



CHEMICAL INDUSTRY MANAGEMENT STRATEGIES THOURTH DIGITAL BUSINESS AND DIGITAL MARKETING IN THAILAND

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Abstract

The goals of this research were to 1. Analyze the current condition of the chemical industry, 2. Analyze the components of digital chemical industry management, 3. Examining the digital chemical industry business management strategy. This analysis relied heavily on quantitative techniques. Four hundred different industry owners were given surveys. Statistics include things like frequency distributions, percentages, means, variances, and KMO (Kaiser-Meyer-Olkin Measure of Sampling Adequacy). The research showed that retail establishments, online marketplaces, and courier services are all standard features for companies operating in the chemical sector today. In addition, businesses achieve a variety of benchmarks. The research also shows that Thai consumers make up a disproportionately large portion of the culinary sector's market share compared to their overseas counterparts. The majority of financing comes from private individuals. A recent study of the components and strategies of chemical industry management via digital platforms found that digital strategy management consists of two factors: a marketing mix with three main sections and 16 sub-components, and a marketing mix with three main sections and three main sections, namely information technology quality. Thai workers make up a significant portion of the current industry workforce. The standard for service quality has eleven components, whereas the promotion of the service has five. There are 22 subcomponents to an online platform, the first main component of digital business and marketing, and three subcomponents to data and technology, the second major component.

Keywords: Strategy, Chemical Industry Management, Digital Business, Digital Marketing

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Introduction

The chemical industry (J.-F. Yang et al., 2023) is a global, continuously evolving industry. Chemical companies must employ new management strategies and digital marketing techniques to remain competitive. Innovation is one of the most essential management strategies for chemical companies. Companies in the chemical industry must create novel products and services to satisfy customer demands. Additionally, they must invest in research and development to remain competitive (Martín, 2022). Sustainability is another essential management strategy for chemical companies. Chemical companies must reduce their environmental impact and develop environmentally friendly products. Additionally, they must be transparent regarding their environmental practices. Chemical companies must use a variety of digital marketing channels to reach their target audience (Li et al., 2023). They must have a robust website that is search engine optimized. In addition, they must utilize social media, email marketing, and paid advertising to reach their target market. Chemical companies can remain competitive in the global marketplace by implementing new management strategies and digital marketing techniques. Here are some additional specifics regarding each of the management strategies and digital marketing techniques that chemical companies may employ: Innovation: Chemical companies must invest in R&D to create new products and services that satisfy the requirements of consumers (P. Yang et al., 2023). Additionally, they must be inventive in their marketing and sales strategies. Sustainability: Chemical companies must reduce their environmental impact and create environmentally secure products. Additionally, they must be transparent regarding their environmental practices. Website: Chemical companies must have a robust website that is search engine optimized. The website must be user-friendly and contain information about the company's products and services. Using social media, chemical companies can communicate with their target audience and promote their products and services. They can utilize social media to share company news and updates, as well as operate contests and promotions. Email marketing: Chemical companies can use email marketing to maintain consumer relationships

and promote their products and services. They can send newsletters, promotional emails, and emails for abandoned shopping carts. Chemical companies can reach their target audience on search engines, social media, and other websites through paid advertising. They can publicize their products and services, generate prospects, and increase website traffic through paid advertising. Numerous industries, including the chemical industry, have undergone significant changes to their operational procedures since the advent of the digital age. This industry, once renowned for its traditional manufacturing and distribution practices, is now at the forefront of digital transformation. The pervasiveness of digital technology has had a substantial impact on how businesses are managed, notably in the realm of marketing, necessitating the development of new management strategies (Japutra & Situmorang, 2021; Pan et al., 2021) for successful navigation. Traditional in its dependence on substantial infrastructure and tangible assets, the chemical industry is undergoing a rapid transition towards digitalization. This transformation is no longer an optional enhancement in today's increasingly competitive and globalized market, but a necessary adaptation that can foster growth and resiliency (Goh et al., 2021; Sheau-Ting et al., 2013). However, the journey towards digitalization, particularly in terms of marketing strategies, presents a unique set of obstacles and opportunities. In addition to presenting new expansion opportunities, the digital business environment necessitates the formulation and implementation of effective management strategies capable of addressing its complexities (Gössling et al., 2023; Japutra & Situmorang, 2021). Digital marketing, a rapidly evolving discipline that has transformed how businesses interact with consumers, is at the center of these changes. The chemical industry can benefit from digital marketing in terms of targeted communication, brand development, and market penetration (Kim & Pomirleanu, 2021). To capitalize on these benefits, however, requires knowledge of digital marketing practices, consumer behavior in the digital age, and data-driven decision making. The purpose of this study is to examine the creation and implementation of management strategies in the chemical industry (Wu et al., 2021) in light of the digital revolution. It aims to shed light on how the industry can leverage digital marketing while traversing the complexities of a digital business landscape. Understanding these changes is necessary for maintaining a competitive advantage, ensuring sustainability, and fostering innovation in a rapidly changing world. This study will provide crucial insights

