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A Meta-Analysis Study on the Factors Influencing Entrepreneurship Performance in the Beauty Industry

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Abstract

Purpose: This paper is a meta-analysis of the relationship between entrepreneurship performance in the beauty industry and its success factors, examining key factors for success in the beauty industry and offering practical findings for the field. **Research design, data, and methodology:** In this study, selected papers were coded based on predetermined criteria to perform the meta-analysis. The coding items included researcher, publication year, correlation coefficients, sample size, characteristics, and study type. Using this data, a meta-analysis was conducted with the Comprehensive Meta-Analysis (CMA) Version 3 software developed by Biostat in the United States. **Results:** The analysis model was tested for homogeneity, and the overall mean effect size was calculated. Publication bias was assessed using a Funnel plot, and a meta-regression analysis based on the publication year was conducted, yielding significant results. **Conclusions:** This study analyzed key factors influencing entrepreneurship performance in the beauty industry but has limitations such as reliance on domestic research and exclusion of qualitative factors. Future research should incorporate global data, compare subfields within the beauty industry, and combine qualitative and quantitative methods. It should also investigate the impact of advanced technologies and government policies on the performance of entrepreneurship in the beauty industry, including services and goods, for deeper insights.

Keywords: Beauty Industry, Entrepreneurial Performance, Success Factors in Entrepreneurship Performance, Meta-Analysis

JEL Classification Code: L16, L21, L66, L80

1. Introduction

Entrepreneurship, as a fundamental economic activity, has evolved alongside human history, adapting to societal and technological changes. In the early Middle Ages, it centered on survival and barter-based economies. By the 13th century, stricter regulations in urban economies hindered market formation, while the beauty distribution market remained exclusive to the elite (Pirenne, 1914).

During the Renaissance and the Age of Exploration, trade and technological advancements spurred international entrepreneurship. Eastern trade introduced ingredients foundational to the cosmetics industry, while the Industrial Revolution enabled mass production, allowing beauty products to be exported to the middle class and paving the way for the formation of global brands in the distribution network (Brenner, 1972; Berg, 2014).

In the 20th century, industrialization and technological innovation democratized entrepreneurship, with digital advancements reshaping traditional business models and

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logistics. The 21st century witnessed a surge in social media and e-commerce-driven entrepreneurship. AI and eco-friendly innovations have facilitated personalized products and sustainable beauty solutions. K-beauty has gained global prominence with its innovative strategies, while the beauty industry continues to grow by integrating technology, biotechnology, and eco-friendly advancements (Gnuschke, 2000).

Therefore, this paper utilizes a meta-analysis methodology to systematically analyze the relationship between the performance of beauty distribution entrepreneurship, encompassing both services and goods, and success factors. It identifies key factors for successful entrepreneurship in the beauty industry and organizes them in a manner applicable to practical business contexts. Based on this analysis, the study aims to predict the future direction of the beauty distribution market and hopes to contribute to the continuation of meaningful academic research in the beauty field.

2. Literature Review

2.1. Beauty Industry

Historically, beauty was used to protect oneself from the external exposed wild environment, symbolizing status, or as part of religious rituals. In the modern era, beauty has evolved into a physiological aspect of health and hygiene and has expanded as a means of self-expression through appearance, becoming a significant tool for political and social expression. (Evans & Stoddart, 2017). In the contemporary era, beauty has expanded into various industries, including cosmetics, product manufacturing, education, psychology, marketing, art, and AI, becoming a key sector driving the economy.

Before delving into the main discussion on beauty distribution entrepreneurship, I aimed to define the precise meaning of beauty, and the scope and perspectives recognized both domestically and internationally. To do this, I reviewed the dictionary definition of beauty and prior studies by scholars.

First, the dictionary definition of the English word "Beauty" from a domestic search site, Naver English Dictionary, defines it as “beauty, a beautiful person, or something beautiful or magnificent.”

The Oxford English Dictionary defines "Beauty" by parts of speech. As a noun, it is defined as “a quality of a person (especially a woman) which is highly pleasing to the sight; perceived physical perfection.” As an adjective, it refers to “the general term for approval or satisfaction: superb, excellent.” As a verb, "Beauty" is defined as “to make beautiful or more beautiful; to adorn or decorate; to beautify (Oxford English Dictionary).”

Upon reviewing prior studies, it was found that scholars either provided only the dictionary definitions, or conducted interdisciplinary studies merging beauty with other fields, but none provided an academic definition or in-depth research specifically focused on ‘beauty’. Additionally, although the term 'beauty' is used frequently in Korean, much like foreign words such as 'pen' and 'sticker', it has not been included in the domestic Korean language dictionary. Therefore, the beauty field is seen as one that requires deeper research and a clearer definition academically. However, due to its broad potential for integration with other industries, the research scope is vast, and the approach from a distribution business perspective is not considered inappropriate.

The Korea Institute for Health and Social Affairs broadly defines beauty as an industry encompassing both physical and psychological experiences and consumption that can make the human body beautiful (Korea Institute for Health and Social Affairs). Meanwhile, in a report by the Korea Health Industry Development Institute, beauty is defined as an industry related to the development, manufacturing, and production of services for managing the human body in a healthy and beautiful manner, including cosmetics, beauty products, and devices (Korea Health Development Institute).

The report above defines beauty as an industry, where industry is traditionally defined as the business of producing goods or services that economically enrich human life (Standard Korean Dictionary, National Institute of the Korean Language). The dictionary definition of the beauty industry is “productive activities or businesses related to beautifying a person’s appearance, such as skincare, makeup, hair care, and nail care.” This definition could be interpreted narrowly as referring only to the beauty services industry, but a broader definition of the beauty distribution industry should also encompass the manufacturing of beauty devices, products, etc. Additionally, the beauty industry can be classified as being associated with the distribution culture of plastic surgery. (Holliday et al., 2015).

This study aims to conceptualize beauty, which is often fragmented into people, objects, and activities, from a business management perspective. The research will focus on the outcomes of beauty entrepreneurship and its role in establishing the beauty industry.

