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Review of Domestic Sleep Industry Classification Criteria and Aanalysis of characteristics of related companies

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Abstract

After COVID-19, the number of people with sleep disorders around the world is increasing. In particular, in the flow of the 4th industrial revolution, the differentiation of types and characteristics of the sleep industry is accelerating. Therefore, in this study, the characteristics of each type of sleep-related industry were reclassified from an industrial point of view, and based on this, an attempt was made to review the classification system that can help companies develop sleep products and improve related national systems.

Based on the 10th standard industry classification, we compared input cost, value, and usability and analyzed common characteristics, treatments, and preventive effects based on this. A comprehensive taxonomy using matrix analysis was reviewed. As a result, in terms of cost (A), the most common sleeping products are general mattresses and general bedding. It is an IOT device (auxiliary device), and the value aspect (B, B/D) included sleep cafe, bedding rental and management service, and sleep consulting. In terms of utility (A/B), a total of 6 product groups including sleep aids (health functional foods) belong to this category, and in terms of treatment (A/C), a total of 3 product groups including sleep clinics (medical services) belong to this category. As for the product group (A/D) with both properties, it was found that non-insurance sleep treatment medical devices, sleep-related over-the-counter drugs, and some sleep monitoring applications belong to this category. Ultimately, it was found that the sleep industry classification enables the most active product development and composition according to the relative relationship between cost and utility, and treatment and utility. appeared to be necessary.

Keywords: Sleep, sleep industry, sleep quality, taxonomy, matrix analysis

1. Introduction

At the American Sleep Society's Annual Meeting, a research team led by Dr. Rebecca Robillard of the University of Ottawa, Canada conducted a survey of 5,525 Canadians. reported an increase of 51%. Hong Kong citizens announced that before and after Corona 19, depression and anxiety increased from 10.7% to 19.8% and from 4.1% to 14.0%, respectively [1-2]. However, due to the lack of a clear industry classification

system, it faces limitations in the development of the sleep industry, such as difficulties in linking industrial capital and securing professional manpower. Therefore, in this discussion, it is necessary to review a clear industrial classification system and to review the classification system that can overcome these industrial limitations. Furthermore, by analyzing the characteristics of related companies according to the relevant classification system, it is intended to suggest the development direction of the domestic sleep industry through the correlation between the relevant industry classification and company characteristics [3-5].

kingston, S presented the sleep industry from manufacturing sleep-related prescription drugs to mattresses and sleep-related products, but could not present a specific industry group. In the study of 16), Referring to the characteristics that separated medical services from general products in the sleep industry, many healthcare professionals did not classify products by function, but suggested sleep-related products as a large category [6-7]. In this regard, sleep experts suggest that sleep apnea in the sleep industry is moving from diagnosis and treatment to management, and the sleep industry is moving from simple diagnosis and treatment to prevention and management monitoring [8]. In other respects, some expert groups suggested that the sleep industry includes various products such as digital products such as sleep trackers, smart mattresses, and smart sleep. The scope of the sleep industry was expanded to reflect this, but the area of sleep-related medical services was not mentioned [9-10].

2. Experiments

Various opinions and discussions about sleep are ultimately contained in both technology development and products. Therefore, the conceptual categories will be explained based on the classification of 'sleep' related discussions into 'functions' and 'skills', which have been dealt with in various domestic and foreign papers where professional and academic discussions are possible on these topics. This is again more systematic and systematic by presenting an industrial classification (draft) for the sleep industry through a matrix analysis method that applies the perspectives of 'value', 'utility', 'cost' and 'public', 'treatment', and 'prevention'. We would like to present a 'sleep industry classification system' applicable to industries. Figure 2 shows 'Veterans hospital treatment cost analysis method, characteristics of each state-sponsored patient & exemption patient'.

