

Article

The Competitive Advantage of the Indian and Korean Film Industries: An Empirical Analysis Using Natural Language Processing Methods

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Abstract: India has a longstanding reputation in the film industry, whereas South Korean films have only recently achieved notable success globally. Despite their significant positions in the global film market, there are very few studies that compare and analyze the competitive advantage of the two countries in the film industry. This paper adopts the ABCD model as a complementary framework to the two mainstream theories of strategic management (i.e., industry-based view and resource-based view) to analyze and compare the competitiveness of the industrial success of emerging countries. For the empirical test, this paper uses natural language processing methods to operationalize the theoretical model. After collecting text data from news articles in English related to the Korean and Indian film industries, this study analyzes how many keywords with regards to the 8 sub-factors of the ABCD model are mentioned in the articles using the document similarity measurement. The results reveal the different but complementary areas of strengths. India has higher competitiveness in the factor of Agility while Korea has higher competitiveness in Convergence. This study also highlights the areas for further development and potential partnership between the two countries by leveraging each other's strengths.

Keywords: competitive advantage; film industry; India; Korea; ABCD model; natural language processing



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1. Introduction

Innovation is considered as an important factor for creating and sustaining competitive advantage in an industry [1,2]. Two key theories in the field of strategic management help explain the drivers for innovation of firms competing in the industry. The first is the industry-based view (IBV) rooted in industrial organization (IO) economics, which emphasizes the determinant role of environmental factors on firm innovation and performance. Michael Porter's analytical frameworks such as the five-forces model [3] have contributed to this perspective in particular. From the 1980s, however, despite the popularity of IBV, it was challenged by the resource-based view (RBV) and extended theories such as knowledge-based view and dynamic capabilities. These alternative views argue that the IBV neglects the effects of internal resources and capabilities among firms that have led to the heterogeneity of firms and their industrial performance.

Despite the contradictory but complementary approaches between the two mainstream theories with regard to competitive advantage, they commonly stress the importance of resource superiority that support firm innovation and sustainable performance [4]. However, these approaches are limited at explaining the success of latecomers because they do not have enough resources for R&D in the initial development stage. The external industrial environment that facilitates firm innovation emphasizes the importance of access

to advanced factor conditions such as technology and skilled labors, sophisticated market, and competitive suppliers. However, these factors are often insufficient or underdeveloped in developing countries. Hence, both theories cannot satisfactorily explain the diverse sources of competitive advantages of firms or industries from developing countries.

To clarify the fundamental sources of competitive advantage of the industries in emerging countries, this paper analyzes and compares the success of the film industry in two developing countries—India and Korea. Despite the dominance of the United States (US) in the global film industry, film markets in the Asian region have been expanding and have brought about a significant increase in its share of the global film market thanks to its increasing living standards [5]. The four main countries in the region—China, Japan, Korea, and India—account for a dominant share of the Asian film market, and they are among the top ten largest film markets in the world.

India has had a longstanding reputation for its film industry. Although it has suffered in recent years from the decline in both domestic demand for films and its share in the global film market, it remains the largest producer of films in the world—about three times the size of Hollywood’s production [6,7]. “Bollywood,” based in Mumbai, in particular, has a large and successful profile around the world. Ref. [8] pointed out that “Bollywood has increasingly emerged as a significant competitor of Hollywood in the size and enthusiasm of its audiences”.

On the other hand, Korean films in recent years, such as Bong Joon-ho’s *Parasite* (2019), have achieved great success at international film festivals and academy awards, for example. In particular, Netflix’s original series *Squid Game* (2021) has set another milestone as the streaming site’s most popular TV show [9]. The Wall Street Journal stated that such success has secured Korea’s reputation for making high-quality shows on tight budgets as noted in an Arirang News article on 29 December 2021 [10].

Although distant from Hollywood in terms of gross revenue, films from India and Korea have managed to outperform many Hollywood blockbusters, and have generated substantial influence in the global film market. As this has only been a recent development, India’s Bollywood and Korea’s film industry have attracted the attention of mainstream academics. However, there has been a lack of serious research in this field, and a systematic analysis of the industrial competitiveness [6,11].

Recognizing the important differences in the fundamental sources that contribute to the innovation and competitive advantages between developed and developing country industries, this study adopts the ABCD model [4]. It stresses the behavior and attitude variables of firms for creating competitive advantages given the limited resources and core competences compared to the leading firms. The ABCD model was first developed to analyze the strategy for Korea’s economic success [4], but later has been widely applied at various levels including nation [12,13], industry [14], and firm [15,16].

Specifically, this paper adopts the ABCD model to analyze the relative competitiveness of the Indian and Korean film industries. The model is composed of four competitiveness factors: agility, benchmarking, convergence, and dedication. To operationalize this conceptual model, this study conducts an empirical test by using the natural language processing (NLP) method, which is a novel approach in this kind of research, particularly in the film industry. As a methodological tool for empirical research, text mining was adopted. This tool has proven, over the past decade, its effectiveness in generating knowledge from large amounts of text data [17]. Text mining is widely used by many researchers in various fields specially to measure concepts that were previously very difficult to measure.

The empirical analysis of this paper shows that competitiveness factors of Korean and Indian film industries are different from the US filmmakers’ success formula which is well supported by the conventional theories of IBV and RBV. Nevertheless, Korean and Indian film industries show different but complementary aspects of strengths with regard to the competitiveness elements of the ABCD model. These findings therefore provide the opportunity for partnership between the two countries to utilize each other’s strengths while overcoming their weaknesses. This paper’s main contribution to strategic manage-

ment and competitiveness literature lies in operationalizing the ABCD model, by using the novel method of Natural Language Processing for data collection and competitiveness measurement. It also points out the significance of the alternative way of creating advantages given the limited technology and human resources, as well as an underdeveloped market system. The empirical study of Korean and Indian film industries thus provides a good example and practical implications for developing indigenous industries in other emerging economies by using the ABCD model.

