

## The socio-economic perspective on the challenges of ICT development on education in Malaysia: The 1BestariNet case study

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### ABSTRACT

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Globalization and rapid changes in technology have created a new economy which is driven by knowledge. In conjunction with this, Information and Communications Technology (ICT) is now undoubtedly the critical enabler of a knowledge-based economy for many nations. Governments across the globe have recognized the positive impact ICT has on the social and economic development of its public. Consequently, many governments have started to invest heavily on ICT to develop the nation's human capital thereby making them capable of addressing the demands of the digital and information age. In light of this there is concern on the challenges of the ICT development to education. Therefore, this research identifies the socio-economic perspective on the challenges of ICT development on education in Malaysia. And the 1BestariNet project is used as a case study to investigate these challenges. The findings signified that the most important challenges to the ICT development (1BestariNet) was weakness in the performance and management of 1BestariNet, that can be overcome through improvement in the projects implementations.

#### Keywords:

ICT, Broadband, Internet usage,  
1BestariNet, Education, Sustainable  
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## 1. Introduction

In the ancient time, human communicate each other through conventional ways like carrier birds and smoke signals. These types of communication have many drawbacks as limited information that can be communicated. People are moving towards quality of life, through technology and information transfer, knowledge sharing and information communication technology. Humans believe that technologies are very improvement and the Information Communication Technology (ICT) is essential for human development. The Malaysian government believes that ICT is a strategic

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driver to support and contribute directly to the growth of Malaysian economy. Malaysia is striving to promote and facilitate the wider adoption and usage of ICT in everyday life, such as E-Commerce, industry, education and health. The motive of this plan is to shift from a manufacture-based economy to the more competitive knowledge based economy. Towards that end the government of Malaysia has taken numerous steps towards the challenges to enter the digital age [1].

However, many socio-economic problems, particularly the income level of a household has a noticeable impact to the adoption of ICT among Malaysian households. A study by Yogesh Kumar, Jyoti, and Willem-Paul [2], confirmed that income and occupation drive the general pattern of ICT ownership and usage. Similarly, Carveth and Kretchmer [3] suggested in the USA, the higher the household income, and the more likely the members of the household would own a computer and use the Internet.

The 1BestariNet project is one of the most ambitious and comprehensive initiatives by the government in raising the Internet penetration among Malaysians as well as increasing the utilization of ICT among Malaysians in education sector. However, the socio-economic state of a part of Malaysian families prove to be a stumbling block towards this goal.

## *2. The 1bestarinet in Malaysia*

According to the 3rd series of the 2013 Auditor General Report the 1BestariNet Service Project (1BestariNet) was an initiative undertaken by the Ministry of Education Malaysia (MOE) and carried out in partnership with YTL Communications Sdn. Bhd. to replace and enhance ICT connectivity in schools. It was an enhancement to the School Net service, which was terminated on 31 December 2010 with emphasis on end-to-end solutions (E2E) network services together with Virtual Learning Environment (VLE). Under this project, 10,000 schools in Malaysia were equipped with high-speed 4G Internet access and a virtual learning platform, providing high-speed Internet connectivity and access to a world class Integrated Learning Solution. MOE was committed to this project, which was categorised as an extension project over 15 years. This project was given priority as it was under the Economic Transformation Plan (ETP), which gave a big impact on the national economy.

Estimated provision for the first 5 years amounted to RM1.735 billion (RM347 million per annum), the second 5-year period amounted to RM1.475 billion (RM295 million per annum) and the third 5-year period amounted to RM1.255 billion (RM251 million per year) or an overall total of RM4.465 billion for the period of 15 years.

The Ministry of Finance (MOF) in its letter dated 23 November 2011 finalised the 1BestariNet tender worth RM663 million for a period of 2 years and 6 months. YTL Communications Sdn. Bhd. Was awarded the 1BestariNet Project to provide broadband connectivity infrastructure and VLE to 10,000 schools within a period of 2 years and 6 months starting from 13 December 2011 until 12 June 2014.