into digital business management strategies and digital marketing tactics in the chemical industry in order to cast light on the path

Objectives

- Analyze the current condition of the chemical industry
- Analyze the components of digital chemical industry management
- Examining the digital chemical industry business management strategy

Theory Research

Chemical industrial (Kong et al., 2023; Peng et al., 2023; Wu et al., 2023), specialty, and other chemicals. It turns oil, natural gas, air, water, metals, and minerals into industrial and consumer goods, powering the global economy. Some chemical businesses make polymers. Chemical industry encompasses several industries. Chemical industries make plastics, paints, pharmaceuticals, detergents, explosives, artificial textiles, dyes, and insecticides. Classify chemicals and dangerous items. and improve production line safety by using the bar code method Benefits of barcode adoption. Streamlining manufacturing line processes, spend less, traces back, boost productivity adding safety.

The chemical industry is a significant contributor to the global economy. There are numerous applications for chemical products, ranging from manufacturing to agriculture to healthcare. As a result, the chemical industry is extremely competitive, and businesses in this industry must develop effective marketing strategies to be successful.

The developing their marketing strategies, businesses in the chemical industry must consider a variety of factors. These elements include:

- The target market: Who are the consumers for your products? What are his or her necessities and wants?
- Competitors: Which companies sell comparable products? What are their benefits and drawbacks?
- The product: Describe the product's attributes and benefits. How does this product compare to the competition?
- The price: How much does your item cost? How does this product compare to the competition?
- The distribution: Describe how your product will reach the market.

towards a more robust and resilient digital future.

- How will you increase product awareness and encourage individuals to purchase it?

Marketing strategy (Erdil & Özdemir, 2016; Kopaneli, 2014; Mucha et al., 2022) that is customized for your business. There are a variety of marketing approaches that can be implemented in the chemical industry, including: This can be accomplished through a variety of channels, including print, television, radio, and the Internet. Public relations (Nguyen et al., 2021): This entails cultivating relationships with journalists and other media entities to generate positive coverage of your company and its products. Sales promotion: This may include offering discounts, vouchers, and other inducements to encourage customers to purchase your products. Direct marketing involves sending potential consumers direct mail, email, or other marketing materials. Event marketing entails sponsoring or hosting events pertinent to your target audience. The optimal marketing strategy for your business will depend on a number of variables, such as your budget, target market, and the level of competition. You can improve your prospects of success in the chemical industry, however, by carefully considering these factors and devising a customized marketing strategy.

In addition to the aforementioned factors, a number of additional trends are influencing the chemical industry's marketing landscape. These trends consist of: The ascent of **digital marketing** (Shankar et al., 2022; Tronvoll et al., 2020) an increasing number of individuals use digital channels to conduct product research and make purchases. Therefore, enterprises in the chemical industry must have a robust online presence. Consumers are becoming increasingly concerned about the environmental impact of the products they purchase, as the significance of sustainability rises. Therefore, chemical industry enterprises must emphasize the sustainability of their products. The chemical industry is in a constant state of change, and businesses must be able to innovate in order to remain ahead of the competition. Businesses (Reuschke et al., 2022) can develop effective marketing strategies for reaching their target market and accomplishing their business objectives if they are aware of the latest trends and challenges in the chemical industry. Over the past few decades, the chemical industry's marketing strategies have evolved significantly, paving the way for the emergence of new paradigms that are responsive to changes in

technology, economic landscapes, and consumer behaviors.

