Practice Article

Revenue management, pricing and the consumer

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ABSTRACT Revenue Management (RM) emerged as a specific discipline in the mid-1980s. However, despite the fact that it has been seen as a set of techniques to influence customer demand and exploit the consumer surplus, there has been a tendency for much of the research in the area to lack a consumer focus. What research there is tends to focus on three main areas, namely, the algorithm modelling of consumer behaviour, consumer trust and fairness and consumer-centric marketing. The purpose of this article therefore is to consolidate and synthesise existing consumer focused research in RM in these three key areas.
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INTRODUCTION

If the primary aim of Revenue Management (RM) is selling the right product/service to the right customer, at the right time, for the right price, in order to generate revenue from perishable capacity (Kimes, 1989; McGill and van Ryzin, 1999), then an understanding of consumers and their behaviour is critical to its effective development and implementation. Indeed, this has become even more important in recent years as a result of the global economic strains of recession and exchange rate changes which have seen the rise of the 'strategic customer' (Currie and Rowley, 2010). Empowered by smartphone technology and the emergence of price comparison/aggregator websites, customers continue to seek absolute value and the best price available (Yeoman, 2013). Simply put the dynamics of supplier pricing are more visible to consumers and, in response, they are adapting their buying behaviour (Currie and Rowley, 2010). As such understanding consumer behaviour has quite rightly become more important in RM.

CONSUMER BEHAVIOUR MODELLING

Initially operations research in the area of RM focused on product demand models that is, on 'the optimisation methods that booking limits and fare products are based upon' (Sharif Azadeh *et al*, 2015, p. 99). In 2004, Talluri and van Ryzin first investigated a discrete choice model (random utility) of consumer behaviour and this opened up a rich vein of research Talluri and van Ryzin (2004). Much of the focus has been on how the consumer chooses which product/service to buy in multi-product situations (Fiala, 2012). One of the key RM techniques is deterministic linear programming (DLP). First introduced by Simpson (1989), a more advanced model (choice-based linear programme, CDLP) was developed by Gallego *et al* (2004) and Liu and van Ryzin (2008) to include choice behaviour. Here revenue is maximised by determining at a given time which product/services should be offered to the potential customer from the different market segments.

Various studies (for example, Kunnumkal and Topaloglu, 2010; Zhang, 2011; Fiala, 2012; Meissner and Strauss, 2012; Meissner *et al*, 2013; Kunnumkal, 2014) have further investigated this area in relation to network RM that has been defined as the 'quantity-based revenue management of multiple resources' (Fiala, 2012, p. 384), where the challenge is, for example, managing capacities of a set of connecting trains or flights across a network. Research here has been driven by the need to develop models that will maximise revenue where customers are purchasing bundles of interdependent products or services.

CONSUMER TRUST AND FAIRNESS

Another fruitful area of research in relation to consumer behaviour and pricing has been the impact of RM on consumer trust and fairness. It may be argued that any transaction requires a degree of trust between consumer and supplier and that a customer should consider that they are paying a fair price. Indeed in the literature it has been argued that, 'Perceptions of fairness and trust seem to have a reciprocal relationship' (Maxwell as cited by McMahon-Beattie, 2011, p. 45). This idea of trust and fairness is a particularly important factor early in a relationship and an essential precondition for the relationship to move to more committed stages of development (Dwyer *et al*, 1987; Grayson and Ambler, 1999) as cited by Palmer and McMahon-Beattie (2008, p. 191).

If there is an absence of trust and a lack of perceived fairness, it has been argued that consumers are unlikely to purchase, (Kimes and Wirtz, 2002) and that there is an adverse effect on customer satisfaction, word-of-mouth intentions and loyalty (Huppertz *et al*, 1978; Oliver and Swan, 1989, as cited by Chapuis, 2012, p. 17). A consumer's perception of fairness may be explained through two widely used conceptual comparative frameworks – the principle of dual entitlement and the concept of reference price and reference transaction. The principle of dual entitlement states that most customers believe they are entitled to a reasonable price and the firm is entitled to a reasonable profit (Kahneman *et al*, 1986a, b as cited by Wirtz and Kimes, 2007, p. 231). While the reference concept reflects how a buyer uses a perceived reference price or reference transaction (Kimes and Wirtz, 2003) and the seller's actual prices (Martin-Consuegra *et al*, 2007) to identify how just the price is (Haddad, 2015).

