

THE ARTICLE BEGINS ON THE NEXT PAGE

RM is "...the number one emerging business strategy – a practice poised to explode". -
The Wall Street Journal

"Your re-engineering has run its course. You manage your quality totally. Where do you turn for future gains? Perhaps to the marketplace, with 'revenue management'...
...Now with computing costs plunging, revenue management is poised to explode." The
Wall Street Journal

Revenue Management has proven to be a devastatingly effective competitive device" -
Dr. Alfred Kahn, Economist, Former Senior Staff Member, President's Councils on
Economic Advisors

When your strategy is deep and far reaching, then what you gain by your calculations is
much, so you can win before you even fight. When your strategic thinking is shallow
and nearsighted, then what you gain by your calculations is little, so you lose before
you do battle. Therefore it is said that victorious warriors win first and then go to war,
while defeated warriors go to war first and then seek to win." -"The Art of War" by Sun
Tzu

"The only constant in the universe is change." -Albert Einstein

New Revenue Management Journal – Journal of Revenue and Pricing Management

- <http://www.henrystewart.co.uk/journals/jrpm/index.html>
- Not just RM - covers RM, Marketing, Pricing & Product Development
- Only RM journal with leading worldwide academic & business leaders and only independent RM information not from a company with products to sell
- Contact Steve Pinchuk steve@profitoptimization.com of Profit Optimization Strategies Inc www.profitoptimization.com to submit an article for publication in the Journal

American Management Association RM seminar

- 3-day seminar and workshop on revenue management and its impact on marketing, pricing and product development
- Begins September 2002 <http://www.amanet.org/seminars/cmd2/1221.htm>
- Steve Pinchuk is writing this briefing and will be giving it across the US

Profit Optimization Strategies www.profitoptimization.com

- "RM Articles" page has links to revenue management articles published by leading publications. "Papers" page has several RM papers and briefings I have written. Including a 171 slide PowerPoint briefing on RM basics.

**REVENUE MANAGEMENT, MARKETING, PRICING & PRODUCT
DEVELOPMENT**

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INTRODUCTION

When your strategy is deep and far reaching, then what you gain by your calculations is much, so you can win before you even fight. When your strategic thinking is shallow and nearsighted, then what you gain by your calculations is little, so you lose before you do battle. Therefore it is said that victorious warriors win first and then go to war, while defeated warriors go to war first and then seek to win."

-"The Art of War" by Sun Tzu

This article will discuss Revenue Management's (RM) interaction with marketing, pricing and product development. RM data and analysis, although revolutionary in their scope and detail, are not routinely and systematically applied in many areas of business. The power of RM has not been fully integrated into corporate marketing, pricing and product development. The information is finally available, but it is not being used to even a fraction of its full potential in most companies. Think about the quote for a moment. Have you optimized the use of RM data and techniques, and the cooperation and daily interactions needed between RM and marketing, pricing and product development?

The article will be published in two parts. We will identify areas of marketing, pricing and product development where RM could be further applied. In order for RM to work it must be applied in a routine and systematic operation where it is applied all the time and not just occasionally. Otherwise the market gets confused and irritated and inconsistencies in implementations cause the whole fabric of RM to be destroyed. RM really did not become RM until it became formal, consistent and systematic in its many applications.

RM's applications to marketing, pricing and product development, which I call "Technical Revenue Marketingsm" (TRMsm), have similar needs. RM is the application of Yield Management (YM) tools in inventory

control, and occasional and generally random applications in marketing, pricing and product development. TRMsm is the full time, routine and systematic application of YM tools in both inventory control, as well as in marketing, pricing and product development. TRMsm must be applied in a routine on going and systematic manner or it will not work properly and a great deal of its potential will be lost. TRMsm needs more of a philosophical RM focus than RM.

RM is very process and numbers driven. TRMsm is more interactive with the market and other forces that cannot be controlled or isolated and therefore is more of an approach than a set of models. Applying RM concepts and tools to marketing, pricing and product development will require a greater focus on maintaining the original goals and culture of RM in mind. In these areas RM must react to the maze of decisions and on the spot interactions required of marketing, pricing and product development. RM must be the culture and the way of doing business not just a promotional tool or lower priority consideration in strategic planning, pricing and product development.

Individual areas that I have touched upon can be explored in more detail in future articles. It is time to assimilate RM formally and systematically into marketing, pricing and distribution. Readers are always welcome to respond with their ideas to www.revenuemanagement.org where one chat room will be dedicated to the Journal.

Revenue management applications

*Revenue Management was recently proclaimed the **number one emerging business strategy** by The Wall Street Journal,*
- Business Wire (Copyright (c) 1997, Business Wire)

RM applies to many areas in a company and to many industries. The Wall Street Journal understands the potential power that RM has for changing something as fundamental as the very way business is conducted. The Journal also understands that RM can be applied to many industries. This article is written to give an overview of how RM is beginning to infiltrate and control marketing, pricing and product development. These are areas where RM is not routinely applied today. They are areas that have no real systematic formal RM approaches and processes. RM applications are moving from the travel and hospitality industries where they were born, to broadcasting, energy and retail sales. A significant amount of change is on the horizon.

The models that RM uses can be adapted to many other industries. Many of the examples in this article are from the travel industries. However, these same basic economic theories, and their marketing and pricing techniques, can be applied, with adaptations, in other industries. However, many businessmen feel that an approach or model used for another industry would not work for them, or that the predictive forecasting models that RM uses won't work in their industry. Mathematical models do not know or care what industry the numbers are from. Models rely on the numbers and the patterns that they can detect in those numbers. There are patterns in our everyday lives that are too complex for our minds to perceive from a stack of numbers. We need computers and special

models to find these patterns and explain them to us. This is why the models that RM uses can work when adapted to other industries. RM is the application of microeconomic theory with the support of modern decision support systems. RM analyzes every decision with a new array of data and analytical horsepower. You determine who can buy your product, at what time and at what price.

