

NOVEL TECHNOLOGY
SMARTAL
EXPLORING THE STUDENT PROBLEM ANALYZER
FOR MATHEMATICS MODULE

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Dissertation submitted as partial fulfilment of the
requirements for the degree of Master of Science
(Information Technology Technopreneurship)

2009

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ACKNOWLEDGEMENTS

Bismillahirrahmanirrahim

I would like to extend my utmost gratitude and appreciation to those who have given me their support and has never weary in assisting me in my quest of conducting this research. First and foremost, I would like to thank my supervisor, Mrs. Norlia Mustaffa without whose help, this research would never have succeeded. Your guidance and kindness is what keeps me going and motivates me to do my best. I would also like to offer my gratitude to my two team members and co-partners in Novel Technology. Working together with you has been a good experience for me and the things we have learnt will be forever remembered.

I would also like to convey my gratitude to my family and friends whose support and encouragement has been a crucial factor in times when everything seemed bleak. Thank you Mr. Umar b. Man (father), Mrs. Khatijah Wan Ismail (mother), Ms. Noor Aina Umar (sister), Ms. Norli Umar (sister), Mr. Siddiq Abu Bakar (brother) and also Mr. Luqman Umar (brother) for all the words of encouragements that pushes me forward in life. Last but not least, I would like to thank my fiancée - Mr. Ahmad Shahrin B. Mohd. Anuar; for being the most understanding person during the course of this research and for giving me the strength to always be the best.

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ABSTRAK

Sebagai sebuah negara yang sedang membangun, masa depan Malaysia bergantung kepada modal insannya untuk mengembangkan keupayaan dan teknologi negara. Oleh yang demikian, bakal pemimpin perlu dipupuk dan diawasi dari usia yang muda lagi. Sekolah merupakan tempat yang paling sesuai untuk proses tersebut bermula kerana pada usia begini, mereka boleh diasuh dan diajar dengan ilmu dan pengetahuan yang penting bagi mengembangkan dan memajukan negara kita. Negara seperti Amerika Syarikat, United Kingdom dan negara membangun yang lain, sudah banyak mengaplikasikan sistem sebegini. Namun di Malaysia, kita kekurangan sistem seperti itu. Sekiranya kerajaan ingin membangunkan 'Information Communication Technology' (ICT), sekolah adalah tempat yang paling ideal untuk bermula.

Sebuah sistem yang memberi tumpuan kepada setiap pelajar akan membolehkan pihak pentadbir, guru-guru dan ibu bapa membantu anak-anak mereka mencapai keputusan yang lebih baik serta berlandaskan matlamat utama mereka. SMarTal ialah satu sistem yang mengawasi dan memproses informasi tentang para pelajar (seperti rekod akademik, kurikulum, kedatangan dan juga rekod disiplin) dengan berkesan dan akan membuat rumusan tentang pencapaian pelajar tersebut. Sistem ini akan membolehkan ibu bapa mengawasi perkembangan anak mereka dan mengenalpasti masalah yang dihadapi dari mana-mana jua melalui internet. Modul tambahannya – 'Student Problem Analyzer' dan 'Student Career Guidance' pula memberi faedah tambahan buat mereka.

Sebuah penyelidikan telah dijalankan untuk mengenalpasti sekiranya guru-guru tidak setuju dengan Sistem Maklumat Murid (SMM) dan mengharapkan perubahan dilakukan. Penyelidikan lain juga dilakukan untuk mengenalpasti elemen yang diperlukan untuk merancang dan membina rancangan penjualan untuk 'Student Management Portal' (SMaRtal)

dan juga rangka untuk modul tambahannya. Penyelidikan yang dilakukan oleh penyelidik telah mendedahkan bahawa subjek matematik boleh diaplikasikan untuk module 'Student Problem Analyzer'. Dengan penemuan ini, maka terbentuklah rangka untuk 'Student Problem Analyzer' bagi subjek matematik dan seterusnya proses pembinaan boleh dijalankan

ABSTRACT

As a developing country, Malaysia's future is dependent on its human capital to enhance and expand our nation's capabilities and technologies. As such, we need to cultivate and monitor our future leaders from an early age. School is the best place to start as it is during these stages of their life that they can be moulded and instilled with the knowledge and education needed to effectively evolve and expand our nation. There are a lot of School Administration and Management software available in countries such as the US, UK and other developed countries. But here in Malaysia we lack in such software or systems. If the government plans to develop ICT, a school is the best place to start.