An industry is formed when businesses achieve results through continuous entrepreneurship and business management. In other words, the formation, growth, and sustainability of the beauty industry is evidence that beauty companies or beauty distribution businesses have been successful. This study seeks to identify the specific outcomes achieved, and what the most significant effects have been. Furthermore, from an industrial perspective, this study will not only examine beauty beyond its simple

definition of physical beauty, but also explore the economic and managerial aspects of industry. Through systematic literature review and meta-analysis, this research aims to identify the key success factors for entrepreneurship in the beauty industry.

Beauty has developed into an independent industry and can be closely integrated with any business aimed at beautifying individuals. However, due to limitations in scope, this paper focuses on analyzing the performance factors of the key sectors within the beauty industry, specifically the beauty product manufacturing and beauty services sectors, which have been the subject of substantial research.

2.2. Entrepreneurship in the Beauty Industry

In the late 1990s, the proliferation of the internet, advancements in education, and the digital revolution progressively equalized entrepreneurial opportunities. People of all ages and genders began sharing information online and initiating businesses. In the early 2000s, the rapid growth of the information technology and software industries significantly lowered market entry barriers for new entrepreneurs by the 2020s. As a result, entrepreneurs could expand into global markets without the constraints of time and distance, while opportunities for transactions among manufacturing-based entrepreneurs also grew. Furthermore, the growth of emerging manufacturing industries and technological advancements can also contribute to national development (Dimova & Pela, 2018).

As of 2020, the era of technology-based startups has arrived, with 230,000 technology-related startups established. Focused investment in technology startups resulted in a 139% increase in quantitative growth indicators for entrepreneurship in South Korea from 2010 to 2020, showing a continuous upward trend each year. In particular, startups centered on software products have concentrated on IT development, leading to frequent e-commerce activities facilitated by advanced platforms and apps. In the beauty industry, IT technologies such as CRM, AI, and shared systems have been adopted to enable startups to efficiently produce and operate their products. Additionally, the industry is solidifying its growth foundation by aligning with contemporary trends and expanding online.

Unemployment and job shortages caused by the Fourth Industrial Revolution have led to severe global economic stagnation and pressing societal issues such as low birth rates and an aging population. In response, governments have shifted their focus from supporting the growth of existing companies to actively fostering new startups, positioning job creation through entrepreneurial activity as a national priority. Efforts to promote employment are being vigorously pursued by both government and private sectors. (Lee & Lee, 2019) Within this context, governments are also actively encouraging women, particularly those with career gaps or those entering the workforce, to participate in social and economic activities. This trend in modern society could be seen as an opportunity to further stimulate the growth of the beauty distribution industry, where women predominantly participate or show significant interest (Park & Chang, 2022).

The number of female entrepreneurs in South Korea is notably high compared to other countries. Additionally, the number of newly established corporations led by female representatives increased by 19.3% in 2019 compared to the first half of 2018. As of 2020, approximately 1.6 million female entrepreneurs accounted for about 27% of all businesses in South Korea (Ministry of SMEs and Startups & Women Entrepreneurs Support Center, 2020). As the proportion of female entrepreneurs continues to rise, as previously mentioned, increased female participation in economic activities will likely lead to greater involvement and entrepreneurship in the beauty industry. Therefore, professional education and research on beauty entrepreneurship are deemed essential for the sustainable development of this industry.

According to the 2023 Startup Survey conducted by the Korea Startup Promotion Agency, there are a total of 3,071,694 businesses in South Korea, comprising 2,678,193 individual enterprises (87.2%) and 393,501 corporate enterprises (12.8%). Among these, startups that remain operational for 1 to 2 years account for 1,284,630 businesses, representing 42% of the total. Startups that sustain operations for 3 to 4 years account for 902,492 businesses, or 29% of the total. Furthermore, businesses that have survived for over 7 years, typically considered to have reached a stable phase, total 251,363, representing an 8% survival rate (Korea Startup Promotion Agency, 2023).

The government allocates an annual national budget to improve startup survival rates and support aspiring entrepreneurs in achieving successful ventures. By collaborating with university startup support centers, it encourages youth entrepreneurship and offers various startup programs and education. Notably, comprehensive startup education in universities began with the "Entrepreneurial University Fostering Program," initiated in 2011. This program designates universities equipped with startup support facilities as entrepreneurial universities, providing them with administrative and financial support. University startup infrastructure includes entrepreneurship-linked majors and scholarship programs, with a focus on actively supporting technological startups. In contrast, how far has education and support for entrepreneurship in the high-potential beauty industry progressed? Despite the increasing number of beauty-related majors, support for beauty entrepreneurship remains significantly limited. With

most support concentrated on technological startups; more detailed research is needed to identify the most effective measures for fostering beauty entrepreneurship.

According to a survey by the Ministry of SMEs and Startups, the number one reason for startup failures is the launch of products that the market does not want. This indicates that the products fail to meet customer needs, leading to a lack of willingness among customers to pay for them. (Ministry of SMEs and Startups) Consequently, even companies established with the goal of generating profit are bound to fail if they proceed with entrepreneurship without analyzing success factors.

Therefore, to reduce startup failures in the beauty industry, it is essential to first identify what the market demands, the success factors of thriving beauty businesses, and the reasons for their failures. Based on this understanding, thorough preparation before starting a business is crucial.

The beauty industry can broadly be categorized into three main sectors: beauty services, beauty product manufacturing, and beauty-related industries. While functional aspects, professional competencies, and academic interpretations may vary, from an industrial perspective, the beauty industry can be unified as the collective domain of professionals working within the beauty sector.

The beauty industry is defined in various ways depending on the perspectives of stakeholders, including government bodies, industry associations, academia, research institutions, market research firms, and for-profit companies. In this study, the beauty industry is defined not as separate sectors of beauty services and cosmetics manufacturing but as an economically interconnected, unified industry.

