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"INTERNATIONAL PRICING STRATEGY FOR SUCCESSFUL EXPANSION OF CERAMIC INDUSTRIES"

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Under The Guidance Of

Faculty Guide

Mr. Aashish Kumar Bhatt

Assistant Professor

Submitted by

GUNJAN MEHTA

Enrolment No.

210617200466

MBA Semester- IV

Parul Institute of Management and Research

PARUL UNIVERSITY, LIMDA, WAGHODIA

Chapter 01

Introduction

❖ Part 1: General Information About Industries

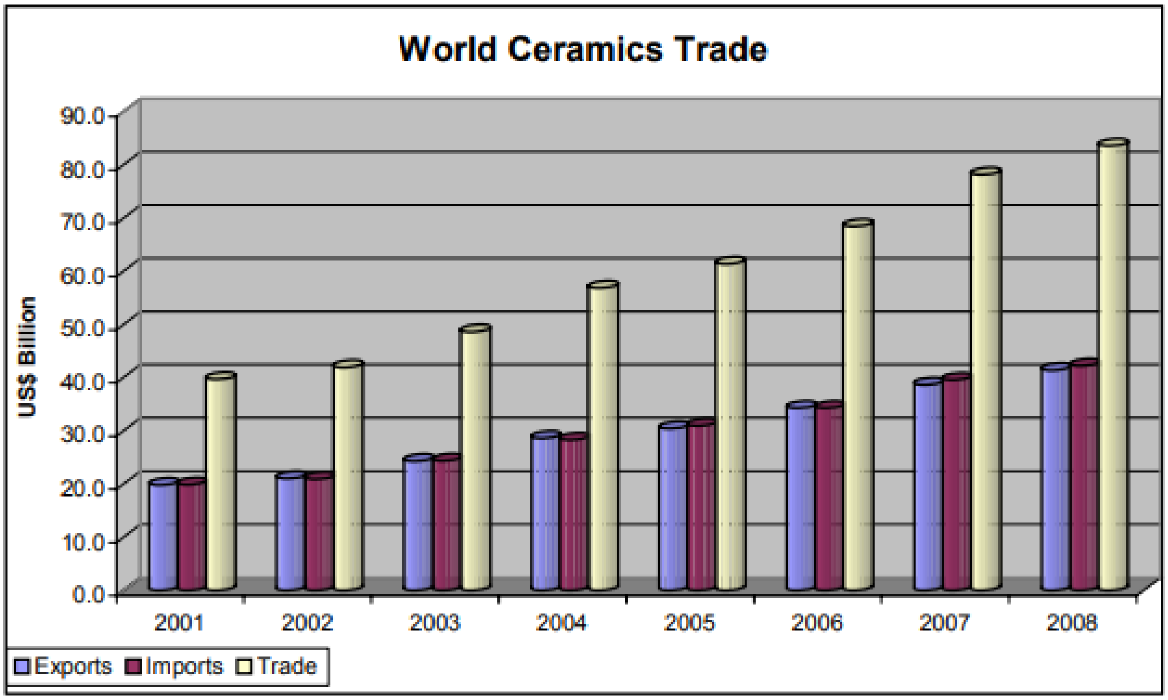
➢ Introduction to the Industry

Introduction Ceramics also known as fire clay is an inorganic, non-metallic solid article, which is produced by the art or technique of heat and subsequent cooling. Ceramics is a diverse industry and contains several categories of products, including sanitary ware, refractories, cement, advanced ceramics, and ceramic tiles. Ceramic products like crockery, sanitary ware, tiles etc play a very important role in our daily life. This is because, apart from their decorative look, ceramic products are primarily hygiene products. This is also one of the chief reasons for their wide usage in bathrooms and kitchens in modern households to medical centres, laboratories, milk booths, schools, public conveniences etc. The ceramic industry has a long history, with the first instance of functional pottery vessels being used for storing water and food, being thought to be around since 9,000 or 10,000 BC. Clay bricks were also made around the same time. The ceramic industry has been modernising continuously, by newer innovations in product design, quality etc.

♦ Section I: Global Scenario

Global Trade/ Growth Profile

During the period from 2001 to 2008, total ceramics trade grew at a CAGR of 9.8%, from US$ 39.6 billion to US$ 83.5 billion. During the period exports increased from US$ 19.8 billion to US$ 41.3 billion (CAGR of 9.7%), while imports increased from US$ 19.9 billion to US$ 42.2 billion (CAGR of 9.9%).



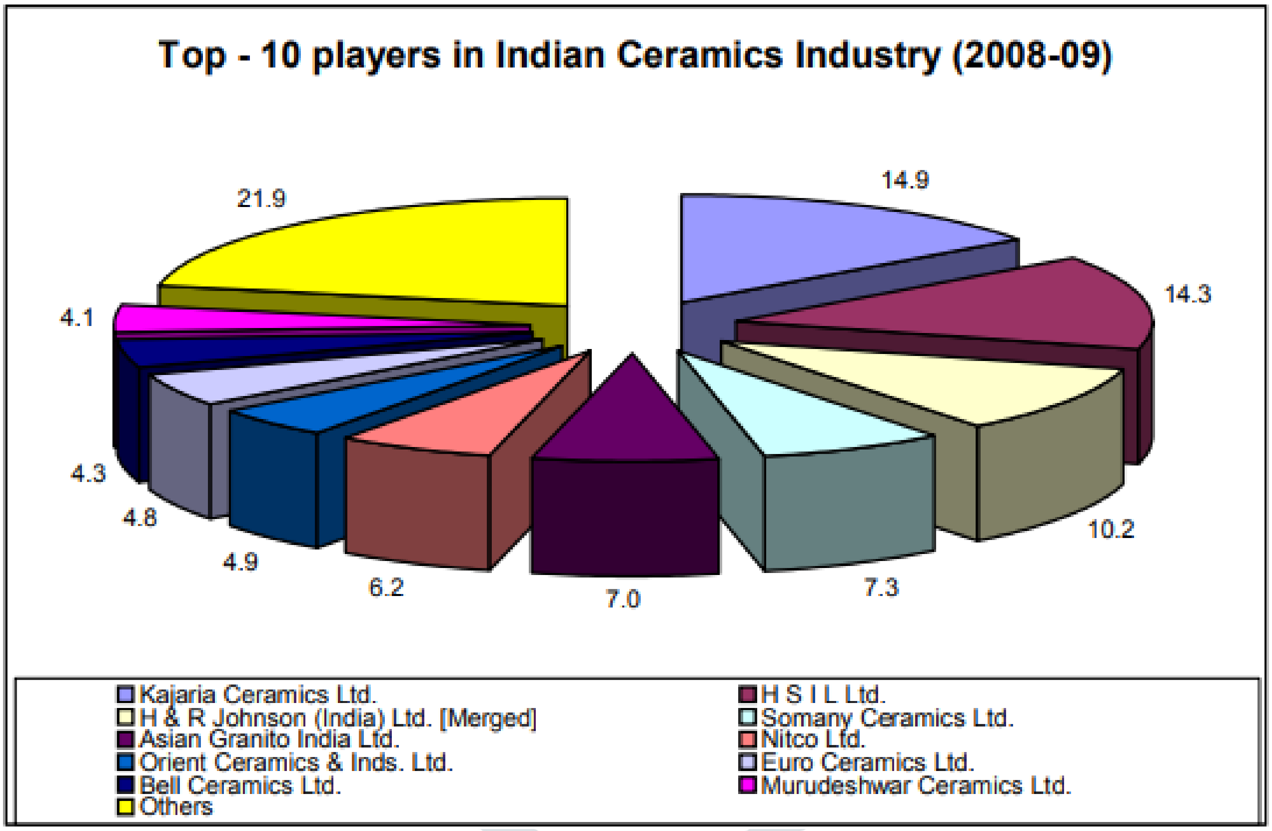
Major Exporters

China was the largest ceramic exporter during 2008, with exports of US$ 8 billion. Italy, Germany, and Spain followed China with annual exports of US$ 6.3 billion, US$ 4.2 billion and US$ 3.9 billion, respectively. The top ten countries together accounted for close to 72% of total ceramics exports during 2008.

Major Importers

United States was the world's largest ceramic importer during 2008, with imports worth US$ 5.4 billion. US rely heavily on imports of ceramic to meet its domestic ceramics consumption. This is also reflected in its high ceramics trade deficit of close to US$ 4 billion. US is followed by France, Germany, and United Kingdom with annual imports of US$ 2.7 billion, US$ 2.6 billion and US$ 2.0 billion, respectively.

❖ **Top 10 Players of Indian Market**



1. Kajaria Ceramics Ltd.

a. Kajaria Ceramics is the largest manufacturer of ceramic/vitrified tiles in India. It has an annual aggregate capacity of 84.45 Mn. sq. meters, distributed across eight plants - Saidabad in Uttar Pradesh, Gazipur & Malo tana in Rajasthan, Vijayawada & Serialists in Andhra Pradesh, Balan agar in Telangana and two plants in Gujarat.

b. Kajari's manufacturing units are equipped with cutting edge modern technology. Intense automation, robotic car application and a zero chance for human error are few reasons for Kajaria to be the number 1 in the industry.

c. Founded 34 years ago, Kajaria has since then grown stronger with its hard work, innovations, and patronage from our discerning customers.

d. The Indian consumers' rapidly growing appetite for style and aesthetics is the inspiration behind every design of Kajaria and its pace to keep up with the customer and market demands has made Kajaria a synonym for quality, service, and innovation - not only in the domestic market but in the international market too.

e. Kajaria Ceramics has increased its capacity from 1 Mn. sq. metres to 84.45 Mn. sq. metres. in last 34 years and offers more than 3000 options in ceramic wall & floor tiles, vitrified tiles, designer tiles and much more. These tiles come in a wide range of colours and textures to complement bathrooms, living rooms, corridors, study rooms & kitchen, born out of an inspired creativity of those who feel that rooms should be an extension of the beauty reflected. With an unparalleled commitment towards quality, we have strived to adopt technologies and standards with the changing times.

f. Be it technology, research, design or quality, Kajaria has set its sight on all these factors adopting new production techniques in order to enhance the quality of its products. Due to creativity and design ability of our team, our design comprises both innovation and exclusivity.

g. Leveraging the two invaluable assets - the Kajaria brand and unparalleled, multi-layer distribution network - to expand the product bouquet to cater to the growing aspirations of the discerning Indian customers.

