TECHNICAL DRIVERS OF REVENUE MANAGEMENT SUCCESS AT 5 STAR HOTELS IN EGYPT

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Abstract:

RM Technical Drivers are defined as the technical processes and routines that facilitate RM success, that are Market Segmentation, Pricing, Forecasting, capacity allocation and Information Technology contribute to effective RM success.

The aim of this study is to Recognize Revenue Management systems, define and recognizing the Technical Drivers, demonstrate how these drivers impact RM success.

As a result the researcher had found that the mentioned five Technical Drivers differ in their contribution on revenue management success as comes at the first level Capacity Allocations followed by Information Technology then comes Forecasting of demand then Market Segmentation and Pricing respectively.

Literature Review:

The concept of revenue management (RM) is originated with U.S airline industry in the late 1970s. It was obvious to the airlines that they could divide passengers into two main segments; business passengers who book in a hurry irrespective of fares, leisure travelers who book with sense to price. In general, most firms attribute a 3 – 7 % increase in profit after implementing RM (Cross, 1997).

Revenue Management (RM) is an important tool for matching supply and demand by segmenting customers into different segments based on their willingness to pay and allocating scarce capacity to the different segments in a way that maximizes hotel revenue. There have been many definitions of revenue management (RM). Many writers use the term interchangeably with yield management (YM) although some consider this relates to accommodation only whereas RM may encompass all areas of hotel revenue. Jauncey et al. (1995) define YM as being an *"integrated, continuous and systematic approach to maximizing room revenue"*. Early approaches to YM addressed only rooms revenue overall and it was only later that segmentation factors were included. This approach was informal and fairly unscientific but almost always practiced by managers (Bryant, 2000). The father of Yield Management (Bryant, 2000), first formally demonstrated how calculations of the yield and a review of displacement could identify where gaps could be filled to increase occupancy. He then developed his arguments to lead to staff "upwelling" to maximize both average room rate and occupancy (Orkin, 1988). Two years later (Orkin, 1990) he also considered the profitability of different segments but only in the context of price-sensitivity Revenue management is defined by Cross (1997) as being the application of disciplined tactics that predict consumer behavior at the micro-market level that will maximize product availability and price in order to maximize revenues. He looked at a range of industries, airlines being some of the major users of yield management techniques and having developed their systems in advance of other industries and hotels in particular.

A number of studies have compared the operating performance of those adopting or not adopting yield management techniques .The multiplier effect was first discussed by (Kimes, 1989) who identified that just concentrating on rooms resulted in a hotel ignoring other revenue opportunities. She suggested that these should be31incorporated into a full RM system

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not just maximizing yield but revenues throughout. Jones and Hamilton (1992) also do not consider the impact on other revenues or on profits. A review of the short break market (Edgar, 1997) identified that certain market segments offer much greater opportunities for maximizing subsidiary revenues than others.

This results in a RM approach (rather than yield) which attempts to identify which segments generate most revenues for the business as a whole, not just for the rooms area. Cross (1997) uses simulation modeling to improve the bottom line but is actually discussing improving revenue rather than profits again the assumption that improved revenue automatically results in improved profits. However, his model could be adapted to include cost implications of the various products, or market segments. He does discuss "costing out the benefits" but implies these are just variable costs rather than all the cost of the particular transaction. He actively argues against taking a cost-oriented approach and focuses purely on revenue. He suggests that tactics which result in sales increases or price "improvements" will have a greater impact on profits than those that focus on costs. He does not address the concept of both approaches being used together to ensure optimization of profits.

Revenue management applies to the service industry when it meets the following five conditions, each specifically adapted for hotels sited from.

1. *Limited capacity*: The design of revenue management target capacity-constrained services firms. The units of inventory sell in a short period of time with a fixed capacity, measured by the number of rooms.

2. *Market Segmentation*: Service industries make use of segmentation because they can choose between different types of customers. They do not allow arbitrary Pricing, so the service should have some distinguishing characteristic so that it uses the same unit of capacity to deliver many different services. Hotels usually use purchase restrictions and refund requirements to help segment the market between leisure and business customers.

3. *Future demand is uncertain*: Revenue management must have the ability to forecast the demand variability so that managers can increase prices during periods of high demand and decrease prices during periods of low demand. Hotels must set aside rooms for business customers, to protect them from the lower prices acquired by leisure customers before they know how many business rooms will sell.

4. *Perishable units of inventory*: Inventory distinguishes service firms from manufacturing firms. The units of inventory unsold after a specific date go to waste in service industries, because services cannot be stored. This special characteristic leads to the sale of services in advance. Hotels cannot store rooms for use by tomorrow's customer.