2.3. Review of Prior Research on the Beauty Distribution Industry and Beauty Entrepreneurship

This study aims to conduct a systematic literature review and meta-analysis, requiring the examination and selection of both quantitative and qualitative studies. To derive insights closer to managerial performance, the boundaries between beauty services and beauty products within the beauty industry were not delineated in detail. However, for future academic exploration or functional meta-analysis studies, a clear distinction between these categories may be necessary

A review of prior studies on the beauty industry reveals that, in the early 2000s, the beauty industry was broadly defined as encompassing all sectors generating profit through the production, services, and sales of beauty products. Narrowly, the beauty distribution industry was often equated with the cosmetics sector, while experiential aspects such as design, emotion, sophistication, and user experience were classified under a broader definition. At that time, the beauty industry leaned towards recognizing the emotional and aesthetic satisfaction provided by beauty services, rather than focusing on the efficient production and delivery of beauty goods in emerging markets like the cosmetics industry. Reflecting this trend, factors threatening the domestic beauty service industry began to be preemptively analyzed. Furthermore, societal interest in building a more robust beauty service industry led to the introduction of beauty curricula at universities, resulting in an increasing number of highly educated professionals entering the field.

University curricula and beauty-related certifications at the time primarily focused on technical disciplines such as hair, skin, nails, and makeup within the beauty service sector. However, education on effective profit generation through beauty industry management was likely less developed compared to the current era of active entrepreneurship.

As consumer individuality and diverse consumption patterns emerged, the beauty industry expanded globally, enabling the distribution of diverse beauty products and services regardless of race or gender (Yang, 2011). defined the beauty service sector as a narrow concept of the beauty industry, encompassing the production of tangible and intangible goods aimed at satisfying and expressing human aesthetic desires, as well as the overall industry from production to consumer sales.

Despite significant increases in government support policies and budgets, entrepreneurship education programs, startup incubator curricula, and initiatives such as the preparatory, early-stage, and growth-phase startup packages, as well as youth entrepreneurship academies, primarily focus on business plan development, reviews, mentoring, expert consulting, prototype production, and follow-up investment linkage. Consequently, the practical success rates of entrepreneurs have not improved significantly compared to previous years.

2.4. Entrepreneurial Performance

Examining the history of entrepreneurship reveals its close connection to the economic, social, and technological backgrounds of each era. Therefore, it is essential to review historical contexts in advance when studying the distribution, development, and performance of beauty products (Wadhwani et al., 2020).

The late 18th-century Industrial Revolution marked the beginning of industrialization and opened a new era for entrepreneurship. The development of mass production technologies and logistics networks allowed beauty products to reach the middle class. This mass production led to the emergence of beauty professionals, enabling greater accessibility and stable capital procurement, which can be seen as key entrepreneurial achievements (Bates & Bradford, 1992).

In the 20th century, entrepreneurship became more widespread among the general public, and globalization became prominent. The beauty industry experienced rapid growth as a result of changes in women's social roles and the increased desire for self-expression. Advertising, brand awareness, and the expansion of the global market helped the beauty market become a key area of success (Papavassiliou & Stathakopoulos, 1997).

In the 21st century, the advancement of digital technologies ushered in a new era of entrepreneurship. Social media, e-commerce, and influencer marketing brought the beauty market closer to consumers and broke down physical barriers between them. Additionally, AI and big data enabled personalized product development. Key success factors include global market access through digital platforms, the development of sustainable and eco-friendly products, and building emotional connections with consumers. In particular, K-beauty gained global recognition with its unique brand and media strategy, becoming a key driver of growth (Trofimova, 2020).

When examining the factors of entrepreneurship and beauty entrepreneurship across different eras, it is clear that resource utilization and technological innovation have remained constant driving forces. Building mass-market brands and fulfilling consumer needs are foundational principles for success, and moving forward, emphasizing marketing with technology and sustainability, alongside social responsibility, will continue to create long-term success. Furthermore, the beauty market has provided opportunities for women's social participation and income generation. Today, not only women but also men can access the beauty market, and running beauty businesses offers the potential for even greater economic growth.

2.5. Success Factors in Entrepreneurship Performance

Successful entrepreneurial management requires diverse competencies and standards. Since the 1980s, the rapid advancement of technologies has expanded the scope of entrepreneurship into fields such as pharmaceuticals, new materials, and IT. During this period, entrepreneurs experienced cycles of success and failure, leading to extensive exploration of key management factors. This resulted in active research on the determinants of successful entrepreneurial management (Pennetta et al., 2024; Nunavath, & Nagappan, 2024; Amankwah-Amoah et al., 2018).

Leadership and decision-making abilities are essential for successful entrepreneurship. Setting clear visions and goals, managing resources efficiently, and making prompt and accurate decisions in complex situations are critical. Such leadership motivates teams, fosters a culture of collaboration, and enhances overall organizational efficiency (Razzaque et al., 2024; Lubis et al., 2024).

The beauty startup market must respond sensitively to rapidly changing consumer demands and trends, making the successful execution of marketing strategies crucial. Effective leadership plays a critical role in ensuring the success of these marketing efforts. Specifically, the ability to develop products, set brand direction, and efficiently manage resources such as capital and teams is a key factor in securing a competitive edge in the market (Agu et al., 2024; Mahato & Jha, 2024).

Financial management and funding enable stable business operations. In the early stages, financial management skills are critical for a company's survival, while profit management, cost reduction, and investment recovery strategies are essential for ensuring sustainability. In beauty product entrepreneurship, efficiently managing high initial costs for product development, marketing, and design is crucial (Wang, 2024; Belas et al., 2024).

The ability to understand the market and identify trends plays a pivotal role in securing competitiveness. Delivering products and services aligned with market demands requires a deep understanding of consumer behavior and industry trends. In the beauty market, this capability is particularly valuable for developing differentiated products and strengthening consumer connections (Urefe et al., 2024; Haris, 2024).

Human resource management is a key factor in enhancing organizational sustainability. Attracting and retaining top talent while fostering a collaborative culture contributes significantly to maximizing entrepreneurial success. In beauty product development, collaboration across R&D, production, and marketing teams underscores the importance of effective management skills (Cheng et al., 2024; Masood, 2024).