2. H S I L Ltd. H & R Johnson (India) Ltd. [Merged]

a. H & R Johnson is India's most trusted tiling brand and we hold the responsibility of imbibing the brand value & trust in every product we manufacture. For that very reason, our Felspar Mines are self-owned & the soluble salts die, punches & inks are manufactured in-house. All this, so as to keep every promise of quality assurance H & R Johnson makes to you.

b. **Manufacturing Excellence**

Johnson has the most modern manufacturing units across strategic locations in India. Our manufacturing facilities employ the best technology from world leaders in tile manufacturing equipment. All our plants are ISO compliant with both 9001 and 14001 certifications as well as OHSAS 18001 certification.

c. Sneak Peek into Tiles Manufacturing Plants in India

To ensure the accessibility of the best across India, H & R Johnson has over 1,000 exclusive dealers and over 10,000 sub-dealers, 35 branches, and many House of Johnson wall tile & floor tiles showrooms. More importantly, the brand offers after-sales support at your fingertips, with a Pan India customer service.

3. Somany Ceramics Ltd.

a. Somany Ceramics Limited (SCL) is among the top 15 global giants of the Ceramic Industry. Established more than 50 years ago by Late Shri Hiralal Somany Ji, Brand SOMANY, under the capable leadership of Mr. Shrikant Somany, Chairman & Managing Director and Mr. Abhishek Somany, Managing Director & CEO, is a household name in India for tiles and bathward. Moreover, it exports its products to over 55 countries across six continents. The company is a complete solution provider in decor solutions with the widest product selection in all categories: ceramic (wall and floor tiles), polished vitrified tiles, glazed vitrified tiles, sanitary ware, and bath fittings.

b. SOMANY's determined pursuit of excellence has placed the brand in an illustrious position. This would not have been possible without the vision of the Late Shri H. L. Somany Ji, who laid the foundation for the company's long-lasting success. He believed in staying ahead of his time - creating trends instead of simply following them, constantly innovating rather than catching up. His wisdom and culture are an intrinsic part of the company's DNA and the following generations of leaders.

4. Asian Granito India Ltd.

a. SILENCING THE SCEPTICS

b. Predictions are meant to be challenged; and assumptions meant to be busted. Only then a true leader emerges from an improbable position. Asian Granito India Ltd. (AGL) has been silencing the sceptics by setting benchmarks globally in the building materials domain. It has debunked myths that a fledgling company from a small-town region in Gujarat can lead the change in the industry by setting higher goals, achieving the unthinkable and creating new benchmarks.

c. BLAZINGGROWTH

Established in the year 2000, the AGL has emerged as one of the largest ceramic companies of India in a short span of 22 years. Its leadership is marked by many successful challenges our incessant pursuit of excellence. Today it has emerged as one of India’s largest groups, with a global footprint across more than 100 countries. Its capacity has grown 40-fold in a span of just 22 years, it is India’s fastest growing Ceramic Wall & Floor Tile, Glazed Vitrified Tiles, Polished Vitrified Tiles, Engineered Marble, Quartz and Bathward Company.

d. VISIONARY LEADERSHIP

e. The AGL is the brainchild of two entrepreneurs, whose dream was to create the world's most sustainable building materials company. Their inestimable experience together with a young and dynamic management team has created a formidable entity that is growing at an amazing pace.

f. DESIGN LEADERSHIP THROUGH TECHNOLOGY

The AGL has debunked the myth that design leadership is a forte only of foreign players, by achieving design leadership through an ideal mix of creativity and technology. AGL's leadership in introducing innovative digital printing technology, technical collaboration with SACMI, Italy and a world class Quality Management System has enabled it to build a portfolio that is truly avant-garde.

From ceramic tiles, Nanotech, Roto-Drum to New Digital Technology, AGL leads the way in creating the most diverse array of designs across the entire tile and marble product range. Modernization plays a pivotal role for the company, which is evident from their Nine ultra-modern plants across Gujarat. Spread over an area of 3,20,000 Sq.mt. these plants unfailingly produce world class products every day. Their state-of-the-art design technology successfully addresses the aesthetic and performance requirements of designers, architects, constructions companies and homeowners across India. Driven by innovation and passion to excel, the Asian Granito India Ltd. formidable and distinctive product range comes with the guarantee of international quality.

5. Nitco Ltd.

The owner of NITCO Tiles is Mr. Vivek Talwar, the Chairman and Managing Director of Nitco Limited. NITCO is one of the most widely recognized brands in the industry; and the only company with a presence and a comprehensive product range in all three surfaces: namely, tiles, marble, and mosaic. The company's prime mission is to offer cutting-edge designs and products that are the choice of discerning architects and consumers. Nitco Tiles was founded in 1953 by Mr. Pran Nath Talwar. Headquartered in Mumbai, NITCO's pan-India presence is facilitated through 9 exclusive display centres, 380 active dealers, and 1800 active sub-dealers. NITCO also enjoys a sizeable client base overseas and exports to over 40 countries like the USA, UK, Canada, South Africa, UAE, Nepal, and more. There are 380 active dealers and 1800 active sub-dealers in India, from where customers can purchase tiles. NITCO is one of the widely recognized brands in the Indian Ceramic and Construction supplier Industry. NITCO manufactures Tiles and provides world-class Marble and Mosaic.

6. Orient Ceramics & Inds. Ltd.

Orient Ceramics develops, designs, and markets a complete range of Bathroom and Sanitary products including Water Closet, Wash Basin, Squatting Pan, Shower Trey, and is reckoned to be India's leading company that caters to unmet need and expectation of clients about design and quality of the products. The company was founded in 1998 and its head office and two production units in Than Gadh, Gujarat, India. Since its foundation, the company has met with significant changes in its business and its products. Orient Ceramics has always been geared up and intended to embrace such changes and transform them into opportunities and growth. The quality of a company is couched in the skill and expertise of its leadership. For nearly 18 years, it has benefited by robust, decisive leaders at its premises, devoted to the core principles. Our business policy is transparent and we honestly work with it. The entity is well known for the excellent quality of the products and their design innovation. Our company majorly entertains exports inquiry from the customers.

7. Euro Ceramics Ltd.

The quality standards manufactured matches with best international quality standards and have received certification from VJTI- Mumbai and Applied Consumer Services, incubate factory is managed by highly qualified professionals with in house R&D.

Right from the beginning the emphasis has been regarding best quality standards that would match international standards. So, Euro Ceramics have selected manufacturing facilities from Sami, Italy which is one of the leading suppliers of ceramic manufacturing technology globally. The vitrified tiles manufactured by us are of international standards ISO 13006 / EN 176 Group B1a.

Euro Vitrified Tiles have revolutionized the flooring industry and become the preferred choice not just in India but in the global arena as well. Composition of raw material such as finest ball clay from Ukraine combined with latest production technology in one of the most accurate temperature-controlled Kilns up to 1200 degree C makes Euro Tiles completely vitrified with moisture absorption below 0.05%. Super White tiles are based on use of the best technology. Spotlessly White Euro Vitrified Tiles add immense class to any room that needs to make a statement. Euro Vitrified Tiles are designed to last, perfectly flat, stain free, abrasion resistant, non-porous, intensely vitrified and extremely consistent in terms colour, strength, and other properties.

8. Bell Ceramics Ltd.

Bell Ceramics Limited is a Public incorporated on 18 October 1985. It is classified as non-govt company and is registered at Registrar of Companies, Ahmedabad. Its authorized share capital is Rs. 400,000,000 and its paid-up capital is Rs. 121,738,072. It is involved in Manufacture of non-metallic mineral products N.E.C. Bell Ceramics Limited's Annual General Meeting (AGM) was last held on 28 May 2011 and as per records from Ministry of Corporate Affairs (MCA), its balance sheet was last filed on 31 December 2010.

We are adding and updating information about hundreds of thousands of companies every day, and periodically add companies to the queue for being updated. You can ask for a company to be added to the front of the queue for updating, especially useful if the address, directors, or

other critical information has changed. Just click on the 'Update Information' button below to start the process.

9. Murudeshwar Ceramics Ltd.

Murudeshwar Ceramics Limited is the pioneer in manufacturing world class Vitrified tiles and Ceramic tiles under the brand name “NAVEEN”. The cornerstone of our corporate journey of Thirty years has been” In Leadership through Quality”. Murudeshwar Ceramics Limited is in this position today because of our knowledge of the manufacturing standards, our experience in applying the standards to a wide variety of products in the tile industry, and our thorough understanding of specialized components of the production. The ‘Naveen Diamon tile’ tiles of various sizes, colours, designs are displayed in over 73 Company owned showrooms all over India. Apart from “A” Grade cities, showrooms have also been opened in “B” and “C” grade cities. In order to meet the immediate requirements, we store the products in 42 depots in different regions. Located in Hubli, Sira (Karnataka) and Karaikal (Pondicherry), the manufacturing facilities are equipped with state-of-the-art technology, in technical collaboration with Schimoler & Breton, Italy. NAVEEN tiles conform to stringent international standards. The R&D Cells attached to both the factories work independently and constantly to develop new colours, designs, textures, finish & sizes in sync with the latest global trends. The Brand ‘Naveen Diamon tile,’ with a complete range of products have a distinct niche in the market due to their consistent high quality. MCL has been accredited with the ISO: 9001-2000 certification from the Germany in recognition of its commitment to quality. **Murudeshwar Ceramics Limited** has three (3) state of the art production units. Naveen tiles are crafted with intense care using modern technology to ensure that we live up to the expectations of our buyers. They are located close to the major growth hubs in South India. The factories are in Hubli, Tumkur and Karaikal. The company is equipped to manufacture Wall tiles, Floor tiles, Ceramic tiles, and Parking tiles. Naveen offers tiles in 300*300, 300*450, 400*400, 300*600, 600*600, 600*1200, 800*800 and 800*1200 The total production capacity of the three units is 28000 square meter a day and 8.4 million square meters a year. State of the art modern machinery is being used to manufacture world class quality tiles. The company has 10 Presses of various sizes from Sami, Italy and Keda, China both world leaders in ceramic machinery. Currently 5 Kilns of various lengths from Sachi, Italy are being run. To make sustainable tiles and be cautious towards the environment, the company set up its own Solar and Wind energy plants as well as a STP plant to conserve nature and make green tiles.

- **Chain of Supply**

Extracting Raw Material from Local Mining

The way through the Indian market gets the raw material extracting from the local mining but to get the product at the best way is not possible from this raw material.

Import the Raw Material

There are some raw materials which is not present in India due to which the ceramic industries must import the raw material from other country which leads to increase the price of the product.

