in this study as a tool to assist airline managers in developing intelligence-based ancillary products and services has proven to be very useful in the sense that it can help managers move from a simple descriptive revenue based impression of what works to a more rounded cost-revenue-risk assessment of ancillary products as investments that perhaps need to be prioritised or de-prioritised or even discarded if deemed to take away resources from more lucrative sources of ancillary income. Airlines have gained considerably over recent years in the area of ancillary revenue but in today's highly competitive environment where airline are quick to imitate each other, there is something to be said for using decision making tools that can help refine the ancillary service offering and give airlines a competitive edge around the all-important margins. The slightly modified PPI used in this study can also be useful to general business investments given the possibility of using stated WTP data as a proxy for customer feedback/preferences (the probability of success variable), which are normally undertaken separately from the PPI estimations with probability of success values typically being best guestimates. More relevant variable names and the addition of an operational savings variable to the numerator also make the PPI more relevant to airlines and airline commercial departments in particular.

In terms of the actual unbundled product recommendations for this study, it appears that having disaggregate visibility can make such assessments more valuable with soft drinks being the only common priority product for both long and short-haul passengers while much there appears to be much more scope to focus investment and efforts on a wider range of products for long-haul to include hot meal services, checked baggage charges and seats with extra legroom.

Notwithstanding the possibility that some passenger segments may not like any form of unbundling at all for long-haul, if such policies are imposed then there are clearly some core, indispensable comforts that passengers would be willing to pay for and which airlines could provide at a reasonable development and operational cost. The Warnock-Smith et al. survey of 2015 is recent but of a limited scale so results are only indicative at this stage. Time to completion, implementation cost and operational savings data are all rough estimates at this stage with the primary focus being to test the PPI as a potentially valid tool for intelligence-based ancillary product development. The next stage would be to conduct an empirical test with a case airline using case specific data. The application of PPI and pareto principles to the other three categories of ancillary product would also form an important extension to this work.

List of references

- BBC News (2006) Ryanair planning baggage charge, 25th January: Accessed online at: <http://news.bbc.co.uk/1/hi/business/4647906.stm>
- Coombs, T (2014) Will Ryanair's change of strategy pay dividends?: Accessed online at <http://www.aviationeconomics.com/NewsItem.aspx?title=Will-Ryanair%27s-change-of-strategy-pay-dividends?>
- Chung, J.Y. and Petrick, J.F.(2012). Price fairness of airline ancillary fees: An attributional approach. *Journal of Travel Research*, p.0047287512457261.
- De Wit, J.G and Zuidberg, J (2012) The growth limits of the low cost carrier model, *Journal of Air Transport Management*, Volume 21, Pages 17-23.
- FlightGlobal (2012) Special Report: Services, *Airline Business*, 20th December 2011
- Hartman, B.,(1983). Implementing quality improvement. *The Juran Report*, 2(11), pp.156-159.
- IATA (2016) "Airline Continue to Improve Profitability 5.1% Net Profit Margin for 2016", accessed online at <http://www.iata.org/pressroom/pr/Pages/2015-12-10-01.aspx>.
- IATA (2015) World Financial Symposium CFO Summit, accessed online at <https://www.iata.org/events/Documents/wfs2015-cfo-summit.pdf>
- IATA (2013) Profitability and the air transport value chain, *IATA Economics Briefing No 10: An analysis of investor returns within the air transport industry and its supply chain*, Pearce, B, June
- IdeaWorks (2015) "Ancillary revenue projected to be 59.2 billion worldwide in 2015", accessed online at <http://www.ideaworkscompany.com/wp-content/uploads/2016/04/Press-Release-103-Global-Estimate.pdf>
- McNulty, P,A., and Wisner, J.D, (2014). The impacts of the 2008 government bailouts on the U.S. automobile industry. *Journal of Human Resource and Adult Learning* 10 (2): 20–29
- O'Connell, J. and Warnock-Smith, D. (2013) 'An investigation into traveler preferences and acceptance levels of airline ancillary revenues' *Journal of Air Transport Management* , 33, pp. 12-21. ISSN 0969-6997
- Oliver Wyman (2015) *Airline economic analysis*, For the Raymond James Global Airline Book, by Tom Stalnaker, Khalid Usman and Aaron Taylow
- Schmalensee, R., 1984. Gaussian demand and commodity bundling. *Journal of business*, pp.S211-S230.
- Waguespack, B. and Curtis, T., 2015. Ancillary revenue and price fairness: an exploratory study pre and post flight. *International Journal of Aviation Management*, 2(3-4), pp.208-225.
- Warnock-Smith, D., O'Connell, J. and Maleki, M. (2015) 'An examination of ongoing trends in airline ancillary revenues'. In: 19th Air Transport Research Society World Conference, 2nd - 5th July 2015, Singapore