3. Materials and Methods

3.1. Overview of Meta-Analysis

Meta-analysis is a statistical method that applies systematic literature review techniques to integrate the effects of variables based on the results of empirical studies, such as research topics, subjects, and methodologies. It is used to ensure the objective validity of research findings. Researchers utilize existing academic papers, theses, and other diverse research results to synthesize and compare outcomes through meta-analysis, enabling the generalization and specification of findings based on abundant data and active research activities.

Additionally, meta-analysis serves as a method for integrating the effect sizes of homogeneous studies conducted independently by various researchers and calculating the mean effect size to test the significance of a

program's impact. Effect size is employed to examine differences or relationships between experimental and control groups. This study aims to analyze effect sizes and structural equation models using the correlation coefficient (r), a type of continuous bivariate data.

A meta-analysis is a methodological approach for synthesizing and reanalyzing results from various individual studies on the same topic, overcoming the limitations of individual research to derive more reliable and valid conclusions. This method is particularly valuable in fields such as education, psychology, and medicine, where it enhances the generalizability of research findings (Glass et al., 1981) identified three key features of meta-analysis:

1) Quantitative Nature: Meta-analysis involves converting quantitative results from individual studies into homogeneous statistical measures through statistical transformations, allowing objective comparison and synthesis. This process facilitates the derivation of reliable conclusions.

2) Objectivity: Studies included in the analysis are selected according to pre-defined, rigorous procedures. Even research that does not support a specific theory or hypothesis is included, minimizing the possibility of subjective manipulation and enabling objective analysis.

3) Generalizability: By synthesizing multiple studies, meta-analysis overcomes the limitations of individual research and encompasses a broader scope of study populations and environments, increasing the generalizability of results. For meta-analysis to be effectively conducted, certain prerequisites must be met.

i) Sufficient Existing Research: A sufficient number of prior studies on the relevant topic must exist, and these studies must be readily accessible. If research is lacking, the statistical power of the analysis diminishes, making it difficult to achieve reliable conclusions.

ii) Quantitative Data: Studies included in the meta-analysis must be quantitative, and heterogeneous statistical measures must be convertible into homogeneous effect sizes to facilitate comparison and synthesis of results.

3.2. Research Data Collection

This study conducted coding of selected papers based on predetermined criteria to perform a meta-analysis. The coding categories included authors, publication year, correlation coefficients, sample sizes, characteristics, and types of studies. Using these as the basis, the meta-analysis was carried out with CMA (Comprehensive Meta-Analysis Version 3) developed by Biostat in the United States.

This study aims to examine domestic research trends on the beauty industry and beauty entrepreneurship by analyzing academic papers and dissertations published in South Korea between 1914 and March 2024. The academic databases used for the literature search include DBpia, e-articles, KISS, Schola, Koreascala, RISS, NDSL, Google Scholar, and Naver Academic Information.

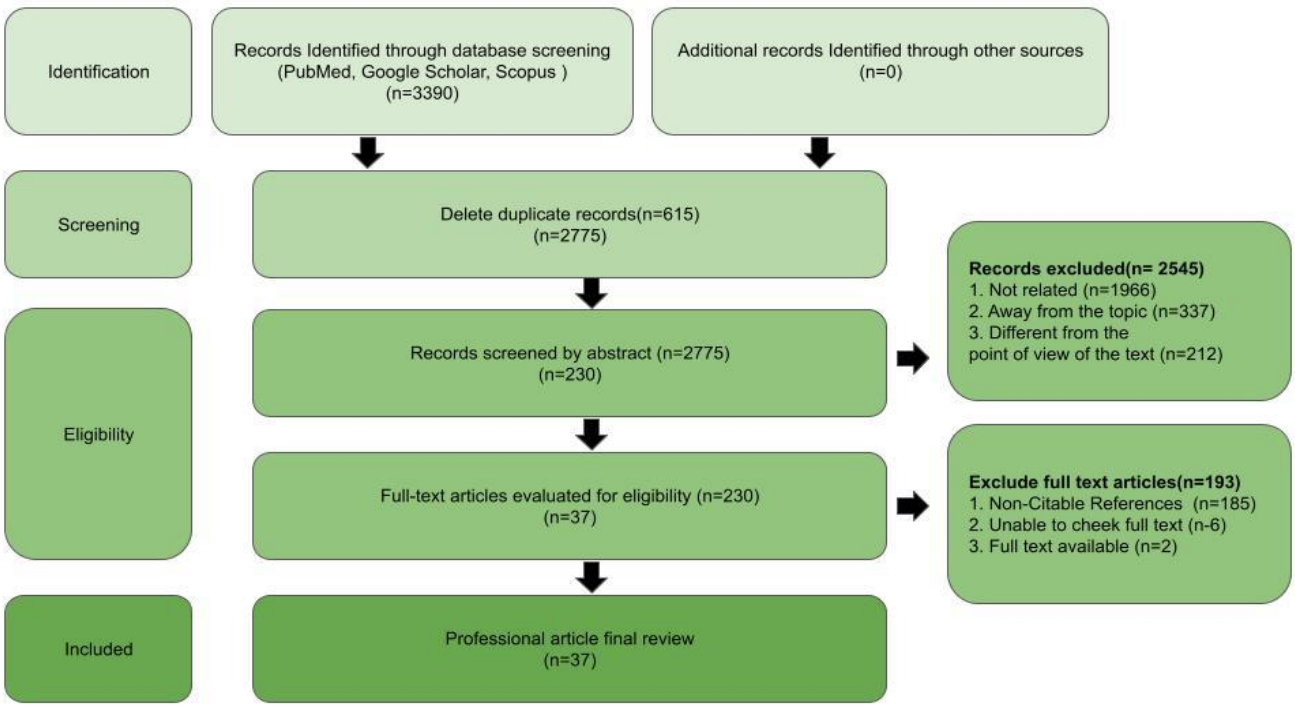

Figure 1: PRISMA Flow Diagram

A comprehensive search was initially conducted using the keywords "beauty industry" and "beauty entrepreneurship," resulting in a total of 3,390 papers. A more detailed search was then performed on these papers using additional keywords such as "beauty entrepreneurship performance," "beauty entrepreneurship performance factors," "beauty entrepreneur," and "entrepreneurial education," applying AND or OR conditions between two or more keywords. During this process, 367 papers unrelated to the research topic, 1,966 papers with mismatched or duplicated subjects, and 212 papers lacking full-text data were excluded. As a result, a total of 230 papers were selected for analysis.

