SMARTAL (STUDENT MANAGEMENT PORTAL): FUNCTIONAL REQUIREMENT ANALYSIS TO DEVELOP THE ENGLISH LANGUAGE DIAGNOSIS MODULE

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MODULE

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Nama Produk: Portal Pengurusan Pelajar (SMaRtal)

Tajuk Penyelidikan: Analisis Keperluan Fungsian untuk membangunkan Modul Diagnosis

Bahasa Inggeris.

ABSTRAK

Disertasi ini merupakan sebuah pelan perniagaan dan penyelidikan untuk memasarkan sebuah produk. Portal Pengurusan Pelajar (SMaRtal) diperkenalkan oleh sebuah syarikat bernama Novel Technology. Syarikat ini ditubuhkan oleh tiga rakan kongsi, Siti Noor Arfah, Nethanjali Manoharan dan Roshini Rajamanicam. Syarikat ini bercadang untuk memasarkan produk tersebut ke sektor pendidikan di Malaysia terutamanya sekolah dan ibubapa pelajar sekolah. SMaRtal mempunyai sistem utama yang akan dipasang di sekolah di atas persetujuan sekolah untuk membeli sistem ini dan modul tambahan iaitu modul Penganalisis Masalah Pelajar, modul Bimbingan Kerjaya Pelajar dan Modul Diagnosis Bahasa Inggeris yang akan dipromosi kepada ibubapa pelajar sekolah. Pilihan pasaran syarikat ini adalah sekolah bukan kerajaan, sekolah kerajaan dan juga ibubapa pelajar sekolah. Anggaran jualan bagi tahun 2011, 2012 dan 2013 adalah RM93,550, RM229,850 dan RM416,360 masing-masing. Komponen kedua disertasi ini memfokuskan kepada kajian permulaan bersama rakan kongsi dan penyelidikan individu. Kajian permulaan dikendalikan oleh tiga ahli (Siti Noor Arfah Umar, Nethanjali Manoharan dan Roshini Rajamanicam) untuk mengetahui masalah pengguna sistem sedia ada, Sistem Maklumat Murid (SMM). Metodologi tinjauan digunakan untuk mengumpul maklumat dari guru sekolah. Tinjauan tersebut menyokong objektif dan membantu membangunkan SMaRtal. Bagi penyelidikan individu, objektifnya adalah untuk menganalisis

keperluan fungsian untuk membangunkan sebuah modul bagi mengenalpasti masalah pelajar dalam mempelajari Bahasa Inggeris. Terdapat empat masalah dalam mempelajari Bahasa Inggeris iaitu masalah linguistik, tatabahasa, budaya dan psikologi. Metodologi yang diguna untuk menganalisis keperluan fungsian adalah temuaramah berfokus melalui lima langkah penyelidikan. Langkah-langkahnya adalah persediaan awal, pensampelan, pengumpulan data, menganalisis data dan kesimpulan. Sampel responden temuramah ialah guru-guru pakar yang mengajar Bahasa Inggeris di sekolah. Hasil temuramah mendedahkan bahawa tatabahasa dan linguistik adalah masalah utama yang dialami oleh pelajar. Ini menunjukkan modul ini perlu direka bentuk dengan menyediakan penilaian yang mempunyai struktur tatabahasa dan linguistik. Hasil dari penyelidikan ini ialah Diagram Aliran Berfungsi (FFD).

Company Name: Novel Technology;

Product Name: Student Management Portal (SMaRtal)

Research Title: Functional Requirement Analysis to develop English Language Diagnosis

Module

ABSTRACT

This dissertation is a business plan cum research to market a product, Student Management Portal (SMaRtal) by a company called Novel Technology. This company is founded by three partners, Siti Noor Arfah, Nethanjali Manoharan and Roshini Rajamanicam. The company intends to market the product to the education sector in Malaysia mainly to the schools and the parents of school children. SMaRtal consists of main system which will be installed in schools upon schools' agreement to purchase the system and add-on modules, Student Problem Analyzer, Student Career Guidance and English Language Diagnosis Module which will be marketed to the school children's parents. The target market of the company is the corporate-owned schools and government schools as well as the parents of the school children. The estimated sales for the year 2011, 2012 and 2013 are RM93,550, RM229,850 and RM416,360 respectively. The second component of the dissertation is focused on the preliminary study by the partners and individual researcher. The preliminary study is being conducted by the three members (Siti Noor Arfah Umar, Roshini Rajamanicam and Nethanjali Manoharan) to know the user pains of the existing system, Sistem Maklumat Murid (SMM). Survey methodology was used to get information from the teachers. The survey conducted supports the objective and helps to continue with the development of the SMaRtal. For the individual research, the objective is to analyze the functional requirements needed to develop a system that