Technical revenue marketingsm

TRMsm is marketing based on RM philosophies, techniques, tools, data and systems. What does TRMsm do? Essentially, it's the ability to have and use the market knowledge, gained through advanced RM analysis and techniques to analyze and track your market's segments. This detailed knowledge is needed to use TRMsm to sell your product as profitably as possible. TRMsm has much stronger analytical tools than traditional marketing. These tools can be used to: stimulate demand, maintain price integrity in higher priced market segments during typical low demand periods and boost revenue during high demand periods. However, the person directing the TRM must be a RM expert with a very strong hands on marketing background.

TRMsm is the process of routinely and systematically making marketing, pricing and distribution decisions using RM data, techniques and approaches. The value of RM today is restricted to a company's "inventory control" areas. RM data and techniques can do more than build inventory controls, forecast the final demand, optimize and dynamically link availability in your booking systems to the optimization process. RM data and theories should also be more routinely and systematically applied in product development, pricing and marketing.

If properly applied, RM theories can be used to direct and change the focus, goals

and techniques used in marketing. RM has the data, analytical horsepower, aptitude, and focus to greatly advance marketing operations for most companies. However RM today is not even systematically and routinely applied in many companies' inventory and sales controls, much less in their marketing, pricing or product development decisions. RM is occasionally used as a tool in a marketing promotion or area. However, marketing today is not focused on maintaining and applying RM principles in all of its decisions.

TRMsm should become more of the focus of marketing actions and decisions, not just an approach used occasionally on a few promotions. In much the same way that RM must be implemented all the time to effectively optimize profits, TRMsm must be implemented all the time to truly optimize RM's potential.

TRMsm is very detailed and uses available RM analysis and RM decision support systems. TRMsm is focused on profits and not on sales volume. TRMsm and its dynamic pricing techniques and approaches apply to retail businesses, theaters, energy companies, cargo and freight companies, travel, transportation, hospitality & leisure, manufacturing, broadcasting, rental properties and many other industries. RM has the long-term potential to change our marketplace, its products and their marketing.

Agenda

With these premises in mind, we will now proceed to explore how RM could be used more effectively in these non-inventory control areas of companies. In order to understand the concepts that TRMsm uses, we will begin by understanding the environment that gave birth to this new management science. Next we will discuss, at a very general level, how RM is implemented today. Then we can explore RM's future applications to see what is

happening. Next we will talk about TRMsm. We will talk about TRMsm and its interaction with pricing, then we will discuss the reasons for TRMsm to be used, what some of TRMsm's concepts were and what tools could be used to implement TRMsm. Hopefully the reader will end the article with thoughts about how RM could assist in a more formal and systematic way in their marketing, pricing and product development.

DEVELOPING RM

It began with airline deregulation

To understand RM requires understanding the market and regulatory forces that gave birth to this new management science. There is an old saying; "necessity is the mother of invention." RM's roots are firmly planted in the soil of necessity, which was created when the United States deregulated the airline industry. We want to focus on the marketing and pricing forces that gave birth to RM.

Most reviews focus on the automated inventory control tools that were born from this era without really discussing the market forces that created the need for RM. We want to go back to the beginning and see the market forces that gave birth to RM. These forces could help to show us how RM could be used beyond inventory control in marketing, pricing and product development. What marketing, pricing and product development forces created the need for RM to develop automated inventory control systems? Hopefully understanding this will help us increase the use of RM tools in marketing, pricing and product development areas.

Up until the point of airline deregulation, the US airlines' were given the domestic routes they could fly, and the prices they could charge, by the US government. The US government considered the airlines to be a public utility or service. The US government regulated the airlines domestic

operations, and they were not allowed to compete in an open competitive marketplace. The government created the market, products and prices. When the US government's regulation of the US airline industry ended, the airlines were left with a tremendous amount of financial assets (planes) that were suddenly thrown into a very open and competitive market environment. The airline executives had never had to market and compete like this. There are probably very few times in history similar to this. A country takes its domestic piece of a mature and very large global industry, and deregulates it and the players are suddenly allowed to compete for any piece of the market they want.

After airline deregulation there was an unprecedented need for the best analysis possible. The airlines redeployed some of their planes and began to change their pricing. Competition was creating market pressures, which in some cases substantially lowered prices, and in some places prices rose as competitors left that market. However, the airlines were still in need of a way to routinely and systematically make all the decisions needed to run a fleet of planes around the US and fill seats in many planes in many markets 18 hours every day.

YM creates many products from one

Airlines were now rewarded for innovative marketing success. The airlines learned that creating many different products out of their one real core product, the plane's seats, allowed them to have the right product to target each existing market segment with the needed prices. Airlines only have a seat to sell, and on most flights the seats come in one or two physical sizes – coach and first class. Many competing airlines even fly the same planes, so the seats are really the same. The airlines found that by adding YM rules and controls they could create many different products and prices for the same seat. Having many

different products created from one physical product allows the owner to sell his product at many different price points, instead of one or two price points. Variable pricing will get more profits from the market than selling all the seats at one or two price points. But how do you sell the same product to different markets at different prices?

Analysis suggested that for almost all products the market segments all sort out and fall somewhere along an imaginary line that has price on one end of the line and service on the opposite end of the line. This is a RM product differentiation theorem. The market can be segmented where each product and its market segment fell along this price – service continuum. Market segments and their clients were seen as being either service sensitive, and therefore willing to be less price sensitive, or on the other end of the continuum, being very price sensitive, and willing to be less sensitive on service. Each market segment represents a unique blend of price and service sensitivities over a range of booking rules and product variations. Because these products were differentiated they could have different prices and target different market segments through different distribution channels. For the first time the domestic US airline market was being truly segmented by the market and individual demand streams were being consistently targeted with discrete products and prices instead of the prior mass markets marketing approaches.

Early YM allowed the airline business, which has a very fungible product, to differentiate the products it was creating along the price – service continuum, by effectively applying different market segmentation and product differentiation rules. Different market segments were targeted with different products, each product with different prices. Each product should have numerous prices according to

RM theory. This allows the RM analysis and controls to open and close prices to optimize the demand streams they are getting, without going into tactical marketing promotions that require that new promotions be announced to the markets.