Procurement

The main work starts from this point to procurement of the product which also includes designing of the product as well.

Manufacturing

To manufacture the ceramic product there must be stove whose temperature must be near about 1100^0 c. And to take this temperature from 0^0 c to 1100^0 c it took 3 days to 4 days just for proper heating this is also the reason to increase the price of the product.

Statement of the Problem

To identify the reason of increasing the price and to get the suggestion to control the price.

Chapter 02
Review of Literature

Marshall indicated three different types of transport costs—the costs of moving goods, people, and ideas– that could be reduced by industrial agglomeration. The fourth powerful advantage opens innovation that are empirically identified by intellectual spill overs in Silicon Valley Route 128.

Saxonian described start-ups and SMEs in Silicon Valley, locate near one another to learn and to speed their rate of innovation that "the mysteries of the trade become no mystery, but are, as it were, in the air."

Ellison and Glaser noted that agglomerations may arise in two ways-cost differences or natural advantages and they propose an alternate measure of agglomeration named EG index. Each Marshallian theory predicts that plants will locate near other plants in the same industry because there is a benefit to locating near plants that share some characteristic. However, conglomeration patterns mean plants are similar to the other plants in their industry along many dimensions. But across industries, plants are similar in some dimensions and not in others. For example, some industry pairs exchange goods but employ very different workers. Other industries hire similar workers but never trade with each other. The basic concept of agglomeration economy synonymous means that production is facilitated when there is a clustering of economic activity. Porter defined clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated in situations (e.g., universities, standards agencies, trade associations) in a particular field that compete but also cooperate.

Robert Heller notated improving management's ability to challenge sales-led pricing decisions instituting greater effectiveness and rigour when pricing strategies are implemented installing the information base and systems needed to do all this. The consultants stressed three main groups of pricing strategy…Customer information management is the first – find out everything about the customer that reveals how much of a price rise the traffic will bear. Exploiting structural advantages, meaning strategies like Direct Line's ability to win lowest costs and turn them into lowest prices – and highest growth. Innovation and leadership. Here you want to improve the 'total value proposition' – by superior technology, better speed to market, higher customer satisfaction, innovative customer value, etc. One reason for reluctance to raise prices is the fear that sales will be adversely affected. A simple calculation, though, will show you that you need a massive increase in sales to offset a major price reduction, whereas, the other way round, the loss in sales can be quite large before you reach breakeven point on the deal. Get your reluctant sales people in and demand to know what sales drop they fear will follow a proposed price increase. Then work out what the effect of that percentage fall would be on the bottom line – you may be very agreeably surprised.

Michael V. Marn, Eric V. Roegner and Craig C. Zawada has analysed about price wars in the book The Price Advantage explains how to react for the change in price of competitors. They said that make the customers focused on the benefits, do not over spend on advertising, gaining the market share rapidly from one or two competitors. Rapid changes in the market almost set the price war. Do not react until you understand the reason for price cut of competitor. If you do not understand the well delay your response until you understands the facts. Do not react with lower price as it affects the organization. They suggest when there is need in change of

price it is necessary to analyse the consequences as it could affect the market and over all organization.

Customers are important for every organization. Numerous researches had been conducted for determining the method of pricing, which is explained in Literature review, has normally segregated in two divisions. First division will explain about a pervasive context about the, pricing and methods of pricing. The second part of this assessment deals with the previous related studies.

Price is a highly sensitive factor of an organization. The standard economic analysis of pricing is based on the customers desire for the product its usually depends up on the income of the customer and other factors like ethnic origin. There are some consumers may pay high prices, while others willing to pay only lower prices. Instead of charging same price to all, the organization decided to charge different price for different customers as it will increase the business profit. This method of pricing is known as price differentiation. In earlier days sellers of perishable goods would sell the old products at low price instead of dumping or taking back home.

If the price of competitor product was reduced it is necessary to reduce the price of the product, as it could create loss of customer and market. The pricing based on the competitors is competitive based pricing.

The simplest method of pricing is cost-plus pricing. It just calculates cost of producing the product and adds on a percentage of profit to that price.

Sacrificing high sales for gaining higher profit. Low volumes at high price. This is suitable for products that have short life cycles. It skims the profit from the market. It is known as market skimming.

A monopolist set limit price to discourage others entry in to the market. Limit pricing is illegal in many countries.

Loss Leader pricing strategy was illegal under EU and US. They sell the product below the cost, so the loss appears as public interest. It is similar to predatory pricing.

Some business set their prices based on the analysis and compiled from the targeted market. This is known as Market-Oriented pricing.

The organization set different price for the same product in the different segments to the market. This method is called Price discrimination

Psychological pricing strategy the price is designed on the positive psychological impact on customers. For example, price of the product at £3.95 or £3.99, rather than £4.

Price leadership is an observation that usually one company would be the dominant competitor among several other companies. They will follow that soon.

Target pricing strategy is calculated to produce a particular rate of return on investment for a specific volume of production. It is often used by public utilities and companies with high capital investment.

These methods of pricing all the cost incurred are recovered. This is a form of cost-plus pricing.

The practice of setting the price of a product to equal the extra cost of producing and an extra unit of output is marginal-cost pricing.

The impact of price elasticity should be considered while deciding the price. The degree of price elasticity focuses on the proportionate changes. The percent of change in price would be something less than the fall in sales is inelastic price. In case of price elastic, the percent of change in quantity demanded greater than change in price. Slow inflation rates from other countries' economies have led to the need for new approaches of pricing strategies.

Five factors to be considered on determining the price are Demand, cost, competitive factors, corporate profit and market objectives and regulatory constraints.

Combivir and Trizivir case study

"Some of the more dominant groups with observe to pricing in the HIV market are patient advocacy groups. Distinct patients on other condition, save probably cancer, HIV/AIDS patients are predominantly mobilized and oral when it arrives to treatment. This had guided to the growth of a widespread expanded admittance programs for products in development, and then patient assistance programs for new, costly products. Companies are aware of the benefits of maintaining a positive relationship with the patient base.

Combivir was launched essentially the same price as the some of the components. This not only replicates GSK's desire to make new treatments accessible to patients at a reasonable price, but also that mixture therapy was flattering more widespread – and that physicians did not need a discounted price to justify recommendation. However, clearly single-agent therapy is still commonly used, as lamivudine unit sales (not including combinations) continue to be greater than Combivir unit sales. Only around the end of 2002 do lamivudine unit sales begin to decrease.

Trizivir was also priced similarly at the some of its component's prices, indicating the company's aspiration to keep it available to treatment for immature patients. GSK held Combi Vir's price the same in most markets when Trizivir was launched. The intension was not to have Trizivir cannibalize Combivir patients. Combivir still had a low price relative to Trizivir which would continue to make it attractive to many physicians.

Sales of Trizivir quickly slowed as a result of clinical results showing that the three drugs used in the fixed-dose combination were not as effective as other three product combinations.

Combivir has not had similar clinical setbacks and has continued to enjoy strong, but flat, sales." (Combivir and Trizivir case studies)

In this case study Combivir has adopted the market-oriented pricing method and penetration pricing hence it can be able to survive in the market after the tough competition with Trizivir. Determination of price is considered as important to survive in the market and to gain consumer interest

Background

SE is an umbrella concept that covers a variety of terms (e.g., sharing economy, collaborative consumption, P2P consumption, and access-based consumption) . Schlage, Schroder proposed three key features of SE, namely, IT-facilitated, peer-to-peer, and no transfer of ownership. However, these features are no longer compatible with emerging sharing forms, such as the encroachment of professional agents and business firms (e.g., Moblike). Therefore, to obtain a more comprehensive understanding of SE and clarify the boundary of SE, the definition of SE is extended as follows.

The sharing economy is an IT-facilitated consumer-to-consumer (C2C) or business-to-consumer (B2C) model for the commercial or non-commercial sharing of underutilized goods or service capacity through an intermediary without transfer of ownership.

Meanwhile, considering the entire supply chain, the model structure of the extended definition is illustrated in figure below. It should be mentioned that, in the extended definition, the B2C and C2C models differ depending on the providers in the sharing market, that is, in the B2C model, providers are business firms, while in the C2C model, providers are individuals.

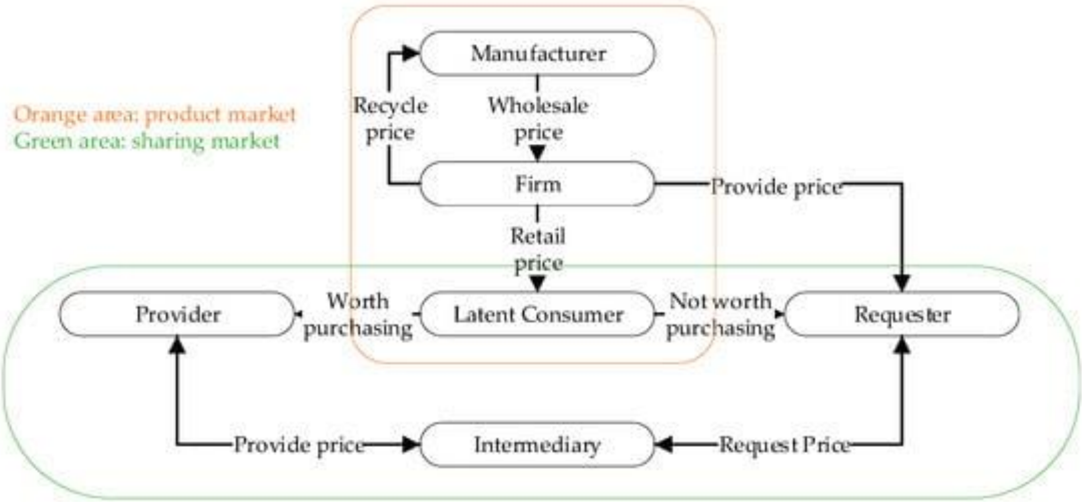


Figure 1. The extended sharing economy model structure.

As illustrated in figure, the product market (orange area) consists of the manufacturer, firm, and latent consumer. The manufacturer produces products, sells them to the firm at a wholesale price, and recycles damaged products from the firm at a recycling price. Then, the firm sells the products to latent consumers, who will purchase products if their perceived values are higher than the retail price (i.e., worth purchasing), or otherwise, they will not purchase them (i.e., not worth purchasing). After the purchase decision, latent consumers leave the product market and join the sharing market.