The rest of this paper is organized as follows: in the next section, we review the existing studies on the competitiveness of Indian and Korean film industries and point out the research gaps between existing studies and this research. The ABCD model and hypotheses based on the model are presented in Section 3. Methods of the empirical test are shown in Section 4. The empirical results and discussions are illustrated in Section 5 and Section 6. For the Conclusions section, we summarize the contributions and implications of our approach.

2. Literature Review

Due to the growing well-being of Asian countries and the demand for cultural services, there has been a significant increase in Asia's share in the global film market [5]. The four Asian leaders—China, Japan, Korea, and India—account for most box office revenues in the Asian film market, and more than 35 percent globally [5]. These Asian film leaders not only contribute to the growth of film consumption internationally, but also to the film production that can even compete with Hollywood. In all four of these countries, local filmmakers are very competitive, accounting for more than 50 percent of their box office revenues.

Despite the large body of literature on film industries around the world, there are few analyses of India and Korea, in terms of the factors that contribute to their film competitiveness. To the best of our knowledge, there is no comparative analysis specifically between the two countries. Ref. [18] is known as the first study that adopted econometric analysis of factors influencing the success of Indian films. This study investigated the effects of the main determinants with regard to brand, product, distribution, consumers on the opening week, and total box office sales in the United Kingdom (UK) and US markets. Neither star power nor director's experience has significant influences on box office revenues, while consumer's online reviews are also found to have no significant impacts on the box office sales.

Ref. [6] is the second and most recent study that conducted an econometric analysis about the factors that contribute to India's film success. This paper, however, is different from Ref. [18] in that it sought to examine the determinants of success in the Indian market instead of the international market. Ref. [6] considered the quality signals such as film budgets, online review scores, and the production of sequels, and proved their significant influences on greater box office success.

In contrast to the two studies above that focused on post-release or post-production, Ref. [19] focused on pre-production prediction. They calculated the possibility of movie success that won Academy Awards by using machine learning algorithms. The study showed that Academy Awards, as a non-dominating ingredient, slightly increase the accuracy of predicating a film's market success. In a similar vein, Ref. [20] used Twitter data to predict the performance of Bollywood films, and argued that social media or social networks can be a useful source for making quantitative predictions.

Other studies have adopted a qualitative approach (e.g., case study, interview) to examine the success factors behind Indian films. Ref. [21] examined how an integrated social media promotion strategy, using multiple social media platforms (e.g., YouTube, Facebook, and Twitter), can affect box office success. Ref. [22] explained why Indian films are gaining popularity in the Chinese market, by suggesting five appealing factors: content-driven story, social values, star power, audience reviews, and cultural connections.

In contrast to the studies on the determinant factors behind the success of Indian films, Korean film studies have mainly stressed different aspects and approaches when

investigating the growth and success of the Korean film industry. Ref. [23] emphasized that the cultural hybridity has contributed to the fast growth of Korean films. Furthermore, Jin argued that cultural hybridity between Western and Korean culture does not necessarily create a new form of culture or unique local culture, but rather represents Western cultural values that suit such tastes.

Similarly, Ref. [24] emphasized the positive influence of global integration on Korea's film development. Specifically, the digital wave in the Korean film industry has provided new impetus and new outlets for Korean films. The digital technical expertise not only helped upgrade technological capabilities among Korean filmmakers, but also supported international collaboration with foreign partners. Global integration thus provided Korean filmmakers with more opportunities for production and marketing abroad, thereby improving its status in the film industry.

On the other hand, Ref. [25], in contrast to most studies that highlighted the importance of government policies, protectionist measures in particular, argued that the success of the Korean film industry should not be attributed to the government's protectionist efforts such as the import quota or subsidies. It is rather the businesses of large conglomerates known as chaebols that have played a major role in effectively responding to internal and external changes, as well as developing cultural products with global competitiveness. In a similar vein, Ref. [26] discussed the shortcomings of various trade-related policies such as regulatory barriers, tax relief, subsidies, and trade agreements. They noted that protectionist policies do not automatically benefit domestic industrial development, but well-designed policies which can contribute greatly toward enhancing film industries.

By reviewing the recent studies on the success of the film industries in India and Korea, we can identify their different focuses and approaches. Studies on Indian films tend to focus more on factors that are resources- and capability-oriented, whereas film studies on Korea highlight rather the aspects of globalization and government policies. The existing literature, therefore, shows that there have been few studies on the analysis between India and Korea with regard to their competitiveness by comparing the commonly important factors in the film industry. Despite the differences, preceding studies emphasized the ownership of resources when achieving a success (or "what" approach). This study, however, adopts the "how" approach to examine the strategy variables that affect their performance, although the firms may have similar resources. In this respect, this paper applies the ABCD model [4] for the analysis of industrial competitiveness. It particularly emphasizes the importance of strategy variables that have contributed to the success and have enhanced competitiveness by utilizing available resources. The following section explains the model in more detail.

3. Conceptual Framework and Hypotheses

3.1. Conceptual Framework: The ABCD Model

The IBV and RBV of the firm are the two mainstream perspectives that explain the sources of the firms' competitive advantage. Therefore, industrial structure and firm positionings together explain how firms can achieve competitive advantages or gain higher profitability against rivals. Industrial structure characteristics are conceptualized as the five forces [3] that impede the entry and limit the current rivalry among participants in favor of industrial attractiveness and firm profitability. However, Indian films, for example, are produced by hundreds of small-scale production firms with one or fewer annual releases, collaborating with independent distributors, financiers, and cinema operators [27]. In the case of Korea, the removal of protectionist policies and the opening of the Korean market to foreign competition have been critical for the take-off of its film industry [25]. Therefore, the IBV represented by Porter's frameworks is useful in understanding the competitive advantages of advanced country firms, yet they show limits when applied to the developing countries with underdeveloped markets and institutions [28–30].