Time sensitivity is a “service”

One big factor YM uses in determining where a product falls between the “service” – “price” sides of the continuum is time. Time is applied in two different ways: 1) to differentiate the actual product being bought and 2) to differentiate the price paid for a product. The first and most obvious application of time in product differentiation is the date the booking is made for, which determines what the actual product is that is being sold. For instance, clients sensitive to the date or time that the flight will leave may be more likely to travel on Monday morning flights instead of flights on Sunday morning. A ticket to Miami in July is cheaper than a ticket the week before Christmas. This is the first application of time - the day or time of the service/product affects the price. The other way that time is applied to differentiate products is the date when the actual sale is made and its proximity to the date of the booking. Making a booking two months from the flight's date will cost less than buying the flight the day of travel. This is the second application of time - how far from the event are you making your booking request.

For those in retail business these YM time related cost factors, could be applied by saying that “oranges will cost more in January than June, and more if bought in a NYC grocer on the day and block where they are to be eaten than if pre-ordered and pre-paid from an orchard's mail order house at the beginning of the growing season.” Both aspects of time have been applied. The time of the year they will be eaten, and the amount of time that you can wait to get them. This is economics. Often people don't realize that what they are doing is a form of

RM. There are many things that could be done to increase profits using RM in marketing and pricing. Once we realize that we are already using RM we can work in improving its implementation.

Perishable products will effect your profits

When an airline seat is unsold for a flight, there are lost revenue opportunities that can never be recaptured. This is very different than a can of beans, which can be held on the grocery store shelf and sold the next day, or the next week. The cost of holding inventory is minute compared to losing the entire value of the inventory. You can hold a can of beans and sell it later. The revenue opportunity for a can of beans is not lost because it can only be realized in a finite period of linear time. Some businesses have perishable inventory and some do not. The airlines, right after deregulation, had thousands of seats each day whose revenue potential perished if they were not sold on each flight. The lease payments on their airplanes still had to be made.

Being forced to sell all of your inventory each day, due to a totally perishable inventory and the effects of time, is a different application of RM than having your assets not perish, but just have their value change, up and down, from day to day. Some businesses have inventory whose price fluctuates on different days, but doesn't spoil. The price fluctuates for their products; however, their product does not lose all of its revenue opportunity value if it is not sold by or on a certain time each day. As the price of their product changes, RM and TRMsm can be determining how much to display and sell for each price period, and how much to keep on the shelf for higher price periods. However, if your product is totally perishable RM becomes almost necessary to just survive.

The airlines created a process that led from Yield Management (YM) to RM to TRMsm

The airlines needed to analyze their markets, create new products that targeted real market segments, fill all their seats every day and decide where to position their assets based on the preceding considerations. This took a great deal of analysis. The airlines focused on inventory control first since this a mainly manual process that was already being practiced in varying degrees. Next came the introduction of YM, which added forecasting and then later optimization models, which made this much more of a predictive and controlling discipline. Now YM is slowly becoming RM, as YM techniques are more frequently used outside of typical inventory control and YM situations to influence demand or pricing. Unlike YM, RM reaches out beyond inventory controls. Now RM can be applied formally and systematically using TRMsm.

First, “inventory control” was used

First, “inventory control” was used to manually “control” the inventory and booking system. In the interim the airlines sharpened their inventory control techniques. Once a booking is made inventory control determines what inventory the booking is given. Inventory control could do things like place booking limits to assure that seat categories were not severely overbooked, place limits on group bookings and handle the “assignment of inventory” once the buyer made their booking. Predictive models did not really support most inventory control. Most inventory control is a manual process involving exceptional market sense and knowledge and making manual adjustments or moves in inventory availability and pricing. Inventory control can include upgrades, complimentary bookings, oversells and nesting of inventory.

Next, YM broke the linear marketing bonds of time.

The airlines saw that even if they created new products at different prices, many times those buying discount fares would book early and take all the seats at discount rates. The airlines also knew they were turning away later arriving and many times higher profit booking requests because all the seats were already sold to discount hunters. The marketplace was at the mercy of the linear nature of time and the fact that the discount seekers could and would normally book earlier than higher pay passengers. Then the airlines decided to become very proactive and yield management was born.

YM was developed to allow the airlines to proactively take control of their own inventories and decide whom they would allow to book their products, on a request by request basis, based on profit potentials and not on the linear nature of time. YM allowed the airlines to have more control in the market. First come no longer meant first served, or even served at all... If you wanted to purchase a discount seat and the yield management forecast models predicted an oversold flight, YM would not allow the reservation agent to book the discounted fare on that flight. The fare would be closed. The airlines were controlling who got their products and at what price based on very advanced million dollar decision support systems.

YM, and those who began it in the airlines, stressed that YM did not create demand; it only decided what demand to accept and what demand to decline. The airlines had very large and powerful marketing departments. Everyone agreed, including YM departments in many major airlines that developed YM, that number crunchers and YM system developers could never create demand. And marketing agreed.

“Revenue Management has proven to be a devastatingly effective competitive device” -Dr. Alfred Kahn, Economist, Former Senior Staff Member, President’s Councils on Economic Advisors

Now YM is evolving into RM

RM evolved to go beyond YM. YM became more proactive and *began to interact* with marketing, pricing and distribution professionals. YM practitioners decided not to listen to someone telling them that YM could not create demand and decided to go ahead and try what they wanted to do. Some YM users saw that they had the tools, data and mindset to dramatically improve on traditional linear marketing techniques.

The quality and quantity of the data that YM gathers and analyzes led many YM practitioners to feel that they should be more involved in many of the decisions made by marketing and pricing. If YM staff didn’t proactively assist in identifying what products needed to be created and how they should be priced the results could be demand that YM has trouble optimizing. A YM system can only optimize the demand streams that try to make bookings. If the most profitable demand streams are not present, YM cannot choose them. YM can only choose the optimal demand to accept from what people try to buy. If you can *proactively create the right products to give you the optimal demand streams*, then you are practicing TRMsm and your YM system can then have the chance to choose the optimal profits from optimal demand streams. It helps to be proactive and try to optimize your demand stream before it encounters your yield management system and models.