In the second phase, the titles, abstracts, and results of the 37 selected papers were reviewed to identify those containing empirical analysis that could be statistically analyzed. Only papers providing correlation coefficients that could be used to derive the effect sizes for meta-analysis were included.

3.3. Data Analysis Method

3.3.1. Reporting Methodology

The debate regarding the use of fixed-effect and random-effect models in meta-analysis has been ongoing (Cooper & Hedges, 1994; Hedges & Vevea, 1998). Typically, results derived from the fixed-effect model are generalized only to the specific sample studied. In contrast, findings from the random-effect model allow for generalization beyond the study sample to a larger population (Schmidt, Oh, & Hayes, 2009). For this reason, this study employed both models to analyze the results, ensuring the reliability and generalizability of the findings.

3.3.2. Data Processing (Selection of Research Method)

This study conducted coding processing on the selected papers based on predetermined criteria to perform meta-analysis. The coding items included researcher, year of publication, correlation coefficient, sample size, characteristics, and type of paper. Based on this data, the meta-analysis was performed using CMA (Comprehensive Meta-Analysis Version 3), developed by Biostat in the United States.

3.3.3. Publication Bias

a. Funnel plot

The funnel plot is a visual method that plots effect size on the X-axis and standard error on the Y-axis to display the distribution of effect sizes. In the absence of publication bias, as the standard error decreases, the variability of effect sizes also decreases, resulting in a symmetric funnel-shaped distribution. Conversely, when publication bias exists, the distribution exhibits asymmetry.

b. Trim and Fil

Duvall and Tweedie (2000) proposed a method to address asymmetry in the funnel plot caused by publication bias. Their method estimates and fills in missing effect sizes to create a symmetrical distribution, thereby providing an unbiased estimate of the effect size.

3.3.4. Formula

The formulas used in this study are as follows (Borenstein et al., 2009). First, the correlation coefficients were transformed into Fisher's z values using the formula (1) below.

(Formula 1)

$$ES_{zr} = .05 \times \ln\left(\frac{1+r}{1-r}\right)$$

Next, the analysis results were calculated using the formula (2) below.

(Formula 2)

$$V_z = \frac{1}{n-3}$$

Additionally, the standard error was calculated using Formula (3) below.

(Formula 3)

$$SE_z = \sqrt{V_z}$$

The effect sizes transformed into Fisher z values were analyzed and subsequently restored to correlation coefficients using Formula (4), and the final results were reported.

(Formula 4)

$$r = \frac{e^{2z} - 1}{e^{2z} + 1}$$

4. Results

4.1. Analysis Model Based on Homogeneity Test

Based on the assumption that the results of individual studies originated from the same population, the homogeneity test indicated significant heterogeneity, with Q(14)=0419, p<.001. This suggests the presence of heterogeneity in the effect sizes among the studies. Consequently, a random-effects model was employed to analyze the effect sizes. While results from a fixed-effects model allow for generalization only within the studied sample, findings from a random-effects model can be generalized to a larger population beyond the studied sample.

4.2. Overall Mean Effect Size

The results for the overall mean effect size are shown in Table 1 below.

Table 1: Overall Mean Effect Size

N	ES	*p*	95% CI	
			LL	UL
15	0.419	0.000	0.336	0.495

The analysis of 15 studies in this research revealed an overall effect size of 0.419, which was statistically significant at the $p<.001$ level. This indicates that the correlation effect size analysis demonstrated statistically significant effects. According to the criteria proposed by Cohen (1988), this corresponds to a medium-to-high level of effect size, close to the high range. Cohen (1988) defined an effect size of 0.1 as a weak correlation effect size, 0.3 as a moderate correlation effect size, and 0.5 or above as a high correlation effect size.

In meta-analysis, individual studies are assumed to be independent. However, when a single study reports multiple effect sizes, the data used in the study may be reused, potentially violating the assumption of independence. To address this issue, the analysis employed the 'shifting unit of analysis' method, treating each study as the analytical unit to avoid information loss and violations of the independence assumption. Specifically, when calculating the overall effect size, only one effect size per study was derived by averaging the sub-factors within each study, and this average value was used as the representative value. On the other hand, when the analysis focused on sub-factors, individual effect sizes within studies, rather than the studies themselves, were used as the analytical unit.

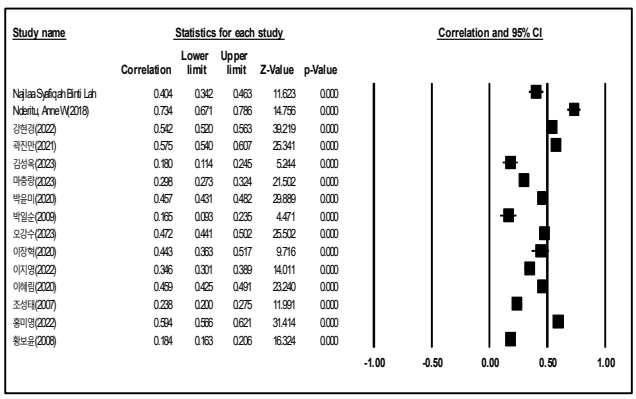

Figure 2: Forest Plot

4.3. Results of Publication Bias

The results of publication bias are presented in Figure 3.