A system that focuses on each student will enable school administrators, teachers and parents to better assist their children in achieving better results and focusing on their goals. SMaRtal is a system that effectively manages information about students (such as their academic records, co-curricular activities, attendance and also discipline records), analyzes that information and produces a of the student's activities. This system enables parents to monitor their child's progress and uncovers any problems they are facing from anywhere in the world using the internet. Its add on-modules – the Student Problem Analyzer and the Student Career Guidance offers added value to the system.

A Pilot study was conducted by the team to find out for certain that teachers are actually disagreeing with SMM and would like improvements to be done on it. Other researches were conducted to find what elements are needed to design and develop the marketing plan for SMaRtal and also the functionality for the add-on modules. The qualitative research carried out by the researcher revealed that the subject of Mathematics can actually be implemented into the Student Problem Analyzer module. From this research, the design for the mathematics module of the Student Problem Analyzer is now complete and can thus be proceed to the development stage.

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Section 1.0 EXECUTIVE SUMMARY

Novel Technology is a company started by 3 partners – Siti Noor Arfah, Roshini and also Neethanjali. This company is advised by Pn. Norlia and the CEO for this company is Mr. Umar B. Man. The main mission for Novel Technology is to design and develop SMarTal and its add-on modules – the Student Problem Analyzer module and also the Student Career Guidance module. All three partners played a role in the development of the product by conducting research to better improve and to develop the best system to meet the user needs.

SMaRtal is a system developed especially for the education sector in Malaysia. SMarTal is a system that requires the teachers in each school to input the data through a program in their computer. These data will then be uploaded through the Internet to a main server where the analysis will be done and stored to be accessed by other teachers and each student's parent or guardian. The Student Career Guidance is a module that will analyze a student's skills and knowledge and assign them on a path that would enable them to pursue a career that is suitable with their interests and skills. The Student Problem Analyzer on the other hand is a module that will analyze a student's academic results and pin-point what is the root cause that is preventing the student from achieving excellent academic results.

Novel Technology will be marketing the SMarTal system to schools while the two add-on modules will be sold to parents and students in the schools installed with SMarTal. The strategy planned for marketing the products is to implement SMarTal in private and international schools in the first and second year of operation before going in for the government sector in the third year. The total revenue that Novel Technology is expected to generate throughout the first three years of operation is RM812,000. This is from 30% of the private and international schools in Malaysia

as well as 40% of the students from those schools. The revenue generated in the third year also includes from the 10% of the students in government schools who is expected to purchase this system.

The research aspect of this dissertation will be divided into 2 sections. The first part is a Pilot study carried out to get teacher's response about SMM. From this survey, the conclusion that can be made is that teacher's find the SMM ineffective and inefficient. The second and main part of the research will be a qualitative research to explore the "Student Problem Analyzer" for mathematics module. The research was conducted by applying the Delphi method of interviewing experts who in this case are experienced mathematics teacher in schools. Determining whether it is possible to identify and pin-point the academic problems that a student could be facing and finding out whether such problems could indicate future predicaments is the main focus of this research because if these information are not confirmed, the add-on module (Student Problem Analyzer) will be rendered useless as it will not be able to function as planned.

As a conclusion, SMarTal is a very effective and efficient system that will enable more focus to be had on each student without burdening the teachers. Its add-on modules offer functionalities that are actually important in a student's development but are often neglected. The market for this system is large and thus will enable Novel Technology to earn profits in the millions of ringgit. The education sector is one of the biggest segments to venture in and it will increase by year as more and more student start their academic pursuit. With a strong product and large customer base, Novel Technology will be able to make it big as a business.