However, even companies that have gone beyond YM and practice RM are not routinely and systematically using it. RM has powerful insights and analysis that should also determine the marketing

strategies and moves, pricing, product development, distribution, sales goals and incentives. These marketing and pricing techniques are based in economic theory and can be applied in many different industries.

The role of RM, as opposed to YM, is that RM has become a mix of various authorities and skills in a company and not just inventory control. However, RM is still not systematically and formally used in all of the marketing, pricing and product development areas where it should be routinely applied when decisions are made. RM can and should be much more involved in areas beyond YM. These interactions should be much more formal and systematic, and be applied as routinely as any other RM principle must be in order for it to be effective. TRMsm is the next step in the application of RM to areas beyond YM. The final section of this article lists some of the RM concepts and tools that TRMsm can use.

The Zen of RM

If someone says they can teach you RM, it probably means that they do not fully understand RM themselves. However, if someone tells you they can explain RM theories and their applications to you – you have found a valuable friend and mentor. RM is a way of thinking, not just a tool or set of models that you can buy. I believe that you can teach someone the RM theories and techniques that have previously worked. However, to understand how to apply RM the person must understand the market, see the RM opportunities themselves, apply the RM theories using the best approach and tools, and adapt RM to any unusual circumstances that are part of the business. There is a great difference in RM between understanding the theories and implementing them.

RM is a philosophy, a culture, and a mandate from the top, an approach, and an

attitude. RM focuses everything and everyone in an organization on total business profitability by using the latest in mathematics, computers and marketing techniques. Your profits will inevitably improve through RM's ability to rally and focus all departments to the same focus (profit).

In this new focus, RM determines and applies the needed economics, technology, and organizational controls and discipline. RM uses all of the management sciences, including economics, math, statistics, computers, operations research and any other needed technical skills. RM gives business as much decision support and information as possible so their decisions are as informed and logical as possible. This means the most profitable decisions are more likely to be made often and consistently. With RM, businesses can now have a much more enhanced understanding of their market and their customers' behavior.

IMPLEMENTATION OF RM TODAY

RM overview

RM has allowed organizations to increase profits by up to 7% without relying on the two traditional methods increasing profits by: increasing market share or cutting costs to increase the profit margins. RM does this by identifying, controlling and optimizing your products' *numerous demand curves or streams*. Then RM optimally matches your inventory to the perceived demand of the demand curves of the many market segments. RM uses numerous controls to enforce its decisions on what products and prices that should be available for sale, at any given time and to any given market segment. RM pricing is dynamic due to the way it is controlled; products and prices are opened and closed as needed to optimize profits. The same core product can be used to create numerous consumer products,

each of which may sell at different price points.

RM is the application of economic, management science and business theories and techniques using modern computer and data systems and marketing/pricing approaches designed to segment the market and allow dynamic pricing. However, RM requires that someone is responsible for overseeing and directing how its tools are used. RM is a dynamic approach and not just a static routine. In some companies RM becomes the profit enforcer reviewing the work of reservations, groups, sales agents, travel agents and any one else who could impact profitability.

RM and TRMsm are not just the application of computer models and mathematics. While analytical models are valuable tools, they only give people information. Someone must have the business and industry knowledge to interpret the new tools and information, decide which business decisions they apply to, and apply the information the best ways possible. TRMsm is a chest of YM tools, which must be properly used, each at the right time, by a savvy TRMsm professional. RM is the application of YM tools in inventory control, and occasional applications in marketing, pricing and product development. TRMsm is the full time, routine and systematic application of YM tools in both inventory control, as well as in marketing, pricing and product development. A TRMsm expert should have a thorough background in RM and all of its disciplines as well as an impressive background in hands on marketing.

RM and each tool must be used with the right products, prices, distribution channels, controls and computer programs. These tools can have a great impact on a company:

- Give many diverse individual corporate actions the same revenue focus. Otherwise, each action - sales, marketing, pricing, and IT can all have goals that may not support each other or corporate RM needs. Determining their own focus can create opposing revenue focuses.
 - Form a symphony of diverse skills which can be brought together and focused into one beam of analytical light, or can be broadened to become the central voice needed to properly control the many corporate decisions that impact revenues and/or profits. Tools must be used properly.
 - Merge TRMsm and RM to create a more total and encompassing real world set of tools. This uses RM and TRMsm techniques like data warehousing or database mining.
- 6) Create products that target the higher, mid and lower profit market segments.
 - 7) Products should have multiple price points with RM rules or discrete distribution channels so that each price point/product makes sense to the market.
 - 8) Forecast the demand for each product price point
 - 9) Through forecasts and optimization the organization can proactively assure that, depending on the market, they practice discount allocation by either:
 - a. Holding the inventory, through controls in the sales system, for which the highest profit demand is still predicted to materialize, or
 - b. Assuring that all the RM/sales, controls and rules are enforced so that higher price demand, which will be impacted less by market softness, can not qualify and move to less profitable products/prices and further negatively impact profits.
 - 10) Use RM data, analysis and controls routinely and systematically to make decisions about marketing, pricing and product development.

General steps in implementing RM

With new TRMsm techniques, organizations can now increase profits by proactively optimizing their demand curve and its many different streams before it encounters their RM system. Organizations can complete the following steps, which are the general implementation steps of RM. Each of the following steps should be accomplished under the direction of RM experts.

- 1) Analyze both existing and potential markets in detail.
- 2) Determine market segmentations.
- 3) Determine the products that each segment wants to buy.
- 4) Determine how to create and package the product for each segment.
- 5) Determine how to best distribute the resulting products.

Examples of RM

- Hotels typically charge less during off-season periods as opposed to peak travel seasons. Rates can even be different based on the day of the week and the length of stay. Some business properties offer weekend specials. Rates follow the demand curve when there are large swings. This is **discount rate allocation theory based on demand cycles and historical analysis**.
- Phone companies charging different rates for calls made at different times of the day. This is **discount rate allocation theory**.