### *2.1. Issues identified by the National Audit Department*

The 1BestariNet project came under heavy scrutiny after the National Audit Department released the 2013 Auditor General's report where it highlighted a number of serious issues on the project. The Audit conducted on the project, which is in its first phase revealed that the 1BestariNet did not achieve its 70 objectives of providing bandwidth connectivity infrastructure and VLE to 10,000 schools within the 2 years and 6 months' period starting from 13 December 2011 until 12 June 2014.

As a result of the failure of supplying internet connection to 1,003 out of the 10,000 schools within the contract period of 30 months beginning 11 October 2011, YTL Communications was fined RM2.4

million on October 27 2014. Audit review on the performance and management of 1BestariNet found some weaknesses as follows:

- i. Internet connection to 4,176 sites was delayed between 12 to 439 days from the date of execution. There was no extension of time and no late penalty was imposed;
- ii. No technical approval by MAMPU's ICT Technical Committee and MOE did not implement value management. MOE did not establish the Project Steering Committee and the Project Technical Committee. There was error on the number of users sites for basic bandwidth in the contract documents;
- iii. The school requirement studies were not implemented before internet connectivity in schools was done;
- iv. A total of 89.1% from 46 schools tested and 70.3% from 491 questionnaires found that the bandwidth connectivity was unsatisfactory. A total of 58% from 501 schools informed that the 1BestariNet access did not cover the entire school area. While the use of the Network Technology Asymmetric Digital Subscriber Line (ADSL) and the Outdoor Customer Premises Equipment (OCPE) violated the terms of the contract;
- v. The rental price of RM1,000 per year for each site of 1BestariNet Receiver Integrated System (1BRIS) throughout the country was unreasonable;
- vi. The hosting service was not fully utilized;
- vii. Antivirus software supplied was not utilized. While content filtering management services on internet access and patch management were unsatisfactory;
- viii. Mini Network Operation Centre (MNOC) did not operate in real time;
- ix. VLE usage by teachers, students and parents was very low that was between 0.01% to 4.69%;
- x. Project Management Office's operational expenses amounting to RM157,940 exceeded the provision limit; and
- xi. Payment for the Change Management Programme for 6 participants from the contractor, 3 participants from Frog Asia, accommodation and meals for family members of the participants as well as claims exceeded the Government servants' eligibility, which violated the financial procedures.

## *2.2. Low VLE usage among students and teachers*

The Auditor General report also published a list of recommendations to improve on the issues and weaknesses discovered during the audit. The recommendations address most of the problems, however, the issue that this paper will focus on is the issue where the audit discovered the VLE usage by teachers, students and parents was very low that was between 0.01% to 4.69%. Therefore, this issue is one of the most alarming of the problems related to the 1BestariNet project where it concerns the usage of the final product (the VLE) and failure to increase the usage will render the project a failure. Although the report does acknowledge the issue, it does not elaborate much on the reasons.

Apart from the technical issues with the Internet connection, the low utilization of the Frog VLE is even more worrying. This is because the whole existence of the ICT infrastructure especially the Internet infrastructure is to enable the usage of the Frog VLE among teachers, students and parents. With usage of the system only between 0.01% to 4.69%, the whole point of having the 1BestariNet program is lost.

Further research on the matter uncovered additional findings related to socio-economic problems that hinder the various players from utilizing the Frog VLE. Among them are:

- Many families cannot afford to own a computer or multiple computers. Low-income families either cannot afford a home computer or have too many family members sharing a single computer.
- Many cannot afford Internet connection at home. The Internet rate is too expensive and data quota is too low for it to be affordable to lower income families. Some users report their Internet plans data quota finishes before they can complete their tasks. The problem is even more serious for families with multiple children in school.
- Not enough training of the usage of the VLE system beforehand.  
An apparent pattern that can be seen from the problems identified above is the problem of affordability where most families cannot afford the tools required to run the VLC program, namely computers and internet connection.