Section 2.0 INTRODUCTION TO THE COMPANY

2.1 Company Background

The company that will be developing and marketing SMaRtal is called Novel Technology. Novel Technology is a newly formed company especially for the production, distribution, marketing and sales of SMaRtal. Novel Technology is a partnership between 3 owners namely Siti Noor Arfah, Nethanjali and also Roshini.

As this company is a newly formed company, it has no previous history of activities. This company will be formed in the Eureka Building of Universiti Sains Malaysia under the incubation program offered there. This company was started especially for the development and marketing of SMaRtal and its add-on modules. SMaRtal was developed as a solution to the current system being used in the government schools in Malaysia to manage student information that is inefficient, ineffective and also contains a lot of flaws. SMaRtal was designed to eliminate all the problems faced with SMM (The current system used in government school) and it also offers various new and innovative functionalities.

All 3 partners of Novel Technology played an important part in the development of SMaRtal and also its add-on modules. Roshini, who is the marketing manager for Novel Technology concentrated on creating the best marketing plan to be used to market SMaRtal and also its two add-on modules – the student Problem Analyzer and also the Student Career Guidance. From the research, a marketing and pricing strategy is compiled and is applied when marketing SMaRtal and its add-on modules. Siti Noor Arfah, who is the operations manager for Novel Technology is conducting a research on the

Student Problem Analyzer for mathematics module. The research uncovers whether the system is actually viable and she will also expose the best method to design the functionality of the system. Neethanjali, who is the Technology Department Manager, conducted a research to analyze the other add-on module for SMarTal which is the Student Career Guidance. From the research, the researcher will uncover how the system will be able to set a career path for a student and how the design of the system will be.

In the early stages of company formation, each partner has to also take on concurrent positions as Novel Technology can't afford to hire additional permanent staff. For tasks that involve professional expertise, Novel will hire temporary staff on case basis. Temporary staffs would include programmers, designers, content developers and legal advisor. The development and programming for this system will be outsourced to a professional software development company. This is to ensure the quality of the product as a professional who has experiences developing systems would be able to do a much better job of developing it.

2.2 Business Intent & Clear indication of intended business activities.

Currently, Novel Technology exists to produce and sell SMarTal and also its add-on modules – the Student Problem Analyzer module and the Student Career Guidance modules. The name SMarTal was derived from the full name Student Management Portal but the main mission for this system is to develop a system that is Simple, Manageable and Reliable, hence the letters S, M and R are capital letters. SMarTal is a web-based system developed to manage students' data in

schools. It also has add-on modules that are offered to parents who want more functionality for their children. SMarTal takes in information such as students' academic result, co-curricular activities, attendance record and also their discipline records, analyses them and produces a summary of the strengths and weaknesses in the students.

SMaRtal is a system that allows the teachers in to key-in the data through a program in their computer. These data will then be uploaded through the Internet to a main server where the analysis will be done and the data is stored. The information stored can then be accessed by other teachers and each student's parent or guardian using an internet connection.

SMaRtal is also enhanced with add-on modules that each parent can subscribe for their children. One of the modules offered is the Career Guidance System. This system will guide each student to select a career based on their interests and abilities. The students are then guided on which subject they should focus on in order to be eligible for a career of their choice. If for some reason, they fail to meet the requirements for that particular career, this system will also propose other similar careers that they are eligible for. Another Add-on module for the SMarTal is the Student Problem Analyzer. The student Problem Analyzer is a system that will assess a student's skills and knowledge and will produce a summary of the student's weaknesses. From the summary produced by this system, a student can better focus their study on the topics that they are weak in and thus will be a more efficient way of learning.

Currently the government schools in Malaysia are adapting a system called the "Sistem Maklumat Murid" or SMM for short. This system was developed using Microsoft Access and functions as a data collection system. Teachers input

the information about students and this information are then compiled in a main server in school. But, this system has received a lot of negative feedback and is widely criticized by teachers who are using them. Among the flaws of this system includes – the system will hang if a crucial step is missed and thus the user has to terminate the program and start again. Teachers also comments that sometimes the data that has been input in the system can go missing and they would have to input those data again. The user interface for this system is also bad and new users to this system will have a lot of difficulties navigating the system.