- A weekend hotel like a Vegas Casino will not allow a booking for just Saturday night in peak demand periods. This could block bookings that would want to stay longer, if too many Saturday night rooms are sold to one-night guests. The hotels therefore require a 3-day minimum at times. Hotels try to keep short bookings from “blocking” longer more profitable bookings. This is **network optimization or length of stay control**.
- Airlines sell the same seat as many different products. They create different products by using different distribution channels (agencies versus internet) and different fences. The fences include booking rules (non-refundable, instant purchase, Saturday night stay required, 3,7 and 14 day advance purchase rates) and prices. You can take the same product and create many discrete products from it to match the needs of the many market segments that use this resource. This is **market segmentation** and **product differentiation** based on sales policies and RM rules.
- RM sets **overbooking limits** so that after cancellations or no shows or returns, 100% of the inventory will be sold. Overbooking limits are controlled through the sales system.
- If lower priced product or inventory is selling out, and more expensive inventory is remaining unsold, **upgrade** clients at no charge so you can book as many people as possible in the product/price category where there is demand. You can also have **nested inventory**.

RM can use inexact answers

Some people dismiss RM by saying that its forecasts and other models could never be exact, and they claim that RM models may

not make the right decisions. They are right when they say that the forecasts are not exact, but they do not have to be exact in order to work.

An example of how exact something must be to work

One day in high school the Principal called in all the boys who wanted to be engineers or mathematicians. He lined them up against one wall of the gymnasium. Then he lined up the cheerleaders against the wall opposite the future engineers and mathematicians.

The Principal said that each time he blew his whistle they boys could advance exactly half the distance to the girl of their choice. He said he would blow his whistle as many times as he was asked.

The mathematicians all laughed and as they were leaving they taunted the future engineers that they would never make it to the girl of their choice. The engineers all laughed and told the mathematicians that they would get more than close enough for practical purposes. The engineers knew what they needed in the real world, not in theory.

RM models are indicative and do not have to be exact in order to be valuable. Knowing that you will have 15 future requests versus 32 really doesn't matter, for the sake of real time inventory control, if you only have 12 units available for sale. However, in advanced RM applications the knowledge that 32 and not 12 future requests would come in could impact pricing decisions. Prices could be raised if RM feels 12 of the 32 would buy the higher rates. A forecast will tell you the total final demand and will not tell you when the requests will come in or the shape of the time series curve showing the cumulative booking build.

However, in general, if all we can get is a rough idea, or a directional forecast – take it and run. Remember that models and math base their outputs on the quality of the data that is input for their analysis. If the models are state of the art and yet their outputs are still inexact, this means that the history and data inputs are also confused. The models are telling you a great deal by telling you that the results are uncertain. However, as it starts to book you can look at its building curves and compare them with historical curves to determine what past patterns, if any, they are beginning to create.

It is very easy to dismiss things as not being exact enough. It is far more productive to gather all the information you can and use it however you can as you move forward. Ask those who would abandon RM to come up with a better solution – anyone can find possible problems and then walk away.

This article will continue. The second half of the article will be printed in the next issue of the Journal of Pricing and Revenue Management. The second half of the article will explore the future of RM and TRMsm, based on the discussions we have just had in the first half of the article. Feel free to use the bulletin boards and chat rooms at www.revenuemanagement.org to further explore these ideas and others and to share your RM and TRMsm thoughts with others.

RM'S FUTURE

This is the second part of an article that was published in the first issue of the Journal. The first half discussed RM's application today. This second half discusses the future of RM and Technical Revenue Marketingsm. The article is not complete unless the first half read first.

"Your re-engineering has run its course. You manage your quality totally. Where do you turn for future gains? Perhaps to the

marketplace, with 'revenue management'...
...Now with computing costs plunging, revenue management is poised to explode."
-The Wall Street Journal

RM, like any tool, must be properly used

However, RM is not like a mathematical equation, which can just have one answer. RM like any tool must be used properly. RM's results will vary depending on who is using the tool and how they are using RM. A tool must be used properly.

A joke I use to describe the improper use of technology as a tool...

Man first found fire when lightning hit a tree. As man progressed he set himself apart from other animals by being able to create and use tools. We learned to rub rocks together to create fire, then we made matches, lighters and now we have cheap disposable, adjustable, windproof lighters. Some people today curse that technology never works right, as they furiously rub disposable lighters against rocks, trying to get sparks to build a fire."

Today it is improbable that someone can run a competitive business and knows enough about all the new technologies to know what to use for their business, without outside assistance. Do you feel like you may have rubbed any lighters against rocks? The problem may be the people using the RM tools and not the tools themselves. Companies seem to buy systems and then cut back on training costs. Make sure the problem is not with the user.

RM has worldwide applications in many industries.

Although this strategy was first implemented by the airline industry, it is currently being adopted by organizations in a wide variety of industries around the world. By analyzing historical data and

reviewing sales trends, many organizations are better equipped to predict when to reduce or increase prices and when to accept a booking request or reject it and wait for a higher profit offer that you have predicted is going to materialize. Studies illustrate that revenue gains attributed to RM strategies are typically in the range of 3 – 7%.

RM works in high and low demand periods

RM works in either high demand or low demand periods. Those who think RM only works in high demand periods, when excess higher profit demand allows you to determine what lower profit demand you can turn away, have some catching up to do in RM applications, theories and techniques. RM can segment the market in low demand periods and keep higher profit demand from slipping into lower profit products, but only if RM rules and pricing techniques target this profitable market segment. An example is not allowing discounts on late purchases or certain products and enforcing all the payment and penalty rules.

RM keeps growing

Most people just understand the most obvious forms of RM, which are inventory control, forecasting and optimization. This leaves much of RM's true potential unharvested. Today RM can control and make great improvements on traditional marketing, distribution, pricing and product development techniques and results. RM is not just a technical discipline involving forecasts, optimization algorithms and other high tech tools. RM involves many areas, if not most of the company, including marketing, operations, distribution, reservations/call center/web site, finance, information technology and public relations.

