

Strategies for Deriving Strategic Products to Enter the Dementia Industry on SMEs-Focused on AHP Analysis

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Abstract

Many SMEs are interested in entering the dementia industry as the national dementia responsibility system begins in earnest. However, it is ambiguous about which technology and field to enter, and accordingly, it is impossible to make a quick judgment and misses the time to enter the market. Therefore, the purpose of this study is to provide a simple but clear information to many SMEs in this situation, which products and related technologies will be able to help product development and market entry in the dementia prevention and diagnosis technology market more easily. In this regard, I would like to suggest the direction through hierarchical analysis (AHP) through conducting with a group of experts who can make professional judgments about the development of dementia medical technology, including the four-year university senior welfare department, nurses, directors and directors of long-term care institutions, medical device workers and experts' opinions on what sectors SMEs can most effectively apply to product development to enter the dementia market.

Keywords: *Dementia Industry, SMEs, AHP, Dementia prevention & diagnosis.*

1. Introduction

Many SMEs want to enter the dementia market in a rapidly aging society, but they are not able to enter the dementia industry easily due to their concerns about technology development and its importance. Therefore, this study intends to prepare a plan that can solve some of the concerns of SMEs[2,9]. Preferentially, Using the AHP technique, the importance of each application area for the development of dementia technology is evaluated from the expert's point of view. In addition, by deriving the priority of each factor, I would like to suggest the direction of SMEs' technology development strategy in the future[4].

2. Study Method

The hierarchical analysis AHP was conducted to identify the areas that SMEs can apply most effectively to product development for dementia market entry. The first tier has the categories of <Dementia Prevention> and <Monitoring of Dementia>[1]. The second tier is included in the general family of dementia

prevention and dementia diagnoses. The study focuses on 1 if Activity1 is more important than Activity2 when pairing the elements of each tier for each endpoint. Marked on the left side in the direction of Activity1. On the contrary, if Activity2 is more important, we investigated by marking it on the number on the right, which is the direction of Activity2 around 1.

Figure 1 shows study method about development of technology to enter SME dementia market.

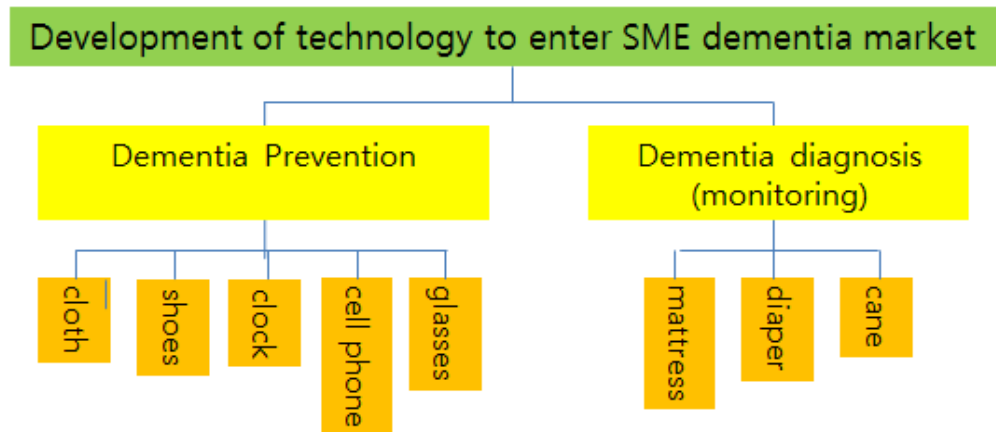


Figure 1. Study method

3. Results

3.1 Survey Respondents' Analysis

This study was conducted with a group of experts who can make professional judgments about the development of dementia medical technology, including the four-year university senior welfare department, nurses, directors and directors of long-term care institutions, and medical device workers[3].

The survey was conducted for one month from May 2019, and after contacting us by wire in advance, we requested a reply to the questionnaire by e-mail or fax.