Digital marketing strategies (Amankwah-Amoah et al., 2021) in the chemical industry have focused primarily on product-based sales, business-to-business interactions, and long-term contracts (Brennan et al., 2014). Historically, the industry has relied on direct sales teams and relationship marketing to reach consumers. Due to globalization and increased competition, however, these strategies are no longer sufficient.

Globalization has increased the significance of customer relationship management (CRM) in the chemical industry, according to Wu and Lu (2012). CRM has become an indispensable instrument for comprehending client requirements, enhancing customer service, and fostering customer loyalty. Due to the traditionally high-value and low-volume nature of the chemical industry, these instruments play a crucial role in establishing and maintaining strong relationships with customers.

The chemical industry (Garcia Fracaro et al., 2021), like many others, has experienced a significant transition in its marketing strategy since the advent of the digital age. The transition to digital platforms has altered the industry's consumer interactions in numerous ways. Digital marketing enables businesses to use data-driven strategies for a more personalized approach to consumer engagement, resulting in increased efficiency and effectiveness.

In addition, the digital transformation (Cloos & Mohr, 2022; Pizzi et al., 2021) has had an effect on the chemical industry by facilitating direct communication with end-users. It has also enabled businesses to expand their geographic reach and enter new markets without having to make significant investments in tangible assets. Moreover, digital platforms provide businesses with unprecedented opportunities to increase customer engagement, enhance customer service, and boost brand visibility.

Social media (Zhan et al., 2021) has also emerged as a crucial marketing instrument for the chemical industry, allowing for increased engagement with consumers and stakeholders. It enables direct communication with end-users, thereby facilitating consumer feedback, problem-solving, and brand-building. In addition, the expanding use of data analytics and AI in marketing has altered the landscape. These technologies enable more targeted marketing strategies in accordance with consumer preferences and behaviors. These tools have the potential to transform marketing strategies in the chemical industry by facilitating more precise targeting and personalization of marketing efforts.

Despite these advancements, the chemical industry confronts numerous obstacles in adopting digital marketing strategies. The traditional mindset, the complexity of digital tools, and concerns about data security and privacy are some of these obstacles.

In conclusion, the literature demonstrates a significant shift in the marketing strategies of the chemical industry, which is driven by globalization, digital transformation, and shifting consumer behaviors. While digital marketing offers significant benefits, it also introduces new challenges that management must address. Digitalization is an ongoing process in the chemical industry, and the successful implementation of digital marketing strategies will be crucial to the industry's future success.

The conceptual framework consists of primary variables, which are the general status of the chemical industry business. Marketing mix for digital chemical industry business management 7P's. The elements of digital chemical industry business management and the dependent variable are chemical industry business management strategies in digital business and digital marketing model as shown in Figure 1.

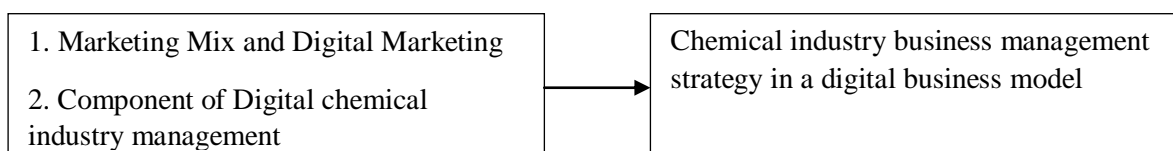


Figure 1: Conceptual Framework

Methodology

According to estimates provided by the Department of Company Development (DBD), the metropolitan area around Bangkok is home to 6,035 company owners and executives that

run companies that are registered in the chemical sector. The population of Taro Yamane is known with a confidence level of 95% thanks to the technique for calculating the population; the margin of error in the estimate is

less than 5%. For the purpose of this inquiry, the sample size was determined to be 375 different people. Utilize a method that selects samples for analysis. By conducting a survey among the members of the company's ownership group, a representative sample may be obtained. Managers of the chemical industry situated in Bangkok who have their registrations with the government