RM is now a systematic, scientific and subjective approach to understanding, predicting and capitalizing on the buying

behaviors of your customers. RM determines where each client is on the “service” versus “price” sensitivity continuum and offers them a product that meets their needs while optimizing profits for the asset holder. RM identifies the markets’ many different segments and determines how to optimally match each of them to your existing inventory in order to maximize *both* your revenues and customer satisfaction. This effectively breaks the linear nature of time and allows organizations to reject a sale today based on knowledge that a better sale will occur in the future. Sales are no longer first come, first served.

TRMsm's FUTURE

Technical Revenue Marketingsm (TRMsm) overview

TRMsm is marketing based on RM philosophies, techniques, tools, data and systems. What does Technical Revenue Marketingsm (TRMsm) do? Essentially, it's the ability to have and use the market knowledge, gained through advanced RM analysis and techniques, to analyze and track your market's segments. This detailed knowledge is needed to use TRMsm to sell your products as profitably as possible. TRMsm has much stronger tools than traditional marketing. These tools can be used to: stimulate demand, maintain price integrity in higher priced market segments during typical low demand periods and boost revenue during high demand periods. The following story is a memorable example of how RM should direct other areas of the company through TRMsm in order to optimize RM's results and total profits.

The necessary interaction between pricing and RM & TRMsm

I live in South Florida and teach scuba diving on weekends. One morning, as we went out to sea in the dive boat, I noticed two divers next to me getting ready for their dive. The divers were going spear fishing

and were deciding where to target their dive. If they dove on the top of the reef the fish they would encounter would be different then the fish population that lived on the bottom of the reef near the sand. They decided to dive along the tops of the reefs for the entire dive and to target for a type of fish found on reef tops.

After the dive the underwater hunters had no fish. They had not even seen any fish to try and catch on top of the reefs. To make matters worse, as we went back to port we saw a fishing boat coming into port. Their nets swayed on the support arms hanging over the sides of the fishing boat. The fishermen were sorting through their catch, and throwing back many fish they did not want, so they only kept the best fish to fill their limited refrigerated hold.

I realized - this is an example of RM and the need for using its data and techniques for proper marketing and pricing! The divers selected one region to target and luck was not with them and the reef top fish were not there that day. The fishing boat was hunting in a different way. The boat knew that they could not predict which fish would be out at what times and depths - so they had multiple nets that were fishing at many levels at the same time. The boats knew that this way they would capture whatever fish were out where they were. They combined the use of multiple nets with prior knowledge and experience of where to fish and at what times and depths. The fishing boat would rather sort through a catch and throw back what is not wanted, instead of targeting one area and not filling their refrigerated storage holds.

Like the fishermen, TRMsm needs to target multiple market segments at different prices at the same time. Then RM helps you select what demand to accept by selecting what prices you will open for each product. TRMsm helps you decide where and when to target markets and allows you to discretely

target more than one market at a time with different products and multiple prices. You can control which market gets your inventory, in what product form and how much of each product they will get – all based on the responses all the markets are giving you. Many of these decisions are real time decisions. With TRMsm you can have the option of having these decisions to make, instead of ending up being empty-handed or not capturing enough demand.

Reasons for TRMsm

In the past the population reacted more favorably to mass marketing campaigns. Products were mass marketed and a company could market one product to the masses through mass ads. The main concern was how many people must see a mass advertisement before enough buy and fill our empty spaces. You could calculate how many ads to run. There were no real price differences for the product and buyers were homogenous to sellers. The goal was the sales level.

Then the media, communication and information explosions changed people's attitudes. People openly rejected being "part of the crowd" and individualism intensified. People began to demand that they could "Have it your way" - as Burger King said. Today, since we must reach many individual market segments we require more products, prices and effort than ten or twenty years ago. We are becoming one large market now with instant information. However, many market segments are now discrete and can only be reached through their own advertising and communication channels. They do not respond to mass media. Marketing is no longer a matter of turning on and off one faucet as needed through mass advertisements.

The market has been segmented. Instead of one market only differentiated by geography, we now have many market

segments even in local markets. Now companies have many separate faucets to orchestrate and turn on and off while trying to sell out. Each faucet must be proactively controlled. Each faucet represents a different market segment. Each faucet has its own prices, costs, volume-flow rate and time periods when it will be turned on. RM has been introduced and can now tell us many things about the faucets. We can use this information to make much smarter decisions throughout the company. This is today's market

This is the basis of TRMsm. The markets have naturally segmented along the price – service continuum. Therefore our marketing goals have changed and our approach should also change. With RM data and techniques we can do a much better job of properly targeting the marketing demand that we need to optimize our profits.

Concepts Used in TRMsm

TRMsm is based on RM theories and the results of RM applications. The following is a list of some of the concepts that are used by RM, and therefore must be understood by those using TRMsm. TRMsm should consider and gather data from all of these sources and theories and then make its plans and decisions based on RM data and insights. In the following listing a concept can be a different subject area from anything else or one of several concepts concerning the same subject area. However, each concept is important to consider and apply when making marketing, pricing or product differentiation decisions. There are many other concepts that can be added to this list. This article hopes to stimulate a discussion about the possible implementations of these concepts.

Variable supply – If supply can vary then your sales task becomes easier...You can move supply when demand is not present or expected. Rental cars can be moved to another location during seasonal or weekly

shifts in demand much easier than a hotel can move its rooms. Variable supply is a key point in the sales equation because it can reduce the number of sales that must be made. TRMsm can exploit this shift in supply using RM data and predictions. If RM predicts unsold space, TRMsm could find it more profitable to move supply temporarily to an area experiencing increased demand, instead of lowering prices and keeping the cars where they are. You need a network RM system in order to optimize and control this.

Substitute products – In the consumers mind, at the time of purchase, some products are exchangeable with others. They are fungible to the buyer – they really don't care which one they purchase enough to pay more for one over the other. If you have substitute products it limits your pricing options and makes your prices very elastic. This obviously should impact your marketing and sales strategies.