Table 1 shows AHP survey respondents of academia, medical organization, welfare center for long-term care institutions, medical device companies

Table 1. AHP survey respondents

Division	Spot	Number of people
Academia	Geriatric Welfare Professor	2
Medical Organization	Nurses	2
Welfare Center for Long-term Care Institutions	Director	4
Medical device companies	Officials	6
	<i>Total</i>	14

3.2 Significance of the Analysis

AHP considered inconsistency ratios among participants[6]. The inconsistency ratio is a measure of the logical contradiction of the judgment. It is useful for identifying not only the inconsistencies that occur in the

judgment itself, but also errors that may occur in the judgment process. In general, the inconsistency ratio should be less than 0.1 to maintain logical consistency. As shown in Table 1, the overall inconsistency ratio is less than 0.1, so all the response results can be used for analysis[10].

Table 2 shows inconsistency ratio of AHP survey respondents for dementia technology development of Dementia Prevention and Dementia Diagnosis (Monitoring).

Table 2. Inconsistency ratio of AHP survey respondents for dementia technology development

Respondent	Consistency Index	
	Dementia Prevention	Dementia Diagnosis (Monitoring)
1	0.4356	0.2424
2	0.0353	0.0000
3	0.5852	0.3259
4	0.4185	0.2417
5	0.1983	0.0408
6	0.1447	0.2336
7	0.2179	0.1499
8	0.1733	0.1126
9	0.0495	0.1097
10	0.5333	0.2114
11	0.4303	0.1571
12	0.1581	0.0092
13	0.1578	0.0000
14	0.1402	0.3863

3.3 Tier 1 Results Analysis

As the importance of the first class <Dementia Prevention> and <Dementia Monitoring (Monitoring)> was expressed based on 100%, <Dementia Monitoring (Monitoring) Technology> was more important than the dementia prevention technology in the entire group. Appeared.

Academics showed the most significant difference in dementia prevention skills with 44.4 points and dementia diagnosis skills with 55.6 points, while long-term care institutions showed the smallest differences with dementia prevention skills with 48.0 points and dementia diagnosis skills with 52.0 points. Significance of the Analysis

3.4 Dementia Prevention Technology

[Figure 2] shows detailed evaluation items regardless of the upper evaluation areas, and lists the indicators corresponding to <Dementia Prevention> among all detailed indicators.

In terms of the overall average, the weight for technical use of shoes (0.370) was the highest, followed by cell phones (0.244), clothing (0.139), glasses (0.137), and watches (0.110).

In the case of shoes, the demand for long-term care institutions that directly contact and care for the elderly and dementia patients was 0.370, indicating that there was a demand on the site. It is predicted that the weight is given a high weight in terms of the hassle of the movement of the device due to the available nature.

Figure 2 shows study Dementia prevention development AHP layer 2 <dementia prevention> analysis.

