

# Exploring the Formulation of Book Pricing Strategies in Economics with a TRIZ Approach to Business Management

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## Abstract

This study first explores the factors that influence the pricing of e-books and physical books, and then book pricing strategies formulated with a TRIZ approach to business management. In this study, the conflict points of book pricing are spotted first, namely exchange rate fluctuation, market share, update speed, penetration price, preferential activity, and differential price. The corresponding positive and negative effects for the six conflict points are identified respectively. Next, the corresponding parameters for the positive and negative effects are used to identify each parameter's corresponding TRIZ-based principle of invention respectively. The principles of invention are then used to formulate book pricing strategies. Finally, the book pricing strategies are recommended to the publishing industry as a reference for new book pricing.

*Key words:* Book pricing strategy, TRIZ approach to Business Management, TRIZ-based principles of invention, Publishing Industry.

## 1. Introduction

The development of the globalized publishing industry faces multiple challenges that change quickly. The factors that influence book pricing not only involve markets and competitors, but also those such as interdependence, supply and demand between the publishing industry and readers.

Take the book market in Taiwan in 2015 for example. The publishing industry market for physical books (upstream) is estimated to be NTD 19.93 billion, and that for bookstores (downstream) is estimated NTD 23.85 billion. The e-book publishing industry (upstream) is estimated to be NTD 0.32 billion while the digital dealer market (downstream) is estimated to be NTD 0.61 billion. With a market worth nearly NTD 45 billion, how to use pricing strategies to create a competitive pricing niche for books is the key issue for this study. E-book pricing models are divided into five categories: long tail theory, brand value, reader positioning, product life cycle, and free pricing. Paper book pricing models are also divided into five types, namely demand elasticity, resale price maintenance system, production cost, psychological pricing and competitor pricing.

This study aims to formulate strategies for book pricing with TRIZ-based principles of invention, which will have been spotted with the positive and negative effects of the conflict points. The conflict points will be found out with the TRIZ approach to business management, which is detailed in the book *Hands-On Systematic Innovation for Business and Management* by Darrell Mann (2004).

## 2. Literature Review

Book prices were determined by previous experiences of the supplier and the demander of the book market. Nowadays, the factors that influence book pricing are determined by expert judgments, customer surveys,

historical data analysis, etc. Consequently, the pricing will differ along with the changes of customer habits, competitive positions, distribution channels, and national conditions. Books are divided into physical books and e-books when they are priced with different pricing strategies. In this way, the publishing industry and readers are both able to maximize their profits and needs. Therefore, the study will discuss the pricing strategies for e-books and physical books, respectively.

### 2.1 E-book pricing strategy

E-books are referred to the published physical books whose words, pictures and images are digitalized and presented with multimedia. Consequently, the e-books are interactive, and they have hyperlinks and can be retrieved. E-book pricing strategies consist of long tail theory, brand value, reader positioning, product life cycle and free pricing.

#### 2.1.1 Long Tail Theory

The Long Tail Theory is founded on the 80/20 Rule. The theory enables businessman to continue making profits until in the late phase of sales so that a considerable profit can be obtained by multiplying the long-tailed niche commodity with a very low unit price. Based on the Long Tail Theory, two strategies can be formulated for e-books, namely bundling pricing and custom pricing.

Bundling pricing refers to the strategy that a sales system will automatically recommend relevant e-books when customers buy one, and the customers enjoy discounts if they buy the recommended books. The more e-books they buy, the lower the unit price for the e-books will be. In this way, the consumers are led to buy more e-books at a time. As for custom pricing, it means that various customized supplies and demands can prolong the long tail of the e-book sales without limits. Online

bookstores can analyze the interest, profession and educational needs of the consumers with their purchase records. With that, the bookstore will customize book information for them, which will be sent to them by e-mail or by phone message. In this way, promotional information of the similar and relevant books is sent to the previous consumers so as to promote sales.

### 2.1.2 Brand Value

Brand value is an intangible asset for enterprises, which represents the enterprises' reputation, brand image, consumers' recognition for the brand, and consumers' loyalty to the brand. A successful brand will help the enterprise spot its position in the market and its own strengths and weaknesses when compared to other brands. If consumers like the brand and they are willing to buy, they will buy its new arrivals. For instance, consumers will wait in a queue to buy NIKE sneakers that are newly issued products. Similarly, the brand value of e-books is closely related to their pricing strategy.