However, research has shown that trust and fairness are not always apparent when RM is introduced into the transaction. From a customer's perspective, as noted by Mauri (2007) the practice of RM may be considered as opportunistic. Furthermore, RM has been shown to create customer conflicts and fairness concerns as it affects reference prices and reference transactions (Wirtz *et al*, as cited by Mathies and Gudergan, 2007).

If RM is considered to be the allocation of the right capacity, to the right customer, at the right place, at the right time (Kimes and Wirtz, 2002), then necessarily it must be at the right price and reflective of this, correct pricing strategies are becoming increasingly important (Taylor and Kimes, 2011). If it is not at the perceived right price, customers may consider RM practices as unfair with a resultant deterioration in a customer's trust (Mauri, 2007). As McMahon-Beattie *et al* (2002, pp. 27–28), noted 'consumers who perceive that suppliers are untrustworthy through various pricing differentials consider them to be practising malfeasance, and not having their best interests at heart'. This situation is exacerbated when the firm engages in the contradictory nature of RM and consumer-centric marketing practices (Mathies *et al*, 2013) and ultimately impacts upon the customer's likelihood to purchase (Mathies and Gudergan, 2007) or, indeed, to continue the relationship.

However, and perhaps unfairly, research has shown that not all practices of RM are considered to be the same. While according to Wang and Bowie (2009), the terms RM and yield management are used simultaneously, customers perception of this practice is not the same. As Martinez *et al* (2011) identified, because of the particularities of the airline industry, the practice of yield management is perceived to be fair. Customers, they argued, were used to paying different prices for the same product, a flight in this case, as a result of the restrictions they traditionally accepted. Furthermore, Wirtz *et al* (2003) contended that consumers perceive yield management to be fair when they know all the conditions they must meet in order to get a discount and they understand the rules of the game. In the case of airlines customers readily accept that a time differential will lead to a price differential. Put simply, customers are more accepting of yield management practices than RM practices.

Reflective of this, Choi and Mattila (2006) have argued that providing information on pricing policy has a positive impact on perceived fairness. This was underpinned by Taylor and Kimes (2011) who recommended that managers should focus on raising customer familiarity with RM because of its significant influence on perceptions of fairness. As noted by Palmer and McMahon-Beattie (2008), mistrust is earned because of the individual's ignorance of the 'rules' by which variable pricing operates not the actual process. There is the potential that with greater availability of information on variable pricing in hotels and other sectors, the practice of RM will no longer be seen as opportunistic but become as acceptable as yield management as practiced by airlines. Fairness and trust is earned through understanding.

CONSUMER-CENTRIC MARKETING

The importance of integrating Customer Relationship Marketing (CRM) and RM strategies has been noted by a number of authors (Dickinson, 2001; Jonas, 2001; Belobaba, 2002;

Lieberman, 2002). It has been argued that it is important that the product, service and price are seen to be based on the needs of the customer (Milla and Shoemaker, 2008). The objective of Customer-Centric Marketing (CCM) in RM is that the organisation positions each individual customer at the forefront of their RM system. Therefore, businesses must recognise that each customer is different in terms of their choices, needs and motivation. CCM, therefore, concentrates on satisfying the needs of different customers (Hanif, Hafeez and Riaz, 2010) and is an ideal approach for marketing especially for small businesses (Johnson, Gustafsson and Roos, 2005). The successful implementation of a RM system necessitates a focus on the customer relationship. If the customer is not the central focus, then the system is not used to its full potential because the customer relationship is core to the successful operation of RM systems (Freeland, 2007). If an organisation takes a customer-centric approach, this facilitates the opportunity to target the right customers, with the right message and preferably with the right price to suit their needs. Therefore, organisations create strategies for attracting, targeting and retaining customers who will purchase products/services and generate repeat business.

CCM is built around the core notion of establishing and maintaining long-term profitable customer relationships (Paas and Kuijlen, 2001; Parvatiyar and Sheth, 2001; Reinartz *et al*, 2004; Zablah *et al*, 2004). It is essentially related to taking decisions that influence buyer decision making in the short term, with a view to increasing revenues in long-term, focussing on the customer revenues achieved over a period of time (Lieberman, 1993). With a focus on the short-term, the primary aim of RM is selling the right product/service to the right customer, at the right time, for the right price, in order to generate revenue from perishable capacity (Kimes, 1989; McGill and van Ryzin, 1999). It uses the elasticity of pricing and the customers willingness to pay (Kimes, 1989), whereas CCM differentiates customers on the profitability they generate over a lifetime (Jain and Singh, 2002).