Price Elasticity – How much change in demand occurs from a change in price? If you are inelastic you can use TRMsm to assure that you hold space for the most profitable yields by limiting the marketing and sales of discounts. If you are very price elastic your options are fewer. Then you must work on differentiating your product with services in order to increase its value – if the market will pay for more service. This way you increase your profits by using service to differentiate your product, and therefore allowing you to raise its price in the market.

Demand cycles – RM gives TRMsm the detailed data, people and tools to see demand cycles at the market segment level, booking level, any level, and develop products, marketing and pricing accordingly. Demand cycles can be for all the market, for a market segment or for a group of market segments. TRMsm can get a very detailed idea of the demand cycles in

seasons, day or week and even hour of day for some businesses like airlines or hotels. If you know this in advance you can create products that are higher priced in high demand periods and in low demand periods you can create discounted products to move demand in to fill the valleys between the peaks. Knowing demand cycles for your market segments is needed to know your market. Before RM very few companies had this wealth of sales data in a database that users could access. Even if the data existed, the software made the task one of hard core programming instead of window clicking. Now we have data, hardware and software available to users and this type of analysis can be done.

Network Optimization – How do you optimize all your resources at the same time? If you have travel product segments where you go from A to B to C you really have three products, not two. Segments: A to B, B to C and A to C. If you sell out your A to B or B to C segments it blocks anyone from going from A to C. Imagine multiplying this by 100 points all interconnected in a network. Now you have 10,000 requests for service – which ones should you take and which ones would block higher paying demand that also needs to use that segment as part of its request for service? If we know from RM what segments or products are limited and will create blockage, we should assure we don't even sell them or place any efforts into marketing those products. If we must accept the request we should try to charge enough to compensate for the displaced demand. In hotels controlling the various length of stay patterns in bookings is their form of network optimization. Now TRMsm can look at this impact on all bookings and proactively try to avoid leaving cut up products that cannot be sold.

Product differentiation – What makes the products different to the marketplace - booking and payment rules, the actual

physical product or a perceived difference in value based on something else? Product differentiation is used to create and justify variable pricing. If products are different we can charge different amounts to the market and it accepts this. In order to have market segmentation we need different products – or why would they be segmented? Remember that the product consists of both the physical product and its method of being sold, priced and distributed. Product differentiation may be from when it was booked, how soon a deposit or full payment was required, if it was non-refundable, etc. If we understand what products we have and what markets they target, we will know what we have that we can use to sell the actual unsold inventory that exists. TRMsm focuses on setting each product before its market segment at the right time and for the right price. Not the promotional approach of getting sales solely by lowering prices and mass marketing the message to everyone at once.

Market segmentation – If we can segment the market we can determine the most profitable mix of their demand to accept. We use product differentiation to do this. Market segmentation is determining what you can do to differentiate the market along the lines of price and service sensitivity. TRMsm could not be used without market segmentation.

Classes of service – This is the physical difference in products, not their marketing and sales rules. Coach and first class seats, big and small cars, suites and standard rooms are all examples of physical classes of service. TRMsm creates as many products as needed and reasonable from the existing physical classes of service that are available. TRMsm must be able to take the same physical class of service and convince the market that because of a booking, payment or other rule it is now a different product and worth more or less than the other product which also uses the

same physical class of service. The RM example we all seem to understand and accept is why the same ski lodge room in a top hotel on a busy weekend holiday costs much more than that same room costs mid week in August.

Fences – These are the rules that make the same physical classes of service different products and different prices. Booking and payment rules are the main fences used in RM. However, TRMsm can use value added packaging now to add another fence. You must buy two or more products to get the core product. Fences are vital or RM and TRMsm would not work. Fences should keep high priced market segments from sliding down to lower rates in rough times, and keep demand streams separate in high demand periods so the most profitable ones can be taken. Fences create different products, which then allows the market to be segmented and optimization to be used to allocate discounts and network usage.

Value added packaging – Adding another item to a product and requiring that the two be sold together. A cruise must be sold with a plane ticket. TRMsm uses value added packaging to differentiate products in order to increase sales or increase profits. The best hotel rooms may not be available on Saturday night in Vegas *unless you also get* the champagne and breakfast in bed option. This can also be used to discount the price of the core product without advertising that low price in the market. A hotel package in Manhattan with dinner and theater tickets can move unsold lower priced rooms without advertising the low room price.

Invisible discounts - There are ways TRMsm can use RM techniques to routinely give extra value at no additional cost. If demand is only coming in at the top and bottom of your 3-tier price plan you use a technique based on “nested inventory.” You can upgrade some existing tier 3 people to unsold tier 2 product(s), and then resell

their now empty tier 3 space to those still waiting for tier 3 product(s). The upgraded people were given invisible discounts to tier 2, just as if the tier 2 products were sold at tier 3 prices. Value added packaging, as discussed before, creates invisible discounts.

Co-marketing - Co-marketing can also create invisible discounts. Assume that buying a new Cadillac gets you a “buy one get one free” coupon. The coupon’s cost to Cadillac is based on an arrangement you made with them where they pay you 50% of your normal rate for a period you know you will have unsold inventory. You have discounted your product without the market seeing the details, and you have associated your product with a desirable market segment.

Tools used by TRMsm

RM concepts can be applied and turned into tools and systems. TRMsm uses many of the RM tools and data to control and optimize marketing, pricing and product development. The following list of RM tools TRMsm can use is like the preceding list of concepts, not intended to be complete or detailed. This article hopes to stimulate thinking about the TRMsm tools possible from RM concepts.

Alarms – Users can set alarms to go off if or when certain things occur, for instance if certain numerical booking related levels are met. Alarms “go off” if and when certain criterion is met and the user is notified through the system’s user interface, email or other message format. Usually the alarms track sales activity or inventory status. If bookings are too high or too low, coming in too fast or too slow, canceling too fast or too slow, etc. The alarms can be set by TRMsm to watch for this and its own areas. Alarms allow people to deal with problems and not spend their time searching for them. Alarms allow confidence that things that are not being

watched are not falling apart. Since almost anything can be alarmed, this creates a great tool for TRMsm to use much like RM has used alarms.