No doubt the two-abovementioned tools are available through the 1BestariNet program, but students will still need to purchase the tools for use at home and by the parents.

The Frog Virtual Learning Environment was developed by a company that goes by the name Frog Education [4]; registered in England and Wales and enjoys reasonable success in the country with a number of case studies of the successful implementation of its VLE in schools in the country.

However, a comparison between the average wages of the labour force in the UK and Malaysia shows a stark difference where the average wage for UK in 2014 is GBP 493 per week or GBP1972 per month which is roughly converted into RM12,560 per month [5], while the average wage of Malaysians for the same year is RM 2231 per month [6].

Given the stark difference in wages between the two countries, it is not hard to understand why the Frog VLC enjoys bigger success in the UK where the families have a larger purchasing power as compared to Malaysian families which allows them to purchase the necessary tools to run the VLE, namely a computer and internet access.

The additional findings are also consistent with the findings of the Internet Users Survey 2014, which was conducted on a group of 3607 Malaysians selected through the simple random sample (SRS) approach. The survey identified the percentage of Internet users in Malaysia are 66.4% while the percentage of non-internet users are 33.6%. In the 33.6% non-user sample, the top six reasons the respondents were not Internet users are:

- I. Lack of confidence or skills – 47.4%
- II. Lack of interest – 32.5%
- III. Not enough time – 24.0%
- IV. No internet access – 14.8%
- V. Cost too high – 13.6%
- VI. No Device – 12.1%

### 3. Solutions

Through this study, the socio-economic problems that hamper the progress of the implementation of 1BestariNet, specifically the usage of its VLC have been identified and a number of solutions are suggested to improve the projects implementation. Among these suggestions are:

#### 3.1. Promote usage of more affordable computers

The MOE and YTL Communications should recognize that owning a computer is important to the success of this project, but not everyone or family can afford a PC. Therefore, the government need

to come up with a cheaper PC alternative to ensure every student and parent can afford to own a PC to utilize the VLE. The government can also subsidize the purchase of PC for families that have children studying in primary and secondary schools.

A better solution would be for the government to purchase and distribute Raspberry Pi# mini PC to students as their personal computer. The Raspberry Pi is a low cost, credit card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It costs as little as USD5 (RM 21) and as much as USD35 (RM150) per unit.

### 3.2. Introduce special unlimited internet packages for students

Internet connectivity at home is also a problem for low-income families with children studying in schools that are implementing the 1BestariNet program. More affordable unlimited Internet packages need to be created by the Internet Service Providers (ISPs).

### 3.3. Education

The Frog VLE is a vast system and requires training to ensure the users (teachers, students and parents) can fully utilize the functionalities of the system. Towards that, more time and effort must be allocated for training the basics of computing and the system. The government can also introduce computer-learning centres in community centres within the vicinity of the homes of the students. This centre can serve as an education centre to further educate students and parent regarding the usage of the VLC and can also serve as a place where underprivileged students can use the computers to complete their homework and upload the results through the VLC.

### 3.4. Policies

If the government plans to raise the utilization of the Frog VLE, there should be a policy to integrate the system with the current school administration system to make both of the systems compatible with each other. This will streamline the management of schools and student educational profiles in the schools. It will also go a long way in lessening the workload if teachers and school administration.

## 4. Conclusion

In a nutshell, in order to make Information, Communication and Technology (ICT) assimilates in the culture of Malaysia, the socio-economic problems need to be addressed before implementing any type of large scale ICT program or VLE based education system such as 1BestariNet. As the study has pointed out, not all families can afford to purchase the hardware needed to run their children's education full using computers and the Internet. As a solution either the ICT program must be fully subsidized by the government from the computers used by the teachers to the computers used by students and parents or introduce more affordable options for the average household to purchase computers and a broadband connection.

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