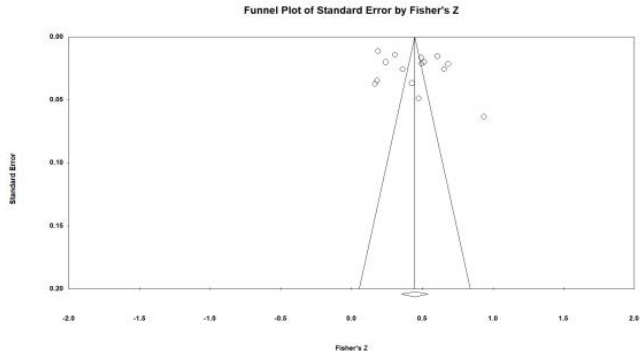

Figure 3: Funnel Plot

This study conducted a meta-analysis and examined publication bias to determine whether any of the 15 studies related to beauty business were biased. First, a visual assessment of potential bias was conducted using the Funnel Plot presented in Figure 3. The results indicated that the distribution was symmetrical along the central axis, as shown in Figure 3, suggesting no evidence of publication bias. Thus, no biased studies were identified among the 15 studies.

Additionally, the trim-and-fill method proposed by Duval and Tweedie (2000) was applied.

The results showed that the adjusted values and observed values were identical, further supporting the absence of publication bias. The trim-and-fill method assumes that if studies with smaller sample sizes are more prevalent on the right side of the summary effect size than on the left, this indicates missing studies on the left. This method imputes these missing studies into the analysis and recalculates the summary effect size. In this study, the adjusted and observed values were identical, confirming that no publication bias exists.

Table 2: Trim and Fill Estimation Results

	Studies Trimmed	Point Estimate	95% CI	
			LL	UL
Observed values	-	0.419	0.336	0.495
Adjusted values	0	0.419	0.336	0.495

4.4. Effect Sizes by Variable

4.4.1. Marriage Intention Based on Publication Status

Table 3: Analysis of Differences in Correlation Effect Sizes by Type of Dissertation

Variable	K	ES(r)	95%CI		Z	p	Q_b
			LL	UL			
Journal	7	0.456	0.338	0.561	6.855	0.000	0.380
Thesis	8	0.386	0.268	0.491	6.068	0.000	

In this study, an analysis was conducted to examine the differences in correlation effect sizes based on the type of research material, specifically academic journal articles and thesis papers. The correlation effect size for academic journal articles was found to be 0.456 (0.338-0.561), while that for thesis papers was 0.386 (0.268-0.491). Both types of research materials exhibited medium to high levels of correlation effect sizes, with no statistically significant differences observed between the groups.

These results support the prediction that there is no publication bias in the analyzed studies.

4.4.2. Effect Sizes by Moderating Variables

Table 4: Effect Sizes by Moderating Variables

Variable	K	ES(r)	95%CI		Z	p	Q_b
			LL	UL			
Business Performance	35	0.329	0.266	0.389	9.721	0.000	23.746 (0.000)
Operational Performance	21	0.239	0.141	0.332	4.702	0.000	
Social Performance	5	0.346	0.179	0.493	3.928	0.000	
Entrepreneurial Performance	87	0.445	0.409	0.480	21.464	0.000	

This meta-analysis study examined the correlation effect sizes between beauty entrepreneurship performance and performance-related factors. The results for each variable are as follows:

The correlation effect size between business performance and performance-related factors was 0.329 (95% confidence interval: 0.266-0.389). This indicates a moderate positive correlation between business performance and performance-related factors, and the result was statistically significant (Z=9.721, p<0.001). The correlation effect size between operational performance and performance-related factors was 0.239 (95% confidence interval: 0.141-0.332). This suggests a weak to moderate positive correlation between operational performance and performance-related factors, with the result being statistically significant (Z=4.702, p<0.001).

The correlation effect size between social performance and performance-related factors was 0.346 (95% confidence interval: 0.179-0.493). This indicates a moderate positive correlation between social performance and performance-related factors, and the result was statistically significant (Z=3.928, p<0.001). The correlation effect size between entrepreneurial performance and performance-related factors was 0.445 (95% confidence interval: 0.409-0.480). This indicates a high positive correlation, close to 0.5, between entrepreneurial performance and performance-related factors, and the result was statistically significant (Z=21.464, p<0.001). The Q statistic for group differences was 23.746 (p<0.001), suggesting heterogeneity.

Overall, entrepreneurial performance showed the highest positive correlation, followed by social performance, business performance, and operational performance in terms of the effect sizes.

4.4.3. Correlation Differences by Gender

Table 5: Correlation Differences by Gender

Variable	K	ES(r)	95%CI		Z	p	Qb
			LL	UL			
Female	16	0.298	0.198	0.393	5.623	0.000	3.172 (0.075)
Mixed	92	0.392	0.353	0.429	17.926	0.00	

This meta-analysis examined the correlation effect sizes between variables related to beauty entrepreneurship performance in female and mixed groups. The results for each group are as follows:

In the female group, the correlation effect size between beauty entrepreneurship performance and related factors was 0.298 (95% CI: 0.198-0.393). This indicates that the variables in the female group have a moderate positive correlation with beauty entrepreneurship performance and that the result is statistically significant (Z=5.623, p<0.001).

In the mixed group, the correlation effect size between beauty entrepreneurship performance and related factors was 0.392 (95% CI: 0.353-0.429). This suggests that the success factors in the mixed group exhibit a moderate-to-high positive correlation with beauty entrepreneurship performance, with statistical significance (Z=17.926, p<0.001).

The Q statistic, representing the difference between groups, was 3.172 (p=0.075), indicating that the heterogeneity is not statistically significant. Therefore, the difference in effect sizes between the female and mixed groups is not substantial.

4.4.4. Effect Sizes by Startup Type

Table 6: Effect Sizes by Startup Type

Variable	K	ES(r)	95%CI		Z	p	Qb
			LL	UL			
Beauty	9	0.561	0.444	0.659	7.921	0.000	8.039 (0.005)
Beauty Entre-preneurship	139	0.381	0.348	0.413	20.555	0.000	

The correlation effect size between beauty variables and beauty entrepreneurship performance was found to be 0.561 (95% CI: 0.444-0.659). This indicates that beauty variables exhibit a very strong positive correlation with beauty entrepreneurship performance, with statistically significant results (Z=7.921, p<0.001).