diagnose student's problem in learning English Language. There are four problems in learning English Language which deals with linguistic, grammatical, cultural and psychological. The methodology used to analyze the functional requirements is focused interview using five investigation steps. The steps are preliminary preparation, sampling, data collection, data analysis and conclusion. Sample respondent of the interview is the experts in teaching English Language in schools. The results of the interview revealed that grammatical and linguistic are the main problems faced by the students. This indicates the system that needs to be designed must incorporate the grammatical and linguistic structure assessments. The outcome of the research is Functional Flow Diagram (FFD).

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SECTION 1.0

EXECUTIVE SUMMARY

Novel Technology is a company formed in 2010 by three partners – Siti Noor Arfah Umar, Nethanjali Manoharan and Roshini Rajamanicam. The company has appointed Mr. Umar bin Man as the Chief Executive Officer and Mrs. S. Banu as the advisor. The mission of this company is to analyze and design a school management system known as SMaRtal and to outsource the development of this product to selected company. The next mission of Novel Technology is to market SMaRtal to the educational sector in Malaysia. SMaRtal consists of a main system and three add-on modules. Main system includes the student registration subsystem, student management subsystem, student summary report subsystem, staff management subsystem and library management subsystem, whereas the add-on modules include the Student Problem Analyzer module, Student Career Guidance module and English Language Diagnosis Module. The add-on modules enable the parents to view online the analysis of their children performance in school.

Our customer base includes schools and parents where the main system is for schools and add-on modules for parents. 4P's concepts are implemented in developing SMaRtal. There are price, place, promotion and people. The main system is charged to RM5,000 and the add-on modules are RM50 each module. The place chosen to market the SMaRtal is the corporate-owned schools and government schools meanwhile the people are the school administrators and parents. SMaRtal will be promoted using the online advertising and physical advertising. Online advertising such as online banners will be placed in the educational blogs and forums, where as the physical advertising such as meeting the public and demonstrate and also giving promotion

packages. For the product development, all the requirements needed to develop the SMaRtal are analyzed by the partners before it is being outsourced to a company.

The company has conducted market research by comparing SMaRtal system with other competitors' products. There are benefits and extra features for this system compared to other systems. The main significant different feature of SMaRtal is the presence of online access modules for the parents. Besides that, the system has student discipline records functions, student curricular activities and also able to manage big sized files into pdf and excel.

The management team of the company comprises of an educationalist and an English Language teacher expert with three Information Technology (IT) graduates. The educationalist is Mr. Umar bin Man who is the CEO of the company with more than 26 years of experience. Whereas Mrs. S.Banu is the advisor who is the expert in English Language with more than 22 years experience. The partners of the company, Siti Noor Arfah, Nethanjali and Roshini have knowledge of IT and they are responsible for designing the product.

There are two types of research being conducted in the dissertation. There are preliminary study and individual research. First research is a preliminary study of the current system, Sistem Maklumat Murid (SMM). This research is done by the group members (Siti Noor Arfah Umar, Nethanjali Manoharan and Roshini Rajamanicam). In the preliminary study, the survey methodology is used to determine the opinions from the teachers about the current system. Then, the data gathered is analyzed and the research supports our objective, thus give us an opportunity to develop the SMaRtal. In the individual research, the research component will focus on the functional requirements analysis for the English Language Diagnosis Module. This module will diagnose the problems in learning English language. The research uncovers whether