Pinchuk (2009) contended that by taking a customer-centric approach, the organisation creates a level of familiarity and trust with customers on an individual basis and therefore the customer feels comfortable in the relationship. This in turn develops an increased loyalty to the brand. Therefore, organisations with capacity restrictions, such as airlines, hotels and car rental companies, encounter difficulties in generating income, because they are incorporating customer-centric marketing practices and their RM concurrently (Mathies and Gudergan, 2007).

It has been argued that traditional RM has morphed into a more expansive activity: demand management (Anderson and Carroll, 2007). Demand management requires organisations to manage overall demand through disseminating information that targets customers, while influencing and building on existing customer relationships. This provides the opportunity to make effective RM decisions. Anderson and Carroll (2007) have suggested that to generate demand, the organisation must target existing or previous customers using marketing and promotion tools, such as special offers and encourage them to make recommendations to others. In addition, this means RM practices should look after and reward loyal customers. For organisations to achieve this, necessitates consideration being given to retaining existing customers, but more immediately ascertaining where new customers research and make their reservations.

Ng *et al* (2007) suggested that implementing an integrated approach towards RM will provide organisations with the opportunity to be more innovative in their RM practices. Furthermore Milla and Shoemaker (2008) have argued that there needs to be more focus on the total value of the customer to the business, rather than just selling the product/service. Therefore, if companies develop and utilise the skills of their RM employees, and introduce them to the variety of marketing platforms available, this in turn will provide the opportunity to develop and promote relevant messages that sell desirable customer experiences.

In 2008, Milla and Shoemaker called for the integration of buyer behaviour and choice into the business marketing and pricing strategy of organisations utilising RM. By being more cognisant of consumer buying behaviour and price sensitivity, this would provide the opportunity to ensure customers are charged the right price at the right time, every time (Milla and Shoemaker, 2008). Therefore, by correctly implementing a consumer-centric marketing focus into RM strategy, will reinforce the customer's options to buy and prevent customer alienation or perceived unfairness (Mathies and Gudergan 2007).

CONCLUSION

While a marked amount of progress has been made in relation to consumer behaviour research in RM, the research area is still in its infancy. Recent research has opened up new areas of interest. For example, Noone and McGuire (2013) have explored how non-price information such as consumer reviews, hotel ranking and brand name influences hotel choice and Helm (2013) has examined the impact of corporate reputation. On the basis of the work of Ovchinnikov and Milner (2012), Chen and Schwartz (2013) have investigated the impact of time on shaping the decisions and behaviours of consumers in relation to their propensity to book. They note that customers learn to anticipate price changes, especially last minute deals and modify their behaviour based on these experiences. However, further work needs to be done in relation to when the customers choose to buy a particular product/service in response to a supplier's dynamic pricing practices. In addition, the impact of competitor behaviour on RM models still requires further research (Dana, 2008), with many models treating rival firms behaviour as fixed. Other fruitful avenues of research that have not yet explored include the impact of habit and hedonistic determinants on consumers' choice of a particular brand or product/service choice and impact of group behaviour for purchase decisions such as family holidays.

REFERENCES

Anderson, C. and Carroll, B. (2007) Demand management: Beyond revenue management. *Journal of Revenue and Pricing Management* 6(4): 260–263.

Belobaba, P.B. (2002) Back to the future? Directions for revenue management. *Journal of Revenue and Pricing Management* 1(1): 87–89.

Chapuis, J.M. (2012) A cross-cultural analysis of passenger's reactions to revenue and pricing management. *Journal of Revenue and Pricing Management* 12(1): 16–25.

Chen, C.-C. and Schwartz, Z. (2013) On revenue management and last minute booking dynamics. *International Journal of Contemporary Hospitality Management* 25(1): 7–22.

Choi, S. and Mattila, A.S. (2006) The role of disclosure in variable hotel pricing. *Cornell Hotel and Restaurant Administration Quarterly* 47(1): 27–35.

Currie, S.M. and Rowley, I.T. (2010) Consumer behaviour and sales forecast accuracy: What's going on and how should revenue managers respond? *Journal of Revue and Pricing Management* 9(4): 374–376.

Dana, J.D. (2008) New directions in revenue management research. *Production and Operations Management* 17(4): 399–401.

Dickinson, C.B. (2001) 'CRM – Enhanced revenue management in the hospitality industry. *Hospitality Upgrade* Summer: 136–138.