5. *Appropriate cost and Pricing structure*: Many service firms have a fixed cost capacity expense and a demand that cannot rapidly adjust. In the same way, the additional cost of adding a new customer to the available capacity is very low (Guadix J., 2009).

Consider a firm implementing RM. First, the firm must segment its customers and charge different prices for each segment (Talluri and Van Ryzin, 1998). As part of charging different prices, the firm must forecast demand for each segment and allocate capacity to various segments to know who and when to charge different prices. Because of the significant information needed for analysis in RM, these tasks must be done within the context of an Information Technology (IT) system.

Talluri and Van Ryzin (1998) define Market Segmentation as "the process of classifying customers into groups based on observed characteristics, behaviors and preferences". Market Segmentation is a necessary, but not sufficient condition for RM to occur.

Since RM is based on the practice of charging different prices to different customer segments, an inability to break customers into different segments translates into an inability to practice RM. Therefore, Market Segmentation ability is an important skill within RM and we include it as part of RM technical driver.

After grouping customers into segments, a firm must set prices for each segment. We define Pricing as the process of setting rates to try to extract the optimal revenue from the firm's customers (Dutta *et al.*, 2003; Vorhies and Morgan, 2005).

RM yields higher revenue to firms because of the ability to charge some customers higher prices than others. However, setting prices wisely has never been an easy task. A manager must consider the value of the good to the customers, the competitors' prices, the customer price elasticity, and many other factors. Many of these variables are either unknown to the firm or constantly changing, thereby increasing the difficulty of setting prices. Regardless of the complexity of Pricing, it is a critical element of RM (Jones and Hmilton, 1992; Talluri and van Ryzin, 1998; Bitran and Caldentey, 2003) and therefore we include it as one of the constructs of RM technical driver.

Product prices directly impact product demand, which must be estimated in order to determine the optimal capacity to reserve for each customer segment. The process of predicting future demand for a firm's product defines Forecasting. Weatherford et al. (2001) call Forecasting "the key technical driver of any RM system success" Forecasts provide a RM decision maker with approximate demand for each market segment, thereby greatly influencing the amount of capacity to allocate to the highest value segments. Better forecasts incorporate quantitative analysis of past data.

We use the definition of capacity allocation from Talluri and van Ryzin (1998) "the decision of whether to accept or reject an offer to buy; how to allocate capacity to different segments or channels; when to withhold a product from the market and sell at later points in time". Each time a new customer arrives, RM users must decide if they should sell capacity to the current customer today, or hold that capacity for a later arriving, higher paying customer, who may or may not materialize. In other words, in a world of finite supply, a firm wants to sell that supply at the highest profit. This concept is a key part of RM and so we include it within RM technical driver.

Practitioners make RM decisions based on huge amounts of data stored, cleaned, and analyzed within an IT system and therefore we include IT as a part of RM technical driver. We define IT as the hardware, software, and people necessary to configure and maintain information systems in support of the business Stratman and Roth (2002).

Firms must use IT resources well to successfully use RM. Firms are able to segment markets, understand consumers' price elasticity, and allocate capacity more effectively, due in a large part to the data and programs within an IT system (Talluri and van Ryzin, 1998). While users must apply their own expertise and adjust system recommendations judiciously, IT facilitates the decision process which relies on detailed analysis of sizable data in RM applications.

While it may seem obvious that IT improves RM performance, the impact of IT on performance has been questioned in the past. Some researchers have generally shown that IT capability, when used to enhance and complement firm core competencies, can be a competitive advantage for a firm (Bharadwaj, 2000; Dedrick et al., 2003; Bhatt and Grover, 2005; Ravichandran and Lertwongsatien, 2005).

Bhardarwaj (2000); Ravichandran and Lertwongsatien (2005) found that The prevailing literature defines IT capability not only as the physical IT assets, but instead as the physical IT assets, the know-how to maintain and update those assets, and the knowledge to apply those assets to assist in the firm's operations. Using this broader definition of IT capability, also they found that IT capability can provide competitive advantages to firms. Whereas the physical assets of IT can be easily imitated, the knowledge to apply IT assets to a specific business are much more difficult to imitate. This research guides us to think of IT as an enabling component of overall firm success. We incorporate IT as a factor in a successful revenue management system.

The objective of the research:
- Defining and recognizing the Technical Drivers.
- Demonstrating how these drivers impact RM success.

Methodology:
The researcher had chosen a random sample of 30 hotels in Cairo, Hurghada and Sharm El Sheikh that apply RM system to their operations, also the researcher had undertaken an interview that was used to measure the Technical Drivers that impact RM success in those hotels.

