BMI internship by Chi Hung Mok
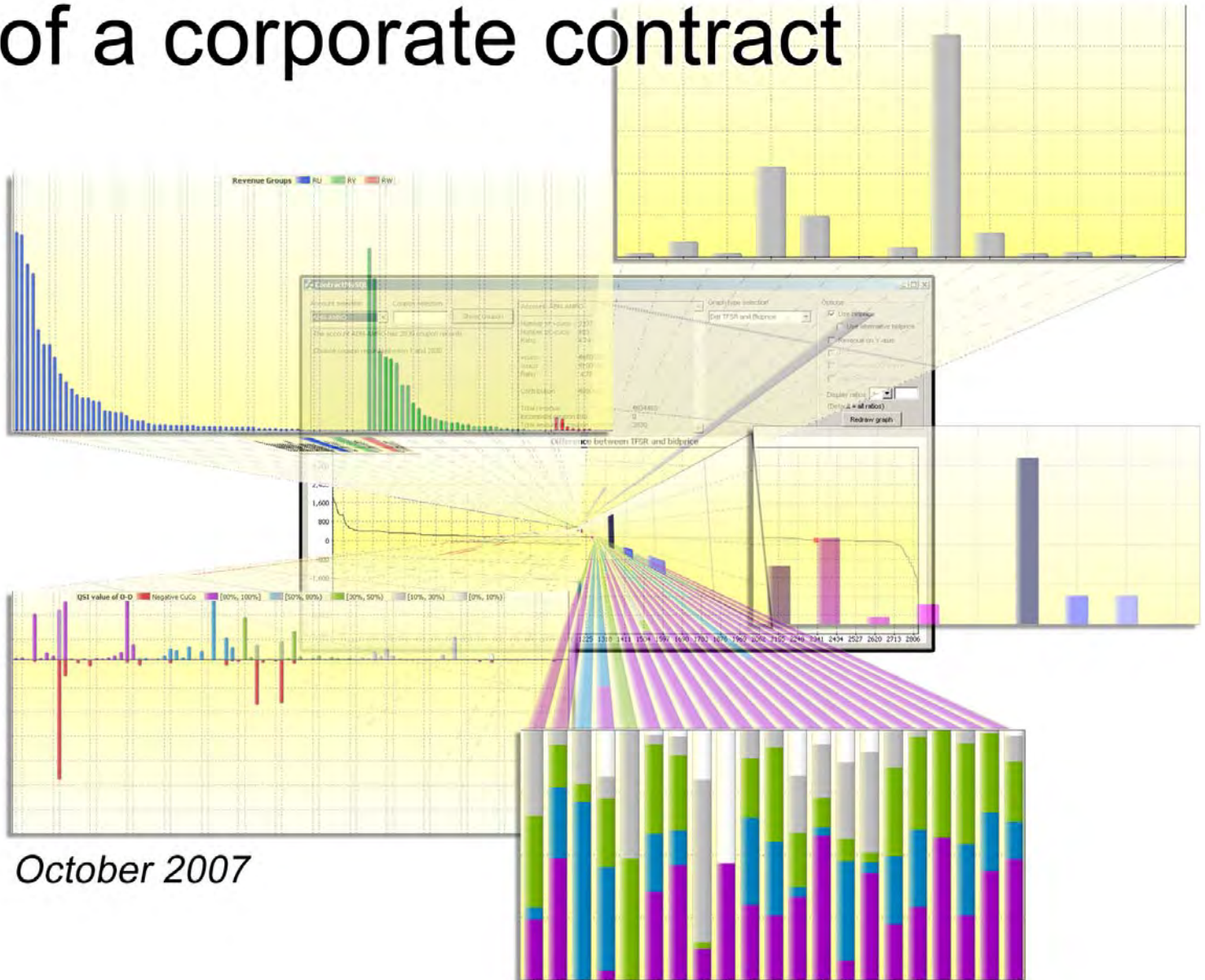
Measuring the true *contribution* of a corporate contract

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vrije Universiteit   *amsterdam*

KLM
Royal Dutch Airlines

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Preface

The study that I am following is called Business Mathematics and Informatics (BMI). This is a multidisciplinary study given at the Free University, Amsterdam. This study combines business economics, mathematics and informatics into one program and creates an environment where students can develop a board view on various business processes like; risk management, data mining, planning problems and revenue management.

Revenue Management has always been my field of interest since I started my Master's program and when I had to do my internship, KLM was obviously my first choice. I was blessed that everything went without any trouble and since March 2007 I was working as an intern at KLM. The department I was placed in is called AMS/RP; the Process and Decision Support within the Revenue Management department of KLM. I could not have hoped for a better project, rarely are all the aspects of BMI represented this well in an internship. I really enjoyed my internship and I am even happier to know that KLM acknowledges the value of this project. Eventually the results of this project will be operational and used within KLM.

I want to thank many people who helped me with this project. First I thank my colleagues at AMS/RP. They have been very supportive and I learned a lot from them during my project. With them many other colleagues from other departments who always find time to answer my questions.