the system is actually viable and functional. The research is a qualitative research that was conducted using the interview methodology. The interview questions are done based on the four problems – linguistic, grammatical, cultural and psychological problem. The interview has been done to get the opinions from the English Language teachers to indicate the functional requirements needed to develop the module. Most of the teachers said that the grammatical and linguistic problems are the major problem. So, if the students are good in grammatical and linguistic, then the students can easily overcome the problem in cultural and psychological. The teachers also mentioned that adverbs, adjectives, nouns, pronouns, conjunctions, interjections, prepositions and verbs are the most important part in learning grammar. Therefore, the students' problem will be diagnosed using these combinations of grammar topics. There will be two types of questions – topical questions and advanced topical questions. In topical questions, the questions are mostly to fill in the blanks and building sentences, where as the advanced topical questions contains the writing composition to analyze the writing skills, reading comprehension to check the understanding skills and spelling to check their listening skills. The answers will be analyzed and evaluation will be sent to the school server through Novel Technology server. Those findings will be sketched into Functional Flow Diagram (FFD) to know the functional requirements needed to develop the module.

In order to achieve the goals and objectives, financial strategies are made to calculate the estimated revenue for the year 2011, 2012 and 2013. In 2011, the office equipments and setups are estimated around RM10,000 and the software development would cost RM50,000. Based on the estimation, the company applies for funds to start the business. Then, the net profit, gross profit and total expected sales are calculated. In 2011, the total sales is expected to be RM93,550, gross profit RM 43,550 and overall will loss after calculating the net profit. In the

following years (2012 and 2013), the company's' estimation leads to net profit RM36,239 and RM73,676 respectively. So, within 12 months we will double our sales. The total expected sales will be RM229,850 in 2012 and RM416,360 in 2013.

SECTION 2.0

INTRODUCTION TO THE COMPANY

2.1   Company Background

Novel Technology is a new company that will offer products for education sector. Novel Technology is formed in 2010 by three partners; Siti Noor Arfah, Nethanjali and Roshini to market school management system and add on modules for the schools and parents. The company is located in the Eureka Building, Universiti Sains Malaysia, Penang. All the partners are in charge in the formation and management of the company. On the other hand, the company will be responsible in designing the system and the modules. The development of the system will be outsourced to a professional company which will be decided by the company later.

Besides that, the company will make an effort to be registered under the Ministry of Education as a company that distributes student management system product in three years time. The team will adhere to the rules and regulations set by the ministry to be eligible as one of the supplier company for Ministry of Education.

2.2   Business Intent

Basically, student management system is a system that handles the admission process, enrollment of new students, examination details, assessments results, and students' information, parents' information, aid/scholarship information and also the student discipline records. In this case, Novel Technology offers a student management system; SMaRtal as a main system and three add-on modules, namely Student Career Guidance, Student Problem Analyzer and English Language Diagnosis Module. Student Problem Analyzer is a module that will determine a students; problem in certain subject which prevents the student from achieving good results. On

the other hand, Student Career Guidance module is a module that will regulate the students on a path that would enable them to pursue profession that suits their skills and knowledge. The English Language Diagnosis Module is created specifically to capture the problems faces by the students in learning English Language in schools. The specialty of the main system is it is connected to Internet and web-based. Besides that, the system is networked with the school server to ease the teachers to send the saved copy of the student to the server. Meanwhile, for the parents will be able to see the performance of the students through the Internet.

Initially, the functional and non-functional requirements of the student management system and the add-on modules are identified through research activity which will be conducted by the partners. Besides that, the user interface of the system is designed to give an idea on the color of the background and fonts. After all the functional requirements and non-functional requirements and user interface of the system are defined, the system is ready to be developed. The development of the system is outsourced and is checked thoroughly throughout the process.

Based on the preliminary study which has been conducted by the company partners (refer to Section 4.2.1), the findings reveal that there are problems in the existing system such as saving the data into the floppy disc to transfer to the main system and no online access modules for the parents to view the examination results and activities of school children. Due to this reason, SMaRtal is sold in the form of main system which is targeted to schools and the add-on modules are sold to the parents separately. In addition, the schools want parents to be more involved in the children by assisting in their homework and reading activities (Md. Nor et al, 1996) thus it is hoped that add-on modules will help the student to get good quality of education because parents will be checking on them. The other reason that we decided to not include the add-on modules with the main system is because this is one of our strategy to generate revenue for the company.

Our company cannot depend solely on the schools because the schools will purchase it only once and then the schools will consider buying the updated version in the coming years. Thus, the parents have to be included in the market by selling them the add-on modules in order to sustain the company.