Based on the results of a pilot study done on teachers from government schools who have been using the SMM, the results show that teachers are having a hard time using this system (as discussed in more detail in section 4). The majority of the respondents gave negative answers when compared to positive one and thought that SMM needed a lot more improvements. The result shows that SMM is known to have problems ranging from difficulties keying data to its complicated layout design and also data loss. The majority of the respondents want a better system to replace the SMM or improvements to be done on it.

The idea behind SMarTal is not to replicate the SMM but to develop a new and improved system that not only solves all the problems faced in SMM but offers a lot more functions with a better user interface. SMarTal not only analyzes the academic results of the students but also takes into account other aspects of each student such as their co-curricular involvement and discipline records. This is important as universities in Malaysia will consider students with not only good academic results but also their social and management skills. As SMarTal is a web-based system, it will also enable parents to check on their

children's activities real-time instead of waiting for a parent-teacher meeting to get feedbacks.

Systems such as this has been widely developed and implemented in developed countries such as in the United States of America, the United Kingdom and also in other European countries. Thus, the researchers are sure that the system is feasible and can be implemented in Malaysia too. Novel Technology plans to first target all the International and privately owned schools in Malaysia to see the acceptance level for this system and also as a testing ground to see the functionality of SMarTal. Once those schools have been convinced, only then will Novel Technology approach the Ministry of Education, Malaysia to promote SMarTal to them.

According to the marketing strategy, Novel Technology will market SMarTal at a very affordable price of RM5,000 per school. This amount is very small compared to other systems that are used in the education department. The reason for selling SMarTal at this low a price is because the main income for Novel Technology in the long run is actually the add-on modules that come with SMarTal. These add-on modules are not sold to the schools but to the parents of each student. Novel Technology plans to charge RM50 per student for each add-on module. According to the latest statistics taken from the Ministry of Education's official website for education management information portal (EMiS), as of 30th June 2008, there are 9,825 schools in Malaysia (including Primary and Secondary schools) and the total number of students currently enrolled in schools in Malaysia amounted to 5,464,751. Thus, considering the number of students in Malaysia alone, the market base for this product is very large. There are also new students every year and thus the number of users will

increase each year too. The potential profit from SMarTal is in the millions and is expected to expand every year as population increases.

2.3 Growth Strategies

The growth strategy for Novel Technology is divided into 3 parts namely the financial strategies, technology and product development strategy and also the marketing strategy. These strategies will provide Novel Technology with a complete base to grow and expand Novel Technology into a successful business

2.3.1 Financial Strategies

This project will be funded using the RM150,000 pre-seed grant offered by MDEC. SMarTal will target the two segments in the education sector which is the privately owned and also the government schools. From the total of 307 privately owned schools, Novel Technology plans to capture 30% of the market within 3 years.

The first year of marketing SMarTal, Novel Technology will be focusing on the privately owned and international schools in Malaysia but will start going through the process of becoming a system provider for the government sector. However, the researchers are not expecting to be able to immediately be given the opportunity to implement SMarTal in the government schools in the first year because of strict rules and procedures of that sector. Thus, adhering to the marketing plan developed for Novel Technology, the first year would be focused more on capturing 5% out of the total of 307 private and international schools in Malaysia while waiting for to be given the approval from the Ministry of Education, Malaysia.

Once each targeted school is installed with the SMarTal system, Novel Technology will start to promote the add-on modules to the parents of the student in those schools. There are a total of 103,737 students in the 307 private and international schools in Malaysia. In this first year Novel Technology estimates that 10% of the total number of students in the schools installed with SMarTal will purchase either one of the add-on modules. This would amount to around 507 students who will be purchasing at least one of the add-on modules. The revenue expected from the sale of SMarTal in the first year is RM75,000 while the revenue for the add-on modules is estimated at RM25,350 bringing a total of RM100,350 for Novel Technology for the first year.