The correlation effect size between cosmetology startup variables and beauty entrepreneurship performance was 0.381 (95% CI: 0.348-0.413), indicating a moderate-to-high positive correlation. This result was also statistically significant (Z=20.555, p<0.001).

The Q statistic, representing the difference between groups, was 8.039 (p=0.005), suggesting that the heterogeneity between the variables is statistically significant. Therefore, the difference in effect sizes between beauty and cosmetology startup variables is meaningful.

Overall, both beauty and cosmetology startup variables demonstrated moderate-to-high positive correlations with beauty entrepreneurship performance, with results that were statistically significant. These findings highlight the critical impact of these variables on beauty entrepreneurship performance.

4.4.5. Effect Sizes by Startup Type

Table 7: Correlation Effect Size by Category

Variable	K	ES(r)	95%CI		Z	p	Qb
			LL	UL			
Beauty Industry Manager	22	0.316	0.239	0.388	7.727	0.000	53.161 (0.000)
Beauty Industry Entrepreneur	68	0.403	0.362	0.442	17.399	0.000	
Beauty Worker	21	0.224	0.129	0.315	4.541	0.000	
Beauty Store Entrepreneur	4	0.734	0.612	0.822	8.163	0.000	
Beauty Shop Manager	15	0.542	0.467	0.610	11.736	0.000	
Skin Care Entrepreneur-ship	18	0.375	0.290	0.454	8.102	0.000	

In this meta-analysis study, the correlation effect sizes between beauty entrepreneurship performance and related factors were analyzed by sector. The results for each variable are as follows:

The correlation effect size between beauty workers and beauty entrepreneurship performance was 0.224 (95% CI: 0.129-0.315). This indicates that the beauty worker variable has a relatively low positive correlation with beauty entrepreneurship performance, and the result was statistically significant (Z=4.541, p<0.001). For beauty store entrepreneurs, the correlation effect size with beauty entrepreneurship performance was 0.734 (95% CI: 0.612-0.822). This suggests that the beauty store entrepreneur variable has a very high positive correlation with beauty entrepreneurship performance, and the result was statistically significant (Z=8.163, p<0.001).

For beauty salon operators, the correlation effect size with beauty entrepreneurship performance was 0.542 (95% CI: 0.467-0.610). This indicates a moderate-to-high positive correlation, and the result was statistically significant (Z=11.736, p<0.001). For skin beauty entrepreneurship, the correlation effect size with beauty entrepreneurship performance was 0.375 (95% CI: 0.290-0.454), indicating a moderate positive correlation, and the result was statistically significant (Z=8.102, p<0.001). The Q statistic for the differences between groups was 53.161 (p<0.001), indicating that heterogeneity is statistically significant. This suggests that the effects of the variables on beauty entrepreneurship performance are not consistent, and the differences in effect sizes between the variables are statistically significant.

Overall, beauty store entrepreneurs and beauty salon operators' variables have a high level of impact on beauty entrepreneurship performance, while the beauty business entrepreneurs and skin beauty entrepreneurship variables have a moderate level of impact, and the beauty business managers and beauty workers variables have a relatively lower level of impact.

4.4.6. Analysis of Changes by Year

Table 8: Correlation Effect Size by Academic Discipline

Variable	K	ES(r)	95%CI		Z	p	Q_b
			LL	UL			
Department of Business Administration	34	0.411	0.346	0.472	11.361	0.000	1.159 (0.560)
Department of Cosmetology	44	0.367	0.308	0.423	11.376	0.000	
Department of Beauty	70	0.398	0.352	0.443	15.400	0.000	

The correlation effect sizes were analyzed according to academic discipline. The results for each variable are as follows:

First, the correlation effect size for business majors was 0.411 (95% confidence interval: 0.346-0.472). This indicates a high moderate correlation effect size close to 0.5 for business majors, and the result was statistically significant (Z=11.361, p<0.001). The correlation effect size for beauty majors was 0.367 (95% confidence interval: 0.308-0.423). This suggests a moderate positive correlation effect size for beauty majors, and the result was statistically significant (Z=11.376, p<0.001). The correlation effect size for beauty studies majors was 0.398 (95% confidence interval: 0.352-0.443). This indicates a high moderate correlation effect size close to 0.4 for beauty studies majors, and the result was statistically significant (Z=15.400, p<0.001). The Q statistic for group differences was 1.159 (p>0.05), suggesting no significant heterogeneity between groups. This indicates that the differences between the

groups were not statistically significant.

Overall, the analysis revealed that the academic discipline with the highest correlation effect size was business, followed by beauty studies and beauty majors.

4.4.7. Analysis of Changes by Year

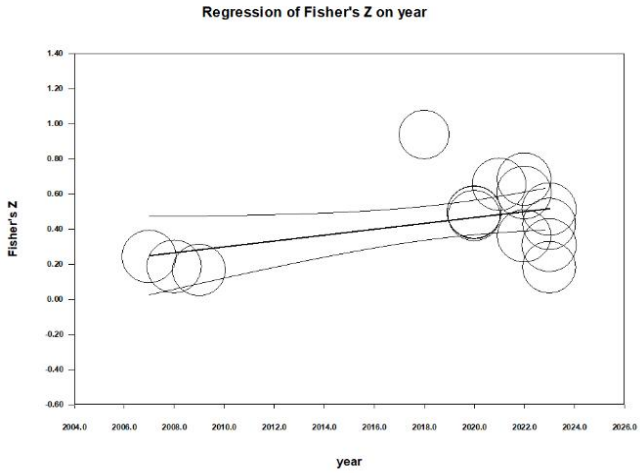

Figure 4: Analysis of Changes by Year

Table 9: Meta-regression Analysis Results by Publication Year

Variable		Coefficient	Standard Error	LL	UL	Z	*p*
Year	Year	-33.365	14.138	-61.074	-5.655	-2.36	0.018
	Intercept	0.017	0.007	0.003	0.031	2.39	0.017

The meta-regression analysis based on the publication year revealed that the slope coefficient of the regression line was 0.017, with a lower bound of 0.003 and an upper bound of 0.031. This slope coefficient was statistically significant ($p<.05$).