On the other hand, the RBV emphasizes the importance of internal firm resources to explain the heterogeneity of firm performances within an industry. Therefore, the RBV focuses on the internal factors but neglects the external elements. The firm-specific idiosyn-

crasies depend on the accumulation of resources characterized with four conditions—rare, valuable, inimitable, and not substitutable [31]. This theory emphasizes the sources of current competitive advantages but cannot adequately explain how firms continuously create resources and capabilities to generate future competitive advantages [32]. Therefore, the RBV has often been criticized for its limitations in explaining the evolutionary path of the firms' capability building [4,33]. The recent research in the RBV focuses on firm capabilities [34–36] to adapt to external changes and evolve over time, thereby complementing the static setting of the early RBV research. However, the RBV approach still focuses on the importance of ownership or access to the unique resources which cannot be easily copied by rivals. Considering RBV and film industry characteristics, Ref. [37] suggested three types of resources—network resources, production know-how, and marketing capabilities—that determine the market performance. Nevertheless, it would be difficult to say that Indian and Korean filmmakers have superior advantages against each other in terms of these resources.

Although the above two approaches are helpful in distinguishing the various development levels between developed (e.g., the US) and developing countries (e.g., India and Korea), they are limited in explaining the different performance among countries with similar resource endowment or those that have adopted similar strategies. In this regard, the ABCD model [4] can fill the gap by explaining how a firm can achieve faster growth than other developing or developed economies with similar resource endowments. Accordingly, in contrast to the traditional approach that stresses the importance of superior resources or “what” approach, the ABCD model utilizes the “how” approach which focuses on how to strengthen competitiveness by efficiently utilizing extant resources.

The ABCD model was first introduced to explain the strategy and fundamental factors that led to Korea's economic success within a short period. This model is composed of four factors—Agility, Benchmarking, Convergence, and Dedication. Each factor is further divided into two sub-factors, thereby comprising eight sub-factors in total.

The first factor, Agility, is composed of two sub-factors, speed and precision, which contribute to enhancing competitiveness. The traditional approach to competitive advantage often emphasizes the entry speed such as first-mover advantage. However, in a fast-growing industry featured with a shortening product life cycle, it becomes more difficult to sustain its existing competitive advantages for a longer time. Thus, firms need to continuously upgrade their advantages or develop new ones to sustain the competitive position in the market. Therefore, both the entry and process speeds matter for building competitiveness. On the other hand, speed should be accompanied with precision, which refers to the accuracy in all aspects of business to satisfy the customer's needs.

The second factor, Benchmarking, refers to developing new best practices by learning the existing industry's best practices plus alpha. The industry's best practices are widely accepted norms in the industry by firms and consumers. It will be more effective for firms to adopt the industry best practices with regard to cost efficiency and risk reduction, and help firms better overcome the entry barriers while starting a new business. Moon suggests three strategic practices—imitation, improvement, and innovation—that lead firms to shift from imitators to innovators. Therefore, innovation occurs most effectively when firms imitate and learn existing best practices and substantially advance them to the next generation of best practices.

The third factor, Convergence, is composed of two sub-factors, “mixing” and “synergy”. Existing studies mainly emphasize the efficiency of specialization or related diversification strategy for achieving higher performance in the market. However, Moon suggests “economies of diversity” by synergistically mixing seemingly unrelated and related sectors in a synergistic way. This, however, requires the firms' higher combinative capabilities and creation of shared values, which facilitate the reduction of coordination costs and maximization of synergistic effects.

The fourth factor, Dedication, comprising “diligence” and “goal” is often neglected by existing competitiveness studies. Diligence with a clear goal is particularly important for

latecomers when they have few superior resources against rivals. The importance of this factor is grounded on motivational aspects of human resource management and leadership, which help firms and nations effectively mobilize and allocate limited resources in the most productive areas. The economies of hard work, or diligence, can be further propelled with the guidance of the right goal.

3.2. Hypotheses

This study seeks to apply the ABCD model for comparing and analyzing the competitiveness of the Indian and Korean film industries. The ABCD model suggests that the higher the level of a sub-factor or factor of the ABCD model, the higher competitiveness an industry has, all other things being equal. Which country has higher competitiveness in the film industry between Korea and India? It is very difficult to objectively judge this question because such judgments arise from differences in perspective and perception. To address this, the direction of the hypothesis in this study was established based on the questions and answers presented in Quora.

Quora is a question-and-answer online platform that empowers people to share and generate knowledge. People participate in Quora to ask questions on any topics, read high-quality answers, and share their own knowledge. As of 2020, the platform was visited by 300 million users a month. In Quora, we found the following questions that directly compare the Korean and Indian film industries.

Question 1. *Between South Korea and India, which country produces better films?*

There is a total of 15 answers to this question, and each one provides a rationale for which country makes better movies. There are six answers that choose Korea, seven answers that choose India, and two answers that take a neutral position stating that it is a matter of taste. There are also three specific questions asking why the Korean film industry is more competitive than its Indian counterpart.

