# Appendix 1: Participant profile

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Title | Role | Department | Cruise experience(years)  | Description | Location | Interview date |
| 1 | Manager | Distributor | Cruise Product | 4 | 4 years selling international cruise products+6 years travel industry | China | 2019Q4 |
| 2 | Co-founder &CEO | Distributor | Owner | 4 | 4 years selling international cruise products+10 years travel industry | China | 2019Q4 |
| 3 | GM | Operator | GM | 6 | 6 years cruise company+15 years travel industry | Hong Kong/China | 2019Q4 |
| 4 | VP/Director | Operator | Global sales | 6 | 6 years selling international cruise products+11 years travel industry | Hong Kong | 2019Q4 |
| 5 | GM | Distributor | GM | 21 | 21 years travel & tour operators including selling international cruise products | Hong Kong | 2019Q4 |
| 6 | Manager | Operator | Global sales | 12 | 12 years cruise operator+6 years travel industry | Korea | 2019Q4 |
| 7 | VP/Director | Operator | Finance-Planning& Analytics | 10 | 10 years cruise (financial planning & analytics)+15 years in finance sector | Hong Kong | 2019Q4 |
| 8 | Manager | Distributor | Cruise Product | 12 | 12 years cruise  | Hong Kong | 2019Q4 |
| 9 | Manager | Operator | Sales-China market | 20 | 6 years cruise+12 years travel agency (selling cruise products) | Hong Kong | 2019Q4 |
| 10 | Assistant Manager | Distributor | MICE Sales | 11 | MICE sales for hotel, cruise, etc. | Hong Kong | 2019Q4 |
| 11 | Manager | Distributor | Global sales | 8 | 8 years cruise sales+12 years travel industry | Hong Kong | 2019Q4 |
| 12 | Assistant Manager | Operator | Marketing | 7 | 7 years cruise | Singapore | 2019Q4 |
| 13 | Owner | Cruise consultant | Consultant/Sales | 24 | 5 years consultant+19 years cruise sales, marketing, operations | China | 2019Q4 |
| 14 | VP/Director | Operator | Ticket revenue | 9 | Cruise ticket revenue  | China | 2019Q4 |
| 15 | Manager | Distributor | Cruise Product | 10 | 10 years travel & tour operators including selling international cruise products | Hong Kong | 2019Q4 |
| 16 | Manager | Operator | Sales-Direct channel | 5 | 5 years cruise +5 years travel industry | China | 2019Q4 |
| 17 | VP/Director | Operator | Marketing | 8 | 8 years cruise marketing+5 years travel industry | Hong Kong | 2019Q4 |
| 18 | Manager | Operator | Ticket revenue | 7 | Cruise ticket revenue  | China | 2019Q4 |
| 19 | GM-Finance | Distributor | Cruise Product | 22 | 10 years cruise sales+12 years travel agent selling cruise products | Hong Kong | 2019Q4 |
| 20 | Manager | Operator | Onboard Revenue | 7 | 7 years onboard revenue  | China | 2019Q4 |
| 21 | VP/Director | Distributor | Global sales | 3 | 3 years cruise+7 years hotel & airlines | Hong Kong | 2022Q1 |
| 22 | President | Operator | Strategy | 13 | 13 years cruise+5 years travel industry+5 years consultant | China | 2022Q1 |
| 23 | VP/Director | Policymaker | Policymaker | 10 | 15 years travel industry+10 years cruise  | Hong Kong | 2022Q1 |
| 24 | VP/Director | Operator | Sales& Marketing | 11 | 5 years cruise+6 years travel agency selling cruise products | Hong Kong | 2022Q1 |
| 25 | President | Operator | Strategy | 12 | 12 years cruise+6 years consultant (RM & travel) | Europe | 2022Q1 |
| 26 | VP/Director | Operator | Revenue& Planning | 7 | 7 years cruise+6 years of RM in rail, airlines & hotels | America | 2022Q1 |