I also thank my two supervisors from the university, prof. dr. Bert Kersten and drs. Maarten Soomer, for their professional input and comments on my work. And Annemieke van Goor from the internship office; without her recommendation I might not have gotten this opportunity.

The last person I thank is Raymond Kat. His continuous interest and involvement in the project really motivated me during this internship. He also taught me many things regarding the different mechanics within Revenue Management in general and specific issues within KLM. His ideas and comments really played a decisive role in the success of this project.

Management summary

In the fiscal year 2006/2007 (March), Air France – KLM Group has contracted almost 170 Global Corporate accounts and these accounts alone generated almost € 1.8 billion revenue for the Air France – KLM Group. As reference; the total revenue in this period was € 23.07 billion. It is clear that these contracts have a significant impact on the results of Air France – KLM Group.

It is very important to distinguish which contracts are valuable and which should be avoided. But how is this determined? The current practice regarding this subject is to evaluate the performance of a contract based on primarily the realized revenue and the extra traffic on the network of KLM. There are other factors which play a significant role like the loyalty of the corporate account and its growth potential.

This project proposes a methodology which performs a more in-depth analysis by regarding the *contribution* of a contract rather than the revenue alone. This methodology also includes the market position of KLM with respect to the corporate account.

The methodology consists of two dynamics:
- Valuation of an account
- Competitive position

The valuation starts at the coupon level, which means that the analysis is done by regarding each individual coupon (ticket) flown by the corporate account. For each contracted, and thus discount granted, passenger the corresponding opportunity costs are regarded. The opportunity cost is the revenue that was displaced by accepting a contracted passenger. In other words, what was the expected value of the passenger who would want the same seat? This value is represented by the bid price; the minimal fare that would be accepted. By comparing the actual revenue and the bid price, it is possible to review the contribution of this particular individual; the *True Customer Contribution* (True CuCo). By performing this analysis on all the tickets issued under the contract, it is possible to review the whole account on its contribution to KLM. Because the initial analysis was done on the lowest detail level possible, it is possible to review the contract in various perspectives; which flows are bottlenecks when regarding the True CuCo? Is there any relation between PoS and the True CuCo? When this is known, more accurate adjustments can be made.

It is important to realize what the level of satisfaction is of the corporate account with respect to the network offered by KLM. If the corporate account is not satisfied, it is possible that the account will contract a different carrier for its business travels. To be able to identify this behavior, this project includes the possibility to review KLMs competitive position on the O-D set of an account. It is then assumed that a highly competitive product will lead to a high level of

satisfaction. This project uses the theoretical market shares, based on the QSI values, to determine this competitive position. With this analysis it might be possible to estimate how a corporate account values the services of KLM.

This project embodies this methodology in a prototype Decision Support System; with the help of this tool it is possible to review the performance of an account and its level of satisfaction with respect to KLM. Unfortunately the results from the prototype at this moment are not representative enough to draw any conclusions regarding the contribution of an account. This is caused by the limited data set of one month (January 2007), which is only used to test the functionalities of the prototype. The aim of the prototype is not to make any decisive conclusions on contracts, but to gain more insight in the correctness and strength of the methodology. This prototype is also used to experiment on how the tool should interact with its user in terms of the graphical user interface; which selections are needed to enable the user to do the desired analysis and how can these results be presented in a comprehensive manner?

The results from the prototype show that the contribution of corporate accounts on ICA flights are less compared to European destinations, which is expected due to the fact that ICA flights are more constrained than European flights. But now it is possible to quickly and accurately analyze which specific flights are the bottlenecks within a contract, something which has never been possible. This analysis will provide information on which O-D KLM might want to increase its competitive position due to the high contribution a contract has on that O-D. One of the possible actions to influence the competitive position is to adjust the corresponding discount.

The contribution of the contract is represented in this prototype by the summation of all the underlying True CuCos. This can be compared to the actual revenues to analyze which percentage of the revenue is real contribution to KLM. Obviously a high percentage would indicate a good performing contract.

Within this **limited** data set of one month, one account (A) seems to be the most valuable contract. It has the highest contribution (€ 407,411) of all the accounts reviewed and second highest total revenue (€ 902,747). Account B generated more revenue (€ 1,788,853), but it has a lower contribution (€ 391,892) and therefore a worse ratio (21.91%) compared to A (45.13%). The O-D set of A is also very diverse and generally generates traffic where KLM really needs it.

The data of the worst performing account (C) is, upon close inspection, flawed due to the incompleteness of the data. Account C operates from the USA and many travels are cooperated by Northwest Airlines (NWA). The revenue of NWA operated flights are regarded in this project, but this revenue is important when calculating the True CuCo. On top of that, this account had many travels to India and January is the month in which this market is very constrained, which

results in very high bid prices and thus low contributions. Account C might not be very bad or even turns out to be good, when all the relevant data is available.

The presented methodology has been accepted as the better method to value and analyze corporate contracts. While this project is only considering the market segment corporate contracts, this methodology also applies to other segments where discount is given like tour operators and seamen.

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