The sharing market (green area) consists of the provider, requester, and intermediary. Purchasing consumers join the sharing market and share their products when vacant; therefore,

they become providers in the sharing market. Non-purchasing consumers come to the sharing market to rent products from providers; therefore, they become requesters in the sharing market. Apart from individual providers (i.e., C2C model), the firm can also encroach on the sharing market by directly providing a rental service to non-purchasing consumers (i.e., B2C model). Transactions between providers and requesters are reached through an intermediary (e.g., online platform), wherein requesters pay the request price to the intermediary, and the intermediary pays the provide price (or the sharing price) to providers and charges a commission fee. It is noteworthy that in the sharing market, not only physical or virtual products, but also services, such as production capacity and labour, can be shared (e.g., gig economy, crowdfunding, crowdsourcing, and ride hailing).

Methodology

In the existing literature reviews, the systematic literature review (SLR) is widely adopted. SLR is an approach to synthesize a large volume of research and conclude research progress and gaps, jointly with the preferred reporting items for systematic reviews and meta-analysis (PRISMA) protocols, which offer clearer and less biased guidance of the review process. This review’s PRISMA protocol is illustrated in Figure 2.

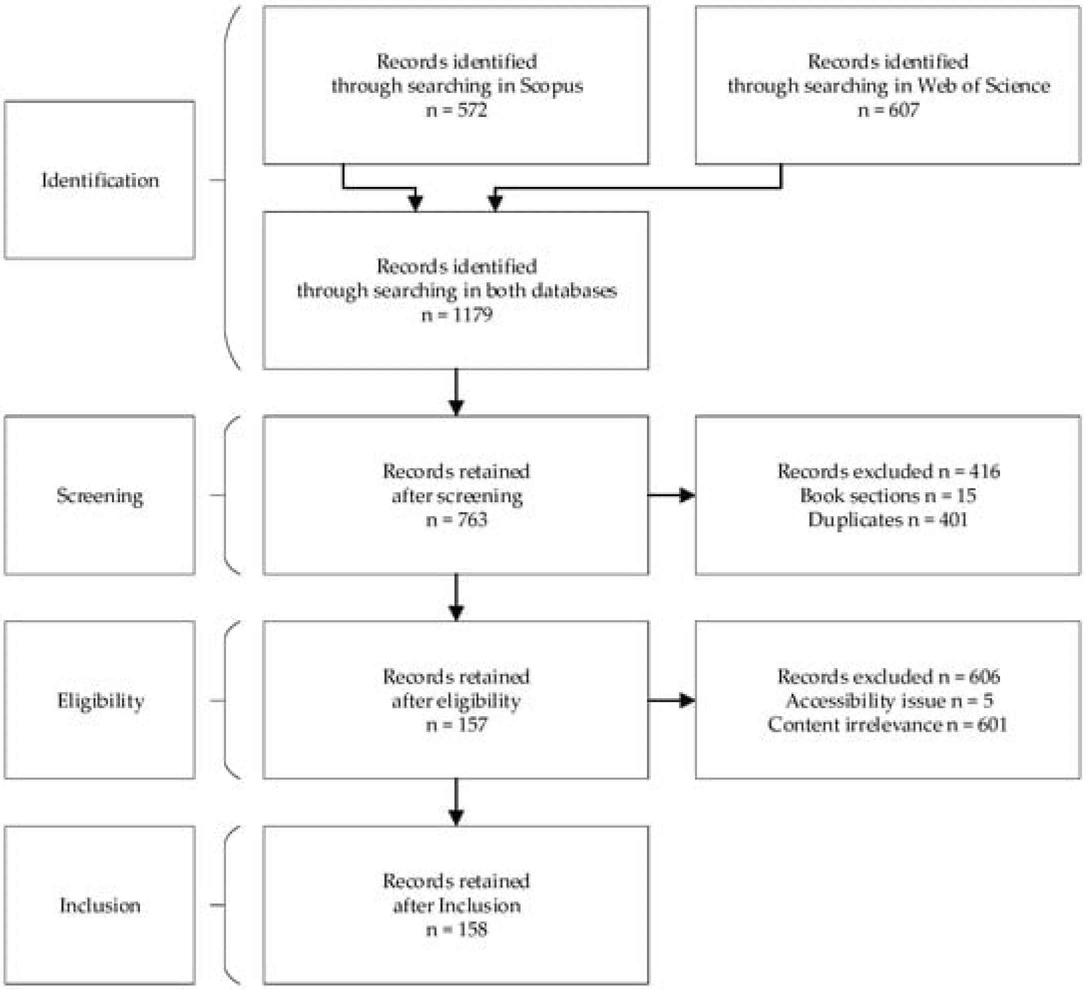


Figure 2. Flowchart of the PRISMA protocol.

A standard PRISMA protocol includes four stages: identification, screening, eligibility, and inclusion. In the identification stage, this review searches relevant English journal articles of all periods in the Scopus and Web of Science (WOS) databases, which cover most journals. Search terms are listed by block in table 1

In Scopus, the search scope includes the title, abstract, and keyword, and in WOS, the search scope includes the title, abstract, keyword, and keyword plus. To ensure reliability and quality, conference papers, book chapters, reviews, and so on, are excluded. After conducting the search on 31 December 2020, 572 articles from Scopus and 607 articles from WOS were identified for further stages.

At the screening stage, articles not published in peer-reviewed journals (e.g., conference paper, working paper, or book chapter) and duplicates were excluded due to concerns of reliability and quality. After

screening, 15 book sections and 401 duplicates were excluded, and 763 articles were identified for further stages.

At the eligibility stage, articles were viewed by title, abstract, keyword, and full text to assess the relevance to this review's theme. As a result, five articles were excluded for no access, 606 articles were excluded for content irrelevance, and 157 articles were identified for the final stage.

At the inclusion stage, the references of the 157 articles were checked to see if any of the literature had been missed. As a result, one article published in Marketing Science in 2011 was included.

In summary, 158 articles were finally identified and coded for content analysis. Due to the space limitation, the coding results were summarized into **Supplementary Materials** and uploaded to the journal's website for download, and the findings are presented in the following section.

Findings

General Characteristics of Existing Research

As illustrated in **Figure 3**, the first study on pricing strategies in SE was published in 2011, while 106 identified articles (67.1%) were published in 2019 and 2020. Furthermore, 86 journals covering management science, marketing, hospitality and tourism, transportation, economics, sustainability, computer science, and so on, were identified. **Figure 4** lists 13 journals with at least three identified articles published, in which 73 published articles were identified in total (46.2%). Additionally, seven articles were published in the UTD 24 Leading Business Journals. The remainders were published in journals well-recognized in related fields (e.g., *Journal of Economic Theory* and *Navel Research Logistics*).

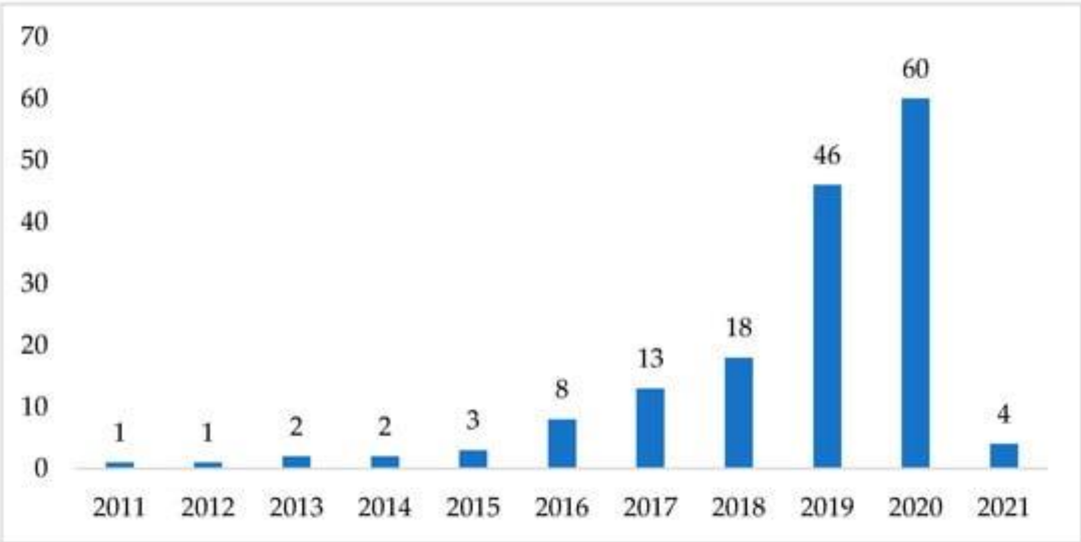


Figure 3. Volume of published articles by year.

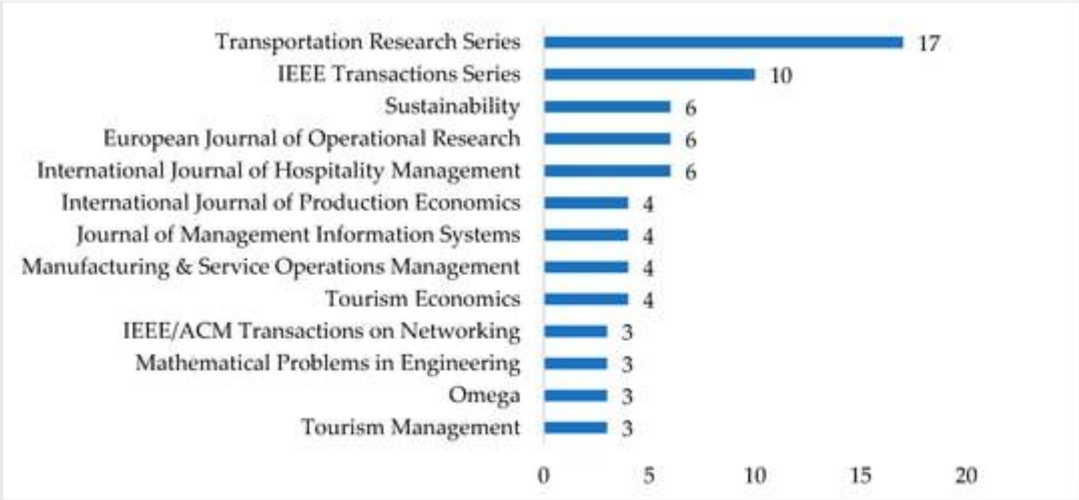


Figure 4. Volume of published articles by journal.