Figure 1 shows 'How to review the concept setting and classification method of the sleep industry'.
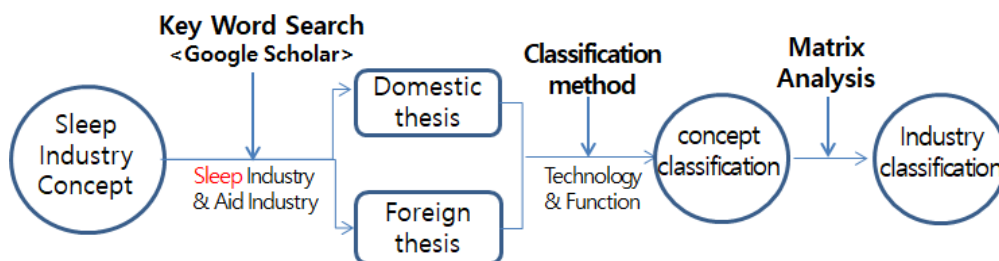

Figure 2. Research design

3. Results

3.1 Key Word Search

After 2015, as a result of searching domestic and foreign papers containing the keywords "Sleep Industry" and "Sleep-aid Industry" through Google Scala (https://scholar.google.co.kr/), 9 domestic papers were found. 42 cases and foreign papers were searched. However, in the case of domestic papers, there were not many

papers dealing with the sleep industry in earnest from an industrial point of view, and mainly foreign papers dealt with sleep services from an industrial point of view.

Table 1 shows 'Domestic & foreign thesis about sleep industry'.

Table 1. Domestic & foreign thesis(key word search; google scholar)

| Division	Search word	Search Results	Number of Cases
Domestic	Sleep Industry &	Kim Kyung-duk (2000) A Study on Sleep Quality and Sleep Interfering Factors in Home Elderly etc	9
Freign	Sleep-aid Industry	Hanes, C. A., Wong, K. K., & Saini, B. (2015). Diagnostic pathways for obstructive sleep apnoea in the Australian community: observations from pharmacy-based CPAP providers. etc	42

3.2 Survey Respondents' Analysis

After deriving basic industry categories and basic items in the sleep industry through prior research and the 10th standard industry classification system, the classification for each basic item was derived from medium and small classifications by technology and function.

In conclusion, all areas that are not currently active but have the potential to create new markets in the future are included in the new classification system. In the mattress and bedding sector, products are being diversified according to the development of current technology and can be classified into general products and functional products. The sleep disease management sector is a medical field for sleep, and medical services provided by medical institutions are representative. For example, in the case of medical services, polysomnography at sleep clinics is typical, and for medical devices, the rental service of positive pressure devices is mainly. In the case of sleep sedatives, they are divided into prescription drugs that require a doctor's prescription and over-the-counter drugs that can be purchased without a prescription. In the sleep induction (improvement) sector, health functional foods in the nature of sleep aids, excluding pharmaceuticals, relaxation drinks that can help sleep, sleep (induction) products, and sleep management such as functional lighting and sound that help sleep or create and improve a deep sleep environment It consists of products and applications that provide sound for deep sleep. The sleep monitoring sector is an area that monitors users' sleep patterns and sleep habits using IoT devices and applications, collects and analyzes data, and provides solutions for improving sleep quality to individuals.

Lastly, the sleep service sector consists of service areas centered on intangible services such as sleep consulting, sleep space provision through sleep cafes, and bedding rental and management other than products provided in a specific form. Figure 3 shows 'Health insurance, Medical Benefits & Veterans Medical Expenses Increase'.