### 2.1.3 Reader positioning

The publication of e-books needs to take into account the needs of readers. When they are published, they need to be properly positioned. The introduction of the books should be concise yet powerful. If they can satisfy the needs of the readers, they can sell a good price.

### 2.1.4 Book life cycle

The life cycle refers to the process in which a book enters into the market and then exits the market. The process includes four stages, namely market entry, growth, maturity and recession. (Parker, 1992) conducted to test the dynamic behavior of elasticity over the product life cycle. The empirical results show that whether the product is necessary and the degree of substitution affects the elastic dynamics.

### 2.1.5 Free pricing

The price mechanism of free pricing is that the buyer and the seller determine the price together by way of bargaining. They decide on the final price for the book based on their objective judgment for its value. The key for the seller to make a profit lies in how to properly price e-books. Generally speaking, the prices for e-books are often low at first and later their prices are raised, for the seller means to make consumers get used to pay for the e-books first. Later he raises the price slowly. In this way, the publishers make a profit.

## 2.2 Physical book pricing strategy

Physical books are the ones with writing and printing as their media, enabling readers to leaf it through at any time and leaf it back and forth. The pricing strategies for physical books include demand elasticity, resale price maintenance system, production cost, psychological pricing and competitor pricing.

### 2.2.1 Demand Elasticity

Demand elasticity means the demand for a product changes along with the prices. The more substitutes a good has, the bigger its elasticity will be. The paper book is a commodity that lacks price elasticity. Usually, manufacturers increase sales revenue by raising prices. However, the price elasticity for diverse types of paper books is different. For instance, the price elasticity of textbooks is lower than that for educational reference books. The elasticity for the popular books about recipes, health and others is higher than that for professional books. That is why popular books are sold at a relatively low price.

### 2.2.2 Resale Price Maintenance System

Resale price maintenance refers to the price at which a fixed counterparty resells a commodity to a third

party. The pricing of paper books is influenced by the diversification of the layout and the enthusiasm of the authors. As long as the books possess specialty, and of cultural and public nature, and the market mechanism is used flexibly, they will be able to exert effects on the pricing.

### 2.2.3 Production Cost

As for the pricing based on production costs, the price of a paper book is set according to actual production costs and appropriate profits. It has two pricing methods: one is cost-based pricing and the other is target profit pricing. The former is a pricing method based on the cost of a single book plus a certain percentage of profits. That is to say, the price of a single book = the cost of a single book \* (1 + profit margin). The pricing of a paper book = (the price of the book + the royalty) \* 3 or 2.5. The latter is the target profit pricing method. According to this method, a paper book is determined based on its total cost, target profit, and expected sales volume, namely the price of a paper book = (total cost + target profit) / expected sales volume. The advantage of the approach is that the target profit can be realized as long as the sale of the book reaches the expected sales volume.

### 2.2.4 Psychological pricing

The so-called psychological pricing is a pricing approach with the use of readers' psychology and their concept of prices. There are three specific practices for the psychological pricing. (1) Mantissa pricing: an integer is not chosen as a price, but 9 is taken as the mantissa of the price. In this way, the consumers will produce an illusion that the price is not high. (2) Integer pricing: the mantissa of the price is 0. This practice is often applied to high-end, high-value, and high-quality paper books. (3) High-price strategy: for those books which are treasured or preserved copies, or short-lived publications,

they are often high priced. Usually, there are often limited copies for the books. In this way, a considerable profit can be achieved in a short-term.

### 2.2.5 Competitor pricing

Competitor pricing is based on the publication prices of market competitors. The price of paper books is set above the competitive price within the industry. In addition, the publishing industry will reserve profits for downstream bookstores when pricing to prevent the paper book from being unsalable.

This study uses the TRIZ approach to business management to draw up a book pricing strategy. This section first discusses the TRIZ theory and the TRIZ principles of invention. Later, it explains how to combine the pricing strategy with the principles.