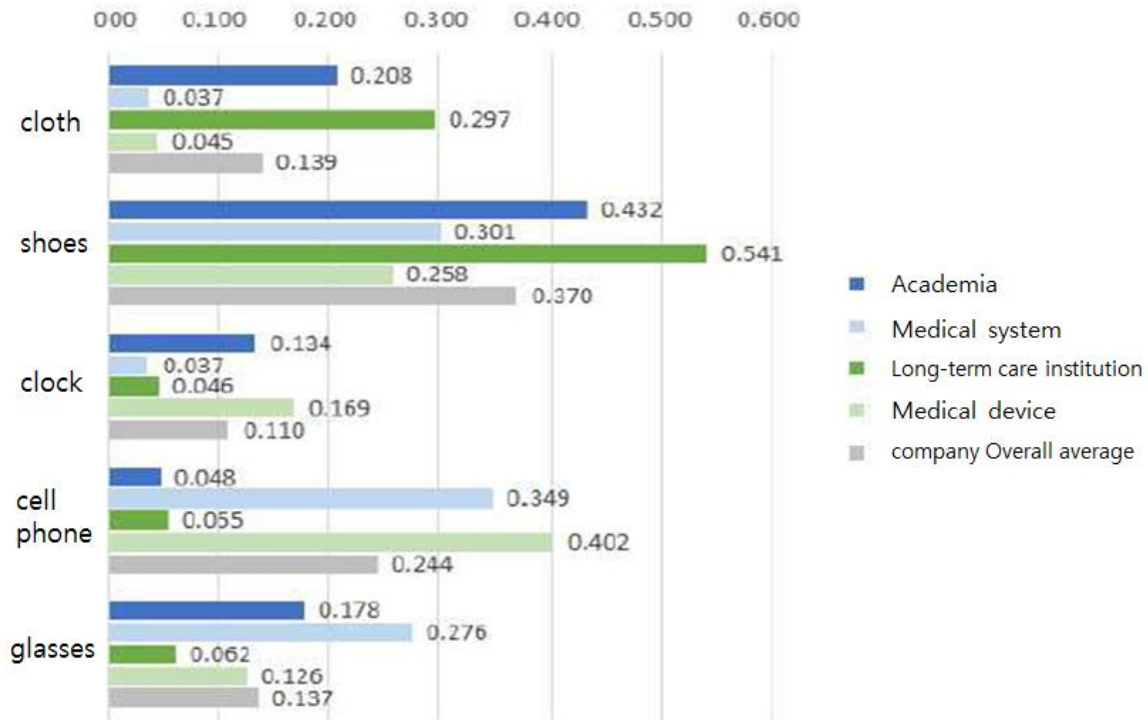


Figure 2. Dementia prevention development AHP layer 2 <dementia prevention> analysis results

3.5 Dementia diagnosis (monitoring) technology

[Figure 3] shows detailed evaluation items regardless of the higher evaluation areas and lists the indicators corresponding to <Dementia diagnosis (monitoring)> among all detailed indicators.

Looking at the overall average, the cane (0.398) had the highest weight, followed by diapers (0.320) and mattresses (0.282).

Overall, there was a difference in weighting for the application of dementia technology between long-term care institutions, which are actual demand institutions, and medical device companies, which are suppliers[7].

In the case of long-term care institutions, canes (0.434)> diapers (0.414)> mattresses (0.152) were shown, but medical device companies showed different results with mattresses (0.412)> canes (0.366)> diapers (0.222).

As a result of combining the weights of the first and second layers, the cane (0.212) had the highest priority of dementia technology application in the entire product line, and the weight was given to the medical, long-term care institutions, and medical device companies.

In the case of shoes, it seems to have taken the lead due to the long-term care institution, which is a demand institution, and the weight of medical and medical device companies is relatively low[5,8].

In terms of mattresses, medical and medical device companies show high weights.

Generally, the weights of academia and long-term care institutions tended to be similar, and opinions of medical and medical device companies were consistently expressed[3-4].

Watches (smartwatches) where health monitoring technology is most commonly applied have been ranked at the lowest priority among the entire professional group, which is expected to change the trend of the dementia-related healthcare market. Figure 3 shows Dementia technology development AHP Layer 2 <Dementia diagnosis monitoring> analysis results

