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| |  | | --- | |  | | **REPORT 1**  **MANAGEMENT OF INNOVATION**  **A.Y. 2018/19**  **Group: The Kebbb**  Report based on the business idea of Alessandro Pellegrino.  **CONTENT**   1. Introduction of the product 2. Component 3. Target 4. Value drivers 5. Key benefits 6. Value Chain 7. Revenue Model 8. Value network 9. Ecosystem | |  | |  | |  | | --- | | GROUP COMPONENTS **Valeria Bortoletto** valeria.bortoletto.97@gmail.com  Francesco Benvenuti francescobenvenuti9@gmail.com  Nicola Biasizzo nicola.biasizzo@gmail.com  Nkem Ezukuse ezukusenkem@gmail.com  Md Minul Islum Manik manik01khan@gmail.com | |  | |  | |

**1. Introduction of the product**

Monitoring and analysis of bio signals play a fundamental role in the medical-diagnostic field. In fact, it is precisely on the basis of these operations that it is possible to arrive at the diagnosis and therefore be able to schedule a therapy.

But not only that, monitoring and analysis are very important especially for the prevention of the patient's health, and it is precisely on the latter that we try to invest.

In recent years, 2% of infant deaths have been associated with SIDS, or infantile infant death syndrome. Therefore, having a device that allows at any time to monitor the infant's breathing is certainly an excellent deterrent to the aforementioned syndrome and accidental suffocation.

The business idea consists of a low-cost device, capable of monitoring various vital parameters related to breathing through a smartphone application. It is not only able to tell whether the child is breathing or not, like almost all competing devices on the market, but is also capable of providing different vital parameters related to breathing, such as:

* Respiratory rate
* Duration of breath
* Duration of the inhalation phase
* Duration of the exhalation phase

**2. Components**

It uses an IMU, which is an accelerometer sensor. According to the forces detected, it’s possible to see if the device is tilting in one position or another. By analysing these movements, data are collected by the device which shows what are the details of the respiratory phase.

The components of the device are

* an accelerometer - MATLAB - for real time simulation and filtering,
* two LEDs (green means ok, red means not ok),
* a system that emits sound in case of danger.

Everything has been produced on a breadboard, which allows the insertion of electronic components to recreate electronic circuits. When this process was over, the focus shifted towards assembly. The casing is developed three in pieces (the front, the back and the clip), not printed in 3D yet. Furthermore, it is possible to recharge the device’s battery through USB cable, which in turn will last for approximately 16 hours.

**3. What is the target?**

This business idea is conceived to be sold in 3 main segments, of which two are B2C and one is B2B:

* **Parents of new-borns – B2C:** in this segment, the average user will be parents with babies that want to monitor them at home. The price of the product will be in line with the ones already in the market, so the consumer could also be low-middle class (not necessarily wealthy). In this segment, the strategy will push toward the feelings of protection of parents rather than on the medical perform side.
* **Elderly people and relatives – B2C:** in this segment, the average user will be elderly people that need to be monitored during the night. In this segment, an important feature is the possibility of dual access in the smartphone application. This function is very useful for 2 reasons: in this way, also an elderly who has no technological skills (or does not have a smartphone) can still use the product and give the access in the smartphone app to another trusted person; if the elderly have the possibility to access to the application, also another person (as a relative) can have the access to it and can be instantaneously updated on the status of the user.
* **Hospitals – B2B:** in this segment, the idea is to focalise in general terms on every patient of the hospital. It could be especially important in intensive care unit because thanks to this device doctors can have past data on the respiration of the patient (not available at the moment, there are no devices that provide respiration data history). Probably, this device won’t be very useful in the neonatal intensive care unit because newborns are already intensively checked by many medical devices.

This type of segmentation has critical aspect that should not be taken for granted; the final user of the product – in most cases – will not be the purchaser. It would be fundamental to leverage the reasons behind such purchases, differentiating between the B2B and B2C motives, and keeping that in mind during the drawing up of the business model.

**4. What are the main value drivers?**

The main value drivers are

* PERFORMANCE: This device improves existing products. Indeed, there are already in the market similar products, but they have just one parameter: whether the patient is or is not breathing. Instead, this device will provide four different vital parameters related to breathing.
* GETTING THE JOB DONE/NEWNESS: the device offers a handy one size solution to all the aforementioned vital aspects of the respiratory organs, further implementing already existing market solutions. “Newness” in this case is secondary, what is meant is allowing possible uninterested customers to understand such product and pushing for a rather “preventive” purchase out of simple interest or curiosity.
* RISK REDUCTION: This device will send an alarm to the monitor (in hospitals) and in the smartphone (private customers) when the user’s breath time goes under 7 breaths per minute. From that point it is difficult to calculate how much time is left to save the person: it could be a gradual decline of the breath time or the person could collapse immediately. For sure, this device will give extra time to the ambulance and to the doctors to save the patient’s life.
* USABILITY: all competitors use a sensor panel to record data. Instead this device is a clip of size 6x4x2.5 that can be clipped to the diaper of the child. Due to its small size, it can also be useful for the patients of all age.