Question 2. *Why are Indians not capable of making world-class movies like Koreans?*

Question 3. *Why are Korean movies more famous than Indian movies?*

Question 4. *Why is Indian Bollywood culture not as globally popular as K-Pop/Korean dramas?*

These three questions imply the perception that the competitiveness of the Korean film industry is higher than that of India. This question in reverse is not found on Quora. For example, there is no question asking why the Indian film industry makes better films than the Korean film industry. Based on the viewpoints expressed in these questions and answers, this study proposes the hypothesis that the competitiveness of the Korean film industry is higher than that of the Indian film industry. When this hypothesis is expressed with the four factors and eight sub-factors of the ABCD model, it is further proposed as follows:

Hypothesis 1 (H1). *Korea is more competitive in agility than India in the film industry.*

Hypothesis 1 (H1a). *Korea is more competitive in speed than India in the film industry.*

Hypothesis 1 (H1b). *Korea is more competitive in precision than India in the film industry.*

Hypothesis 2 (H2). *Korea is more competitive in benchmarking for efficient catch-up than India in the film industry.*

Hypothesis 2 (H2a). *Korea is more competitive in learning the best practices than India in the film industry.*

Hypothesis 2 (H2b). *Korea is more competitive in creating best practice by global standards than India in the film industry.*

Hypothesis 3 (H3). *Korea is more competitive in mixing synergistically for creating new advantages than India in the film industry.*

Hypothesis 3 (H3a). *Korea is more competitive in combining various resources for generating advantages than India in the film industry.*

Hypothesis 3 (H3b). *Korea is more competitive in generating synergies to enhance competitiveness than India in the film industry.*

Hypothesis 4 (H4). *Korea is more competitive in dedication toward success than India in the film industry.*

Hypothesis 4 (H4a). *Korea is more competitive in diligence toward success than India in the film industry.*

Hypothesis 4 (H4b). *Korea is more competitive in goal-orientation toward success than India in the film industry.*

4. Materials and Methods

In this study, analysis is made based on the degree of how many times the eight sub-factors are mentioned in movie-related newspaper articles about Korea and India. The more mentions related to each sub-factor, the greater emphasis the country's film industry places on the sub-factor and hence the more important the sub-factor is to the country's film industry. The technical steps of this process are described in Figure 1.

For the analysis of this study, we use Python, because this open-source language community offers the latest NLP technologies in libraries. The analysis was conducted in December 2021, and the data and the source code used for this analysis are available at https://github.com/lbtl/paper_ssm02 (accessed on 17 March 2022) [38].

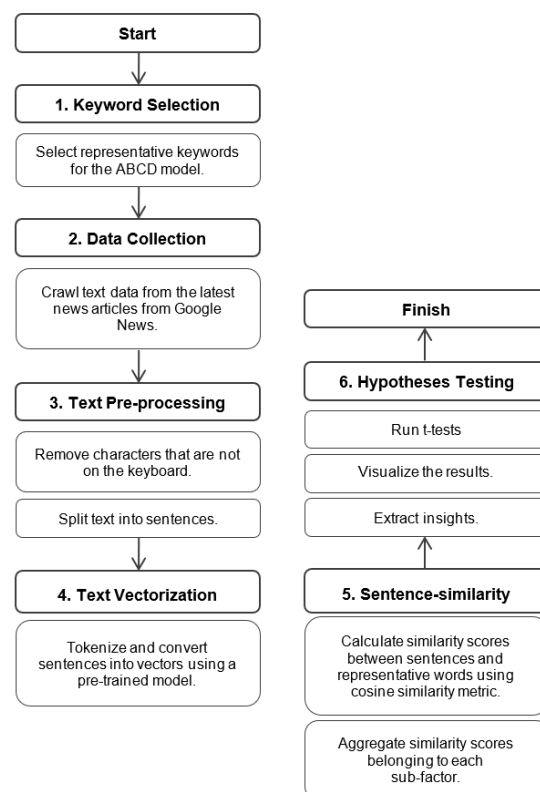


Figure 1. Workflow of overall analysis.

4.1. Creating a Keyword List

In order to empirically test the hypotheses of this study, it is necessary to measure the variables included in the hypotheses. For example, we need to measure “speed for increasing productivity” in Has for the film industries of Korea and India. Although undertaking a survey is a commonly used method for such research, results could be different depending on the respondents of the survey.

To avoid such limitation of a survey approach, this study lists keywords related to 8 variables or sub-factors included in the hypotheses. Next, the variables are measured by applying text-mining techniques and calculating the degree of mentions of the 8 sub-factors in movie-related newspaper articles of Korea and India. The list of keywords related to the 8 variables is developed through brainstorming of the group involving the author of the ABCD model and 3 of his colleagues who are very familiar with the model. Four researchers individually list words related to 8 variables and collect them to remove duplicate words. A total of 224 keywords are selected with 28 keywords for each of the 8 sub-factors of the ABCD model. Table 1 shows a list of keywords related to the 8 sub-factors.

Table 1. Keywords for the ABCD model.

Agility Speed	Precision	Benchmarking Learning	Best Practice
speed	precise	learning	guide
speedy	preciseness	evaluating	guideline
fast	accurateness	experimenting	ideal
fastness	accurate	comparing	indicator
swift	accuracy	imitating	index
swiftness	clarity	copying	exemplar
rapidity	clearness	measuring	model
rapidly	correctness	testing	norm
prompt	careful	trying	paradigm
promptitude	dependability	discovering	pattern
hurry	detail	tracing	reference
haste	detailed	developing	prototype
quick	distinctness	advancing	specification
quickness	exactitude	strengthening	standard
legerity	exactness	checking	archetype
responsiveness	exhaustive	researching	mark
suppleness	on target	optimizing	yardstick
reflex	well aimed	identifying	criterion
resilience	refinement	retrieving	touchstone
acceleration	meticulous	analyzing	level
deftness	infallible	determining	baseline
nimbleness	fineness	verifying	distinction
proficient	closeness	understanding	value
adaptability	veracity	enhancing	condition
velocity	perfection	estimating	character
celerity	strictness	surveying	target
flexibility	constancy	emulating	basis
lightness	quality	finding	blueprint
Convergence Mix	Synergy	Dedication Diligence	Goal
combination	synergic	attentiveness	motivated
union	coefficient	carefulness	self-discipline
uniformity	mutual gain	putting efforts	driving force
confluence	interchange	continuance	strong desire
mixture	team effort	constancy	aimful
merging	connected effort	commitment	determined
blending	combined effect	hard work	enthusiastic
integrating	powering	perseverance	inspired
connecting	reinforcing	devotion	striving
coming together	leverage	ability to focus	energetic
joining	harmonious	passion	enterprising
crossing	joint action	willingness	ambitious
interconnection	efficiency	conscientiousness	aspirational

Table 1. Cont.