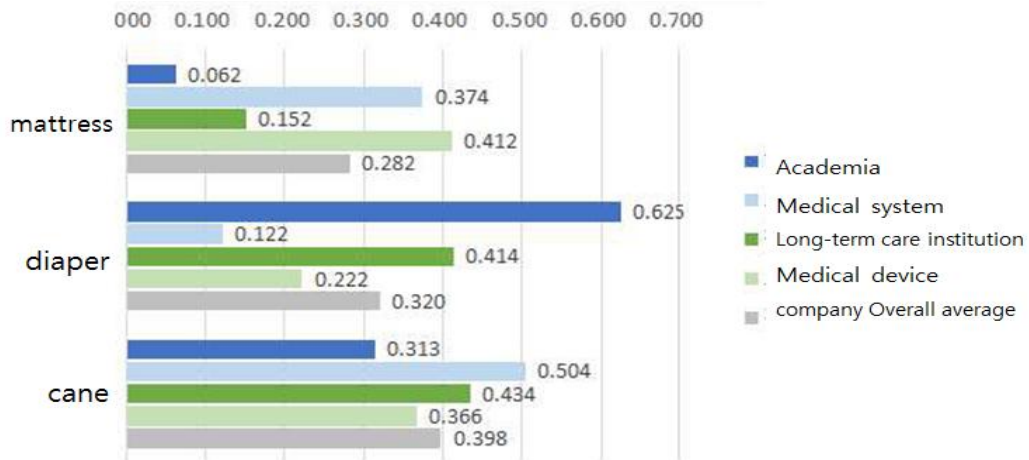


Figure 3. Dementia technology development AHP Layer 2 <Dementia diagnosis monitoring> analysis results

4. Discussions and Conclusion

Figure 4 shows Dementia technology development AHP final weight nosis monitoring> analysis results

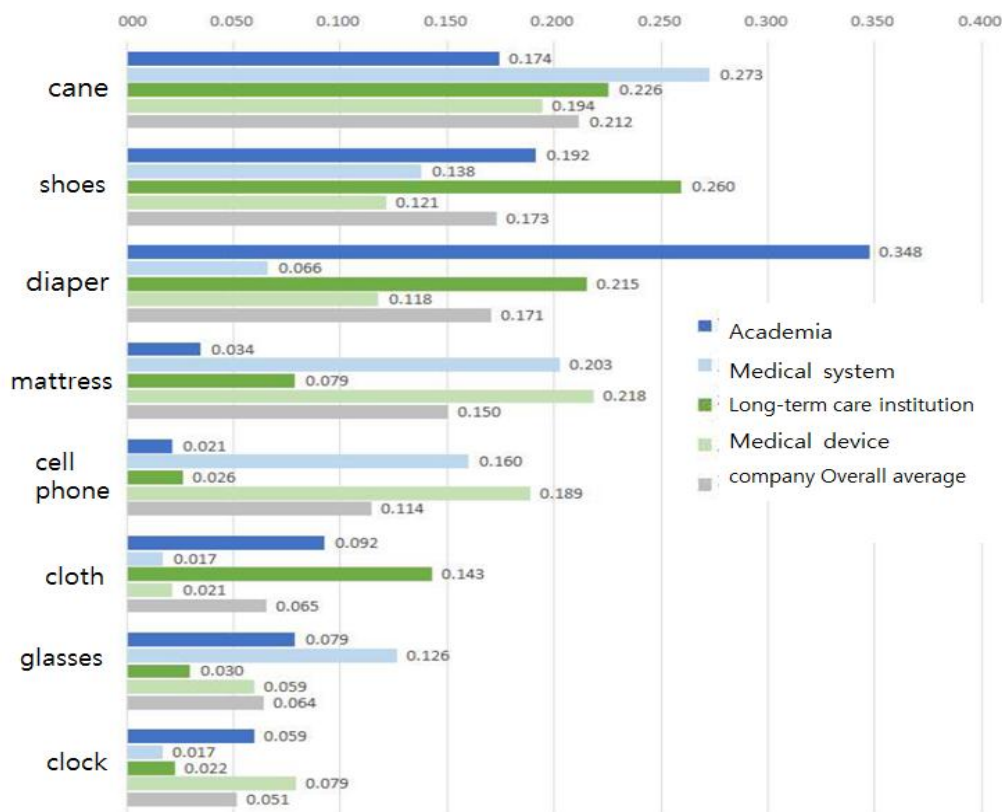


Figure 4. Dementia technology development AHP final weight

Analysis results using AHP technique It is easy to identify the product development centering on the product development in order to identify the dementia technology development field of SMEs.

The results of the analysis show that it is predicted that it will be positive for the application of dementia technology to consider the high mobility items such as walking sticks and shoes that are essential to carry out when going out. Technology, taking into account the needs of the market, it was analyzed that product development is necessary.

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