

The Status of Yield Management in Service Organizations in the United Arab Emirates: Results of a Survey

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Abstract

This paper investigates the awareness, self-reported current usage of yield management (YM), as a new technology, in a number of service organizations in the United Arab Emirates (UAE), perceived usefulness of using yield management and to explore to what extent the conditions necessary for the adoption of YM exist in non-users organizations. A sample of 77 individuals from hotels, airlines, and restaurants in the emirates of Abu Dhabi, Dubai, Ras Al-Khaimah, and the city of Al-Ain was used. The results show that the majority of respondents are aware of YM and use it at least moderately. The sources of acquiring knowledge in YM for those who are aware of YM were as follows: practice, training, and reading books and journals. The results also show that respondents perceive that the use of YM influences efficiency, sales, profitability; improves productivity, competitive advantage, capacity utilization and reduces costs. Results also show that about 53 percent of the users have been using YM for five years or more and that the conditions required for the adoption of YM exist to some extent for most of the non-users organizations. Limitations, implications, and lines of future research are discussed.

Keywords: Yield Management; revenue management; innovation adoption; developing countries; United Arab Emirates; service organizations; survey .

Introduction

Yield Management (YM), (also known as revenue management and revenue optimization), has been used in the service industries such as hotels, restaurants, airlines, train – operating, cruise liners, car rentals and the like in the western countries since late 1970's. Since then it has gained wide publicity in these countries. Consequently, yield management concepts and applications have received considerable attention from western scholars and academicians. Although, the majority of western literature reported the use of yield management in service industries such as airlines and hotel industry, few reported the use of yield management in other industries such as health care (e.g., Chapman and Carmel, 1992), broadcasting (Cross, 1998), golf course industry (Kimes, 2000), internet service provision (Nair et al, 1997; Paschalidis and Tsitiklis, 1998) and nonprofits sector (Metters and Vargas, 1999). However, to the best of the researcher's knowledge, there is no published work on the present topic in the context of any of the Arab countries including the United Arab Emirates (UAE). As it is known, the UAE economy as well as the economies of most of the Arab countries rely heavily on service industries. For instance, the contribution of service industry in the UAE's GDP for 2003 was 42.5% (AMF, 2004). Thus, one would expect that yield management would gain wide acceptance and usage in these countries.

The issue of accepting and adopting new technology and the factors influencing its acceptance and adoption also received considerable attention in the western literature.

The present study is based on the concept of accepting and adopting new technology and the influence factors, but without detailed discussion of these factors. It is designed to investigate the awareness, self-reported current usage of yield management, as new technology, in addition to perceived usefulness of using it and to explore to what extent the conditions necessary for the adoption of yield management exist in a sample of service organizations in the United Arab Emirates (UAE). It also draws decision makers' attentions in the UAE as well as other developing countries to the importance of yield management and the requirements for its adoption. The structure of this paper is now outlined. The next section describes the theoretical background of the study, followed by a section containing a description of the methodology employed. The one before the last section reports the empirical results and the discussion of these results and the final section provides the conclusion.

Theoretical Background

Adoption of new technologies

Acceptance and adoption of new technology and the factors that influence it have received considerable attention, especially in the western literature. It has been found that there is a significant correlation between acceptance of new technology and perceived usefulness and perceived ease of use. For instance, Davis (1989) found that perceived usefulness was significantly correlated with both self-reported current usage and self-predicted future usage. Similarly, perceived ease of use was significantly correlated with both self-reported current usage and future usage. Rogers (1995) examined the independent variables related to organizational innovations. These variables were classified into three categories: (1) leader characteristics such as attitude toward change; (2) internal characteristics of organizational structure such as centralization, complexity, formulation, interconnectedness, organizational slack, and size; and (3) External characteristics of the organization such as system openness. Rogers proposed positive relationship of attitude toward change, complexity, interconnectedness, organizational slack, size and system openness with organizational innovations, and negative relationship of centralization and formulation with organizational innovations. Fen -Hui Lin and Jen- Her Wu (2004) concluded that management support and perceived ease of use directly affected perceived usefulness, and perceived usefulness directly affected system usage. Van der Heijden (2004) found that perceived enjoyment and perceived ease of use are stronger determinants of intentions to use than perceived usefulness. Klopping and Mckinney (2004) show that perceived ease of use is not linked to perceived usefulness and perceived usefulness is directly linked to actual use. Grandon and Pearson (2004) found that among the factors which influence e-commerce adoption are perceived ease of use and perceived usefulness. Qingxiong Ma, and Liping, (2004) in a Meta analysis of empirical findings found that the correlation between usefulness and acceptance and between usefulness and ease of use are strong.