## 3. Methodology

### 3.1 TRIZ Theory and Principles of Invention

TRIZ is the abbreviation of Teoriya Reahniya Izobretatelskikh Zadatch, the name of the theory in Russian. It means an inventive problem-solving theory. It was translated into English as Theory of Inventive Problem Solving, which means innovative problem solving theory. The TRIZ theory was developed into an analytical problem solving tool, which contains 39 engineering parameters, contradictory matrix, 40 principles of invention and the Algorithm of Invention Problem Solving (ARIZ).

Genrich Altshuller (1994, 1999) put forward 40 TRIZ-based invention principles by reviewing about 200,000 patents. TRIZ has been gradually applied to non-technical fields such as society, business, culture and art. In 2004, Darrell Mann published the book titled *Hands on Systematic Innovation*. In that book, he started using the TRIZ approach to business management. Also, he proposed many innovative business solutions. He

combined the contradictory matrix with business, which became a contradiction matrix for business management, and later evolved into 40 TRIZ-based principles of invention for business management. Next, Valeri Souchkov proposed the 40 invention principles of TRIZ business management innovation, as shown in Table 1. (Sheu, 2017)

**Table 1** The 40 TRIZ principles of invention used in business

No.	Inventive Principle	No.	Inventive Principle
1	Segmentation	21	Hurrying
2	Taking Out	22	Blessing in Disguise
3	Local Quality	23	Feedback
4	Asymmetry	24	Intermediary
5	Merging	25	Self-Service
6	Universality	26	Copying
7	Nesting	27	Cheap and Short Life
8	Counter-Balance	28	Principle Replacement
9	Prior Counter-Action	29	Flows and Flexibility
10	Prior Action	30	Border Conditions Change
11	Beforehand Cushioning	31	Holes and Networks
12	Remove Tension	32	Visibility Change
13	The Other Way Around	33	Homogeneity
14	Non-Linearity	34	Discard and Recovery
15	Dynamization	35	Parameter Changes
16	Slight Less Or More	36	Paradigm Shift
17	Another Dimension	37	Relative Change
18	Resonance	38	Enriched Atmosphere
19	Periodic Action	39	Calm Atmosphere
20	Action Continuity	40	Composite Structures

### 3.2 Combination of book pricing strategies with the principles of invention

The books can be categorized into e-books and paper books. In the literature review, this study describes the pricing strategies for e-books and paper books separately. There are five strategies for each category and 10 strategies in total. The 10 pricing strategies are combined with the 40 invention principles to find out the corresponding relationship between the strategies and the principles, as shown in Table 2. This table can be used when pricing conflicts are discussed later. When the contradiction produced by the 31 business management TRIZ parameters (as shown in Table 3) will be fed back to the invention principles, one can immediately spot the corresponding book pricing strategy.

**Table 2** Pricing Strategy and Invention Principle

Category	Pricing strategy	Inventive Principle
E-book	1.Long tail theory	14 Non-Linearity \ 15 Dynamization \ 20 Action Continuity \ 28 Principle Replacement \ 37 Relative Change
	2.Brand value	10 Prior Action \ 38 Enriched Atmosphere
	3.Reader positioning	3 Local Quality \ 7 Nesting \ 14 Non-Linearity
	4. Book life cycle	19 Periodic Action \ 36 Paradigm Shift
	5. Free pricing	15 Dynamization
Paper book	1.Demand elasticity	14 Non-Linearity \ 29 Flows and Flexibility
	2.Resale price maintenance system	33 Homogeneity
	3. Production cost	35 Parameter Changes
	4.Psychological pricing	5 Merging\ 9 Prior Counter-Action \ 16 Slight Less Or More \ 22 Blessing in Disguise
	5.Competitor pricing	11 Beforehand Cushioning \ 12 Remove Tension \ 18 Resonance