**5. What are the key benefits provided to the clients?**

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| --- | --- | --- | --- | --- |
|  | DEVICE 1 | NANNY | ANGELCARE | BABYSENSE |
| PRICE | = | = (114€) | + (95€) | - (130€) |
| SHAPE | + | = | = | = |
| DESIGN | = | = | = | + \* |
| FUNCTION | + | = | = | = |
| WARRANTY | = | = | = | = |
| TERMS OF PAYMENT | = | = | = | = |
| BRAND | - | + | = | = |

\* primo monitor non-touch nel suo genere/first non-touch monitor in this sector

From the previous table, the result is that the key benefits provided to the clients by this new device are shape and function. Indeed, the shape is a key benefit in terms of volume: all the other competitors use a panel of size 33cmx33cmx6mm, while the size of the clip is 6x4x2.5cm. Thanks to this characteristic, the device is usable by patients of all ages and it is more manageable.

As previously mentioned, the device provides four different vital parameters related to breathing, while the competitors provide only one parameter. This key benefit is especially important in the hospital segment. Its main disadvantage is the brand: parents, as well hospitals, will be more willing to buy from competitors (in particular from Jablotron, the producer of Nanny) because are more trustable and well-known. This could be a huge problem at the beginning. For this reason, a good pre-sales force is needed: there must be someone that explains to the parents the benefits provided by the additional functions of the product and that convince hospitals to invest in this new device (since probably doctors can understand by themselves the importance of data history and of the additional vital parameters recorded). This software will be “open” in the sense that continuous updates and new elements will be added, the limitation is only based on the data that the sensor is capable to turn in; in order to implement more and more new measurements also the built – in sensor must be physically updated, this will thus require a new purchase, therefore, open implementation is dependent on the sensor’s capabilities.

**6. What is the (intended) value chain?**

The business idea will be positioned in the middle of the intended value chain. Indeed, the idea is not to product each component but to buy them from suppliers. The major suppliers are already being identified. For the hardware part of the device, 2 major suppliers are identified:

* RS (https://it.rs-online.com/web/)
* TDK Invesense (https://store.invensense.com/FeaturedProducts.aspx?type=709&manf=383&NavType=1)
* Digi-Key Elettronics (<https://www.digikey.it/it/resources/iot-product-selector>)

For the enclosure that will host the electronic part, the following alternatives are identified:

* Teko (http://www.teko.it/it)
* Direct Industry (http://www.directindustry.it/fabbricante-industriale/scatola-dispositivi-elettronici-137614.html)
* Futura elettronica (<https://www.futurashop.it/componenti-sensori-breakoutboard-cavi-contenitori/contenitori-per-elettronica>)

Regarding the assembly:

* Kompass (https://it.kompass.com/a/assemblaggio-di-componenti-elettronici-per-conto-terzi/4098015/r/lombardia/it\_03/)
* MB Elettronica (<https://www.mbelettronica.com/>)

N.B. in this part are considered only the potential suppliers that operate in the Italian territory, but the foreign ones are not excluded in the case in which they are decidedly more convenient.

As for the distribution, this part is still to be defined because it is closely related to the partners that will be incorporated into the project, in order to exploit the latter's distribution channels. Possible partners:

* hospitals,
* pharmacies.

**7. Does the business idea have a revenue model?**

The main revenue stream abides to Direct Product Payment, meaning that revenue derives only from product purchases and not extra services. What is yet to be implemented is a coherent and “strong” pricing strategy to be used for the two possible target segments. At the moment, the range of the selling price is 115€ for babies, 70€ for elderly people, 65€ for hospitals.

1. **What is the value network of the company?**

The main stakeholder/ value network aim is convincing external investors that the idea/project has enough newness over stable competition in order to find its place in the market. The product must find a market that is well above the “preoccupied relative/parent” stigma, since, the main aim is to get involved within the health industry, for this sort of mission the value network must be implemented by creating strong relationships and partnerships/health service providers with pharmaceutical companies as well as with known professionals. This of course can only partly be controlled by the firm itself as it is intrinsic with how the idea is perceived as well as its usability within a professional environment. For this scope, it is fundamental to develop an outstanding monitoring software, depicting data which is actually useful for professional parties.

**9. Are there constraints related to the ecosystem?**

* General public: huge impact on the success of the new medical device. If the general public does not accept this new “brand” as trustable and useful, then the idea will have no future.
* Medical community: to be successful, this new device must be accepted also by the medical community.
* Technological advancements: technological advancements within the monitoring phase of other similar devices can sort of create a “discontinuous” environment in which in a short time span the device/product has less features than competitors, in this hypothesis, the reference to competitors is not directed to the ones within the segment under analysis (NANNY etc) but from other type of “vital measurement devices”, that are used to monitor other kinds of data (Cardiac functioning etc).
* Public bodies: There’s no doubt that the strongest influence pending amongst the success of a medical device is the abidance to the European certification criteria, thus the project/device has a sort of dependency amongst such norms and regulations, which are highly uncontrollable.
* Other companies: since the product is not patented, at the moment there is a huge risk of imitation.