# Appendix 2: Cruise RM publications

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Title | Authors (Year) | Journal Name, Volume/issue, page # | Discipline | Ticket, Onboard, or General | Method |
| 1 | **Optimal cruise-lines passenger cabin pricing policy** | Ladany and Arbel (1991) | European Journal of Operational Research, 55(2), 136-147 | Operational Research | Ticket | Quantitative |
| 2 | **Room occupancies: cruise lines out-do the hotels** | Toh, Rivers and Ling (2005) | International Journal of Hospitality Management, 24(1), 121-135 | Hospitality & Tourism | General | Qualitative |
| 3 | **A cruise ship is not a floating hotel** | Biehn (2006) | Journal of Revenue and Pricing Management, 5(2), 135-142 | Revenue & Pricing | General | Qualitative |
| 4 | **Application of modified nested and dynamic class allocation models for cruise line revenue management** | Ji and Mazzarella (2007) | Journal of Revenue and Pricing Management, 6(1), 19-32 | Revenue & Pricing | Ticket | Quantitative |
| 5 | **Expanding the revenue management frontier: Optimal air planning in the cruise industry** | Lieberman and Dieck (2007) | Journal of Revenue and Pricing Management, 1(1), 7-24 | Revenue & Pricing | Ticket | Quantitative |
| 6 | **Price discrimination and the cruise line industry: implications for market definition, competition, and consumer welfare** | Langenfeld and Li (2008) | International Journal of the Economics of Business, 15(1), 1-25 | Business Economics | Ticket | Quantitative |
| 7 | **Onboard revenue: The secret of the cruise industry’s success?** | Vogel (2009) | Book: Cruise Sector Growth (Chapter 2)<https://doi.org/10.1007/978-3-8349-8346-6_1> | Maritime | Onboard  | Mixed |
| 8 | **Dynamic cruise ship revenue management** | Maddah, Moussawi-Haidar, El-Taha and Rida (2010) | European Journal of Operational Research, 27(1), 445-455 | Operational Research | Ticket | Quantitative |
| 9 | **Forecasting for cruise line revenue management** | Sun, Gauri and Webster (2011) | Journal of Revenue and Pricing Management, 10(4), 306-324 | Revenue & Pricing | Ticket | Quantitative |
| 10 | **Marketing research and revenue optimization for the cruise industry: A concise review** | Sun, Jiao and Tian (2011) | International Journal of Hospitality Management, 30(3), 746-755 | Hospitality & Tourism | General | Qualitative |
| 11 | **Mechanism design in an integrated approach towards revenue management: the case of Empress Cruise Lines** | Ng and Yip (2011) | Service Industries Journal, 31(3), 469-482 | Service | General | Mixed |
| 12 | **Modelling for Cruise Two-Dimensional Online Revenue Management System** | Li (2011) | International Journal of Digital Content Technology and its Applications, 14(6), 72-78 | Technology | Ticket | Quantitative |
| 13 | **A Risk Decision Model of Cruise Line Overbooking System with Multiple Price Classes from the View of Real Options** | Li (2011) | Journal of Convergence Information Technology, 6(3), 156-163 | Technology | Ticket | - |
| 14 | **Revenue management system for the cruise industry: a simulation study** | Ma and Sun (2012) | Book: Cruise Management: Information and Decision Support Systems, <https://doi.org/10.1007/978-3-8349-7159-3> | Hospitality & Tourism | Ticket | Quantitative |
| 15 | **Capacity allocation for cruise lines revenue management:EMSR-a VS EMSR-b** | Sun and Feng (2013a) | Tourism Tribune (in Chinese), 28(11), 32-41 | Hospitality & Tourism | Ticket | Quantitative |
| 16 | **How to set prices for cruise cabins: An empirical study on the North American market** | Sun and Feng (2013b) | Tourism Tribune (in Chinese), 28(2), 111-118 | Hospitality & Tourism | Ticket | Quantitative |
| 17 | **Cruise ship itineraries and occupancy rates** | Lee and Ramdeen (2013) | Tourism Management, 34, 236-237 | Hospitality & Tourism | Ticket | Quantitative |