Based on the previous discussion it can be concluded that both perceived usefulness and perceived ease of use are the most important determinants of the acceptance and in turn usage of a new technology such as yield management.

Yield management

Different scholars have defined yield management differently. Yield management was defined by Optism (2002:1) as "an economic technique to calculate the best pricing policy for optimizing profits generated by the sale of a product or service, based on real-time modeling and forecasting of demand behavior." Nagle and Holden (1995) defined it as "a discriminatory pricing procedure which involves setting different prices for different segments of the market so as to maximize revenue gained." Also Smith ,Leimkuhier and Darrow(1992) defined revenue management as the application of information systems and pricing strategies to allocate the right capacity to the right customer at the right place at the right time, while Murtach and Mitra (2002) defined it as "a method of controlling inventory and the objective is to maximize expected return". However, a widely accepted definition of yield management is that of Kimes (1997a) who argues that YM is "the process of allocating the right capacity or inventory unit to the right customer at the right price and at the right time so as to maximize revenue or yield."

It worth noting that the definition of yield management varies with the industry it is used in. For example, in the hotel industry it is defined as "an integrated continuous and systematic approach used to maximize room revenue through the manipulation of room rate in response to forecasted patterns of demand" (Jauncey, Michel and Slamet 1995:26). In the airline industry, on the other hand, it is defined as "allocating fixed capacity of seats to different fair categories to achieve maximum profit" (Belobaba, 1989: 184). For the purpose of this study, however, Kimes' definition of yield management, mentioned above was adopted.

Advantages and disadvantages of yield management

The use of yield management has a number of advantages including facilitating decisions regarding the allocation of undifferentiated units of capacity to available demand in a way that maximizes revenue and the utilization of available capacity over time; improves sales through price discrimination; raises productivity through enticing more demand, and increases competitive advantage through capacity utilization and revenue generation (Larsen, 1988; Williams, 1987).

Although yield management has several advantages, as mentioned earlier, it also has a number of potential disadvantages such as unfairness (i.e., customers perceive that firms behave unfairly), opportunistic behavior on the part of customer (i.e., increase customers price awareness and sensitivity and in turn not willing to purchase at normal prices) and perception problems (i.e., repeated use of price discount might give bad image of the firm and the quality of the service provided). (Marmorstein, Rossomme, and Sarel, 2003)

Requirements for the adoption of yield management

According to some, successful adoption of yield management requires the presence of a number of characteristics such as fixed capacity (i.e. the capacity of the firm providing the service or the product is constrained), predictable demand, perishable demand, appropriate cost and pricing structure and finally time variable demand (Kimes et al., 1998; Kimes,

1997b). Others like Kimes and Sheryl (1989), Harris and Peacock (1995) argue that the adoption of yield management in an organization requires the presence of certain conditions such as segmented demand, perishable inventory, advance sale of the product or service, demand fluctuation, low marginal sales costs and production costs, and high capacity changes costs. Yet others, like Matos (2001:890) would argue that a successful adoption of yield management system requires the ability to segment the market, the availability of information on demand and booking patterns, good knowledge of pricing, a well-developed overbooking policy, and a good information system. Griffin (1996) states that the following factors are important for the success of yield management process: 1) the ability to segment the market according to certain characteristics, 2) forecasting patterns and accuracy of historical usage information, 3) accuracy, timeliness, and comprehensiveness of existing inventory, and 4) ability to monitor performance. Marmorstein, Rossomme, and Sarel (2003) argue that the success of yield management depends on the quality of information and the speed with which the information can be translated into appropriate offers for specific customers. It seems that there is an agreement among scholars with regard the conditions required to the adoption of yield management.

Obstacles to the use of yield management

As mentioned earlier, the adoption of yield management requires the presence of certain conditions. Accordingly, if these conditions are not met, then the adoption of yield management may be difficult. However, the European Commission (1997) classifies the obstacles to the use of yield management in small and medium sized enterprises into two major groups of obstacles: One is business internal obstacles which were subdivided into: First, attitudinal obstacles which include insufficient management skill or expertise, lack of awareness of yield management, and resistance to formalization of information and /or information technology. Second operational obstacles, which include lack of suitable communication/distribution channels, dependence on contract business with fixed prices, insufficient internal information, and cost of computer yield management systems. The other is environmental obstacles which are mainly infrastructural and include insufficient infrastructure to support diversification and market segmentation, insufficient sharing of information, lack of appropriate off-the-shelf computer yield management systems, and rigid seasonality of demand.