Dwyer, F.R., Schurr, P.H. and Oh, S. (1987) Developing buyer-seller relationships. *Journal of Marketing* 51(April): 11–27.

Fiala, P. (2012) A framework for solving network revenue management problems with customer choice behaviour. *Central European Journal of Operations Research* 20: 383–392.

Freeland, L. (2007) Adoption of customer-centric cargo revenue management: Brief history of cargo revenue management vs passenger revenue management. *Journal of Revenue and Pricing Management* 6(4): 284–286.

Gallego, G., Iyengar, G., Phillips, R. and Dubey, A. (2004) Managing flexible products on a network. Technical Report TR-2004-01. New York: Department of Industrial engineering and Operations research, Columbia University.

Grayson, K. and Ambler, T. (1999) The dark side of long-term relationships in marketing services. *Journal of Marketing Research* 36(1): 132–141.

Haddad, R.L. (2015) Exploration of revenue management practices – case of an upscale budget hotel chain. *International Journal of Contemporary Hospitality Management* 27(8): 1791–1813.

Hanif, M., Hafeez, S. and Riaz, A. (2010) Factors affecting customer satisfaction. *International Research Journal of Finance and Economics* 60: 44–51.

Helm, S.V. (2013) How corporate reputation affects customers' reactions to price increases. *Journal of Revenue and Pricing Management* 12(5): 402–415.

Huppertz, J.W., Arenson, S.J. and Evans, R.H. (1978) An application of equity theory to buyer-seller exchange situations. *Journal of Marketing Research* 15(May): 250–260.

Jain, D. and Singh, S.S. (2002) Customer lifetime value research in marketing: A review and future directions. *Journal of Interactive Marketing* 16(2): 34–46.

Jonas, D. (2001) Carriers melding revenue management and CRM systems. Business Travel News, 26 March, pp.18–19.

Johnson, M., Gustafsson, A. and Roos, I. (2005) The effects of customer satisfaction relationship commitment dimensions, and triggers on customer retention. *Journal of Marketing* 69(4): 210–218.

Kahneman, D., Knetsch, J. and Thaler, R. (1986a) Fairness as a constraint on profit seeking: Entitlements in the market. *American Economic Review* 76(September): 728–741.

Kahneman, D., Knetsch, J. and Thaler, R. (1986b) Fairness and the assumptions of economics. *Journal of Business* 59(4): 285–300.

Kimes, S.E. (1989) Yield management: A tool for capacity constrained service firms. *Journal of Operations Management* 8(4): 348–363.

Kimes, S.E. and Wirtz, J. (2002) Perceived fairness of demand-based pricing for restaurant. *Cornell Hotel and Restaurant Administration Quarterly* 43(1): 31–37.

Kimes, S.E. and Wirtz, J. (2003) *Has revenue management become acceptable? Journal of Service Research* 6(2): 125–135.

Kunnumkal, S. (2014) Randomization approaches for network revenue management with customer choice behaviour. *Production and 0perations Management* 23(9): 1617–1633.

Kunnumkal, S. and Topaloglu, H. (2010) computing time-dependent bid prices in network revenue management problems. *Transportation Science* 44(1): 38–62.

Lieberman, W.H. (1993) Debunking the myths of yield management. *Cornell Hotel & Restaurant Administration Quarterly* 36(1): 34–41.

Lieberman, W.H. (2002) Revenue management: What lies ahead? Debunking the myths of yield management. *Journal of Revenue and Pricing Management* 1(2): 189–195.

Liu, Q. and van Ryzin, G. (2008) On the choice-based linear programming model for network revenue management. *Manufacturing and Service Operations Management* 10(2): 288–310.

Martin-Consuegra, D., Molina, A. and Esteban, A. (2007) An integrated model of price, satisfaction and loyalty: An empirical analysis in the service sector. *Journal of Product and Brand Management* 16(7): 459–468.

Martinez, M.E.A., Borja, M.A.G., Jimenez, J.A.M. and Trinquecoste, J.-F. (2011) Yield management and consumer price perception on the internet. *African Journal of Business Management* 5(23): 9779–9786.

Mathies, C. and Gudergan, S. (2007) Revenue management and customer centric marketing – How do they influence travellers' choices? *Journal of Revenue and Pricing Management* 6(4): 331–346.

Mathies, C., Gudergan, S. and Wang, P.Z. (2013) The effects of customer-centric marketing and revenue management on travelers' choices. *Journal of Revenue and Pricing Management* 52(4): 479–493.