The target set for the second year of Novel Technology is to capture another 10% of the private and international schools in Malaysia. Thus, for the second year, a total of 30 schools are expected to be installed with SMarTal. An estimated total of 1,521 students or 15% from the number of students in the 30 schools are expected to purchase either one of the add-on modules during the first year. The total revenue expected for this second year is RM226,050 which is a combination of the revenue from SMarTal – RM150,000 and from the add-on modules – RM76,050.

The marketing strategy for the third year would still be to keep on going strong in the private and international school. But it would also include the government sectors as well as Novel Technology expects to have approval from the Ministry of Education, Malaysia to implement SMarTal in the government schools by the third year. Novel Technology plans to install SMarTal to another 15% of the total number of private and international schools in Malaysia in the third year. This would mean that, there would have been another 46 schools to market SMarTal to. Novel Technology would also continue to market the add-on modules to at least

15% of the parents and students of these 46 schools meaning 2,332 units of the add-on modules will be sold in this year. Because SMarTal will be provided to the government schools for free, the revenue from this sector will be coming from the add-on modules only. Thus, by targeting 10% of the students from 0.5% schools from the total number of government schools in Malaysia, 2780 units of the add-on modules will be sold in the third year bringing in RM139,000 in revenue. From the private and international schools, the revenue generated in the third year would be a total of RM485,600 (RM230,000 from SMarTal and RM255,600 from the add-on modules).

Based on a research conducted by a member of the research team, the research team is certain that it is either very difficult or almost impossible for a third party company to sell directly to the Ministry of Education, Malaysia. Thus, to ensure that the ministry will be more interested in adopting SMarTal in the government schools, Novel Technology is offering this system to them for free. Novel Technology would not make any profit from the SMarTal system itself but the revenue from the add-on modules to all of the parents and students in each school installed with SMarTal would be a huge number already. Throughout Malaysia, there are a total of 9,825 government schools amounting to a total of 5,464,751 students who is a potential customer for the add-on modules. Thus, by adopting this marketing strategy, Novel Technology can ensure much bigger revenue in the long run.

After the initial three years, Novel Technology will be registered under the Ministry of Education and will also be listed under the MSC Status companies. The team will follow the rules and guidelines laid out in order to be eligible for the

recognitions. As there is limited fund in the early stage of operations, all the expenses will be kept to a bare minimum. Novel Technology will only make necessary purchases and all of the partners will have to use their own money if they need anything that Novel Technology doesn't currently have. The development of the software will be outsourced to a professional software development company and thus, the staffs only need to do management duties.

2.3.2 Technology and Product Development Strategies

Although Novel Technology will be designing the functionality of the system, the actual system development and programming will be outsourced to a professional software development company. The company to outsource the development of SMarTal will be selected once the prototype for SMarTal is finalized and all the research conducted on the system is complete.

SMarTal is a web-based system and thus the technology used to develop this product are also web related technologies. The initial plan for the development of SMarTal is to use MySQL as the database (running on Apache-Tomcat) in which all the data is stored and to use ASP.net to build the interface and integrate with PHP as the programming language when developing it. Macromedia Dreamweaver will be used as the platform when designing the GUI while Macromedia Flash will be used for the animations to make the system more attractive and interactive.

As Novel Technology will be operating under the Usains Incubation Facilities, the management team plans to make full use of the services they have to offer. There are labs equipped with computers and other technologies that Novel Technology staffs would be able to access to in order to run this business.

2.3.3 Marketing Strategies

As SMaRtal will be developed and sold by Novel Technology, the process of marketing will be done in-house by Novel Technology as well. The management team will do most of the works themselves and will hire additional help on case basis. This business will start of a business-to-business (B2B) first as its customer base will first be the private schools in Malaysia. Later on, once Novel Technology has managed to strike a deal with the ministry of education, they will be a business-to-government (B2G) business. The add-on modules however can be categorized as a business-to-customer (B2C) type of business as Novel Technology will be selling them direct to the student's parents.