| 18 | **How to forecast cruise ship arrivals for a new port-of-call destination** | Tsamboulas, Moraiti, Koulopoulou (2013) | Journal of the Transportation Research Board, 2330(1), 24-30 | Transportation | General | Quantitative |
| 19 | **Revenue management in the cruise industry** | Selby (2013) | Book: Revenue Management for Hospitality and Tourism (Chapter 11). Goodfellow. | Hospitality & Tourism | General | Qualitative |
| 20 | **A cruise line dynamic overbooking model with multiple cabin types from the view of real options** | Li (2014) | Cornell Hospitality Quarterly, 55(2), 197-209 | Hospitality & Tourism | Ticket | Quantitative |
| 21 | **Data processing and modeling of dynamic pricing of cruise transportation based on revenue management** | Dong, Jia and Xie (2014) | Advanced Materials Research, Trans Tech Publications Ltd., 1030, 1984-1987 | Transportation | Ticket | Quantitative |
| 22 | **Modeling a cruise line revenue management problem** | Li, Miao and Wang (2014) | Journal of Revenue and Pricing Management, 13(3), 247-260 | Revenue & Pricing | Ticket | Quantitative |
| 23 | **“Low price dilemma” in China cruise market：Analysis on the price formation mechanism -中国邮轮市场的价格形成机制与“低价困境”研究** | Sun, Ye and Hu (2016) | Tourism Tribune(in Chinese), 31(11), 107-116 | Hospitality & Tourism | Ticket | Qualitative |
| 24 | **Study of cruising price strategies – based on the forecasting基于预测的邮轮定价策略研究** | Fu and Wang, 2016 | Shandong Social Science(in Chinese), S1, 265-267 | Hospitality & Tourism | Ticket | Quantitative |
| 25 | **Application of an alternative expected marginal seat revenue method (EMSRc) in unrestricted fare environments** | Tavana and Weatherford (2017) | Journal of Air Transport Management, 62, 65-77 | Transportation | Ticket | Quantitative |
| 26 | **Empirical evidence of revenue management in the cruise line industry** | Ayvaz-Cavdaroglu, Gauri and Webster (2017) | Journal of Travel Research, 58(1), 104-120 | Hospitality & Tourism | Ticket | Quantitative |
| 27 | **Optimal dual pricing and passenger safety level for cruise revenue management** | Cho and Zhang (2017) | Journal of Navigation and Port Research, 41(2), 63-70 | Port Management | Ticket | Quantitative |
| 28 | **Cruise Line Revenue Management: Overview and Research Opportunities** | Sturm and Fischer (2018) | Operations Research Proceeding, 441-447 | Operational Research | General | Qualitative |
| 29 | **Cruise tourism: a hedonic pricing approach** | Espinet-Rius, Fluvia-Font, Rigall-Torrent and Oliveras-Corominas (2018) | European Journal of Management and Business Economics, 27(1), 101-122 | Business Economics | Ticket | Quantitative |
| 30 | **Decomposing the price of the cruise product into tourism and transport attributes: Evidence from the Mediterranean market** | Niavis and Tsiotas (2018) | Tourism Management, 67, 98-110 | Hospitality & Tourism | Ticket | Quantitative |
| 31 | **Global and local pricing strategies in the cruise industry** | Rius (2018) | Journal of Revenue and Pricing Management, 17(5), 329-340 | Revenue & Pricing | Ticket | Mixed |
| 32 | **A cabin capacity allocation model for revenue management in the cruise industry** | Sturm & Fischer (2019) | Journal of Revenue and Pricing Management, 18(6), 441-450 | Revenue & Pricing | Ticket | Quantitative |
| 33 | **An analysis of price segmentation in the cruise industry** | Espinet, Gassiot-Melian and Rigall-I-Torrent (2020) | Journal of Revenue and Pricing Management, 19(3), 162-189 | Revenue & Pricing | Ticket | Quantitative |
| 34 | **Improving revenue performance with third-degree price discrimination in the cruise industry** | Namin, Gauri and Kwortnik (2020) | International Journal of Hospitality Management, 89, 10257 | Hospitality & Tourism | Ticket | Quantitative |
| 35 | **Carnival optimizes revenue and inventory across heterogenous cruise line brands** | Beck, Harvey, Kaylen, Sala, Urban, Vermeulen, Wilken and Xie (2021) | INFORMS Journal on Applied Analytics, 51(1), 26-41 | Applied Analytics | Ticket | Qualitative |