Mauri, A.G. (2007) Yield management and perceptions of fairness in the hotel business. *International Review of Economics* 54(2): 284–293.

McGill, J. and van Ryzin, G. (1999) Revenue management: Research overview and prospects. *Transportation Science* 33(2): 233–256.

McMahon-Beattie, U. (2011) Trust, fairness and justice in revenue management: Creating value for the consumer. *Journal of Revenue and Pricing Management* 10(1): 44–46.

McMahon-Beattie, U., Yeoman, I. and Mudie, P. (2002) Customer perceptions of pricing and the maintenance of trust. *Journal of Revenue and Pricing Management* 1(1): 25–34.

Meissner, J. and Strauss, A.K. (2012) Network revenue management with inventory sensitive bid prices and customer choice. *European Journal of Operational Research* 216(2): 459–468.

Meissner, J., Strauss, A.K. and Talluri, K. (2013) An enhances concave programme relaxation for choice network revenue management. *Production and Operations Management* 22(1): 71–87.

Milla, S. and Shoemaker, S. (2008) Three decades of revenue management: What's next? *Journal of Revenue and Pricing Management* 7(1): 110–114.

Ng, I.C.L., Maull, R. and Godsiff, P. (2007) An integrated approach towards revenue management. *Journal of Revenue and Pricing Management* 7(2): 185–195.

Noone, B. and McGuire, K. (2013) Pricing in a social world: The influence of non-price information on hotel choice. *Journal of Revenue and Pricing Management* 12(5): 385–401.

Oliver, R.L. and Swan, J.E. (1989) Consumer perceptions of interpersonal equity and satisfaction in transactions: A field survey approach. *Journal of Marketing* 53(April): 21–35.

Ovchinnikov, A. and Milner, J.M. (2012) Revenue management with end-of-period discounts in the presence of customer learning. *Production and Operations Management* 21(1): 69–84.

Palmer, A. and McMahon-Beattie, U. (2008) Variable pricing through revenue management: A critical evaluation of effective outcomes. *Management Research News* 31(3): 189–199.

Pinchuk, S. (2009) Changing revenue management and marketing using a new customer life cycle system. *Journal of Revenue and Pricing Management* 8(1): 109–111.

Paas, L. and Kuijlen, T. (2001) 'Towards a general definition of customer relationship management. *Journal of Database Marketing* 9(1): 51–60.

Parvatiyar, A. and Sheth, J.N. (2001) Customer relationship management: Emerging practice, process, and discipline. *Journal of Economic and Social Research* 3(2): 1–34.

Reinartz, W.J., Krafft, M. and Hoyer, W.D. (2004) The customer relationship management process: Its measurement and impact on performance. *Journal of Marketing Research* 41(3): 293–305.

Simpson, R.W. (1989) Using network flow techniques to find shadow prices for market and seat inventory control. *Proceedings of technical report memorandum, M89-1.* Flight Transportation Laboratory, MIT, Cambridge.

Sharif Azadeh, S., Hosseinalifam, M. and Davard, G. (2015) The impact of customer behaviour modules on revenue management systems. *Computational Management Science* 12(1): 99–109.

Talluri, K.T. and van Ryzin, G.J. (2004) Revenue management under a general discrete choice model of consumer behaviour. *Management Science* 50(1): 15–33.

Taylor, W. and Kimes, S.E. (2011) The effect of brand class on perceived fairness of revenue management. *Journal of Revenue and Pricing Management* 10(3): 271–284.

Wang, X.L. and Bowie, D. (2009) Revenue management: The impact on business-to-business relationships. *Journal of Services Marketing* 23(1): 31–41.
Wirtz, J.L. and Kimes, S.E. (2007) The moderating role of familiarity in fairness perceptions of revenue management pricing. *Journal of Service Research* 9(3): 229–240.
Wirtz, J.L., Kimes, S.E., Ho, J.P.T. and Patterson, P. (2003) Revenue management: Resolving potential customer conflicts. *Journal of Revenue and Pricing Management* 2(3): 216–226.
Yeoman, I. (2013) The importance of consumer behaviour. *Journal of Revenue and Pricing Management* 12(5): 383–284.
Zablah, A.R., Bellenger, D.N. and Johnston, W.J. (2004) An evaluation of divergent perspective on customer relationship management: Towards a common understanding of an emerging phenomenon. *Industrial Marketing Management* 33(6): 475–489.
Zhang, D. (2011) An improved dynamic programming decomposition approach for network revenue management. *Manufacturing and Service Operations Management* 13(1): 35–52.