Wirtz, Pheng, and Patterson (2001) outline two potential forms of conflicts that might arise from the adoption of yield management in service firms. One is customer conflicts, which deal with those customers who perceived the firm negatively when practicing inventory and the second is pricing controls, and employees conflicts which deal with conflicted demand on employees. Jarvis (2002) discusses the reasons for the failure of yield management in new industries which include: lack of top management support, importing inappropriate system from another industry, taking insufficient account of yield maximizing processes, and taking insufficient account of yield management organization and skill sets.

Having outlined the theoretical background of the study, it worth noting that the present study attempts to empirically investigate the existence of the elements mentioned in the theoretical background in a sample of UAE service organizations. In particular, this study, as mentioned earlier, aims at exploring the awareness, self-reported current usage of yield management as new technology, perceived usefulness of using it, length of time YM is being used, the reasons for not using it, whether the conditions required for the adoption of yield management exist in the organizations under study, willingness to learn YM, the reasons for not willing to learn yield management and sources of acquiring knowledge in YM.

Methodology

Sample and data collection

A random sample of twenty service organizations such as hotels, airlines, and restaurants in the Emirates of Abu Dhabi, Dubai, Ras Al-Khaimah and the city of Al-Ain was selected. A random sample of 150 marketing, sales, and finance managers in the twenty hotels, airlines, and restaurants was chosen. The author and his assistants using drop-off and pick-up methods distributed One hundred fifty questionnaires. Only one hundred questionnaires were returned, resulting in a 67 percent response rate. Of the returned questionnaires, only seventy-seven questionnaires were usable.

The questionnaire was administered in English. Of the subjects, 52 percent are less than thirty years old, and about 81 percent hold a graduate or postgraduate degree. About 77 percent have less than five years experience in their present occupation. Of the subjects, about 80 percent are male and 62 percent have been working with the present organization for less than five years. About 57 percent are Arabs. About 69 percent are working in organizations which have been in the business for 5 years or more , 23 percent work in organizations belonging to the public sector, 51 percent work in organizations belong to the private sector, and 26 percent work in organizations belong to the joint sector .The main characteristics of the sample are presented in Table 1.

Table 1: The main characteristics of the sample
(n= 77)

| Characteristics | Frequency | % | Characteristics | Frequency | % |
|---------------------------------------|-----------|----|---------------------------------|-----------|----|
| Age | | | Organization's age | | |
| < 30 years | 40 | 52 | < 5 years | 24 | 31 |
| 30 – 45 years | 25 | 32 | 5 – 10 years | 23 | 30 |
| > 45 years | 12 | 16 | > 10 years | 30 | 39 |
| Gender | | | Organization's ownership | | |
| Male | 62 | 80 | Public sector | 18 | 23 |
| Female | 15 | 20 | Private sector | 39 | 51 |
| Nationality | | | Joint | 20 | 26 |
| Arab | 44 | 57 | | | |
| Non-Arab | 33 | 43 | | | |
| Education level | | | | | |
| Below university degree | 15 | 20 | | | |
| University degree | 53 | 68 | | | |
| Postgraduate | 9 | 12 | | | |
| Tenure in present job | | | | | |
| < 5 years | 59 | 77 | | | |
| 5-10 years | 16 | 20 | | | |
| > 10 years | 2 | 3 | | | |
| Tenure in present organization | | | | | |
| < 5 years | 48 | 62 | | | |
| 5-10 years | 20 | 26 | | | |
| > 10 years | 9 | 12 | | | |

Measures

A questionnaire was designed by the author to assess the awareness, self-reported current usage, perceived usefulness of using yield management and the existence of the conditions necessary for the adoption of yield management. The questionnaire consists of three parts. Part one consists of questions on the extent of awareness of yield management, willingness to learn it if not currently aware of it, the reasons for not willing to learn it, the sources of acquiring knowledge in yield management, the extent of using yield management, the length of time it has been used and perceived usefulness of using it. Part two is directed to those who are currently not using it although they are aware of it asking them about the reasons for not using it, and whether or not they are planning to use it in the future and if not why?. Part two also addresses the question of the existence of the conditions required for the adoption of yield management. Finally, Part three consists of general information about both the organization and the individuals completing the questionnaire. A number of colleagues revised the questionnaire and a number of changes have been introduced based on their recommendations. It should be noted that this questionnaire was developed based on a comprehensive revision of the literature and the author's own experience.