An interview about revenue management Technical Drivers
In Egyptian hotels

Drivers	1	2	3	4	5
Market segmentation					
1. The hotel categorizes customers based on similar buying characteristics.	1	2	3	4	5
2. The hotel has distinguishable groups of customers who can be separated into identifiable characteristics.	1	2	3	4	5
3. The hotel promotes itself differently to different groups of customers.	1	2	3	4	5
4. The hotel regularly reviews if it has appropriate, well defined market segments	1	2	3	4	5
Pricing					
5. Competitors' reactions are considered when deciding room rates.	1	2	3	4	5
6. Long term customer satisfaction is balanced with short term revenue when setting room rates.	1	2	3	4	5
7. The hotel has effective policy for setting room rates.	1	2	3	4	5
8. Customers' price elasticity is considered when setting room rates.	1	2	3	4	5
Forecasting					
9. Compared to the hotel competitors, the hotel forecasts are very accurate.	1	2	3	4	5

10. The hotel uses accurate and timely data for forecasting customer demand.	1	2	3	4	5
11. The hotel uses RM system forecasts to drive business decisions.	1	2	3	4	5
Capacity allocation					
12. RM system allocates rooms well to our market segments.	1	2	3	4	5
13. When analyzing the value of a given customer, the hotel includes customers' auxiliary spend (food & beverage, spa, etc.) in addition to room rate.	1	2	3	4	5
14. On any given evening, the hotel has a few rooms available for high value customers	1	2	3	4	5
Information technology					
15. The RM system meets business needs.	1	2	3	4	5
16. Our reservations and RM systems are integrated.	1	2	3	4	5

Results and Discussion:
The Descriptive Analysis:

As shown in Table No. (1) revenue management in 5 star hotels has discovered that market segmentation is so important among the five drivers reaching a value of 4.44 then came forecasting with a value of 4.20 followed by pricing 3.89 capacity allocations came in the fourth level finally came information technology with 3.00 .

Table No. (1) Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Market Segmentation	30	4.00	4.75	4.4417	.18198
Forecasting	30	3.00	5.00	4.2083	.46463
Pricing	30	3.33	5.00	3.8944	.34039
Capacity Allocations	30	3.00	4.00	3.5622	.42788
Information Technology	30	2.60	4.00	3.0022	.28243
Valid N (listwise)	30				

Figure No. (1) indicates this consequence as follows:

Fig. No. (1) Descriptive Statistics
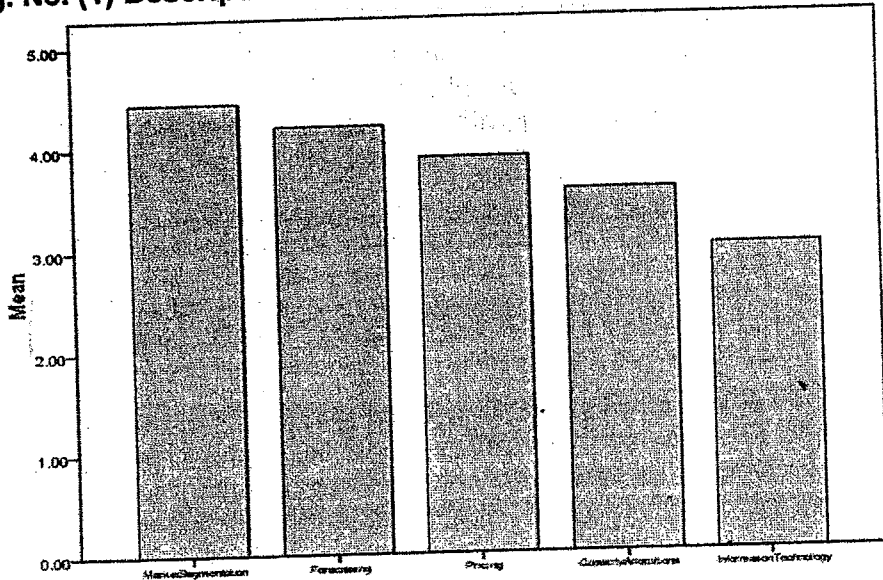
Analytical Statistics:
After identifying the levels of Technical Drivers by revenue management department through the descriptive analysis the researcher has determined the relations of these five drivers through simple correlation and regression analyses, the results was as follows:

First: Simple Correlation Analysis :-
Table No. (2) indicates correlation factors between Technical Drivers and revenue management performance. The important result pinpointed that the overall Technical Drivers correlated significantly with performance factors which in other words state the strength of correlation among the Technical Drivers and revenue management performance.