According to the proposed classification in **Section 2**, 158 identified articles were classified into nine sub-models covering 30 scenarios (see **Table 2**). In general, 106 identified articles (67.1%) investigated C2C sharing, and 59 articles (37.3%) investigated B2C sharing. Specifically, 48 C2C articles (45.3%) investigated provider pricing (mostly P2P accommodation), 45 C2C articles (42.5%) investigated intermediary pricing (mostly ride hailing), 36 B2C articles (61.0%) investigated provider pricing (mostly crowdfunding), and 19 B2C articles (32.2%) investigated requester pricing (mostly crowdsourcing).

As regards analytical approaches, 110 articles (69.6%) employ mathematical modelling, while the remainders employ quantitative analysis (43 articles, 27.2%), algorithm design (5 articles, 3.2%), and simulation (1 article, 0.6%). Pricing methodologies including supply–demand balance pricing (123 articles, 77.8%), optimization pricing (123 articles, 77.8%), auction-based pricing mechanisms (7 articles, 4.4%), fair cost allocation pricing (2 articles, 1.3%), and hedonic pricing (28 articles, 17.7%) are adopted. In articles that employ mathematical modelling, to precisely characterize participants' decision processes, scholars commonly adopt multi-period models (usually two periods), jointly with backward induction, which enables them to conduct optimization, linear program, equilibrium analysis, and comparative analysis. In articles that employ quantitative analysis, scholars commonly use statistical methods, including regression analysis and hypothesis tests, to investigate the pricing in P2P accommodation. As regards theories and methodologies, hedonic pricing theory is commonly employed in P2P accommodation articles, while game theory is widely adopted in mathematical modelling articles.

Content Analysis

In the sharing economy, each participant in both the product market and sharing market can conditionally obtain pricing capacity due to the scarcity of resources. When supply is lower than demand, suppliers obtain pricing capacity (i.e., the sellers' market); otherwise, demanders obtain pricing capacity (i.e., the buyers' market). In this review, manufacturer pricing, firm pricing, provider pricing, and intermediary pricing are sellers' market scenarios, while requester pricing is the only buyers' market scenario.

1.**Manufacturer Pricing**

Five articles (3.2%) investigated manufacturer pricing. In the supply chain, the upstream manufacturer's optimal price and production decisions are affected by the status of the product market, which may fluctuate with the appearance of the sharing market. Therefore, following backward induction, the manufacturer should first investigate latent consumers' preferences to predict market demand, then decide the price and production accordingly.

1.1 C2C Model

In the C2C model, considering the product's salvage value and potential moral hazard, forward-looking consumers may purchase products for self-use and share when vacant, or rent from owners when needed. Accordingly, the manufacturer decides the optimal price and the production capacity considering consumers' purchase decisions and costs of building the production capacity. When building costs are relatively high, moral hazard is relatively low, and the product's salvage value is relatively high; therefore, the manufacturer can benefit from the existence of the C2C sharing market. Furthermore, for a manufacturer that produces sequential innovation products, the existence of the sharing market suppresses the market performance of old-generation products.

In the scenario of vehicle sharing, sharing activities can improve vehicles' fuel efficiency, thus enabling the vehicle's original equipment manufacturer (OEM) to charge a higher wholesale price. This is similar to the "sharing premium" proposed by Weber.

1.2 B2C Model

In the B2C model, the firm that operates a B2C sharing business may incur product damage; therefore, the manufacturer can recycle damaged products at a recycling price. The manufacturer benefits from recycling when costs of recycling and reproduction are lower than those of directly producing new products. Additionally, both the manufacturer and the firm further benefit if they maximize their profits jointly (i.e., cooperation) as opposed to separately (i.e., non-cooperation).

2 **Firm Pricing**

Four articles (7.6%) investigated firm pricing. The firm can, on the one hand, sell products to consumers as a retailer, while, on the other hand, it can directly rent products to requesters as a provider. To maximize profit, the firm needs to strategically decide the retail price, product quality, and rental price (if they join the sharing market). In addition, sharing activities can

occur inside the firm's platform (i.e., internal sharing, e.g., Car2go) or through a third-party intermediary (i.e., external sharing, e.g., Airbnb).

2.1 C2C Model

Weber proposed that sharing activities can benefit owners (i.e., the sharing premium), thus enabling the firm to charge a higher price. If the firm provides products with high marginal costs (it should be noted that production costs are commonly set as the quadratic form of product quality; therefore, high marginal costs represent high product quality), the sharing premium can lead to a lower price increment, thus weakening the price effect (i.e., the demand loss due to the price increment), and the firm is stimulated to strategically improve the product quality; as a result, both the firm and consumers benefit from sharing. Otherwise, the firm can reduce the product quality enough to disable the sharing market. Additionally, under certain conditions, C2C sharing can benefit the downstream firm at the expense of the upstream manufacturer's profit loss.

In addition, the firm can sense, monitor, and authorize sharing activities through embedding intelligence in products (e.g., software license), to charge a sharing tariff. This can benefit the firm if the tariff can cover the loss caused by the price effect. In this scenario, the firm benefits more if marginal costs are high and requesters are less patient. When considering both the sharing tariff and the product durability, Weber proposed an optimal product design to balance the durability-driven use and price effect.

On the other hand, the firm can also encroach on the C2C sharing market as a provider. In the scenario of internal C2C sharing, the firm can join the sharing market if production costs are relatively high. In the scenario of external C2C sharing, the firm can join the sharing market if production costs are relatively high, entry costs and the population of high-use consumers are relatively low, or the number of requesters (i.e., the sharing culture) exceeds a certain threshold. If the firm decides to join, the firm will improve their product quality. Additionally, both internal and external C2C sharing can increase the sale demand, and external C2C sharing can lead to a higher rental price than internal C2C sharing. Furthermore, the firm can disable the sharing market by offering the sharing service at an overly low price.

In the scenario of information goods sharing (e.g., software), sharing activities are nearly costless; therefore, the firm can switch from targeting individual consumers to targeting sharing groups; in this way, the firm can charge a higher price for sharing groups and thereby benefit from the increased sharing activities.

2.2 B2C Model

In B2C sharing, the firm can encroach on the B2C sharing market as a business provider. In scenarios of both internal and external B2C sharing, the firm can join the sharing market if production costs are relatively high; furthermore, the production cost threshold of joining the internal C2C sharing market is higher than that of joining the internal B2C sharing market. Additionally, the firm should reserve more products for sale, or keep the rental supply at a low level. Compared to internal B2C sharing, external B2C sharing leads to a higher rental price.

Pei, Yan also discussed a scenario that contains both C2C and B2C sharing markets; in this scenario, the firm will always join the sharing market to compete against third-party sharing firms.

3.**Provider Pricing**

Eighty-four articles (53.2%) investigated provider pricing. Providers in the sharing market can be individuals (i.e., C2C model) or firms (i.e., B2C model). Intuitively, due to the lack of monopoly power, the pricing capacity of providers is weaker than that of manufacturers, firms, or intermediaries, and the pricing capacity of individual providers is weaker than that of business providers.

3.1 C2C Model

In the C2C model, individual providers provide products or services with reasonable quality to requesters at a lower price; this advantage is more obvious, especially when requesters are variety-seeking. In the C2C model, sharing activities are realized through the intermediary; in this process, information asymmetry and moral hazard may arise. Information can be disclosed through self-disclosure and the bilateral reputation system. To eliminate moral hazard, providers can set a higher price, and the intermediary can design a proper deposit and insurance scheme.

In practice, C2C provider pricing is adopted in scenarios of P2P accommodation, ride sharing, and crowdsourcing.

a. P2P Accommodation

Research on P2P accommodation pricing (e.g., Airbnb) commonly employs hedonic pricing theory. Research data are collected from airbnb.com or insideairbnb.com, or by web-scraping; jointly with hedonic pricing models, scholars have examined the impacts of massive factors on the rental price through regression methods (ordinary least squares regression (OLS), quantile regression (QR), geographically weighted regression (GWR), and panel data regression (PD)) and machine learning methods (random forest (RF) and conditional inference tree (Cotree)). By comparison, GWR performs better than OLS, while RF performs better than OLS and Cotree.

However, inappropriate model settings or variable selections can cause inaccurate estimations. Due to the concern of endogeneity, López, Mínguez employed the instrumental variable (IV) and maximum likelihood (ML) approaches. Additionally, Faye discussed incorrect estimations caused by endogeneity, sample segmentation, functional form, time heterogeneity, and spatial correlation. Accordingly, this review excluded seven articles that set multi-category variables without reference groups (e.g., accommodation type and cancellation policy), thus causing multicollinearity and resulting in incorrect estimation results.

Five types of variables were examined, namely, listing attribute, host attribute, listing reputation, rental policy, and listing location. Additionally, some macrolevel factors were also considered. Variables that significantly affect the listing's price are summarized in table 2, from

which some validated conclusions can be summarized: the number of bedrooms, number of bathrooms, accommodating capacity, superhot badge, and overall rating have positive impacts on the rental price; the accommodation type's impact on the rental price changes from positive to negative as the renter's private space shrinks, while counter-intuitively, the number of reviews has a negative impact on the rental price.

In addition, dynamic pricing is preferred by multi-listing and experienced hosts. However, although dynamic pricing is more profitable, a less dynamic pricing strategy is also widely adopted, under which multi-listing hosts can still profit more than nearby single-listing hosts by setting the rental price higher than that of nearby listings.

b. Other Scenarios

Provider pricing can also be adopted in ride sharing, crowdsourcing, and electricity storage sharing. In Ballecer, experienced drivers often set lower prices.

In the fashion industry, the platform can adopt crowdsourcing, that is, entrant designers post samples on the platform at prices set by designers for consumers to reorder; when the number of orders reaches the

minimum production quantity (MPQ), the platform arranges production. The profit is shared by both designers and the platform; therefore, to maximize the entire profit, the designer should set the price as low as possible if it is still profitable, and the platform should adjust the MPQ to production costs.

In electricity storage sharing, consumers purchase electricity storage equipment to store electricity in off-peak periods, then use it in peak periods or resell to others; therefore, electricity costs are redistributed. Employing backward induction and game theory, the consumer's optimal purchase decision can be transformed into a utility maximization problem, by solving which is the optimal rental price generated.

2. B2C Model

In the B2C model, business providers directly provide high-quality products or services at a high price to requesters. Theoretically, business providers should remain risk-averse rather than risk-neutral. Furthermore, it is unwise for providers to continue improving quality if related costs are already high.