Exception reporting – This is an alarm with the accompanying data you would like to see about the alarm's reason. You can program an alarm in a report. If certain requirements are met you are notified about the exception and given data on the occurrence so you can take informed actions. Exception reports can be used to handle circumstances that your systems cannot solve or process. Exception reports can be used by TRMsm to monitor their actions in the markets where if an occurrence happens they want not only an alarm but also data on the cause of the alarm so TRMsm can adjust accordingly.

Demand and cancellation forecasts – This power to see what final demand will be like well into the future allows you the power to break the linear bonds of time and proactively optimize the market's demand. Predetermine what demand will be accepted and what demand will be rejected. TRMsm uses RM forecasts to determine how effective its efforts are, what can be improved and what is next. Forecasts are the most powerful tool in RM, the one with the biggest bang for its buck, and also the core of TRMsm. If forecasts indicate that a demand stream won't be accepted – why waste more resources there? Forecasts are the crystal ball for RM and TRMsm. RM uses forecasts to determine what demand to accept and what to reject. TRMsm uses forecasts to determine what markets, segments and products to stop investing resources in and where they need to focus their efforts or make changes.

Displacement cost calculations – Look at the “network optimization” section again. In that example the displacement cost is the lost opportunity cost created by blocking one A to C demand request by overselling

an A to B space. This is the value of the lost revenue. However, if the profits from the sale of the product(s) that created the displacement costs were great enough to offset the displacement costs – then the decision was correct. In TRMsm displacement costs can be used to determine if demand requests make sense or should be rejected. If a large group wants space you must look at the network optimization, or length of stay, impact as measured in displacement costs. Does the request net out as profitable?

Bid or Hurdle price – It is the minimum net profit accepted in order to have your booking accepted.

Imagine that you have 40 sales to make and 200 requests at different prices to decide among. Wouldn't you like to know how to identify and then only accept the 40 requests that were the most profitable? In RM the optimization models consider all the known and expected demand, and then determines what requests to accept. The models determine what requests to accept by listing all the requests in the descending order of their net profit. Then RM determines how many sales need to be made, let's say it is “n” number of sales. RM looks at the list of requests listed in descending order of their net profit. RM takes the top “n” number of requests – the crème de la crème in terms of profits. The imaginary line under the name of the last request that was accepted, in the descending list of net profits, above which demand is accepted and below which demand is rejected, is known as thresh hold price, bid price or hurdle price.

The model takes the price paid, subtracts all the variable costs and displacement costs, for this requested packages use of elements that the forecasts said would have also been in other packages, therefore limiting the sales of other packages - and that is the net value of that booking request.

As an example, if this is done for 150 known and forecasted demand requests for 100 spaces, and all the requests are sorted by their descending net values, the threshold price would be the price of request number 50. That would be the lowest net profit acceptable and therefore the threshold price. TRMsm can use this knowledge to know how profitable each booking is and what product would and would not improve the yields. The target for TRMsm is to raise the threshold price above the level that RM has calculated as the threshold price.

Cancellations & no-show rates – How many of your current bookings will remain until the day of the service? How many will not even bother to cancel and will just fail to show up when expected? This behavior affects RM. In response, RM increases the sales limits, or overbooking levels, for those days in anticipation of the cancellations and no shows. TRMsm would try to assure that where demand was needed there was still demand available. Perhaps demand from oversold times would move to a time when demand was needed. Or demand from a lower tier for that day would upgrade for reduced price. This is not the normal thought process for marketing and pricing unless you understand RM's control of inventory and are applying it proactively and routinely.

The Future

The transition from yield management to revenue management is natural and is underway in several industries. Businesses are using YM to break the linear nature of time so they have the information to proactively determine who gets their products. The transition to Technical Revenue Marketing requires people who can work equally as well in RM, marketing, operations research and computer systems. This new breed of techno-manager will be able to fully understand RM and take all of this knowledge, and the knowledge from

having all the RM data and its analysis, and apply it seamlessly in marketing, pricing and product creation decisions.

Marketing and pricing are also moving in the same direction as RM – technical and very focused on individual market segments. Technology is allowing marketing to focus much more on market segments. In this new organizational landscape RM will be a leader of integrating different resources, much like an orchestra director. While marketing, pricing and distribution all play their roles; they do not get involved in directing the overall effort, just the portion of the effort that they are responsible for implementing.

Implementing TRMsm into more and more markets, will allow profits to be increased, even if some of the markets do not have the forecasting and optimization models to practice full RM, they can still use many TRMsm's techniques.

Man's greatest scientific accomplishment will be learning how to control and travel in time. RM has perfected ways of applying this freedom from the bonds of time today, in many RM decisions.

Our Discussion

We have seen how RM can be used in several non-inventory control areas of companies. In order to understand the concepts that TRMsm uses, we explored the environment that gave birth to this new management science. Next we discussed, at a general level, how RM is implemented today. Then we explored RM's future applications. Next we looked at TRMsm and its interaction with pricing. Then we discussed the reasons for TRMsm to be used, what some of TRMsm's concepts were and what tools could be used to implement TRMsm.

Hopefully the reader now understands, and has their own ideas, about how RM's formal

and systematic application through TRMsm could assist in marketing, pricing and product development.

Think again about the quote below for a moment. Do you still have the same answers? Have you really optimized the use of RM data and techniques, and the cooperation and daily interactions needed between RM and marketing, pricing and product development in your operations? Are you reacting to or are you proactively controlling and optimizing your markets? Is all of the information and power of RM analysis being formally and systematically used outside of basic YM and inventory control?

When your strategy is deep and far reaching, then what you gain by your calculations is much, so you can win before you even fight. When your strategic thinking is shallow and nearsighted, then what you gain by your calculations is little, so you lose before you do battle. Therefore it is said that victorious warriors win first and then go to war, while defeated warriors go to war first and then seek to win."
-"The Art of War" by Sun Tzu

Please feel free to use the bulletin boards and chat rooms at www.revenuemanagement.org or www.profitoptimization.com to further explore these ideas and others and to share your RM and TRMsm thoughts with others.