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Table No. (2) Correlations

		Performance
Performance	Pearson Correlation	1
	No.	30
Market Segmentation	Pearson Correlation	.393*
	Sig.	.032
Forecasting	Pearson Correlation	.443*
	Sig.	.014
Pricing	Pearson Correlation	.377*
	Sig.	.040
Capacity Allocations	Pearson Correlation	.767**
	Sig.	.000
Information Technology	Pearson Correlation	.553**
	Sig.	.002

Results indicated that capacity allocations came at the first level of correlation with a value of 0.767**, So RM managers should focus on this driver (capacity allocations as it correlated with performance directly, Coming in the second level the (information technology) as correlated with performance in a moderate ascending way with value of 0.557**. The other three Technical Drivers came as follows respectively (forecasting, Market segmentation and pricing).

Second: Simple Regression Analysis:-

Simple regression, ANOVA and f test were used to examine the strength of significance between the five Technical Drivers and the performance of revenue management department.

As indicated in Table (3) R Square was 0.58 for capacity allocations which pinpoint its importance for revenue management performance, It is stated also by the high interpreted value 58.9% and the highest significance 0.000 as shown in Table (4).

Table (3) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.393	.154	.124	.42642

a. Predictors: (Constant), Market Segmentation

Table (4) ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.927	1	.927	5.100	.032
	Residual	5.091	28	.182		
	Total	6.019	29			

a. Predictors: (Constant), Market Segmentation

b. Dependent Variable: Performance

Table (5) shows the extent at which R Square is reached with a value of 0.30 for information technology Driver, and so its interpreted value 30%, It is stated also by the high significance 0.002 as indicated in Table (6).

Table (5) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.553	.305	.280	.38643

a. Predictors: (Constant), Information Technology

Table (6) ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.837	1	1.837	12.305	.002
	Residual	4.181	28	.149		
	Total	6.019	29			

a. Predictors: (Constant), Information Technology

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Table (5) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.553	.305	.280	.38643

b. Dependent Variable: Performance

Here comes the driver of forecasting of demand with R Square of 0.19 and a significance of 0.014 as indicated in Table (7) and Table (8) in sequence .

Table (7) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.443	.196	.167	.41568

a. Predictors: (Constant), Forecasting

Table (8) ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.181	1	1.181	6.833	.014
	Residual	4.838	28	.173		
	Total	6.019	29			

a. Predictors: (Constant), Forecasting
b. Dependent Variable: Performance

Market segmentation came with R Square of 0.15 and a significance of 0.032 as indicated in Table (9) and Table (10), respectively.

Table (9) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.393	.154	.124	.42642

a.   Predictors: (Constant), Market Segmentation

Table (10) ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.927	1	.927	5.100	.032
	Residual	5.091	28	.182		
	Total	6.019	29			

a. Predictors: (Constant), Market Segmentation

b. Dependent Variable: Performance

Finally comes the Technical Driver of pricing with R Square of 0.14 and a significance of 0.040 as demonstrated in Table (11) and Table (12) in sequence

Table (11) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.377	.142	.112	.42941

a. Predictors: (Constant), Pricing

Table (11) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.377	.142	.112	.42941

Table (12) ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.856	1	.856	4.642	.040
	Residual	5.163	28	.184		
	Total	6.019	29			

a. Predictors: (Constant), Pricing

b. Dependent Variable: Performance

Conclusion:

Eventually, the researcher had found that the mentioned five Technical Drivers differ in thin contribution on revenue management performance as comes at the first level allocations capacity followed by information technology their comes forecasting of demand then market segmentation and pricing respectively. Management of 5 star hotels should make benefit of those findings to get utmost application to their operations.

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الملخص العربي
الدافعيات الفنية لنجاح إدارة الإيراد بالتطبيق علي فنادق الدرجة الخامسة بمصر

بدأ ظهور مفهوم إدارة الإيراد في سبعينيات القرن العشرين بأمريكا حيث كانت تعني مضاهاة العرض بالطلب عند تقسيم سوق الطلب إلي شرائح تبعا لقدرة العميل علي الدفع أو غير ذلك من العوامل ، مع توزيع هذا الطلب علي طاقة العرض المحددة متمثلة في عدد الغرف المتاحة مما يعظم من إيرادات الفندق .

ونظرا لحداثة هذا النوع من الدراسات وبمراجعة ما تم نشرة من أبحاث فقد تم تحديد هدف هذه الدراسة ليوضح مدي نجاح الفنادق المصرية في تطبيق إدارة الإيراد من خلال تعريف مفهوم المحددات الفنية لإدارة الإيراد ومدي تأثيرها في نجاح هذه الإدارة .

تمت الدراسة من خلال إجراء مقابلة شخصية مع مديري إدارة الإيراد بالفنادق المصرية حيث أكدت نتائج الدراسة علي أهمية إدراك المدرين لتلك المحددات بالترتيب التالي (توزيع الطاقة الإستيعابية – تكنولوجيا المعلومات – التنبؤ – التشريح السوقي – التسعير) .