In practice, business providers can share production capacity (crowdfunding and 3D printing sharing) or products (bike sharing, vehicle sharing, WIFI sharing, and electricity storage sharing) with requesters.

a. Crowdfunding

Compared with traditional investment, when products are costly in production but low in demand, crowdfunding is more friendly and more economical for small entrepreneurs to implement otherwise unfeasible projects. To investigate crowdfunding, Hu, Li proposed an

analytical framework as follows: a creator initiates a crowdfunding project to raise production funds by sharing its production capacity to backers; backers sequentially complete two processes—they perceive the product value as high (H) or low (L), and make the joint decision as to whether their expected utility is higher than the perceived value; the project is realized if the financial target is achieved. This analytical framework lays the foundation for subsequent research.

As regards the funding scheme, the creator can choose the All or Nothing (AON) scheme or Keep It All (KIA) scheme. If the financial target is not achieved, under AON, all funds will be refunded, while under KIA, the creator can keep the funds and close the project, or start production at a lower quality.

Comparing AON and KIA, AON yields a higher expected profit and a higher success rate, while under certain conditions, KIA yields a higher financial target and a larger price discrepancy. Additionally, both AON and KIA lead to a lower quality difference than the traditional selling scenario. KIA is more suitable when the project is scalable and the risk of starting an under-resourced project is mitigated. However, if altruistic backers, who will donate the unachieved portion if the fundraising fails but the raised funds exceed a certain threshold, exist in the market, the creator will be stimulated to choose AON. Furthermore, Guan, Mu proposed a hybrid scheme, which allows the creator to keep a portion of funds if the fundraising fails. By comparison, AON performs better when the backer's valuation is discrete, while the hybrid scheme performs better when the backer's valuation is continuous.

As regards the pricing strategy, the creator can choose uniform pricing, margin pricing, volume strategy, intertemporal pricing, or menu pricing; each of the pricing strategies can be optimal within certain parameter sub-spaces. Additionally, under intertemporal pricing, a profit-maximizing creator can set an early bird price in the early period, or strategically adjust the price in the late period based on the market performance of the early period.

To fulfil different backer segments' needs, the creator can set different package sizes (e.g., large or small). The creator can raise more funds by reducing the size of the large package and narrowing the price gap between two package sizes. Furthermore, when backers have different tastes, the creator can charge a higher price for taste products, but if the risk of the uncertainty of backers' preferences for quality is high, the creator should not decide product quality in the early period.

Apart from the sequential arrival scheme, the creator also allows backers to arrive simultaneously. When the perceived value is low or the difference between H and L is relatively small, the creator benefits more from the simultaneous arrival scheme; otherwise, adopting the sequential arrival scheme is more profitable.

As regards the crowdfunding intermediary, an intermediary with higher competitive strengths (i.e., lower unit costs and a lower commission fee) can help creators achieve a lower price, higher profit, and higher product quality. Additionally, the intermediary should charge the same ratio for different crowdfunding projects.

To expand the market potential, the creator can advertise strategically, and more funds will be invested into improving the advertising level when market demand increases. Additionally, the creator tends to set a higher price when demand is low, and as demand expands, menu pricing or a lower price are preferred to guarantee the success of the project.

Crowdfunding is also introduced into other scenarios, such as flight ticket selling, cloud computing resource sharing, and green crowdfunding products, wherein it performs better than traditional models.

b. Bike Sharing

Bike sharing and vehicle sharing are typical free-floating practices, that is, requesters can rent and return bikes or vehicles at different stations. To attract more requesters, a bike sharing firm strategically prices the rental service considering the requester's time sensitivity (i.e., availability and costs) and the government subsidy, as well as the perception of convenience (i.e., hassle cost). Furthermore, the firm can design a proper pricing scheme to stimulate requesters to return bikes to underused stations, thus rebalancing the unbalanced inventories among stations. In some cases, the price can be negative. This scheme can reduce the number of unbalanced stations, while some imbalanced stations may intentionally become more unbalanced, and can be set as "hub stations". As a result, the firm can benefit from adopting this dynamic pricing scheme if costs of the price incentive are lower than those of hiring trucks and dedicated staff.

c. Vehicle sharing

In vehicle sharing, providers are divided into light asset firms (i.e., firms that do not possess vehicles) and heavy asset firms (i.e., firms that possess fuel-driven or electric vehicles). Light asset firms operate vehicle sharing services by renting vehicles from a joint venture that possesses heavy inventory at a rental price.

As regards heavy asset firms, fuel vehicle firms can offer renting vehicles only, or renting vehicles and parking spaces to requesters, wherein parking spaces are rented from owners. By comparison, the bundled scheme yields more profit and social welfare Electric vehicle (EV) firms possess EVs and limited parking and charging lots. To stimulate requesters to park EVs in underused stations, the firm can design a proper pricing scheme considering the mobility of EVs, charging scheduling, and the electricity price; therefore, the pricing problem can be transformed into an optimization problem under constraints of limited parking lots, charging scheduling, and so on.

d. Other Scenarios

In 3D printing sharing, employing data mining and machine learning approaches, Pahwa and Starly proposed a feasible pricing method that considers a provider's experience, capability, and reputation.

In WIFI sharing, a firm can offer renting indoor WIFI devices only, renting outdoor WIFI sharing only, and the bundled service. Due to the network's externality, if the firm can keep

total costs of installing devices and providing internet services at a relatively low level, offering the bundled option is the optimal strategy.

In electricity storage sharing, it is costly to purchase electricity storage equipment; therefore, a profit-maximizing firm can provide both retail and rental options to consumers, benefitting both the firm and consumers.

Intermediary Pricing

Forty-five articles (28.5%) investigated intermediary pricing. In this scenario, the intermediary needs to match requesters and providers, price the sharing service according to real-time supply–demand status, and post the price to both sides; a transaction is reached if both sides accept the posted price, and the intermediary charges a commission fee. A for-profit intermediary can strategically charge a fixed or flexible commission fee to providers, requesters, or both; charging a flexible commission fee to both (i.e., dynamic pricing) is the optimal strategy. To maximize the profit, the intermediary needs to ensure that the market is cleared; therefore, if the price and the usage capacity increase, or the retail price decreases, the intermediary needs to charge a higher commission fee to providers, and a lower commission fee to requesters, or vice versa.

In practice, the free-customers-commission strategy (FCC) and the dynamic-customers-commission strategy (DCC) are also widely adopted. Under the FCC, the intermediary charges a fixed commission fee to providers only, while under the DCC, the intermediary charges a fixed commission fee to providers and charges a flexible commission fee to requesters. By comparison, DCC benefits providers but disadvantages requesters, while FCC benefits both, which explains why mature intermediaries prefer DCC, while start-up intermediaries prefer FCC.

When dealing with massive requests that arrive quickly, the intermediary needs to ensure timeliness, real-time updating, high efficiency, and profit maximization. Correspondingly, the intermediary can adopt dynamic pricing, surge pricing, or static pricing (see table 2 for differences), among which adopting dynamic pricing is optimal. Additionally, adopting surge pricing is more profitable than adopting static pricing when demand exceeds supply; otherwise, both strategies are equivalent. In practice, surge pricing and static pricing are preferred due to higher feasibility. Under surge pricing, it is optimal for the intermediary to increase the price when demand increases, and increase the pay-out ratio when requesters are losing patience. When supply decreases, the intermediary can subsidize providers or increase the pay-out ratio to recruit more providers. When both demand and supply increase at nearly the same rate, the intermediary should reduce the pay-out ratio. Additionally, under the first-come-first-serve scheme, forward-looking providers and requesters can wait for a better price; correspondingly, the intermediary can compensate waiting costs with price adjustments, through which both providers and requesters become myopic.

In some scenarios, users can switch their status between providers and requesters, or transfer to other platforms. Correspondingly, the intermediary needs to find the equilibrium price to balance both sides and compete against other intermediaries, through which social welfare is always improved.

a. Ride Sharing

Ride sharing offers a solution to congestion during peak hours and the “first-mile” problem to nearby transit hubs. In ride sharing, a driver can share spare seats and travel costs with only one rider (i.e., non-pooling) or at least two riders (i.e., pooling). Both sharing forms can lead to an efficient equilibrium, but considering the monopoly optimum, the social optimum, and the second-best optimum, the pooling form yields a lower travel fare than the non-pooling form.

As regards the pricing strategy, intermediaries can adopt auction-based pricing or rule-based pricing. Under auction-based pricing, the price is generated from the real-time auction; matching and pricing are realized simultaneously when both sides accept the auction-based price. The intermediary can post drivers’ biddings to nearby requesters, or post requesters’ biddings to nearby drivers, while neither considers the supply–demand unbalance problem, thus decreasing requesters’ utilities. Correspondingly, Zhang, Wen proposed a pricing mechanism based on a trade reduction double auction, which is proved to be individually rational and incentive compatible. Additionally, Yan, Lee [145] proposed a pricing mechanism based on the Vickery–Clarke–Groves (VCG) auction, under which properties of economic efficiency, budget balance, incentive compatibility, and individual rationality are realized.

Under rule-based pricing, the price is divided into travel costs and inconvenience costs (i.e., extra travel time due to detour and extra waiting time due to possible early arrival). Following the mechanism design, problems of matching, pricing, and routing can be transformed into the minimization of travel costs and the maximization of users' general utilities under the constraints of individual rationality (i.e., utility non-negative and price non-negative) and incentive compatibility (i.e., truth-telling).

At the operational level, Cao, Hou and Zhang, Xie proposed two pricing and matching algorithms. Furthermore, Yan, Zhu proposed a novel dynamic pricing algorithm, named dynamic waiting, which allows drivers and riders to wait or leave before dispatch, thus mitigating the price variability and improving social welfare and system efficiency.

b. Ride Hailing

Like taxi drivers, a ride hailing driver takes riders to their destinations for a living. Ride hailing intermediaries include light asset intermediaries (i.e., intermediaries that do not possess vehicles) and heavy asset intermediaries (i.e., intermediaries that possess vehicles); individual providers who own vehicles can join light asset intermediaries, while non-owners can join heavy asset intermediaries. Additionally, light asset intermediaries can enable non-owners to provide ride hailing services by cooperating with car-rental companies; if the commission fee is high, or the fixed pay-out ratio is low, this cooperation can yield a win–win–win outcome.

As regards the pricing strategy, the intermediary can adopt dynamic pricing, surge pricing, or static pricing (see table 3), among which dynamic pricing maximizes the profits of both the intermediary and the drivers. Meanwhile, surge pricing yields a nearly optimal profit for the intermediary and benefits both the intermediary and drivers; furthermore, a more flexible price

and pay-out ratio can bring more profit to the intermediary. However, when considering the utility of requesters, controversies arise. Zha, Yin proposed that, under surge pricing, requesters incur utility losses caused by the expanded price, while Cacho, Daniels claimed that surge pricing yields a lower price during normal hours and expanded access to ride hailing services during peak hours; therefore, surge pricing also benefits requesters.