For each school, Novel Technology will provide a six month trial period to get to know and to familiarize themselves with the functions of SMaRtal. After the six month trial period, the team will be conducting a survey on each school to get their feedback on the system. The information that will be searched for are things such as how well they are able to navigate and manipulate the system, the positive and also negative comments and also what they would like to add into the system. The results of this survey will enable Novel Technology to enhance SMaRtal and correct any flaws in the system. Through a good feedback system and by providing a good customer support team, Novel Technology can ensure that they have an advantage over the rest.

Novel Technology will also be adopting a few methods to advertise SMaRtal and also the add-on modules to the public. Among the activities planned for the marketing and promotion of the products include by sending "demo CDs"

through direct mail, participating in exhibitions and trade shows, distributing flyers to students, attending seminars and conferences and also the traditional method of publications in newspapers, magazines and also journals.

2.4 Target Markets

The target market for SMaRtal is the Education Sector in Malaysia. For the initial stages, Novel Technology will be focusing more on the privately owned and international schools in Malaysia while efforts will be done since the first year to penetrate the government sector. The main system will be sold to individual schools and thus implemented by schools. The add-on module however, targets the parents of the students as their customer. The parents have the option to subscribe each module for their children and can choose which modules they would like to enroll their children on. Each modules are sold separately but for parents who would like to purchase more than one module, value for money packages will be offered for them to choose from. Parents nowadays can afford to spend money just to make sure that their child gets the best education in order to ensure a brighter future for them.

2.5 Revenue Model

There are 2 parts to SMaRtal – the main system (SMaRtal) and also the add-on modules. Each school will be charged RM5,000 for SMaRtal and each parent will be charged RM50 for a module for each child.

According to the latest statistics taken from the Ministry of Education's official website for education management information portal (EMiS) (*see* Appendix), as of 30th June 2008, there are 7,644 government primary schools and

2,181 government secondary schools in Malaysia. Based on the statistics provided at the “Bahagian Pendidikan Swasta, Kementerian Pendidikan Malaysia”, as of June 2007 there are a total of 307 privately owned schools in Malaysia.

Novel Technology will be targeting 5% of the private schools in Malaysia for the first year and 10% of the students from those schools are expected to purchase the add-on modules. For the second year, Novel Technology plans to capture 10% of the total market for private and international schools in Malaysia and also 15% of the student from the schools installed with SMarTal.

In the third year, a total of 15% of the private and international schools in Malaysia is expected to be installed with SMarTal bringing a total of 30% of the total number of schools to be installed in the first three years. The third year is also when Novel Technology expects to be given permission to provide SMarTal to the Ministry of Education for free. Thus no revenue is expected from the implementation for SMarTal in the government sector but more revenue is expected from the sale of the add-on modules to the parents of the students in the government schools. Novel Technology estimates to sell a number of 2,780 units of the add-on modules which is 10% of the students in 0.5% of the government schools to have installed SMarTal in the third year. The revenue model for Novel Technology is depicted in Table 2.1.

Table 2.1: 3 year Revenue Model for Novel Technology

Year	2010		2011		2012	
Product	SMaRtal	Add-on Module	SMaRtal	Add-on Module	SMaRtal	Add-on Module
Target Number	15	507	30	1,521	46	5,112
Price Per Unit	RM5,000	RM50	RM5,000	RM50	RM5,00	RM50
Total Revenue	RM75,000	RM25,350	RM150,000	RM76,050	RM230,000	RM255,600
Grand Total	RM100,350		RM226,050		RM485,600	

2.6 Operational Setup

Novel Technology will be started in the year 2010 and will be trained under the Usains Incubation Facility located in the Eureka Building, USM. Throughout the initial startup period, the 3 partners will be doing most of the management tasks themselves but part-time staffs will be employed on case basis. Positions such as legal advisor and also programmers will be hired from time to time for their professional services.