Analysis

Due to the exploratory nature of this study, descriptive statistics including means, standard deviations, and frequencies were used. These types of statistical analyses suit the purpose of this study.

Results and Discussion

Table 2 presents the degree of awareness of yield management.

Table 2: Degree of awareness of Yield Management
(n=77)

| Degree of Awareness | Frequency | % |
|----------------------|-----------|-----|
| Not at all | 9 | 12 |
| Slightly | 10 | 13 |
| Moderately | 18 | 23 |
| More than moderately | 21 | 27 |
| Extremely | 18 | 23 |
| Missing | 1 | 1.0 |

As clear from Table 2, about 74 percent of the respondents are at least moderately aware (3 points on a scale of 5) of yield management. These results indicate that the majority of the respondents are aware of YM. Therefore one would expect that the future of YM in the UAE is promising, in the sense that those who are currently aware of YM and not using it, may start doing so in the near future. This, of course, would increase the acceptance and adoption of YM in the UAE service organizations. For instance, Brotherton and Turner (2001) cited that building awareness and the development of yield culture are critical issues influencing the success, or otherwise, of yield management implementation.

Table 3 shows the degree of willingness to learn yield management on the part of those who are currently not aware of it.

Table 3: Willingness to learn Yield Management
(n=19)

| Willingness to learn YM | Frequency | % |
|-------------------------|-----------|----|
| Yes | 15 | 79 |
| No | 4 | 21 |

The results in this Table also show that of those who are currently not aware of yield management, 79 percent are willing to learn it. This of course, is a positive indication, since the more individuals are aware of YM, the more it will be accepted and adopted provided that they are aware of its usefulness.

With respect to the reasons for not willing to learn yield management, it was found that they include: lack of time, lack of ability and desire to learn, shortage of financial resources, the absence of need for yield management and other reasons. It is most likely that if those who are currently not willing to learn YM realize its usefulness, they will do every possible effort to devote the time to learn it and acquire the knowledge in it. The most important factor in increasing the willingness to learn YM is to increase the awareness of its usefulness.

Table 4 shows the sources of acquiring knowledge in yield management for those who are aware of it.

Table 4: Sources of acquiring knowledge in Yield Management

| Sources of Knowledge | Frequency | % |
|--------------------------|-----------|----|
| Taking courses | 18 | 23 |
| Training | 37 | 48 |
| Reading books & journals | 21 | 27 |
| Practice | 43 | 56 |
| Other | 2 | 3 |

The results indicate that the sources of acquiring knowledge in yield management are as follows: practice, training, reading books and journals, taking courses and other sources respectively. Although practice ranks first as a source of acquiring knowledge in YM, training and taking courses are also important sources. Therefore attention should be directed towards offering courses and training programs in YM in order to enhance the knowledge in YM and in turn improve the level of its acceptance and adoption in the UAE service industry. For example, Brotherton and Turner (2001) conclude that initial and on-going yield management training is critical issue in influencing success, or otherwise, of yield management implementation.

Table 5 exhibits self-reported current usage of yield management for those who are aware of it.

Table 5: Self-reported current use of Yield Management

| Self-reported current use | Frequency | % |
|---------------------------|-----------|----|
| Not at all | 3 | 5 |
| Slightly | 5 | 9 |
| Moderately | 18 | 32 |
| Frequently | 17 | 30 |
| Extremely | 13 | 23 |

The table shows that about 86 percent of those who are aware of yield management reported that they are currently using it at least moderately. These results might lead to the conclusion that increasing the awareness in YM would, undoubtedly, increase its acceptance and usage. Therefore, every effort should be made to enhance the awareness in YM. However, despite the fact that the vast majority of respondents reported that they are currently using YM, it is not publicly known that YM is widely used in UAE's service industry. This might be due, in part, to a lack of empirical studies in the UAE with respect to the status of YM.

Table 6 shows the length of time using yield management.

Table 6: Length of time using Yield Management
(n = 53)

| Length of time using YM | Frequency | % |
|-------------------------|-----------|----|
| < 5 years | 25 | 47 |
| 5- 10 years | 20 | 38 |
| > 10 years | 8 | 15 |

It is obvious that 53 percent of those who are currently using YM have been using it for five years or more. This might give an indication that YM has a reasonably long history in the UAE's service industry. Once again, it is not widely known that YM is being used in UAE's service industry for such a long time. Table 7 shows the perceived usefulness of using yield management by those who are currently using it.