**Table 3** 31 TRIZ parameters for business management

No.	Parameter	No.	Parameter
1	Activity Effectiveness	2	Activity Variability
3	Activity Expense	4	Activity Time
5	Activity Complexity	6	Activity Convenience
7	Activity Safety	8	Activity Reliability
9	System Effectiveness	10	System Variability
11	System Expense	12	System Time
13	System Complexity	14	System Convenience
15	System Safety	16	System Reliability
17	Internal Risk	18	External Risk
19	Information Sharing	20	Information Loss
21	Information Flow	22	Feedback
23	Material Flow	24	Harmful Effects to System
25	Harmful Effects from System	26	Adaptability /Versatility
27	Organizational Tension	28	Organizational Stability
29	Customer tension	30	Customer Stability
31	Environment Stability		

## 4. Book Pricing strategy

To find out book pricing strategies, the factors that are taken into account during the pricing should be spotted first based on the conflicting points of pricing. This section first discusses the conflicting points of book pricing. Secondly, the TRIZ parameters of business management are used to find out the corresponding invention principles. At last, the factors that determine the pricing of books are spotted with the principles of invention, and later the pricing strategies are formulated. They are now described as follows.

### 4.1 Conflicting points of book pricing

Book prices are subject to exchange rate fluctuations, market shares, and the speed of version updates, penetration prices, and preferential activities. (Dolan and Simon, 1996)

#### 4.1.1 Exchange rate fluctuation

Book pricing is influenced by exchange rate fluctuations. The depreciation of domestic currency is conducive to the export of books, affect the price system and increase consumers' willingness to buy, so choose parameter 9 (System Effectiveness) while the appreciation of domestic currency is helpful to the import of books, affect the price system and increase consumers' willingness to buy, so choose Parameter 11 (System Expense).

#### 4.1.2 Price increase

Along with book prices increasing, the unit profit of books rises, choosing parameter 9 (System Effectiveness). Accordingly, the relative market share will be reduced, affect the ability of stable achieving profits, choosing parameter 31 (Environment Stability).

#### 4.1.3 Speed of version updates

To respond to changes in the market, the book editions should be constantly updated. It means the complexity of the firm's marketing strategy, so choose parameter 5 (activity complexity), If the editions are not updated for a long time, consumers will reduce their willingness to buy, which results in slow sales and increasing inventory costs. In this way, loyal customers may decrease. Also, the monopoly and leadership will be lost. Due to the loss of the original stable customer base and leadership position, parameter 31 (environmental stability) was chosen.

#### 4.1.4 Penetration price

In order to stimulate sales, books are often issued with a low initial entry price to attract readers and gain market share. Duo to stable customer group was established, parameter 31 (environmental stability) was chosen. On the other hand, it will result in ineffective management for booksellers. For instance, defected books

that enter into the market will lead to bad reputation due to their high market share. The original favorable factor (market share) becomes a harmful effect, so choose parameter 24 (the harmful effect to the system).

#### 4.1.5 Preferential activity

The bookseller launches different preferential activities for varied types of books from time to time. Before the activities, different media are used to inform consumers of the news as quickly as possible, so choose parameter 21 (Information Flow). If the promotional period has passed, the discount will no longer be available to the consumers. Consumers accustomed to the rapid and automatic inflow of information will be unable to adapt, resulting in a lack of information, which will reduce the profit of firm, so choose parameter 26 (Adaptability /Versatility).

#### 4.1.6 Differential pricing

Booksellers will set different prices for books based on the consumers' different preference in order to increase elastic profits. This flexible pricing strategy is based on the understanding of the consumer information, so choose parameter 21 (Information Flow). On the other hand, the method may make consumers feel unfair. Reduce consumer loyalty and increase instability, so choose parameter 26 (Adaptability /Versatility).

This study, based on the aforesaid six conflict points, finds out the positive and negative effects for each conflict point, as shown in Table 4.

**Table 4** Conflict points for pricing

Contradiction	Positive effect	Negative effect
1. Exchange rate fluctuation	Domestic currency depreciation conducive to exporters	Domestic currency appreciation conducive to importers
2. Price increase	Unit profits increase	Market share decreases
3. Speed of version updates	Innovative/diversified versions update quickly	Leadership lost with a low update
4. Penetration price	Market share increases	Defected books
5. Preferential activity	Sellers respond quickly	Buyers respond slowly
6. Deferential pricing	Profits increase	Customers feel unfair



## 4.2 Find out corresponding principles of invention with TRIZ parameters

According to Table 4, the corresponding parameters for the positive and negative effects of the six conflict points are spotted respectively from the 31 TRIZ parameters. Later, corresponding invention principles for the parameters are found out, as shown in Table 5.