As SMaRtal is a software-based system, the distribution of SMaRtal will be done in the form of a CD. Once the school has agreed to purchase this system, a staff will go to that particular school to install the system and make the proper configurations needed to run this system. A copy of the CD will be given to each school so that they can manually reinstall the system if anything happens to the computer that was originally installed with SMaRtal. The Add-on Modules however are only accessible on-line through the internet. Parents or students can browse the website for information regarding the add-on modules offered. If they decide to subscribe to any of the modules, they will be required to do an on-

line transaction to register their children. Once they have successfully subscribed for the add-on modules, their children's account will be automatically created from which they can access the modules that they have subscribed to. For parents who do not wish to make an on-line transaction, they are required to manually bank-in the fee and send the transaction receipt as proof. Their subscription will be processed manually by a staff from Novel Technology and they will be given a confirmation on their subscription status.

2.7 Long Term Goals of Company

For future works, Novel Technology is planning to expand the features of SMarTal and add more add-on modules with other functions and also to expand to include the international market as well. Countries in South East Asia would be the first to be targeted as these countries have strong ties and offers a good opportunity for each country to expand within its member countries. The content of SMarTal and the add-on modules would be revised to suite the Education syllabus and structure of those countries. Another option for the future of Novel Technology is by reengineering SMarTal and its add-on modules to suit the higher education sector such as colleges and universities.

The target set for the future is so that Novel Technology will be listed under the MSC Status companies. Novel Technology will follow the rules and guidelines laid out in order to be eligible for the recognitions. This will enable Novel Technology to be better recognized and ensure that the company name and product is looked upon.

2.8 Market & Competitors Information

The market for SMarTal is the education sector in Malaysia. This would include all the government, international and also the privately owned schools in Malaysia. Novel Technology plans to focus more on the privately-owned and international schools in Malaysia first in the first and second year while at the same time try to penetrate the government sector. This is because from the research done by a team member (Roshini Rajamanicham) on the marketing strategy, it is found that government sectors will not deal with third party vendors and the process of getting listed as a vendor for them is very tedious and takes a lot of effort and time. Thus, Novel Technology plans to spend the first two years to get approval to provide SMarTal to the government schools and start the implementation in the third year.

The competitors for SMarTal include the current system used by the government schools in Malaysia. One of the systems is called the Sistem Maklumat Murid or the SMM. This system however, has been widely criticized by teachers using them and is known to contain many flaws. Thus, if the management team is able to prove that the proposed system will offer the same functionality as the current system and at the same time offer even more benefits compared to it, then they would have a big chance to succeed.

Another known competitor for SMarTal is the SISmo or “Sistem Maklumat Murid Online”. This system is currently used in a few schools in the state of Perak. This system offers a similar functionality to SMM and also SMarTal as it is a student data management system. It’s different from SMM because it can be accessed online and can do student data analysis as well. This system however, is not a standardized system and is not currently being used in other states and

only certain schools in Perak are privately using it.

Most of the competitors for SMaRtal are commercial products developed by companies from Malaysia and also other countries. In Malaysia, the two most prominent competitors are the School Management System from The Media Shoppe Bhd. and also “Sistem Pengurusan Sekolah” (SPS) from ENOV8 Infostructure Sdn. Bhd. While a competitor from the international level includes the ADM-200 from Acesoft Software in Ohio, USA. For more details on the features of the product, a comparison matrix is attached in the appendix.

2.9 Strengths and Weaknesses (SWOT)

All initial companies and even experienced companies will have its strengths and weaknesses and thus, the same applies to Novel Technology. Table 2.2 shows the strengths, weaknesses, opportunities and threats of Novel Technology. However, there is more strength and the weaknesses can all be addressed to in time. The most important thing is that there is an opportunity and that will ensure that Novel Technology will be able to sustain.

Table 2.2: Strengths, Weaknesses, Opportunities and Threats.