Convergence Mix	Synergy	Dedication Diligence	Goal
combining	usability	persistence	self-driven
crossing	practicality	engagement	high-reaching
meeting	cooperation	loyalty	zealous
linking	coopetition	continuity	resolute
interchange	concurrence	fortitude	intent
intersection	interplay	tenacious	self-starting
associating	pulling together	carrying out	destined
consolidation	dynamic	concentration	aggressive
hybridity	concurring	exertion	earnest
intermixing	interdependent	industrious	resourceful
bridging	complementary	endurance	vigorous
pairing	cooperative	steady	purposeful
broaden	interaction	thoroughness	inspired
diversify	coexistence	assiduous	eager
transform	united	sedulity	unwavering

4.2. Data Collection

Google News [39] is used to select recent newspaper articles about Korean and Indian film industries. We search news with 2 keywords, “India Film Industry” and “South Korea Film Industry”, and then select the 70 most recent articles for India and Korea. Of these 70 articles, 58 articles with free access are crawled. Thus, the total number of crawled articles is 116, and all articles collected are in English.

4.3. Text Pre-Processing

Text preprocessing in NLP tasks is an important step that can affect the final performance of text mining [40]. In this study, the text data of crawled articles are pre-processed in two steps: (1) removal of special characters that are not on the keyboard, (2) splitting text into sentences. After replacing all characters that are not on the keyboard with spaces, the text is split into sentences using the “sent_tokenize” module in Natural Language Toolkit (NLTK) [41], one of the most popular NLP libraries in Python. The tokenizer uses a pre-trained algorithm for English to split the text into lists of sentences. The algorithm can recognize words that start sentences and do not end sentences, for example, “Mr.” and “Ph.D.” [41]. As a result, a total of 2333 sentences for the Indian film industry and 1924 sentences for the Korean film industry are obtained for vectorization. Tables 2 and 3 show the first and last five sentences of the sentence list.

Table 2. Sentences obtained from news articles for “India film industry”.

No	Doc ID	Article	Sentence
0	0	Indian Cinema is not just Hindi Cinema: As language barrier comes down, Southern movies are ready to dominate	Actor Dhanush has earned the coveted Best Actor award at the renowned BRICS Film Festival for his portrayal in ‘Asuran’.
1	0		Dhanush is an Indian actor, producer, director, writer, lyricist, dancer, and playback singer who works mostly in the Tamil film industry and occasionally in Hindi cinema.
2	0		‘Asuran’ is a script-driven, low-budget (in terms of set and technical components) film that sends a social message and has a socially relevant topic.
3	0		Also read BRICS Film Festival 2021: Dhanush wins Best Actor for ‘Asuran’ Another such film, ‘Jai Bhim’ was so good that it obtained better ratings than some of biggest Hollywood movies on Internet Movie Database (IMDb) portal.
4	0		Also read Indian film ‘Jai Bhim’ beats ‘The Shawshank Redemption’ to become top-rated on IMDb The success of such reality-based and content-driven South Indian films raise the question: Where does Hindi cinema fit into the picture?

Table 2. Cont.

No	Doc ID	Article	Sentence
...	...	...	...
2328	57	Down with COVID-19, film industry eyes release of two Bollywood films for revival	And as the industry is not recognised by many banks, we do not get the support required and we have to resort to private institutions for debt and the interest there is very high.
2329	57		In addition, the nature of business is risky, so the interest rates are high", he explained.
2330	57		This is why many films have taken to direct to digital releases due to which the box office has lost around Rs 580 crore from the release of 26 films that released on over the top (OTT) platforms first.
2331	57		While there are uncertainties for both the film and theatre business, multiplex operators like PVR and INOX are seeing growth in occupancy levels with every new release.
2332	57		However, it will be Akshay Kumar's Bell Bottom that will have to do the heavy lifting in bringing back audiences in large numbers to theatres.

Table 3. Sentences obtained from news articles for the "Korea film industry".

No	Doc ID	Article	Sentence
0	0	Is Squid Game the dawn of a TV revolution?	The South Korean series Squid Game became Netflix's most-watched show of all time in 2021.
1	0		Its success could spark enormous changes in what we watch in 2022 and beyond, writes Al Horner.
2	0		When Bong Joon-ho won best picture for Parasite at the 2020 Oscars, his acceptance speech included a message to Western audiences.
3	0		"Once you overcome the one-inch-tall barrier of subtitles, you will be introduced to so many more amazing films", he told filmgoers who may historically have avoided non-English language movies or worse yet, waited for their inevitable American remakes.
4	0	South Korea's Busan Festival Opens With 'Parasite' Stars and a Spirit of Recovery	The director did not have to wait long for signs his wish could be coming true.
...	...		...
1919	57		You could say that it's a natural transition, but I think these are the barriers we need to overcome.
1920	57		In an interview with a Korean press, Park Hyeon-joon, the new mayor of Busan, seemed clearly aware of the impact of the government's interference on the festival's reputation, and said, Film festivals should not be swayed politically.
1921	57		On Wednesday, Park, who attended the opening-night event, said: As an avid fan of BIFF, I watched what was happening to the festival over the years and cheered [for its success].
1922	57		Now as mayor, I will spare no effort to support the festival for it to become the center of world cinema.
1923	57		The Busan International Film Festival runs 6–15 October, closing with Anita, Hong Kong director Longmond Leung's biopic about Cantopop star Anita Mui.