At the same time, the company, Novel Technology prepares themselves to promote and market the product by traditional advertising such as newspapers and magazines. The main system is targeted to the education sector in Malaysia whereas the add-on modules are targeted to the parents. Therefore, both markets will give the opportunity for the company to grow in the future. Thus, the main business intent of Novel Technology is to conduct research and to develop SMaRtal, to promote and sell SMaRtal and to provide support for the customers.

Even though the sales revenue estimated for the first year is less than RM100,000 but in the second year it is double up to RM200,000. Whereas for the third year, the sales will reach around RM400,000 without calculating the gross profit and net profit.

2.3 Growth Strategies

The three main strategies that need to be considered are financial strategy, technology and product development strategy and also the marketing strategy to increase the market share and to minimize the cost for the company. These strategies will provide Novel Technology with a complete base to grow and expand into a successful business.

2.3.1 Financial Strategy

Practically, it is not easy to start up a company without money. Therefore, several financial strategies are prepared to ensure that the company could run the business. First of all,

the partners determine the suitable location and cost for the company. After that, each item to setup the office is detailed. Items such as software, hardware and stationary to occupy the office are listed. Furthermore, the patent and copyright of the software is processed together with the outsourcing cost. The total estimation of the cost is RM70,000. The Table 2.1 shows the estimated cost for the office setup and the company for the year 2010 and 2011.

Table 2.1: Estimated cost for office setup and company for the year 2010 and 2011

Item	Cost
Hardware - Computer servers - Personal computers - ISDN Lines connection - Workstation hardware and accessories - Furniture and fittings	RM 9,000
Software - Software licensing for Windows NT - Software for hardware development - Design tools	RM1,000
Patenting and copyrights	RM5,000
Land (Rent)	RM5,000
Outsourcing - Software (Main system) - Website (Add-on modules)	RM50,000
TOTAL	RM70,000

After obtaining the estimated cost for the company, the partners find ways to secure the financial support. Novel Technology needs a grant of approximately RM150,000 to start up the company. In this case, Novel Technology is planning to get the MDeC pre-seed fund of RM150,000 to introduce the company. Besides that, the partners use their own money and ask from their relatives and friends.

As the company is targeting the parents and schools, the partners believe that the revenue would reach an unexpected margin. It is because schools are built every year and the students are increasing every year in Malaysia. The company is aware that it is difficult to penetrate the

government schools in the beginning so the company will concentrate to market the system to the corporate schools in the early year. Thus the revenue mainly will be generated by selling the product to the corporate schools besides making effort to sell the product to the government schools. Besides that, the add-on modules are charged separately for each student every year. If the parents purchase all the three add-on modules for a child, then the revenue from the parents is three times higher than the parents who buy one add-on module for their children. Therefore, the company's highest revenue is from the add-on module market.

2.3.2   Technology and Product Development Strategy

SMaRtal system is developed using MySQL as the database and ASP.net as the platform to build the user interface and PHP as the programming language. The database will be running on Apache-Tomcat in which all the student data is stored. System database is used to run the system. Macromedia Dreamweaver is the software being used to develop system's Graphics User Interface (GUI) and Macromedia Flash is used to create animation in the system to make the system attractive and interesting. The operating system used is Windows XP. For the time being, these applications are used to develop the system. From time to time, the development of the system will be updated.

SMaRtal will be designed using System Analysis and Design (SAD) modeling techniques such as Use Case Diagrams and System Sequence Diagram to give the overall view of the system. Prototypes for the main system and add-on modules will be created to get a general idea of the system.

Our company outsources the development of the product to reduce costs and increase value. However, outsourcing has its own risk. Some strategies have been made to overcome the

risks. The main risk is on the security. First of all, our company makes sure that the outsourcing company is well-known of their secured-coding and has experience and skilled programmers. We too spend time to search for a well-experience outsourcing company because the product should be fully secured. Besides that, our company to ensure that the product have security mechanisms which only perform the requested functions. Then, the product is checked on the presence of some malicious code such as Trojan and viruses. These strategies are to validate the foundation for the security is in place.

The minimum system requirements for the main system to be installed are:

(a)   Hard Disk Drive 10GB

(b)   Memory RAM 256MB

(c)   Processor Pentium-III

(d)   Speed 550MHz AT/AT Compatible

For those schools who agreed to purchase SMaRtal, the main system will be installed in the schools whereas no installations are required for the add-on modules because the add-on modules are purchased online and it is a webpage for this web-based system.