The tool for collecting data is a questionnaire, and Part 1 of the questionnaire concerns the overall status of the company. Part 2 of the questionnaire focuses on specific aspects of the business. The second section of this guide, entitled "Characteristics of a Checklist" is comprised of a questionnaire that focuses on the organizational structure and day-to-day activities. There are checkboxes present on the form. In the third part of the report, there is a questionnaire on methods for running a firm in the chemical sector using a model that incorporates digital business and digital marketing. The format of the questionnaire is a rating scale, which can be thought of as a kind of assessment that is based on a scale. There are five possible responses on the Likert Scale: most, most, moderate, least, and least. As part of their assessment of the product's overall quality, five experts looked through the content to ensure that it was accurate. It received a confidence rating of 0.95 across the board and an Index of Conformity (IOC) score of 1.00 across the board across the board.

The researcher contacted a group of company owners, executives of enterprises, and registered chemical industry facilities situated in the Bate, Bangkok area by distributing the questionnaire via internet channels to a sample group of 375 persons. The researcher then gathered data from the replies that were given to the questionnaire. Spreadsheets hosted on Google will automatically gather the information that has been supplied.

To do statistical analysis on the data, make use of a computer program that has already been developed. A numerical code was produced as a result of data extraction from the collected surveys, and this code was then saved inside the

program. The statistical data was examined using both descriptive statistics and inferential statistics using the check-list approach and the frequency method. Percentage is a rating scale utilizing the technique to get the mean (\bar{x}) and standard deviation S.D. for the whole sample and is split by item and factor analysis using the KMO (Kaiser-Meyer-Olkin) and Eigen Value methodologies.

Research Result

Results of a research study on chemical industry business management methods in a digital business and digital marketing model given as an overview of research in order of objectives:

1. The study's conclusions include chemical industry business status. Large operates unincorporated. 57.00% are small companies. 47% are newer. 71.00% have no international partnerships. 62.70% are non-family enterprises.

2. Organizational structure and operation analysis outcomes. Most have a storefront, a website, and delivery (82.8%). Multi-certified enterprises constitute 80.50 percent of Thailand's clients. 77.30% from private sources, 55.30% of Thai employee's 52.00 percent prioritized operators. 64.0% of tools most buy domestically. Raw materials 42.30% most purchase domestically. Comprised 41.80%. Strengths, 57.00% of employees knew chemical industry business management. Weaknesses, most lacked skilled employees. 31.30% internal business operational elements 40.80% were sales and marketing, 37.70% requested academic knowledge and product development from government bodies. 32.00% SWOT analysis most run annually. 55.30% of firms searched the internet and online media for marketing information, accounting for 46.00% of queries.

3. The average significance score of marketing mix variables for the chemical industry business management strategy in the digital business and digital marketing model was high (mean = 4.26). Table 1 shows that pricing had a high mean score (mean = 4.48).

Table 1: Displays chemical industry business management strategy averages and standard deviations in digital business and digital marketing models. Marketing mix elements

Chemical industry management in digital business and marketing Mix overall marketing	\bar{X}	S.D.
Overall	4.36	0.06
1. Product or service	4.38	0.04
2. Price or cost	4.58	0.02

3. Place	4.31	0.04
4. Promotion or Communication	4.14	0.19
5. People	4.36	0.02
6. Process	4.42	0.01
7. Physical Evidence	4.24	0.03

4. The findings of the study of information regarding the chemical industry company management strategy in the digital business and digital marketing model. The average importance score (mean = 4.29) for digital

business and digital marketing as a whole was found to be high. The Online Platform aspect received the highest average importance score (mean = 4.58 out of a possible 5) across all dimensions.