4.4. Text Vectorization and Similarity Measurement

In order to verify the hypothesis presented above, the sentences obtained through preprocessing are converted into numerical properties that can be calculated statistically. A pre-trained model "MiniLM layer 6 versions 2" [42] is used to transform the sentences into vectors. It should be noted that the MiniLM model is one of the distilled versions of Bidirectional Encoder Representations from Transformers (BERT) [43]. Using a pre-trained model has become an essential part of NLP systems to improve the accuracy of final models [44]. Among many BERT-based models, we choose a model with high-speed

performance that can be run on general computers such as laptops [45]. To import the model, we use the “sentence transformer” [46] library in Python.

To measure the 8 variables in the hypotheses, it is necessary to calculate the similarity between each sentence in an article and the keywords for the 8 sub-factors. For the measurement of similarity, we use cosine similarity, which has proven to be a robust metric for evaluating the similarity between documents [47]. The cosine similarity module from the Scikit-Learn library [48] is imported. Equation (1) is the formula for calculating the cosine similarity between a sentence in articles and a keyword in the sub-factors. A denotes a vector for each sentence from articles, B refers to a vector for each keyword in the 8 sub-factors, and n represents the dimension of vectors:

$$\text{Similarity score} = \frac{A \cdot B}{\|A\| \|B\|} = \frac{\sum_i^n A_i \times B_i}{\sqrt{\sum_i^n (A_i)^2} \times \sqrt{\sum_i^n (B_i)^2}} \quad (1)$$

To guarantee that all scores have the exact same scale, scores are rescaled to a value between 0 and 100 by using min-max normalization. Equation (2) is the formula for normalizing the scores as follows:

$$z_i = \frac{x_i - \min(x)}{\max(x) - \min(x)} \times 100 \quad (2)$$

where x stands for the similarity score of a sentence, and z represents the normalized similarity score.

In this way, each sentence would have 224 similarity measures, since there are 224 keywords across sub-factors (28 for each sub-factor). The total number of similarity scores is 522,592 for India (2333×224) and 430,976 for Korea (1924×224). To obtain the overall similarity measure for each sub-factor, we average the similarity scores belonging to each sub-factor across Korea and India. The result is 8 similarity scores for Korea and India, respectively. Figure 2 shows the process of calculating the similarity scores across 8 sub-factors for Korea and India.

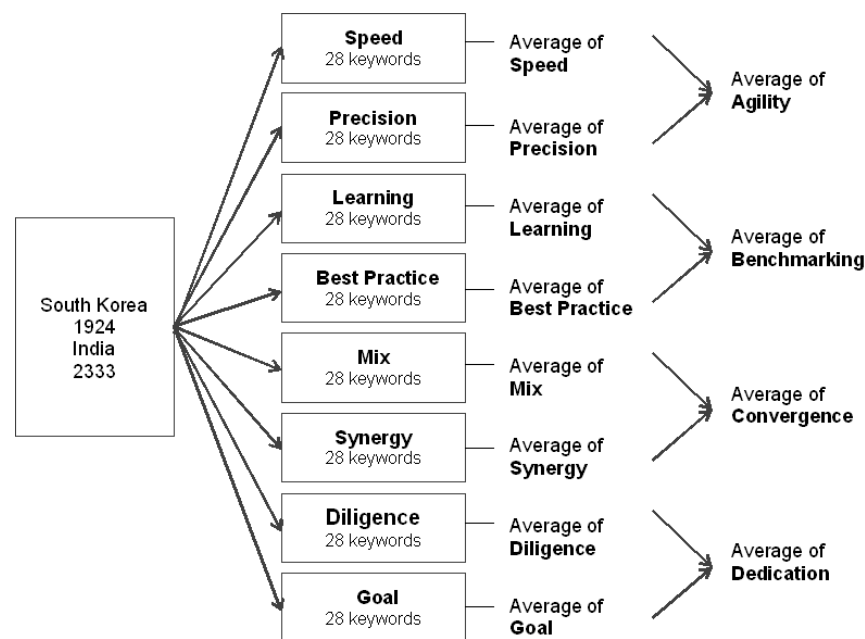


Figure 2. The process of calculating similarity scores for sub-categories.

5. Results

We calculate eight average similarity scores for Korea and India. These similarity scores indicate how frequently movie-related articles mention the eight sub-factors. The higher

the degree of mention for each factor, the greater emphasis the country's film industry places on the sub-factor and hence the more important the factor is to the country's film industry. Figure 3 below visualizes the similarity scores between Korea and India for each of the four factors.

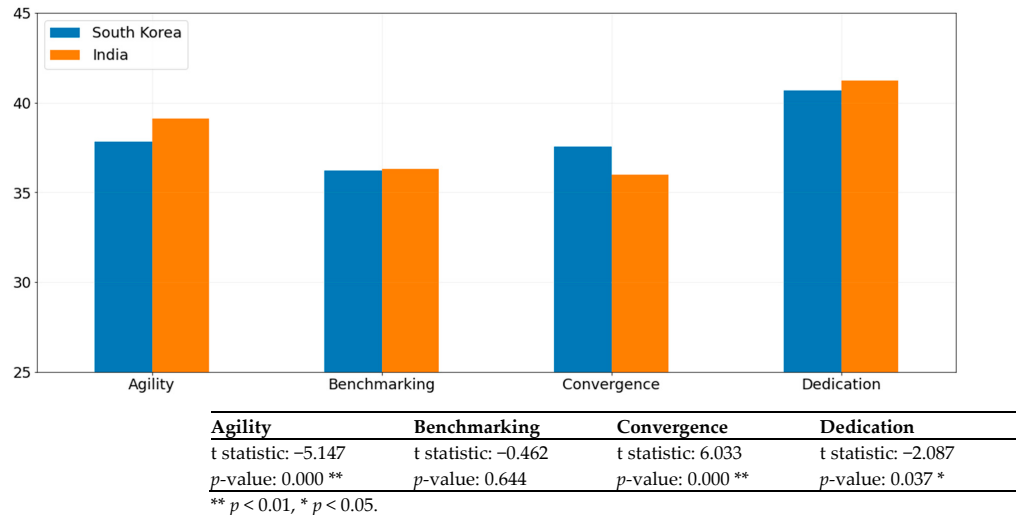


Figure 3. Average similarity scores for four factors.