Table 7: Perceived usefulness of using Yield Management
(n=53)

| No. | Perceived usefulness of using YM | Degree of influence | | | | |
|-----|----------------------------------|---------------------|------|------|------|-----------|
| | | Not at all | | | | Very high |
| 1 | Increase efficiency. | - | 11 % | 27 % | 28 % | 34 % |
| 2 | Improve productivity. | - | 13 % | 19% | 23% | 45 % |
| 3 | Improve profitability. | - | 9 % | 11% | 30% | 50% |
| 4 | Reduce costs. | 2% | 13% | 22% | 38% | 25% |
| 5 | Improve competitive advantage. | - | 9 % | 28% | 36% | 27% |
| 6 | Increase sales | - | 8 % | 23% | 38% | 31% |
| 7 | Improve capacity utilization | - | 15% | 25% | 40% | 20% |

The majority of YM users perceive that the use of YM has high levels of influence on increasing efficiency and sales, on improving productivity, profitability, competitive advantage, capacity utilization and finally on reducing costs. Undoubtedly, if non-users of YM are aware of these benefits they might adopt YM in their organizations. Therefore, efforts should be directed towards publicizing the usefulness of using YM in order to motivate non-users of YM to use it in the near future.

The analysis of the collected data indicates that lack of knowledge in YM and lack of appropriate computerized software are perceived as the most important reasons for not using YM. Lack of top management support and lack of financial resources rank second in terms of importance as reasons for not using YM followed by both the lack of data required to use YM and the insufficient management skills or expertise. Therefore, encouraging the wide acceptance and adoption of YM requires educating individuals in YM, the provision of the necessary software packages, top management support, and the availability of funds and data. As mentioned earlier, management support directly affects perceived usefulness, hence improving perceived usefulness and in turn increasing the chance of adopting and using yield management require top management support. Top management support might include encouraging individuals to use it, providing the necessary help and resources to enable people to use YM, providing good access to hardware resources and to various types of software.

With respect to the existence of the conditions necessary for the adoption of YM, it was found that the majority of these conditions exist in the majority of non-users organizations. Thus, one would expect that those organizations would be potential users of YM provided that some effort is made to make them aware of its usefulness.

Conclusion

This study investigates the awareness and self-reported usage of yield management in addition to other related issues in a sample of service organizations in the United Arab Emirates. The findings show that the majority of respondents are aware of YM and use it at least moderately. The sources of acquiring knowledge in YM for those who are aware of YM were as follows: practice, training, and reading books and journals. The findings also show that respondents perceive that the use of YM highly influences efficiency, sales, productivity, profitability, competitive advantage, capacity utilization, and costs. The study also reveals that about 53 percent of the users have been using YM for five years or more and that the conditions required for the adoption of YM exist to some extent in most of the non-users organizations.

Although this study provides interesting insights into the status of YM in the UAE service industry, it has a number of limitations. First, it was confined to certain emirates and therefore, it might not provide a clear and comprehensive picture of the status of yield management in the UAE as a whole. Nonetheless, the three emirates (namely, Abu Dhabi, Dubai, and Ras Al-Khaimah) covered in this study represent the most important emirates in the UAE. Second, the sample size was small ($n = 77$) and this in turn might affect the generalizability of the results. However, due to the exploratory nature of the present study, this size might be acceptable. Additionally, a sample size of 30 observations or greater, is considered acceptable from statistical point of view. Third, the study excluded other service organizations such as hospitals, telecommunications and car rental. Finally, this study is an exploratory type and therefore it does not examine the impact of a number of factors on the awareness and usage of yield management. Yet a number of policy implications can be drawn from the current study. First, the survey of the current literature indicates a lack of research in this area in the context of the UAE in particular. Therefore, more attention should be devoted to this area of research to increase the awareness of decision makers in yield management and in turn to encourage wide acceptance and usage of yield management. Second, the findings of this study show that the current users of YM perceive its usefulness in a number of aspects. Thus, it is deemed worthy to publicize these benefits so that non-users could be motivated to adopt and use YM in the near future. Finally, the study confirms that most of the necessary conditions for the effective use of yield management exist in the non-users organizations. This means that the potential for the usage of yield management in the UAE is high and more efforts are required to motivate the wide acceptance and usage of yield management.

Still, the issues dealt with in this paper can be further expanded in a number of directions. For example, an analytical study, which takes into consideration the factors, which might influence the awareness and usage of yield management, might be worthwhile. Furthermore, replication of this study using a larger sample to find out the development of yield management awareness and usage over time is valuable. Additionally, a study, which explores the perceived fairness of yield management practice, is of interest. Finally, the inclusion of other service organizations such as hospitals, telecommunications, and car rentals is worthwhile.

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