The intermediary faces the problem of spatial–temporal supply–demand imbalance as well. To balance the supply–demand status among areas, the intermediary can first predict market demand, then adopt spatial discriminatory pricing accordingly (i.e., set a higher price in high-demand areas to stimulate vacant drivers to move to high-demand zones for more profits). In this way, even when demand is still not fulfilled, the intermediary still profits more from charging a higher price in less-supplied areas. Additionally, to ensure enough drivers move to less-supplied areas, the intermediary can strategically set the surge price high enough to throttle demand in over-supplied areas.

As regards matching, the intermediary can adopt the first responding driver policy, which benefits requesters, or the closest driver policy, which benefits the intermediary and drivers. Moreover, it should be noted that matching and pricing should be optimized jointly; simply considering each side alone can lead to a subpar overall profit. Therefore, Ozan and Ward proposed a continuous-linear-program-based matching policy (CLP), which matches riders with farther drivers to maximize the number of matched pairs in the future. By comparison, this policy performs better than the closest driver policy.

For the intermediary that possesses autonomous EVs, the optimal pricing problem can be transformed into a profit maximization problem under the constraints of charging scheduling, electricity price, and routing. In this scenario, adopting static pricing can lead to a longer waiting time and a lower profit; correspondingly, Turin, Pedersen, and Al-Kanj, Nascimento proposed different real-time dynamic pricing policies.

In a developing economy with limited initial assets, the intermediary should subsidize drivers to stimulate them to stay in the ride hailing system and continuously provide services. In the long run, this subsidy policy benefits both the intermediary and drivers.

c. Other Scenarios

In WIFI sharing, the intermediary can adopt discriminatory pricing (i.e., differentiated pricing) or uniform pricing. Under incomplete information, adopting discriminatory pricing is optimal, while adopting uniform pricing is more feasible and yields an asymptotic optimal outcome. Additionally, if the discriminatory pricing scheme is simple enough (e.g., only two prices), then it is both feasible and more profitable.

In parking space sharing, the optimal price can be generated by solving the social cost minimization or the intermediary's profit maximization. Furthermore, the government's subsidies and regulations for the intermediary can yield a nearly social-cost-minimizing result.

Delivery sharing derives from ride hailing, wherein "riders" are products. In delivery sharing, the intermediary can adopt membership-based pricing, transaction-based pricing, or cross-subsidization (i.e., the platform simply subsidizes the deliveryman exactly the amount the requester pays in each transaction, and gains the profit only from the membership fee). When no time-varying discount is offered and requesters' order frequency is price-insensitive, these three strategies are equivalent. However, adopting membership-based pricing is still optimal for collecting money the earliest and maximizing the price-sensitive order frequency.

In computing resource sharing, Meng, Zhu proposed the following pricing approach: the intermediary first announces a basic price, then providers and requesters update their optimal amount of supply and demand; the price is also updated in a timely manner, and this process is repeated until the price is stable. Additionally, Wang, Wang proposed an approach based on computational latency, wherein the quality-of-experience performance is considered. Both approaches maximize all participants' profits and ensure system efficiency.

Mostafavi and Dehghan investigated a scenario in which users can share their bandwidths with others based on a non-cooperative game, and correspondingly proposed a double auction mechanism to generate the sharing price and govern the bandwidth sharing market.

4.2.5. Requester Pricing

Nineteen articles (12.0%) investigated requester pricing. Requester pricing is a typical buyers' market, wherein requesters can decide the payment. Requester pricing is adopted in scenarios of parking space sharing and crowdsourcing.

a. Parking Space Sharing

In parking space sharing, parking space owners can temporarily exchange their parking spaces with other owners for free, or rent at a rental price to the intermediary that operates the parking space sharing service. Based on first-price and second-price sealed auctions, Tan, Xu proposed a sequential auction mechanism, which enables the intermediary to allocate parking spaces to requesters at a price; the allocation price can then be referenced by the intermediary when setting the rental price.

b. Crowdsourcing

Crowdsourcing offers requesters an alternative solution to accomplishing massive and repetitive tasks. In crowdsourcing, the requester posts tasks, and corresponding rewards on a platform for workers to accomplish and receive. Note that adopting monetary rewards performs better than adopting non-monetary rewards. Therefore, determining how to price massive tasks profitably and efficiently is important; thus, automated agents are employed. Azaria, Aumann proposed two automated agents, namely, the reservation-price-based agent and the no-bargaining agent, the simulation results of which show that both automated agents outperform human experts.

To ensure task assignment, task accomplishment, budget control, and quality control, the requester needs to price tasks strategically. Based on an asymmetric all-pay auction, Luo,

Kanhere proposed a reward-based incentive mechanism with properties of strategy autonomy, individual rationality, and incentive compatibility; under this mechanism, heterogeneous workers behave homogeneously. Gonne, Rabin proposed a descending pricing function that is sensitive to the supply–demand status, under which workers accomplish their tasks in a timely and efficient manner.

Workers' payments are decided based on their arrival sequences, their reputation observed from their previous work, and the quality of accomplished tasks. In some cases, workers can bid their expected payments, and the requester decides workers' actual payments by considering their biddings and reputation jointly. To incentivize workers to bid truthfully, Duan, Yan designed a VCG-auction-based mechanism, which is proved to be individually rational and computationally efficient. Furthermore, after tasks are accomplished, the requester can reprice tasks based on the quality of accomplished tasks, to control quality and costs

In addition, employing regression methods, Li, Li and Hao, Guo examined the impacts of factors including workers' average distance from the given task point, distance between locations of tasks, workers' credit and reputation, workers' density within the given area, and tasks' density within the given area.

Imbalance problems occur if workers strategically accomplish nearby tasks (e.g., sensing geographical data or photographs). To encourage workers to accomplish remote tasks, the requester can announce a price in the early period, and reprice the unaccomplished tasks in the late period. However, this pricing scheme may cause an expanded budget and reduce the attractiveness of early period tasks; therefore, Shi, Zhao proposed a

price mediation mechanism based on an optimal branch-and-bound algorithm, under which requesters' profits, workers' profits, and social welfare are maximized. Furthermore, Zhou, Chen also proposed a novel dynamic pricing iterative algorithm that prices tasks considering their supply–demand status.

In hierarchical crowdsourcing networks, imbalance problems occur as a herding phenomenon (i.e., a portion of reputable workers are overloaded, while others are idle). Correspondingly, Yu, Miao proposed a Lyapunov-optimization-based decision support approach, which allocates tasks and payments reasonably, considering workers' reputation, workloads, eagerness to work, and trust relationships with others

5 Discussions

Research Gaps

As reviewed above, employing empirical and mathematical approaches, scholars have successfully investigated pricing strategies in various SE scenarios. However, there are still some gaps to fill. First, in mathematical modelling articles, scholars commonly assume that the market information is complete, while information asymmetry is closer to reality. Second, the

existing literature mainly discusses interactions among different parties (e.g., providers and requesters, firms, and consumers), while competitions within the same party (e.g., competitions among providers) are rarely discussed. Third, in some empirical articles, dependent variables and independent variables are causal to each other (i.e., mutual causality); therefore, endogeneity arises. Additionally, some of the literature directly compares the estimation results of the same model with different sample data, and such comparison conclusions are statistically unreliable.

Manufacturer Pricing

In the supply chain, the manufacturer needs to collect market information as the basis of setting the optimal price and production capacity. Information can be collected by the manufacturer at a cost, and/or by sharing from the downstream firm who has limited information (e.g., sales data). To incentivize the firm to share the information truthfully, a properly designed mechanism is needed. If the downstream firm chooses not to share, the manufacturer can still infer the information from the firm's retail price. However, the manufacturer's optimal information sharing strategy and mechanism design are still investigated. This interaction can be characterized as a coopetition game by employing backward induction and signalling games.

Firm Pricing

As mentioned above, the downstream firm and the manufacturer can strategically choose whether to share the market information with each other. The firm can also infer the information from the wholesale price, and then decide their retail price accordingly. Furthermore, if the firm chooses to join the sharing market, it also needs to collect the sharing market's information by itself at a cost or by inferring it from competitors' pricing decisions (e.g., incumbent third-party sharing platforms). Similarly, these coopetition or competition games can also be characterized by employing backward induction and signalling games. Moreover, it is worth mentioning that the signalling game has been widely employed in research on supply chain management and online platforms; however, it has not been introduced into research on SE.

Provider Pricing

Weber discussed the ex-post information asymmetry (i.e., moral hazard) and the external competition (i.e., the competition between Airbnb listings and hotels) in the scenario of P2P accommodation, while the internal competition (i.e., competitions among providers in the sharing market) is not discussed thoroughly. Furthermore, in B2C sharing, moral hazard, the competition among providers, and their effects on providers' pricing decisions are not discussed. As regards research on specific scenarios, such as P2P accommodation, bike sharing, vehicle sharing, and crowdfunding, theoretical and empirical gaps still exist.

1. P2P Accommodation

In practice, Airbnb listings and hotels compete against each other, which implies that mutual causality exists between their pricing decisions; therefore, endogeneity arises. To characterize this pricing interaction and eliminate endogeneity, a simultaneous equation model (SEM) can be employed. Additionally, some of the literature directly compares the estimation results of the same model with different sample data, and such comparison conclusions are statistically unconvincing. There are three approaches to compare estimation results of the same model with different sample data: (1) Chow test (i.e., introducing a dummy variable and cross term), (2) SUEST (i.e., hypothesis test based on seemingly unrelated regression), and (3) Fisher's permutation test (i.e., hypothesis test based on regressions of bootstrap samples). With these models and approaches, a more accurate and reliable regression analysis can be conducted.

Theoretically, due to the lack of market information and professionality, it is not easy for individual hosts to price their listings accurately. Contrarily, Airbnb holds the market information (e.g., sales data) and can, therefore, post a suggested price to hosts as a reference. Correspondingly, hosts may accept the suggested price, infer the market information if they value it as reasonable, or ignore and price listings independently if they value it as overly low. However, how Airbnb decides the suggested price, how hosts react to the suggested price, how hosts advertise their listings (i.e., the truthfulness of self-disclosure), and how hosts decide the optimal price are still investigated problems. Furthermore, the internal competition (i.e., the competition among nearby Airbnb listings) and the external competition (i.e., the competition between Airbnb listings and hotels) under asymmetry of information are still investigated. These problems can be characterized by employing cheap talk and signalling games.