2.3.3   Marketing Strategy

Novel Technology adopts the following marketing strategies to reduce cost and maximize the profit. The marketing strategy implemented to promote SMaRtal is the marketing mix model. Table 2.2 shows the marketing mix for SMaRtal and add-on modules.

Table 2.2: Marketing Mix for SMaRtal and add-on modules

Aspect	Strategy
Place	Corporate-owned schools and government schools
People	School administrators, Parents
Promotion	Direct selling, Online Advertising, Promotional Packages, Public Relation
Pricing	RM5,000 (main system), RM50 (each add-on module)

Based on the agreement by the partners, it was agreed that the price for the main system SMaRtal is RM5,000 whereas the add-on modules will cost RM50 each. The main system is customized according to the school administration for the corporate-owned schools. Basically, the school semesters and the examination for those schools are different among the corporate-owned schools. The syllabuses also differ from the government schools and among the corporate-owned schools. The add-on modules are sold separately for each student. The parents may choose the add-on modules they prefer for their children. Spending from RM10 to RM15 per month would generate a better generation.

Government and corporate-owned schools are targeted to market the student management system. Both levels (primary and secondary schools) are targeted for the venture. In the mean time, the partners realize that problems might occur in approaching the government because it is not easy to penetrate the government. There are procedures to follow to enter and market the

product in the government schools. The important procedure is getting the permission from the Ministry of Education using Educational Planning and Research Division (EPRD) form. However, the partners do not foresee a lot of problems in marketing the product in corporate-owned schools.

The school administrators (for main system) and parents (for add-on modules) are targeted because they are the direct purchasers of the product. Before that, Novel Technology needs to make school teachers aware of the system. So, the company promotes it in schools and gets the feedback. The company also advertises it in the Internet to make it convenient for the teachers when they browse the Internet. They will find out more about SMaRtal in Internet.

For school in the rural areas, the government has allocated at least 12% to 23% of public sector development expenditure during the 6th Malaysia Plan (6MP) until 9th Malaysia Plan (9MP) ("Infrastructure and rural development in Malaysia", 2007)for rural area development. Besides that, there were also positive indicators to show that the programmes held to improve the quality of rural area life such as in water supplies, electrical supplies, roads, health and education facilities. For the time being, Information Technology (IT) is not fully realized in poor and rural communities but according to Mohd Yasin (2002), the rate of awareness is fairly the same in rural and urban areas. Total of 64.7% of rural areas students exposed to Internet (IT source) compared to 84.6% in the urban areas. It is just a slight difference and it could be due to more cyber cafes in urban area and some have their own Internet connection at home. For SMaRtal, the strategies for marketing this product to school in the rural areas will be similar to the marketing programmes that have been adopted for the urban areas schools. The most important thing is the rural area students are IT literate, so this product can be marketed to them as well.

Even though the rural areas would take time to rise, it would not be a problem because we are targeting small percentage of schools and parents every year.

The company will concentrate on making schools and parents of the school children aware of this product by adopting the marketing programme that has been laid out in Section 5. During first year all the partners will concentrate their effort on promoting this product and disseminate information about this product aggressively. We strongly believe with these efforts, the product will be accepted by the customers once the product has been utilized by the customers.

2.4   Target Market

Novel Technology has agreed to market this product right away to the corporate-owned schools and also to the government schools as well. The company is aware it is difficult for the government schools to accept SMaRtal which is chargeable so this is the reason why we target more on the corporate-owned schools rather than the government schools. However, the existing product SMM has lots of problem (based on the preliminary study in Section 4.2.1) so we hope to convince at least one government school to purchase the product and we will give the support for the school to use the product. We hope when this particular school has successfully used this product then the school will spread the news about this product and will convince other schools to purchase this product.

The main system of the SMaRtal is sold to the schools; meanwhile the add-on modules are targeted to the parents of the students. The parents have the option to subscribe the add-on modules for their children. The reason to choose schools and parents because the product is an educational product. As the students are involved in the education sector so the product is also

applicable for the student's parents to monitor their children's performance. Meanwhile, school and family strong partnerships represents a shared approach to the education to provide a quality education for the children (Md. Nor et al, 1996). Furthermore, parents is the second target because student spend more time at home, so parents can motivate their children to use our product. Even though the scope is limited yet the market is huge as it increases every year.