Figure 2 shows 'Detailed classification system diagram for each major sector of the sleep industry.'
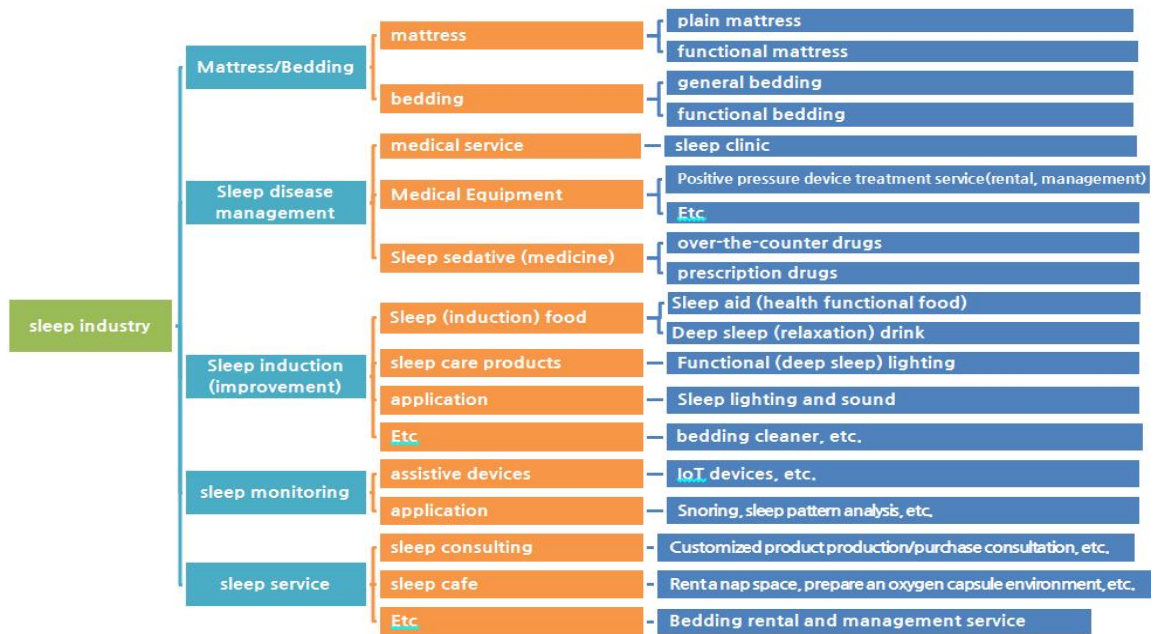
Figure 2. Detailed classification system diagram for each major sector of the sleep in dustry

3.3 Significance of the Analysis

The detailed areas suggested in the sleep industry classification are classified so that they can be reinterpreted in a form applicable to the industry by applying the matrix analysis method according to the industrial value chain of 'symptom-treatment-prevention' & 'cost-utility-value' tried.

As a result, various sleep-related products can create new industrial value while future new technologies are oriented toward treatment and utility (A/D), and furthermore, prevention and value (D). How can product development and industrialization be promoted? The standard was presented at least briefly. In terms of cost (A), the most common sleeping products are general mattresses and general bedding, and in the most ideal aspect, the preventive aspect (C/D), which is an area that requires long-term product development, is 'sleep monitoring IOT'. It is a device (auxiliary device), and the value aspects (B, B/D) include sleep cafe, bedding rental and management service, and sleep consulting. In terms of utility (A/B), a total of 6 product groups including sleep aids (health functional foods) belong to this category, and in terms of treatment (A/C), a total of 3 product groups including sleep clinics (medical services) belong to this category. The product group (A/D) with both properties includes non-insured sleep treatment medical devices, sleep-related over-the-counter drugs, and some sleep monitoring applications.

Figure 3 shows 'Classification of value application area according to matrix analysis of sleep industry.'.

Value	⟨B⟩ sleep cafe / Bedding rental & anagement service / sleep consulting	⟨B/D⟩	⟨D⟩
Utility	⟨A/B⟩ Functional Mattress & Functional Bedding / Sleep aid (health functional food) / Deep sleep (relaxation) drink / Functional (deep sleep) lighting / Sleep induction (improvement) application / Sleep environment improvement products (bedding cleaners, etc.)	⟨A/D⟩ Non-insured sleep treatment medical device / Sleep-related over-the-counter medications · sleep monitoring application	⟨C/D⟩ Sleep monitoring IoT device (auxiliary device)
Cost	⟨A⟩ plain mattress / general bedding	⟨A/C⟩ Sleep Clinic (medical service) / Positive pressure device treatment/rental management service (medical device) / Sleep-related prescription drugs	⟨C⟩
Division	Popular	Cure	Prevention

Figure 3. Classification of value application area according to matrix analysis of sleep industry

4. Discussions and Conclusion

Since COVID-19, sleep-related diseases around the world are having a broader negative impact on the state of 'sleep', which profoundly affects the quality of human life. Under this circumstance, the irony is that the sleep-related industry is naturally in the spotlight as a promising industry in the future. In the end, individual, corporate, and national interest in the sleep-related industry is rising, and if the development of the related industry can provide the possibility of improving 'sleep quality' for all mankind by examining the sleep-related industry classification system, it will be It can be said that this alone has sufficient meaning for the study.

In the end, we found that we tytified the products of the sleep industry and analyzed the meaning of various products based on them in conjunction with sleep diseases. However, there is a limitation that many discussions related to sleep could not be discussed in this study. We look forward to further research on specific sleep products in the future through more detailed analysis.

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