2. Bike Sharing and Vehicle Sharing

Some scholars mention government subsidies on bike sharing and electric vehicles, while the government's subsidy strategy is not discussed. In scenarios of bike sharing, bikes are often parked in public areas; according to Coase's theory of property, to avoid "the tragedy of the commons", the government can clarify the ownership of the public area's property right. On the other hand, the government can also subsidize firms, requesters, or both to improve social welfare, but which subsidy strategy is optimal in terms of budget and operation is still not discussed. Additionally, scholars have investigated the competition between firms and the public transportation system, while the competition among firms has not been investigated, nor has the moral hazard that firms face (e.g., potential damage to bikes and vehicles).

In practice, firms often adopt discriminatory pricing in different market segments. Inspired by hedonic pricing theory, a hedonic-pricing-like model can be employed to empirically examine the impacts of a product's attributes (e.g., vehicle information, covered area, and sharing policy) and users' reviews on the sharing price.

3. Crowdfunding

In crowdfunding, backers are usually unaware of product quality; therefore, ex-post information asymmetry arises. Backers may change their minds if they consider the risk of quality uncertainty; thus, the creator needs to adjust their funding **and** pricing strategies accordingly. Furthermore, the impacts of the creator's pricing strategy, funding strategy, product design, and other attributes (e.g., reviews, ratings, product descriptions, and number of product photos) on the crowdfunding project's success rate at different price intervals have not been investigated. To investigate such impacts, discrete choice models (DCM) (e.g., logistic model and probit model) can be employed.

Intermediary Pricing

In intermediary pricing, ex-post information asymmetry can arise if either providers or requesters do not fulfil; their obligations. Such moral hazard can affect the decisions of both sides, thus causing supply–demand status changes in the sharing market, and results in price fluctuation. Additionally, the role that the intermediary can play in eliminating moral hazard has been discussed in provider pricing by Weber [115], while similar research remains absent in intermediary pricing.

• → Ride Sharing and Ride Hailing

If drivers or riders do not fulfil their obligations, such as cancelling orders or detouring intentionally, which compensation and punishment mechanism can be designed has still not been discussed. Additionally, in practice, the intermediary controls service quality by issuing licenses, scheduling routes, and installing monitors, which generates more operating costs, while these efforts' effects on users' purchase decisions and the intermediary's trade-off have not been investigated. Furthermore, the internal competition (i.e., the competition among nearby drivers) and the external competition (i.e., the competition between ride sharing and ride hailing and the taxi industry) have not been investigated either.

Despite the fruitfulness of the theoretical research, empirical research is rarely conducted, including research on the profitability difference between dynamic pricing (e.g., ride hailing platforms) and static pricing (e.g., the traditional taxi industry). Batterman and Qian empirically validated that the surge multiplier is affected by weather conditions, traffic conditions, and public events, while regional factors (e.g., the departure and destination locations and trip distance), time factors (e.g., peak hours), and macro factors (e.g., local income level, local taxi price) were not examined. Additionally, Faraj Allah, Hammond examined factors that affect a driver's pricing decision in Ballecer by adopting a hedonic-pricing-like model, which inspires the idea that hedonic-pricing-like models can also be employed to empirically investigate pricing strategies of different market segmentations (e.g., express service and select service provided by Didi).

Requester Pricing

Different from other scenarios, requester pricing is a typical buyers' market. In requester pricing, the requester can directly decide prices of tasks when their pricing capacity is strong enough or post their requirements for workers to bid if their pricing capacity is weak. In the second scenario, the reverse auction can be employed to design a proper mechanism to stimulate workers to bid truthfully

Research Extension

Indeed, practices of SE are becoming increasingly mature and diverse. However, it is still worth exploring whether the business form of SE can be applied to more traditional business scenarios and whether new pricing methodologies can be applied to existing sharing scenarios. Moreover, under the back-and-forth situation of

COVID-19, how participants, especially beneficiaries, are affected by the epidemic, and what they should do to survive the dilemma remain challenging questions.

Scenario Extension

In some scenarios, providers will face vast requesters in the predictable future (e.g., seasonal tourism); therefore, shared products can be in extreme scarcity. In addition to dynamic pricing, auction-based pricing is also feasible in such scenarios, but it is still not discussed. Contrarily, when no provider shows intention to share, the requester can increase the posted price to stimulate latent providers or adopt a reverse-auction-based mechanism, which is like crowdsourcing, but related research remains absent. In addition to crowdfunding flights, other sharing scenarios, such as crowdfunding a long-term rental apartment, are also worth being investigated, and other new practices are also worth discussing, such as sharing a portable charger.

Under COVID-19

What impacts has the epidemic caused? What actions should be taken under the "new normal" situation? What will SE be like in the post-epidemic era? Under the COVID-19 situation, these three questions need to be answered. In scenarios that are affected by the epidemic the most (e.g., P2P accommodation and ride sharing), to assess the epidemic's impacts, difference-in-difference (DID) and regression discontinuity design (RDD) approaches can be employed. As regards the unemployment caused by the epidemic, SE can offer more jobs to the unemployed, like what SE offered after the financial crisis in 2008. Furthermore, in the post-epidemic era, how SE will be organized (e.g., more remote, and self-service activities and consumption, and less direct contact) is an interesting and practical topic.

5.3. Limitations

Despite the work this review has accomplished, there are still some limitations. First, although this review identified 30 scenarios, only seven scenarios were investigated

intensively; therefore, other scenarios are neither sufficiently investigated nor sufficiently reviewed. Second, due to the space limitation, technical details of the existing literature are not fully presented; if readers are interested in technical details, please refer to related original articles. Third, due to the lack of related systematic knowledge in some fields (e.g., algorithm), this review is not able to provide comments, or propose gaps or future directions from these perspectives.

Two clusters strategy's comparison.

	Foshan, China	Sassuolo, Italy
Cluster paradigm	Cost, economic scale, customized OEM	Style, design, image, tacit knowledge
Main competitive advantage	Cheap price, Brand image for domestic market, Competence of sales reps Customer service; quick delivery	Design and technological leadership new applications for tiles Mergers and acquisitions Diversified brands image, Made in Italy Competence of sales reps Customer service; quick delivery
Distribution channel	Building materials supermarket (international exhibitions) Independent distributor, construction company	Independent distributor, home-centre retailer, construction company, company-operated sales centre, specialised retail shops offer specification and installation services
Vertical integration	Low	Medium to high
Industrial structure	Few groups, mostly independent private-owned SMEs	Holdings of several specialized, legally independent firms
Internationalization strategy	Big firms major in domestic market; global export mostly by SMEs	Global presence in all potentially relevant markets FDI in main markets

Harrison, Kelley, and Gant (1996) for a good summary. "Static" agglomeration economies consist of a local concentration of customers (or downstream firms) sufficient to permit suppliers to achieve economies of scale in production or distribution, large enough for local firms to amass sufficient demand to warrant the provision (usually by or through local governments) of specialized infrastructure and large enough to realize a specialized local division of labour. So-called dynamic agglomeration economies consist of advantages in terms of technological learning and improvement.

Other management and economics literatures (e.g., buyer-supplier relationships, outsourcing or partnering, co-opetition [i.e., network effects and complementarity], innovation, the diffusion of innovation, transaction costs, a literature that examines organizational incentive problems that stand in the way of efficiency) explore the mechanisms through which clusters affect productivity and innovation. However, little of this thinking connects to location in spite of the fact that proximity clearly affects the ability to harness linkages and the size of transaction costs.

There is strong empirical support for spill over effects among firms and between universities and firms in R&D and innovation. See Audretsch and Feldman (1996); Harrison, Kelley, and Gant. (1996); and Jaffe, Trajtenberg, and Henderson (1993).

Creating Your International Pricing Strategy

It goes without saying, it is important to regularly review your pricing and you may use a combination of the pricing strategies. Paul McIntosh, Founder of Bridgehead advises, "At the end of the day, you must find a price that your customer is willing to pay, whilst offering any middlemen such as wholesalers/retailers the margins they desire. You must cover your own internal costs, as well as hit your margin targets. Setting a pricing strategy is a team effort and a fundamental part of your overall Go-To-Marketing Strategy." Make sure your go-to-market strategy is successful – we will develop & implement it, achieving quantifiable results within 90 days, guaranteed.

Conclusion

Globalization has encouraged productive fragmentation and intermediate product exchanges. The growth trajectory and local development outcomes of international firms of Sasol have combined the external links that incorporate district firms into global commodity chains. Hervas-Oliver and Albors-Garrigós interviewed over 60 managers with R & D background in the Castellon and Emilian for identified a cluster's resources and capabilities. Their research result had indicated that skilled labour availability, social capital, linkages, business sophistication and network effects composed a unique set of resources and capabilities to derive industrial clusters achieved a certain performance level. Porter regarded clusters should combine with theory of competition to conduct localized or specialized competitive strategy in a global economy.

Unlike the other ingredients of the marketing mix, price generates revenue, so arriving at the correct price is vital to the success of the business. However, there is no one magic pricing strategy that will guarantee success, so a firm should be constantly researching the market to identify a correct policy for its product or service.

One crucial factor to recognise at the end of this section is that firms may use a **Combination of pricing strategies** in response to changes in the market and the marketing activities of competitors.

- Whenever you are thinking about **PRICING** think about **ELASTICITY**.

-the two go together like complementary goods! No pricing change should be made without reflecting on the effect on sales revenue and profit, caused by consumer reaction to the change. Do not forget that reducing price can lead to an increase in sales revenue if the market is very price sensitive.

- No firm works in isolation so a change in price may be met by a similar reduction by competitors, so changing the nature of elasticity and the significance of revenue changes.

REFERENCES

- www.sanandres.esc.edu
- bridgeheadagency.com
- https://www.yumpu.com/en/document/view/49670155/ceramics-and-sanitary-ware-export-strategy-enpdf-imc
- www.researchgate.net
- www.scirp.org
- www.ism.edu
- https://www.leadershipreview.net/why-its-time-to-review-your-pricing-strategy/
- www.hrjohnsonindia.com
- www.kajariaceramics.com
- https://www.hrjohnsonindia.com/
- https://www.somanyceramics.com/
- https://www.aglasiangranito.com/
- https://www.nitco.in/
- https://www.orientceramic.com/
- https://www.eurovitrified.com/
- https://www.orientbell.com/
- https://www.naveentile.com/murudeshwar-ceramics-limited/