Table 2.3: Total corporate-owned schools and government schools in Malaysia

Type of Schools	Schools	Students
Corporate-owned Schools	307	103,737
Government Schools	9,844	5,416,924

Source: www.schoolmalaysia.com (Private School Statistics at June 2007),

www.moe.gov.my (Malaysian Ministry of Education, Data as at 30th June 2009)

According to Jabatan Pendidikan Swasta (www.schoolmalaysia.com in June 2007), there are 307 corporate-owned schools in Malaysia, with a total of 103,737 students in the schools. Besides that, there are a total of 9,844 government schools in Malaysia with 5,416,924 students studying in the schools as shown by the statistics taken from the Malaysian Ministry of Education website (www.moe.gov.my on 30th June 2009) depicted in Table 2.3.

Table 2.4 shows the percentage of the targeted market (schools and parents) for the first three years. In the first year (2011), 5% of the corporate-owned schools and 0.01% of the government schools are targeted. Less government schools were targeted because it is not easy to penetrate the government. So, by starting from a small number in the northern region, Novel Technology expects that more government schools will be using it. In the second year, the target percentage is increased to 10% for the corporate-owned schools and 0.05% for the government

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school and the market will expand to east Malaysia. Finally, in the third year (2013), 15% of the total corporate-owned schools and 0.1% of government schools will be targeted. The target for corporate-owned schools increases by 5% every year but the target for the government schools is smaller. This is because Novel Technology found that it is difficult to penetrate the government schools market. Therefore, only nine government schools are targeted in the third year.

As for the parents, for the first year (2011), we will target 5% of the total parents from the 5% of the targeted corporate-owned schools and 3% of the total parents from 0.01% of targeted government schools. In the second year, we will increase the targeted parents to 10% because we are targeting more schools in that year. For the government school, we target 5% of the parents in 0.05% schools. Meanwhile in the third year (2013), we will increase to 15% for parents in corporate-owned schools and 10% for the government schools.

Table 2.4: Percentage of target market for first three years

Type of schools	2011		2012		2013	
	Corporate-owned	Government	Corporate-owned	Government	Corporate-owned	Government
Main system (Schools)	5%	0.01%	10%	0.05%	15%	0.1%
Add-on modules (Parents)	5%	3%	10%	5%	15%	10%

2.5   Revenue Model

Based on the statistics shown in Table 2.3, the revenue for the company is calculated. These are the formulas used to calculate the revenue for main system and add-on modules.

Average number of students in a school =   <u>Total number of students in schools in Malaysia</u>
Total number of schools in Malaysia

Revenue (Main system) = (Percentage of target market (schools) * total number of schools) * Price of SMaRtal

Revenue (Add-on Modules) = (Percentage of target market (parents) * (Percentage of targeted schools * total number of schools) * Average number of students in a school) * Price of an add-on module

Below is the calculation of expected revenue from the expected sales of the main system and the add-on modules of SMaRtal.

First Year (2011)

Percentage of target market in corporate owned schools = 5%

Revenue (Main system) = (5% * 307 schools) * RM5,000 =15 * RM5,000 = RM75,000

Average number of students in corporate owned schools = 103,737 students / 307 schools

= 338 students

Percentage of target market for parents = 5%

Revenue (add-on modules) = (5% * (15 * 338)) * RM50 = 253 * RM50 = RM12,650

Percentage of target market in government schools = 0.1%

*Revenue (Main system) = (0.01% * 9,844 schools) * RM5,000 = 1 * RM5,000 = RM5,000*

Average number of students in corporate owned schools = 5,416,724 students / 9,844 schools

= 550 students

Percentage of target market for parents = 3%

*Revenue (add-on modules) = (3% * (1 * 550)) * RM50 = 17 * RM50 = RM850*

Total revenue = Revenue (Main system) + Revenue (Add-on Modules)

= (75,000 + 5,000) + (12,650 + 850)

= 80,000 + 13,550

= RM93,550

Therefore, the total revenue for the first year (2011) is RM93,550.

