46. Nokiya Fighters

NOMU

1. Executive summary

The number of people in Japan who needed nursing care in 2020 was approximately 6.82 million, a 2.0% increase from the previous year. [1] It is anticipated that the number of people in need of nursing care will continue to rise, which could pose a significant problem for caregivers. One of the most common difficulties that approximately 20% of the elderly population face is dysphagia which is a swallowing disorder. [2] As people age, the swallowing function deteriorates, making it difficult for the tongue to send objects from the mouth to the throat. [3] When care recipients face difficulties in swallowing medicine due to dysphagia, it can create a significant problem as it prevents them from maintaining their health. Recently developed sonic tractor-beam technology can solve this problem by levitating and manipulating medicine through internal organs. In addition, by making use of cutting-edge AI developing technologies, the medicine-delivering process can be personalized based on each patient's condition.

2. Our mission

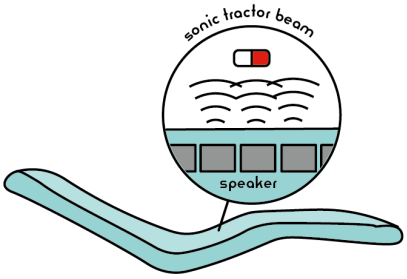
Our mission is to improve the quality of life of the elderly with dysphagia by providing a safe and effective drug delivery system. The incorporation of the device within the mattress enables support for a wider population in need, including those who have difficulty rising in addition to the elderly with normal mobility.

3. Our product/ service

NOMU mattress is a nursing care device for elderly people who have difficulty swallowing medicine. This is a game-changing product for the nursing industry, with the application of cutting-edge sonic tractor-beam technology and an AI personalization program. The *NOMU* mattress can deliver and drop medicine to a desirable part of the body even if the person lacks swallowing function. The following describes how a *NOMU* mattress functions.

Sonic tractor-beam technology:

Marzo and his colleagues have recently developed a new technology called sonic tractor-beam, which can levitate objects by creating an acoustic force field from an array of ultrasonic speakers. [4] By carefully controlling the phase, frequency, and amplitude of the sound waves, researchers succeeded in moving objects in three dimensions, in any desired direction. [4] Many researchers are now investigating the application of this technology to the nursing industry. [4] Inside the *NOMU* mattress, the array of 5000 miniature speakers are producing ultrasonic sound waves. The acoustic field created by the array levitates and travels medicine through the esophagus and drops it to the intended place.



AI personalization algorithm:

Conventionally, the acoustic field is easily interrupted by obstacles in the field, but by utilizing machine-learning technology, this can be overcome. Trained by the 3-dimensional scanned images of patients' inner bodies, the AI algorithm computes the optimal settings for each parameter of the speaker array by analyzing the patient's inner organ conditions. Processing 3D data has been time-consuming due to its massive data size. However, new evolving technology called Sparse Voxel Octrees converts a 3D object into 8-layered trees, and by selecting only relevant layers to break down, this technology can efficiently reduce the complexity of the 3D object. [7] This shortens the processing time of 3D object analysis. Thus, this AI program allows the *NOMU* mattress to deliver medicine in an optimized and personalized in real time. This is essential to adapt to the different internal organ conditions of each patient. In addition, AI could also be used to enhance the safety of the medication delivery system by

sending real-time feedback and monitoring processes to the doctors. For example, it may be used to keep track of the patient's vital signs in case of any accidents.

4. Target market/ strategy

Our target markets are hospitals and caregivers that take care of people in need of nursing care due to dysphagia.[5] Because our company is B2B, which is a company that sells products to other companies, and the product is not for public use we will use door-to-door selling as our marketing method which will reduce the marketing cost to only labor costs. The strategy that we plan to use for our *NOMU* mattress is penetration pricing. By using this pricing method we will be able to gain new customers easily because the low price will make it easier for the companies to buy our products, and the information about *NOMU* mattresses will spread through word of mouth to the consumers. This will cut the cost of advertising because word of mouth is done by the consumers, and other companies will trust the information and reviews from actual consumers rather than an advertisement from our company. In Japan, more than one million people are suffering from dysphagia, and the number is growing every year. Therefore, our NOMU mattress market is growing, and our company will become more profitable every year.

5. Finance

NOMU					
(YEN)	YEAR 1	YEAR 2	YEAR 3	YEAR 10	YEAR 20
1. Revenue	2000000	5000000	9600000	700000000	7000000000
unit average price	20,000	20,000	24,000	35,000	50,000
uints sold	100	250	400	20,000	140,000
2. Production Cost	1000000	2500000	4000000	140000000	700000000
unit average cost	10,000	10,000	10,000	7,000	5,000
3. Expenses	6,000,000	12,500,000	18,000,000	50,000,000	220,000,000
Markeint Cost	5,000,000	10,000,000	15,000,000	40,000,000	200,000,000
other expenses	1,000,000	2,500,000	3,000,000	10,000,000	20,000,000
4. Profit/Loss before Tax	-5,000,000	-10,000,000	-12,400,000	510,000,000	6,080,000,000
5. Income Tax	0	0	0	280,500,000	3,344,000,000
6. Net Profit /Loss	-5,000,000	-10,000,000	-12,400,000	229,500,000	2,736,000,000
7. Start up costs	50,000,000	0	0	0	0
8. Free Cash Flow	-55,000,000	-10,000,000	-12,400,000	229,500,000	2,736,000,000
9. Funding Required	10,000,000	0	0	0	0
10. Loan Required	10,000,000	0	0	0	0
11. Repayment of Loan	500,000	500,000	500,000	5,500,000	0
12. Divident of Shareholders	0	0	0	50,000,000	300,000,000
13. Cash Balance	-35,000,000	-10,000,000	-12,900,000	174,000,000	2,436,000,000

As we use penetration pricing as our marketing strategy, the average price of our mattress is increasing as the years pass. The sonic tractor beam technology can be made for under $10 [6] which enables us to decrease our unit average cost.

6. Conclusion

NOMU mattresses will help a large number of patients. By making use of the sonic tractor beam technology, the NOMU mattress will allow elderly people to swallow medicines without stress. The innovative combination of the sonic tractor beam and AI adaptive algorithms has the potential to change medication treatments, making them more effective and personalized.

7. References

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