Figure 3 shows the results of statistical tests. The numbers in Figure 3 summarize the t -test results at the significance level of 1 percent. As can be seen from the p -values, the result of the t -tests statistically confirms the differences between Korea and India with regard to the sub-factors. The Indian film industry is statistically proven to be more competitive than the Korean film industry in terms of agility and dedication. On the other hand, the Korean film industry is significantly more competitive than the Indian film industry in terms of convergence. With regard to benchmarking, the difference between the two film industries is not statistically significant.

Figure 4 below visualizes the similarity scores between Korea and India for each of the eight sub-factors. Furthermore, the table in Figure 4 summarizes the t -test results at significance levels of 0.01, 0.05, 0.1.

Except for the “Goal” of the Dedication factor, all sub-factors show the same statistical significance as their corresponding factors. This result means that the “Dedication” factor is not as significantly different compared to the other two factors—Agility and Convergence—between India and Korea, since it is statistically significant only in one of the two sub-factors. Therefore, if the two sub-factors are both high, the factor competitiveness is higher; if only one sub-factor is high, then the factor competitiveness is not so high.

Table 4 summarizes the results of hypotheses testing. It indicates that neither Korea nor India unilaterally shows higher competitiveness in all four factors of the ABCD model. The Indian film industry is more agile than the Korean film industry, while the Korean film industry is more competitive in convergence.

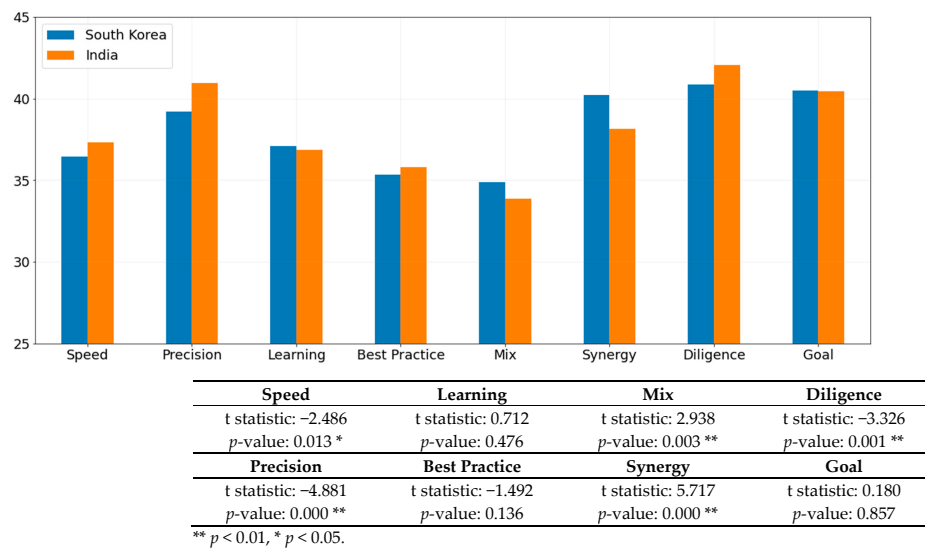


Figure 4. Average similarity scores for eight factors.

Table 4. Summary of hypotheses testing.

Agility (H1)		Benchmarking (H2)		Convergence (H3)		Dedication (H4)	
Reject		Reject		Accept		Reject	
Speed (H1a)	Precision (H1b)	Learning (H2a)	Best Practice (H2b)	Mix (H3a)	Synergy (H3b)	Diligence (H4a)	Goal (H4b)
Korea < India		Not significant		Korea > India		Korea < India	
						Not significant	

6. Discussion

The empirical results in this paper highlight that India and Korea have different areas of strengths among the four ABCD factors. Overall, India is particularly more agile than Korea in the film industry. This result is very convincing considering the characteristics of the Indian film industry and is also well supported by the findings of existing studies. Given the scale of the Indian film industry, the short period of time that films remain popular on Indian screens and the rapidity with which films are pirated, the performance at the box office in the opening week has become very important and determines the total revenues that can be made. The speed of film production and exhibition are more important in the Indian film industry than in Korea. Unlike Hollywood filmmakers which are vertically integrated, Bollywood filmmakers are disintegrated. For example, most Bollywood films continue to be produced by specialized firms with an annual output of less than three productions [27]. However, social networks between production firms and players in distribution and finance, within Indian film clusters, contribute to reducing transactions' costs of Indian filmmakers. These features allow and support India's speedy and high annual output [27]. Ref. [21] suggested that the social media strategy in the Indian film market has played a crucial role in generating awareness about the film for promotional purposes in the pre-release stage. Sharing the audience experiences through electronic word-of mouth (eWOM) also influences their audience decision to watch the post-release stage.

On the other hand, the Korean film industry is more competitive than India in convergence. This clearly explains the characteristics of the Korean film industry, which is emerging globally despite the limitations of scale and resources. Korea's competitiveness in convergence can be explained across three aspects: (1) vertical integration of large firms; (2) digital technology and film activities; and (3) integration between Korean and global cultural resources. As the Korean government further liberalized its film market to foreign competition, Korean firms have accelerated their vertical integration between film

producers, distributors, and cinema chains in line with the Hollywood business model. Such integration has become more vertically integrated to compete with foreign studios. Korea's conglomerates or chaebols have also committed huge investments into the film industry and some films have been able to successfully challenge the blockbusters from Hollywood [25,49].