For the year 2012 and 2013, the same calculation has been used to determine the revenue for each of the three years. The total revenue for second year (2012) is RM229,850 and the third year (2013) is RM416,360. Table 2.5 shows the revenue model for the first three years (2011-2013).

Table 2.5: Revenue Model for the year 2011, 2012, and 2013

	2011		2012		2013	
Type of Schools	Corporate-owned	Government	Corporate-owned	Government	Corporate-owned	Government
Target Number / Main System (RM) (Schools)	5% (15) 75,000	0.01% (1) 5,000	10% (30) 150,000	0.05% (5) 25,000	15% (46) 230,000	0.1% (9) 45,000
Revenue from main system	RM80,000		RM175,000		RM275,000	
Target Number / Add-on modules (RM) (Parents)	5% (253) 12,650	3% (17) 850	10% (1014) 50,700	5% (83) 4,150	15% (2332) 116,610	10% (495) 24,750
Revenue from add-on modules	RM13,550		RM54,850		RM141,360	
Total Revenue (RM)	RM93,550		RM229,850		RM416,360	

2.6   Operational Setup

Novel Technology will be formed in the year 2010 which will be located at USAINS Incubation Faculty, Eureka Building Universiti Sains Malaysia, Penang (Figure 2.1). The company is just 15 minutes away from Penang International Airport and 10 minutes from the Penang Bridge.

Figure 2.1: Kompleks EUREKA

In the company, computer servers and personal computers are placed for the staff. Besides that, printers, software and hardware are installed in the computers to manage the educational software. ISDN line connection is connected too to handle the online subscription for the add-on modules. Parents who do not believe in online transactions do have a chance to pay by money order or bank-in method, and the schools are approached directly to convince the school administrators to purchase the system. Once a school purchases, the installation will be done. The partners of the company will be in-charge of fixing and installing the main system in schools for the first year. For the following years, computer technicians will be hired to do the installation work.

2.7   Long Term Goals of Company

Novel Technology plans to expand the features of main system and to add more add-on modules with functions that facilitate the student information management in school. At the same time, Novel Technology plans to market the product to international level in the future. The content of main system and the add-on modules would be revised and adapted to suit the education syllabus of other countries. Neighboring countries would be the first to be targeted as these countries are near and also there is a good opportunity to expand within them. Furthermore, Novel Technology wants to save costs and wants to get feedback from the customers.

In the future, the company intends to develop the SMaRtal system for higher education level such as colleges and universities. The add-on modules also will be customized to suit the higher education sector.

At the same time, Novel Technology would like to set a future target to be one of the company listed in MSC status companies. The guidelines and the regulations of the MSC status company will be followed to obtain the recognition. By attaining the following regulation, the company has faith that the company would obtain the MSC status company.

2.8   Market and Competitors Information

Novel Technology's direct competitors would be the companies that sell the existing products. The competitor companies are the The Media Shoppe Berhad, ENOV8 Infostructure Sdn. Bhd., Acesoft Software and the Ministry of Education as shown in Table 2.6. The comparison is made with the first version of Sistem Maklumat Murid (SMM). Only Sistem Pengurusan Sekolah (SPS) do not provide the aid information but the other competitors have. The student discipline records are not available in the SMM, where as other competitors product

has the discipline record functions but do not have the whole version like SMaRtal does. The SPS does not manage the student co-curricular activities in their system as the other systems do. Then, there is no online access for the SMM and SPS but SMaRtal, ADM-2000 and School Management System do. Yet, SMaRtal is highlighted here with additional features that are color coded reporting, future projection, statistical reporting and also the student discipline demerit/merit information. The teachers can view the report statistically. Future projection is used to make plans for the future examination. The system is also able to store the report in pdf file format and can be saved in any drive whereas Sistem Maklumat Murid (SMM) can only be saved in floppy discs to be transferred to the main server.

The strength of SMaRtal over SMM is better when both of them are compared. As mentioned earlier, the SMM has no online accessible functions and do not manage student disciplinary records. The teachers have to be in school to update the students' data in SMM because the system is installed in school server. Furthermore, the teachers find troubles in saving the data into the floppy disc which only can save few bytes of size. Later, the saved data have to be transferred to the administrative system in the school. If the size is big then the teachers have to send it partially.

