Strategic Marketing Plan of Neonatal Intensive Care Unit as Korean Strategic Big Data Business Initiative

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Abstract. Collecting large amounts of data is very useful in many ways, however it is only half of a larger whole. This vast amount of data needs to be analyzed and presented in such a way that it can be understood and then used by those who need it, thus the need for strong visual analytics. Development at this stage and in this environment should provide a supportive and technologically rich foundation on which to develop the technology in preparation for international expansion. We believe this can be done by providing comprehensive, collaborative, and easy to use clinical support solutions for the clinical decision makers involved in the NICU.

Keywords: NICU, Big Data, Marketing, Visual Analytics

1 Big Data and Visual Analytics

Big Data is a term that describes the exponential growth and availability of structured and unstructured data (SAS). Collecting large amounts of data is very useful in many ways, however it is only half of a larger whole. This vast amount of data needs to be analyzed and presented in such a way that it can be understood and then used by those who need it, thus the need for strong visual analytics. Visual analytics is defined by

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VisMaster as follows "Visual analytics combines automated analysis techniques with interactive visualizations for an effective understanding, reasoning, and decision making on the basis of very large and complex datasets." (VisMaster).

2 Reasons for Visual Analytics and Big Data in NICU

The need for this kind of technology also has a strong advantage in societies where the mortality rate is lower, such as in South Korea, due to reasons concerning population. As of 2010, South Korea had the world's lowest birth rate at 1.14 babies per woman aged 15 to 49 over their lifetime (Kim). South Korea also provides a somewhat unique opportunity for this technology due to their own advanced IT infrastructure. As of 2009, 81% of the country was connected to the internet in some way, and 22% were classified as super-users, people using the internet in all areas of their life (Emerging Technology News).

3 Marketing Strategy

Short-Term Strategy(Years 0-5): As the medical industry is one that does not readily embrace new ideas without a number of trials and testing, short term marketing will focus heavily on building trust within the industry.

Mud-Term Strategy(Years 5-10): Technology convergence is described as the process where existing technologies merge into new forms, bringing together different kinds of media and applications (McGuigan). This trend is readily apparent to anyone who owns a smartphone, which now operates as a multitude of devices such as a camera, music player, video player, and storage device in addition to its intended function of being a phone.

Long-Term Strategy(Years 10 and Beyond): A successful launch in one or two countries should generate interest in other countries as well, both developing and developed. Through this interest it may be possible to enlist the aid of different NGOs or governments themselves to help facilitate a rapid expansion across the world.
4 Marketing methods applied and summary of objectives and principles

**TOWS Matrix**

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<tr>
<th>Strengths</th>
<th>Weaknesses</th>
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<tr>
<td>- Strong willingness of government for big data development (Ministry of Science and ICT, LG CNS, SK C&amp;C, SAMSUNG SDS) are driving big data solutions focusing on market strategy. (Adopting of big data (SAMSUNG ELECTRONICS, POSCO, etc) with relevant knowledge and core ability.)</td>
<td>- Lack of big data experts (Data scientist)</td>
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<td>- Big Data analytics may detect infection before clinicians.</td>
<td>- Lack of big data analysis technology (Software)</td>
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<th>Opportunities</th>
<th>Threats</th>
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<tr>
<td>- Expanding of semi-structured data and mobile smart devices (smart phone, tablet PC, etc)</td>
<td>- Remote ICU will not be legally supported until 2015 so it prevent related technology and healthcare industry advancement in Korea</td>
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<tr>
<td>- Expanding of big data related cases (manufacturer, government, medical industry, distribution, finance, etc)</td>
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<tr>
<td>- Big data analytics can generate up to $190 billion annually in health care cost savings by 2020 (McKinsey, 2013)</td>
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<td>- Declining fertility rate in Korea and increased average age of marriage triggered Korean government policies to promote having more children with tax benefits and increased interest in children’s health</td>
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**SO:**

1. Build Big data in NICU solution and reference cases
2. Build remote Big Data in NICU solution exploiting convergence trend
3. Expand into foreign markets
4. Strategic Partnership based solution development approach
5. Increase social awareness on benefits
6. Develop on-premises solution first with enhanced security capabilities
7. Trigger government attention to trigger related regulations and policies
8. Acquire expert services (data scientist and software) with enhanced security capabilities

**ST:**

1. Utilize Korean government subsidies in ICT to build more complete solution
2. Acquire Korean search engine, analytics and visualization capabilities based on partnership or University cooperative study program
3. Increase social awareness on benefits
4. Develop on-premises solution first with enhanced security capabilities

**WOT:**

1. Utilize expert services (data scientist and software)
2. Trigger government attention to trigger related regulations and policies
3. Acquire expert services (data scientist and software) with enhanced security capabilities

**Questions:**

- How to develop a whole product solution?
- How to get cost leadership to overcome the chasm?
- Leveraging technology convergence?

Fig. 1. TOWS Matrix

**Recommendation > Strategic action road map**

1. **Short Term Strategic action**
   - Build Big data in NICU solution and reference cases
   - Strategic Partnership based solution development approach
   - Acquire expert services (data scientist and software) with enhanced security capabilities
   - Expand into foreign markets
   - Increase social awareness on benefits
   - Develop on-premises solution first with enhanced security capabilities

2. **Mid Term Strategic action**
   - Build remote Big Data in NICU solution exploiting convergence trend
   - Increase social awareness on benefits
   - Develop on-premises solution first with enhanced security capabilities
   - Acquire expert services (data scientist and software) with enhanced security capabilities
   - Trigger government attention to trigger related regulations and policies

3. **Long Term Strategic action**
   - Build Big data in NICU solution and reference cases
   - Strategic Partnership based solution development approach
   - Acquire expert services (data scientist and software) with enhanced security capabilities
   - Expand into foreign markets
   - Increase social awareness on benefits
   - Develop on-premises solution first with enhanced security capabilities

**Fig. 2. Strategic action road map**
Fig. 3. Recommendation for convergence technology decision

5 Conclusions and Future Strategies

The overall goal of using big data visual analytics in the NICU is a two-fold one, focused on improving the quality of care and reducing the costs related to the NICU. We believe this can be done by providing comprehensive, collaborative, and easy to use clinical support solutions for the clinical decision makers involved in the NICU.

The analysis and data collected on premature infants should continue beyond the premature stage, monitoring infants and predicting/diagnosing problems they may have, such as the flu. As the premature babies who received NICU care grow, analyzing and growing with them would be a logical progression in this technology. In the end we believe the foundation here could lead into what is considered the "Quantified Self" in which there will be personal self-tracking of daily habits and behaviors through tools and apps in order to encourage positive life changes.(Dunn)

Regardless of how far the trend goes, the solutions provided here should prove invaluable the world over.

References