**Table 5** The corresponding parameters of the positive and negative effects of conflict points

Contradiction	Positive effect	Negative effect
1.Exchange rate fluctuation	Parameter 9 (System Effectiveness)	Parameter 11 (System Expense)
2.Price increase	Parameter 9 (System Effectiveness)	Parameter 31 (Environment Stability)
3. Speed of version updates	Parameter 5(Activity Complexity)	Parameter 31 (Environment Stability)
4.Penetration price	Parameter 31(Environment Stability)	Parameter 24 (Harmful Effects to System)
5.Preferential activity	Parameter 21(Information Flow)	Parameter 26 (Adaptability /Versatility)
6.Deferential pricing	Parameter 9 (System Effectiveness)	Parameter 30 (Customer Stability)

## 4.3 The Principles of invention used to find out the factors that influence book pricing

In this section, according to the conflict points, their corresponding principles and the factors that influence book pricing will be found out.

### 4.3.1 Conflict Point One

The first conflict point is the exchange rate fluctuation. Parameter 9 and 11 and the corresponding TRIZ-based principles are Principle 11, 7, 29 and 36.

Strategy 5 for book pricing is found out with Principle 11 (Beforehand Cushioning), the strategy content, as shown in A1 below. Based on principle 7 (Nesting) and Table 2, e-book price strategy 3 is spotted, i.e. reader positioning, the strategy content, as shown in B1 below. Based on principle 29 (Flows and Flexibility) and Table 2, paper price strategy 1 is spotted, i.e. demand elasticity, the strategy content, as shown in C1 below. Based on Principle 11, 7, and 29, this study can find out the strategies that correspond to Conflict Point One (Exchange rate fluctuation).

- A1 The exchange rate fluctuation is taken into account to avoid exchange rate loss.
- B1 The book positioning should be considered according to the topics of the books. In this way, consumers will not change their purchase along with the change of the pricing caused by the fluctuation of the exchange rate.
- C1 When the domestic currency depreciates, the cost of imported books rises. In this instance, the prices of the books should be adjusted. For those with a low price elasticity of demand, professional books, for example, their prices can be significantly adjusted in this instance. For those with a high price elasticity of demand, their prices can be adjusted slightly or there are no changes in the prices in that case.

### 4.3.2 Conflict Point Two: Price increase

Parameter 9 and 31 and their corresponding principles are Principle 10, 19, 37 and 33.

Based on Principle 10 (Prior Action) and Table 2, e-book price strategy 2 is spotted, i.e. brand value, the strategy content, as shown in A2 below. Based on Principle 19 (Periodic Action) and Table 2, e-book price strategy 4 is spotted, i.e. life cycle the strategy content, as shown in B2 below. Based on Principle 33 (Homogeneity) and Table 2, paper book strategy 2 is spotted, i.e. resale price maintenance system, the strategy content, as shown in C2 below.

Based on Principle 10, 19 and 33, the strategies that correspond to Conflict Point Two can be spotted, respectively.

- A2 If the publishing industry is raising book prices, it is advised to consolidate its brand value first. In this way, it can be avoided that the market share declines when product prices are raised.
- B2 The bookseller can raise or decrease book prices to avoid the situation that the market share slips with an increased price.

C2 It is suggested to adopt a fixed resale price to avoid horizontal competition. In this way, a considerable profit space is reserved for downstream bookstores and a friendly and cooperative win-win relationship can be achieved.

#### 4.3.3 Conflict Point 3: Speed of version updates

Parameter 5 and 31 and the corresponding principles are 5, 15, 34, and 24.

Based on Principle 5 (Merging) and Table 2, book price strategy 4 is spotted, i.e. psychological pricing, the strategy content, as shown in A3 below. Based on Principle 15 (Dynamization) and Table 2, e-book price strategy 1 is spotted, i.e. Long tail theory, the strategy content, as shown in B3 below.

With Principle 5 and 15, this study can find out the following strategies for the conflict of the speed of version updates.

A3 Different speeds of updates are adopted for different categories of books.