Table 2.6: Comparison of five competitive products

Features	SMM	School Management System	Sistem Pengurusan Sekolah (SPS)	ADM-2000	SMaRtal
Produced By	Ministry of Education, Malaysia	The Media Shoppe Berhad	ENOV8 Infostructure Sdn. Bhd.	Acesoft Software	Novel Technology
Originating Country	Malaysia	Malaysia	Malaysia	Ohio, USA	Malaysia

Table 2.6: Comparison of five competitive products (Continued)

Student Registration	Yes	Yes	Yes	Yes	Yes
Student Background Information	Yes	Yes	Yes	Yes	Yes
- Student Information	Yes	Yes	Yes	Yes	Yes
- Parent Information	Yes	Yes	Yes	Yes	Yes
- Aid / Scholarship Information	Yes	Yes	No	Yes	Yes
Student Academic Records	Yes	Yes	Yes	Yes	Yes
- Previous records	Yes	Yes	Yes	Yes	Yes
- Test Results	Yes	Yes	Yes	Yes	Yes
- Subjects Taken	Yes	Yes	Yes	Yes	Yes
- Marks Management	Yes	Yes	Yes	Yes	Yes
- Time Table	No	Yes	Yes	Yes	Yes
Student Discipline Records	No	Yes	Yes	Yes	Yes
- Attendance	No	Yes	Yes	Yes	Yes
- Demerit	No	No	No	No	Yes
- Merit	No	No	No	No	Yes
- Discipline Problems	No	Yes	No	Yes	Yes
- Comments	No	No	Yes	Yes	Yes
Student Co-curricular Records	Yes	Yes	No	Yes	Yes
- Sports	Yes	Yes	No	Yes	Yes
- Uniform Bodies	Yes	Yes	No	Yes	Yes
- Clubs & Association	Yes	Yes	No	Yes	Yes
- Extra Activities	Yes	No	No	Yes	Yes
Viewing					
- Student View	Yes	Yes	Yes	Yes	Yes
- Class view	Yes	Yes	Yes	Yes	Yes

Table 2.6: Comparison of five competitive products (Continued)

- Custom View	No	Yes	No	Yes	Yes
Accessible On-Line	No	Yes	No	Yes	Yes
Report Summary Generation	No	Yes	Yes	Yes	Yes
Color Coded Reporting	No	No	No	No	Yes
Statistical Reporting	No	N/A	N/A	No	Yes
Future Projection	No	N/A	N/A	No	Yes
Printing & Exporting	Yes	Yes	Yes	N/a	Yes
- Form Printing	Yes	Yes	Yes	N/a	Yes
- Custom View Printing	No	N/A	N/A	N/a	Yes
- Data Exporting	To Floppy Disc ONLY	N/A	To other IS	N/A	To all drives/excel/ pdf
On-line Payment	No	Yes	No	Yes	Yes
Teacher Management	No	Yes	Yes	No	Yes
School Asset Management	No	Yes	No	No	No
Medical Records	No	No	No	Yes	No
Vehicle Management	No	No	No	Yes	No
Annual archive	No	No	Yes	No	No
Backup & Restore	No	Yes	Yes	Yes	Yes

The 'Borang Maklumat Murid' of the existing system Sistem Maklumat Murid (SMM) is shown in Figure 2.2 followed by the main page of School Management System by The Media Shoppe Berhad as shown in Figure 2.3. The company's indirect competitors would be the changing technologies and customer needs which will be monitored for customization of the provided product and this will enable us to come up with various versions of updates for the system.
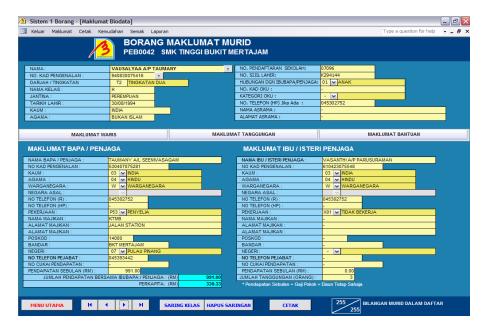
Figure 2.2: Sistem Maklumat Murid (SMM)
(Source: http://www.ppdkmy.net/e107_files/downloads/Panduan%20Pengguna%20SMM.pdf)

Figure 2.3: School Management System
(Source: www.tmsasia.com/cms)