These results suggest that more recent studies show a higher correlation effect size between beauty entrepreneurship performance and success factors.

5. Discussions

We are living in an era where anyone can start a business with promising ideas and innovative technologies. This study systematically analyzed the relationship between beauty distribution entrepreneurship performance and related success factors through meta-analysis, deriving meaningful insights. The findings are as follows:

First, the key factors influencing beauty distribution entrepreneurship performance were identified as business variables, entrepreneurial performance variables, managerial performance variables, and social performance variables. Among these, business variables exhibited the highest correlation effect size (0.734), highlighting their significant impact on entrepreneurial performance.

Second, a gender-based analysis revealed that the difference in correlation effect sizes between female groups and mixed-gender groups was minimal. However, mixed-gender groups (0.392) showed slightly higher correlation effect sizes compared to female groups (0.298), indicating the need for more targeted support for female entrepreneurs.

Third, sector-based correlation analysis showed that beauty store entrepreneurship (0.734) and beauty salon operators (0.542) demonstrated the highest correlation with entrepreneurial performance, indicating their substantial influence. Conversely, beauty business managers (0.316) and beauty workers (0.224) exhibited relatively lower correlations.

Fourth, an analysis of year-based publication changes revealed that more recent studies yielded higher correlation effect sizes, suggesting that technological advancements and industrial changes significantly impact entrepreneurial performance.

Fifth, meta-regression analysis indicated a gradual increase in correlation effect sizes over time, reflecting the growing influence of technological trends and awareness of sustainability on entrepreneurial success factors.

To enhance entrepreneurial performance, effective business models and clear market strategies are essential, and tailored support programs should be implemented to help entrepreneurs improve their initial funding and operational capabilities. Educational institutions, such as universities, should strengthen distribution entrepreneurship education by combining theoretical and practical training, creating environments where entrepreneurs can gain hands-on experience. Entrepreneurs must also develop innovation and risk-taking capabilities while fostering resilience to overcome challenges, which can be internalized through systematic entrepreneurship education. Moreover, global best practices and sustainable technology adoption should be emphasized, and beauty startups that integrate AI and eco-friendly innovations are well-positioned for significant growth.

This study identifies the key factors influencing beauty distribution entrepreneurship performance and proposes directions for advancing the entrepreneurial ecosystem. These findings can be utilized to develop policy, educational, and industrial strategies that maximize entrepreneurial success.

The practical implications of this study are as follows (Lee et al., 2014). First, effective business models and clear market strategies are essential to enhance entrepreneurial performance. To achieve this, tailored support programs that help entrepreneurs improve their initial funding and operational capabilities are required. Second, specific policies targeting female entrepreneurs and beauty

entrepreneurs need to be established. Female entrepreneurs should be provided with continuous mentoring and networking opportunities, while beauty entrepreneurs should receive support to actively adopt online market platforms and digital technologies (Wang, 2023).

Third, educational institutions, such as universities, should strengthen entrepreneurship education by combining theoretical and practical training, creating environments where entrepreneurs can gain hands-on experience in areas such as distribution and manufacturing (Dimova & Pela, 2018). Fourth, entrepreneurs must cultivate innovation and risk-taking capabilities while developing the resilience to overcome challenges at an early stage. These competencies can be internalized through systematic entrepreneurship education. Fifth, the adoption of the best global practices and sustainable technologies should be emphasized, as beauty startups integrating AI and eco-friendly innovations demonstrate high growth potential (Gnuschke, 2000).

This study identifies the key factors influencing beauty distribution entrepreneurship performance and proposes directions for the development of the entrepreneurial ecosystem. These findings can be utilized to establish policy, educational, and industrial strategies that maximize entrepreneurial success.

As systematic literature reviews and meta-analytical studies are actively conducted in consumer research, continuous studies on the beauty industry and beauty distribution entrepreneurship are also necessary to ensure comprehensive and high-quality analyses (Timotius, & Octavius, 2021).

6. Conclusions

The present study systematically analyzed the key factors influencing beauty distribution entrepreneurship performance through meta-analysis but has several limitations. First, the study primarily relied on domestic research, limiting its reflection of entrepreneurial performance factors in global contexts or different cultural settings. This regional specificity may restrict the generalizability of the findings. Second, while the beauty distribution industry encompasses diverse subfields, such as product manufacturing, service sectors, and technology-driven startups, this study did not distinctly separate these domains, making it challenging to capture the unique characteristics of each subfield. Third, although the Funnel Plot and Trim-and-Fill results indicated no publication bias, the absence of unpublished literature or internal documents (gray literature) may hinder a comprehensive representation of the research field. Lastly, this study focused on quantitative data and excluded qualitative factors, such as entrepreneurs' motivations, experiences, and organizational culture, thereby limiting a deeper analysis of the factors influencing entrepreneurial performance.

To address these limitations, several directions for future research are proposed. First, future studies should incorporate research data from various countries to explore differences in global entrepreneurial ecosystems and identify universally applicable success factors. Second, comparative analyses of performance factors across subfields of the beauty distribution industry, such as manufacturing, services, and technology-based startups, are necessary to provide strategic insights tailored to each sector. Third, the integration of qualitative research, including factors like entrepreneurs' experiences, motivations, networks, and cultural influences, with quantitative data through a mixed-methods approach, could yield more comprehensive insights.

Additionally, longitudinal studies are essential to understand the long-term changes in entrepreneurial performance factors. Investigating the impact of cutting-edge technologies, such as AI, big data, and eco-friendly innovations, along with consumer trends on entrepreneurial performance and the beauty business, should also be thoroughly investigated. Finally, the practical effects of government and public sector policies supporting beauty distribution should be empirically examined to establish a foundation for more effective and impactful policy design. These research directions will contribute to expanding the depth and scope of studies not only in the beauty distribution industry but also in the broader field of entrepreneurship research.

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