# Appendix 3: Descriptive summary of RM literature reviewed

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **# of Articles** |  |  |  |  | **# of Articles** |  |
| **Research disciplines** |  |  |  | **Research Regions** |  |  |
|  | Hospitality & Tourism | 14 | 40% |  |  | Unspecified | 18 | 51% |
|  | Revenue & Pricing | 8 | 23% |  |  | America (North & South) | 8 | 23% |
|  | Operational Research | 3 | 9% |  |  | International | 3 | 9% |
|  | Transportation | 3 | 9% |  |  | Europe | 2 | 6% |
|  | Business Economics | 2 | 6% |  |  | China | 2 | 6% |
|  | Port Management | 1 | 3% |  |  | Mediterranean | 1 | 3% |
|  | Service | 1 | 3% |  |  | Asia  | 1 | 3% |
|  | Technology | 1 | 3% |  |  |  | ***35*** | ***100%*** |
|  | Applied Analytics | 1 | 3% |  |  |  |  |  |
|  | Maritime | 1 | 3% |  |  |  |  |  |
|  |  | ***35*** | ***100%*** |  | **Research Methods\*** |  |  |
|  |  |  |  |  |  | Quantitative | 24 | 71% |
| **RM Topics\*\*** |  |  |  |  | Qualitative | 7 | 21% |
|  | Pricing | 13 | 37% |  |  | Mixed | 3 | 9% |
|  | Capacity & Inventory | 7 | 20% |  |  |  | ***34*** | ***100%*** |
|  | Forecast | 4 | 11% |  |  \* *One missing paper - can't find original paper.* |
|  | Itineraries, planning & Occupancy | 4 | 11% |  |  |  |  |  |
|  | General | 3 | 9% |  | **RM Sector** |  |  |
|  | Casino | 1 | 3% |  |  | Ticket | 27 | 77% |
|  | Segmentation | 1 | 3% |  |  | Others (general factors) | 6 | 17% |
|  | RM System | 1 | 3% |  |  | Onboard | 1 | 3% |
|  | Others- Concept | 1 | 3% |  |  | Total RM | 1 | 3% |
|  |  | ***35*** | ***100%*** |  |  |  | ***35*** | ***100%*** |
| *\*\**  | *Some papers have overlapped topics, the topic is based on the primary aim of the paper.* |  |  |  |  |  |
|  |  |  |  |  |  |

# Appendix 4: Interview Questions

For cruise companies:

1. Can you please tell me what is your definition of ‘revenue management’?
2. What is your role in relations with revenue management?
3. Please describe the revenue management process for ticket. And how about onboard?
4. What is the biggest challenge (or most important) for the ticket revenue? And onboard?
	1. may drill down to each category – i.e., factors influence on business analysis, pricing, inventory control, distributions…
	2. additional: product & activity design
	3. Itinerary & planning?
5. How is the coordination between onboard and ticket teams?

For travel agencies or other related cruise disciplines:

1. Can you please tell me what is your definition of ‘revenue management’?
2. What are your responsibilities? And how you think your role in related to revenue management?
3. Focusing on ticket - What do you know about cruise RM?
	1. For instance, how do they set price?
	2. This may drill down to itinerary planning, inventory control such as cabin types and distribution or cabinet allotments, etc.…
4. Focusing onboard – how does cruise make money through onboard activities?
	1. Pricing? Activities & product design
	2. What are the critical factors for cruise company? Discuss on both positive and negative impacts.
5. How is the coordination between onboard and ticket teams?