B3 Long Tail Theory can be used to avoid selling dilemmas caused by low version updates. Through bundling and a custom pricing strategy, the profit will continue to be made in the late phase of sales.

#### 4.3.4 Conflict Point Four: Penetration price

Parameter 31 and 24 and their corresponding principles are Principle 35, 10, 37 and 24.

Based on Principle 10 (Prior Action) and Table 2, e-book price strategy 2 is spotted, i.e. brand value the strategy content, as shown in A4 below. Based on Principle 37 (Relative Change) and Table 2, e-book strategy 1 is spotted, i.e. Long tail theory the strategy content, as shown in B4 below.

With Principle 10 and 37, the researchers find out the strategies that correspond to Penetration Price.

A4 The sold books are of brand value. As long as the quality of the books is ensured, readers will be willing to purchase serial books and the like.

B4 The clearance books can be sold with a penetration price.

#### 4.3.5 Conflict Point Five: Preferential activity

Parameter 21 and 26, and the corresponding principles include 18, 38, 12 and 14.

Based on Principle 18(Resonance) and Table 2, the fifth paper pricing strategy is spotted, i.e. competitor pricing, the strategy content, as shown in A5 below.

A5 New books are priced at the same level as the competitor when they are newly issued products. In this way, a price war can be avoided. Instead, other non-price competitions will be adopted to attract consumers.

#### 4.3.6 Conflict Point Six: Deferential pricing

Parameter 9 and 30 and their corresponding principles are Principle 12, 27, 34 and 24.

Based on Principle 12 (Remove Tension) and Table 2, paper book price strategy 5 is spotted, i.e. competitor pricing, the strategy content, as shown in A6 below.

A6 The same pricing strategy is formulated with others in the industry when new books are issued. In this way, consumers will be less likely to feel unfair.

Base on e-books and paper books, we categorize the book price innovation strategies, as shown in the following Table 6:

**Table 6** Book price innovation strategies

Contradiction	Paper book price strategy	E-book price strategy
1.Exchange rate fluctuation	A1, demand elasticity (C1)	A1, reader positioning (B1)
2.Price increase	resale price maintenance system (C2)	brand value (A2), life cycle the strategy content (B2)
3. Speed of version updates	psychological pricing (A3)	Long tail theory (B3)
4.Penetration price		brand value the strategy content (A4), Long tail theory (B4)
5.Preferential activity	Competitor pricing (A5)	
6.Deferential pricing	Competitor pricing (A6)	



## 5. Conclusion and Future research directions

Through literature review, this study first finds out the five pricing models for e-books, namely long tail theory, brand value, reader positioning, production life cycle and free pricing, and the five pricing models for paper books, i.e. demand elasticity, resale price maintenance system, production cost, psychological pricing and competitor pricing. Secondly, the ten book pricing strategies are mapped to the 40 TRIZ-based invention principles for business management. In this way, each book pricing model consists of one to several inventive principles. For example, the long tail pricing theory for e-books consists of Principle 14 Non-linearity, Principle 15 Dynamization, Principle 20 Action Continuity, Principle 28 Replacement, and Principle 37 Relative change. Thirdly, the TRIZ approach to business management is used to draw up a book pricing strategy. Six pricing conflict points are spotted based on the book Pricing Bible by Dolan and Simon (1996), namely exchange rate fluctuations, market share, the speed of version updates, penetration prices, preferential activities, and differential pricing. With these six pricing conflict points, appropriate and innovative pricing strategies are found out. The strategies can be used as the basis of book pricing for the publishing industry to maximize the niche in the competitive market. This article combines economics and innovation to explore the issue of book pricing. Pricing has always been the core issue of economics. This paper finds out the contradictions from the general problems of pricing, and then narrows it to the problems of book pricing. From table 6 there are some contractions that do not find the appropriate innovative pricing strategies, so the next study can be based on this article, in-depth use of more business management TRIZ tools to find out these solutions. Moreover, the same research methods can also be used to discuss the pricing of different commodities. It is expected that this paper should open up more research on

the economics and business management, on the one hand, expand the development of economics in innovation theory, on the other hand, expand the application of business management TRIZ to the field of economics.

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