Korea's competitive advantage in digital post-production and visual effects has particularly facilitated its international film co-production, providing a better leverage of resources internationally [23,24]. Furthermore, as Ref. [23] emphasized, the cultural hybridity of Korea's film industry, in fact, follows the global cultural industry or Western culture more, rather than stressing the unique aspects of Korean culture. The Korean government's policy has facilitated such integration. In the late 1990s, Korea's cultural policy made a big shift toward cultural diversity and globalization, by allowing the entry of Japanese cultural products. In addition, since the 2000s, the government has further expanded its globalization policy which has facilitated integration with foreign networks [49]. In contrast, Indian films have placed greater emphasis on songs and dances, which are distinctive from global culture.

There is no difference between the two film industries in terms of benchmarking for efficient catch-up towards success. Although there have been efforts among both Indian and Korean filmmakers to adopt industrial best practices, such as those associated with Hollywood, the results are not statistically significant. This might be because both filmmakers are still limited in global penetration, in terms of actually setting globally-accepted practices, as Hollywood has been doing for many decades. The phenomenon of "cultural discount" [50] has long been discussed by media economists. "Cultural discount" is defined as "a cultural product rooted in one culture will have a diminished appeal elsewhere as viewers find it difficult to identify with the style, values, beliefs, institutions, and behavioral patterns of the material in question" [50]. As demonstrated by the success of Hollywood films, the national identity of films should be minimized instead of being strengthened in order to reduce cultural barriers and be globally attractive [14,51].

The strong dedication driven by the sub-factor of diligence for the Indian film industry could be explained by its strong engagement in film production given that it accounts for the highest output in the world. This large production capacity is reflected by the fact that India produces more than 1000 feature films every year, particularly the hub centered around Bollywood [52]. In addition to Bollywood, India has other very prosperous film clusters such as those in Hyderabad and Chennai, which have contributed to local economic development in part due to the strong spillover effects.

The different areas of strengths in the film industry between Korea and India thus suggest a high potential of cooperation and synergy effects between the two countries. For example, by accessing Indian film clusters, Korean filmmakers have been able to leverage more diversified and high-quality resources for both production and distribution. The Korean economy can further learn the best practices from India's cluster development, thereby enlarging the benefits beyond the film industry to the wider economy. On the other hand, India can learn from Korea's best practices for its universal storylines and genre experimentation, thereby improving its global reach and popularity. Moreover, Korea's technology advantage in the digitalization area can also strengthen India's film quality.

The huge purchasing power of the US consumers and the production of big-budget films supported by endogenous investments into marketing and distribution have rendered the US film industry with long years of dominance in the global market [53,54]. The competitive advantage of US filmmakers and film industry are well matched with the conventional theories of IBV and RBV. However, the success model of Hollywood and US experiences of the film industry are great challenges for emerging countries and are very difficult to benchmark. In fact, big-budget films are not the only success formula for achieving global success. As audiences become increasingly sophisticated in their tastes with the changing trend of watching films such as online streaming, more diverse genres of films can have the potential to attract global audiences. In keeping the existing strengths,

and overcoming the weaknesses in “cultural discount” for both Indian and Korean films with regard to the four elements of the ABCD model, they can provide an alternative formula to Hollywood for achieving global success in the film industry.

7. Conclusions

There have been studies that examine the success factors of the Indian and Korean film industries individually. What is missing, however, is a comparative analysis that brings together the two countries so that they can position themselves as new cultural forces in the global film market. Preceding studies on the success factors of the Indian or Korean film industry mainly stress the importance of the “what” approach, ownership or access to specific resources. On the other hand, the influences of strategy variables that lead to industrial success is under-researched. In this regard, this paper adopts a comprehensive framework toward analyzing competitiveness—the ABCD model—to compare and analyze the strengths of each film industry. This model particularly seeks to explain how a country, industry, or firm can achieve success by strategic utilization of available resources. Thus, the first main contribution of this paper to the literature is the comparative analysis of the film industry between the two countries adopting the ABCD model.

Theoretical or conceptual frameworks are often used to describe phenomena that are difficult to fully understand or explain. These frameworks are very important for gaining a comprehensive view of such trends, and understanding key concepts or variables and their relationship. However, empirical studies can help quantify analysis and visualize results, thereby verifying the relevance of the theoretical framework.

So far, existing empirical studies have mainly relied on coarse aggregate statistics and smaller-scale surveys rather than rigorous approaches such as hypothesis testing. This is mainly because it is very difficult to obtain sufficient observational data. Nevertheless, the increased accessibility and availability of data sources over the past decade have allowed social science researchers to measure concepts that were previously very difficult to measure. New methods of measuring and collecting data have paved the way for empirical studies to be able to confirm the usefulness of theoretical frameworks. This therefore leads to the second contribution of this study, which proposed a novel approach to operationalize the determinants of competitiveness of the Korean and Indian film industries, using NLP methods. The results show that neither country has higher competitiveness in all four factors of the ABCD model. Overall, this paper shows that the Indian film industry is more agile for production, while the Korean film industry is more effective in creating new advantages.

Instead of using simple criteria such as box office sales to compare the performances between the two countries, the approach of this study helps us better understand their various strengths that lead to market success. This approach is also useful as a guide to utilize each other’s strengths towards the enhanced and sustainable development of the film industries in both countries by utilizing each other’s strengths. Last but not the least, this research on the emerging film markets of India and Korea can contribute to enriching the conventional approach to achieving competitive advantages driven by well-developed market systems and the superiority of resource advantages of advanced countries, by providing an alternative approach to understand various ways of enhancing competitiveness in a more comprehensive manner.

This study has contributed to operationalizing the ABCD model and providing strategic guidelines for the competitiveness of Korean and Indian film industries. It, however, has some limitations. First, as this study uses only English articles for the analysis and comparison between the Korean and Indian film industry, future studies can include local Korean and Indian newspapers. It is also useful to investigate whether there are any differences in the empirical results between local and international sources. Second, future studies can extend the research scope to other sectors which will inadvertently provide rich insights and also enhance the analytical capability of the ABCD model.

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