Table 2: The mean and standard deviation for chemical industry business management strategies employed by digital business and digital marketing models. Overall digital business and digital marketing

Chemical industry management strategies in a digital business and digital marketing model	\bar{X}	S.D.	Priority
Digital business and digital marketing			
Overall	4.29	0.05	high level
1. Online Application and Platform	4.38	0.02	high level
2. Business and Marketing Strategy	4.31	0.03	high level
3. Relationship	4.21	0.12	high level
4. Data and Digital Technology	4.18	0.08	high level
5. Business Management	4.36	0.01	high level

5. The results of the analysis of the composition of the variables on the components of the digital

chemical industry business management in terms of marketing mix factors

Table 3: Appropriate values of group variable correlation matrix in terms of marketing mix factors

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.864
Bartlett's Test of Sphericity	Approx. Chi-Square	14246.407
	Df	487
	Sig.	.000

Table 3 shows that the association between the 32 variables was verified using the KMO of Kaiser-Meyer-Olkin Measure of Sampling Adequacy, KMO = 0.864 (KMO value should not be below 0.50). Bring it. Composition analysis was done on these variables. Principal Component Analysis with Varimax Rotation

and an Eigen Value of at least 1.0 was used to analyze the composition of such variables.

6. Digital chemical industry business management, digital business, and digital marketing variable composition analysis findings

Table 4: Appropriate group variable correlation matrix values for digital business and marketing

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.905
Bartlett's Test of Sphericity	Approx. Chi-Square	12831.741
	df	275
	Sig.	.000

In Table 4, the KMO of Meyer-Olkin Measure of Sampling Adequacy statistic assessed the connection between the 24 variables. Component analysis brought this collection of variables. Principle Component Analysis with spindle rotation and Varimax Rotation with Eigen Value 1.0 or above retrieved the components.

The survey indicated that Bangkok chemical industry operators use digital business and digital marketing techniques. Business type

Storefront, online, and delivery. The company has many certifications. Thai clients outnumber international customers in the firm. Personal money supports many businesses. Chemical industry personnel are entirely Thai. Operator-level training builds knowledge and expertise for your staff. The firm only buys domestic tools/machines. Industry s exclusively by domestic raw supplies. Chemical industry business managers is the strongest factors. Skilled personnel are the chemical industry's

biggest weakness. Sales and marketing drive business. Businesses work with governments. Government entities most often provide technical knowledge and product development. Marketing is difficult since your product is too expensive. Annual business plans include a SWOT Analysis. And companies seeking marketing information online. This study may have been influenced by chemical industry corporate management practices. It helps marketers plan. Appropriately satisfy customers.

Conclusion and Discussion

The chemical industry business management strategy in a digital business and digital marketing model has 5 main components, 56 sub-components, and 16 sub-components for marketing mix factors, the efficiency component of an information technology system. 11 service standard sub-components ensure quality. Promotion has five parts. Digital business and marketing use 21 Online Platform components. Data and Technology has three subcomponents. The digital business and digital marketing model's chemical sector business management strategy components research outcomes. The researcher presented outcomes by component: Marketing mix has three basic components: IT efficiency Service quality

Promotion aligned with Kwok et al. (2020) suggested measuring service quality before buying. To build trust (Reliability). Reliable service. Customers demand timeliness and trustworthiness. Delivering promised services on schedule preparing customers for service. Customers may also trust assurance. Be nice to consumers. Knowledge of service job consumer reaction (Responsiveness), which must be ready and willing to provide with full attention and swift service happy to help Ready to assist consumers. Preparing to handle tasks before, during, and after sales shows empathy. Customer satisfaction matters. Know consumer needs. The company's and service providers' look (tangibles). Modern, high-tech, beautiful materials, and service equipment. Be kind and professional.

2. Digital business/marketing components Two key components are Online Platform Technology and data Entrepreneurs' perspective of the marketing mix in internet marketing is crucial to marketing strategy and the creation of marketing solutions to meet company objectives. Online marketing is new. Products are anything sold to meet customer needs. Physical, digital, and services are their categories. 2) Price: This establishes a product's monetary worth or its exchange value. This is important for product pricing. Shipping rates

cheap goods may not sell. Ordering convenience. 3) Distribution networks offer products from manufacturers to consumers. Which element should be considered while choosing an online product distribution channel, such as a website? The site is simple. Information security is simple and engaging. 4) User-to-user marketing promotion.

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