<p><u>Strengths</u></p> <ul style="list-style-type: none">▪ Management team is strong on IT background.▪ Management team has relevant work experience in the field▪ The team has an advisor who has connections in the education who is willing to assist them▪ Location for launching and testing available▪ The management team are young and motivated▪ The product itself – provides an important function of managing student data as well as add-on functions.	<p><u>Weaknesses</u></p> <ul style="list-style-type: none">▪ Inexperienced in business▪ No financial backer▪ Shorthanded
<p><u>Opportunities</u></p> <ul style="list-style-type: none">▪ Market segment (Education sector) is huge▪ Current system implemented are widely criticized▪ Offers of add-on modules gives extra benefits for users	<p><u>Threats</u></p> <ul style="list-style-type: none">▪ The government might not be willing to implement the system in government schools▪ The current system provider might upgrade and copy our product▪ Other competitors might take our idea and build something similar

Strengths

IT Background

As SMarTal is an IT system, an IT related background is crucial in order for the management team to fully understand the process involved in designing and developing it. Thus, as all those involved in this company are graduates in the IT field, this is a great strength in which they can rely on.

Relevant Work Experience

All the team members have had prior experience designing, developing and managing an IT based system, these experiences will ensure that novice mistakes do not happen. They would have also grasp the concepts and process involved in developing systems such as these and thus will make understanding and planning the overall development schedule better.

Contacts in the Industry

The team will be guided by Mr. Umar B. Man, who is an experienced person with more than 30 years in the industry (*see* Appendix). Through him, they can meet other relevant sources for information and be able to test out the system. An expert in the education field will also be able to critically analyze the strengths and weaknesses of this system and also its efficiency in fulfilling its goals.

Location for Launching and Testing available

Novel Technology have identified and contacted the administrator of a private school in Malaysia on which the team can do their research on and use as a launching ground to test the functionality of the system. They have also agreed to apply this system in their school if the system proves to be effective and efficient. Once the team has their first customer, they can use this as a reference site and it would give them more leverage when trying to convince other new customers.

Young and Motivated

Another big strength for the team is that all of them are still young and thus are more motivated to make this work. The team members have not much commitments to others and can thus spend more time, energy and other resources in order to make SMaRtal a success.

The Product

The product itself is strength for this company as it is something which is very basic but vital in a school. The add-on modules add on value to this main system and offer something that other competitors have not yet got.

Weaknesses

Inexperienced in Business Management

None of the team members have had experience owning or even managing a business before. They are novice in this industry and thus could possibly do the wrong things or even fail to identify the opportunities that make come up. This however, can be solved by either hiring an experienced person as a business development manager or by attending courses in business management.

No financial Backer

As all the team members are fresh graduates, they have very little fund to contribute to Novel Technology. This would mean that they have absolutely no backup in terms of financial assistance in case they are having trouble

financially. In order to solve this problem, they would have to find a financial backer as investors or make loans from available fund offered.

Shorthanded

As there are limited funds for the team to work with, they are also very shorthanded. They would have only 3 full-time personnel working in Novel Technology and would have to hire temporary staffs if needed. Once they have more sales and can afford to, they can add on more permanent staffs to their team.

Opportunities

Market segment is huge

The target market for this product is the Education sector which is a very huge industry and one which expands with time. The market for the main system (which is sold to schools) in itself could generate sales in the millions and the add-on module (which is the biggest income) would generate even more.

Current system implemented are widely criticized

The current system (SMM) implemented in the government schools are poorly designed and contains many flaws. This causes the teachers who use this system a lot of problems and are thus criticized and disliked by them. By offering a product that focuses on simple user interface and a manageable but reliable system, this product could make it big.

Add-on modules provides extra benefit

Although there are similar products in the market, none of them offers add-on modules catered for students. Through these modules, the system could interact better with each student and will then provide a more personalized system that takes into account each student as an individual instead of looking at the whole school.

Threats

Possibility of rejection from the government

The government might not be willing to implement this new system in the government schools and thus will give a major impact on the sale of SMarTal. It is widely known that to get a “project” with the Malaysian government is not an easy task. There are a lot of procedures to abide to and even after fulfilling those requirements, the system might still be rejected.

Current system provider

Another threat that could give a negative impact on SMarTal is that the current system providers might decide to make upgrades to the current system with something that offers the same functionality as our product. As they are currently providing the system for the customers, they could be given more priority as they are already well-known.

Other competitors

Other new competitors might also decide to develop and offer a similar product to SMarTal. Once a system is launched and is being used, the possibility of someone else copying it is very high.