THE VIABILITY OF BUSINESS PROCESS REENGINEERING: “INTRODUCTION OF ELECTRONIC BILLING PRESENTMENT AND PAYMENT (EBPP) FOR TELEKOM MALAYSIA BERHAD”

BY

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A Research Paper Submitted in Partial Fulfillment of the Requirement for the Degree of Corporate Master in Business Administration

Faculty of Economics and Business
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I certify that I have supervised and read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a research paper for the degree of Corporate Master in Business Administration.

Asleena Helmi
Supervisor

This research paper was submitted to the Faculty of Economics and Business, UNIMAS and is accepted as partial fulfillment of the requirements for the degree of Corporate Master in Business Administration.

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Dean, Faculty of Economics and Business
UNIMAS
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Name : JASON SIM KIAM HOWE

Matrix Number : 01-02-0619

I hereby declare that this research is the result of my own investigations, except where otherwise stated. Other sources are acknowledged by footnotes giving explicit references and a bibliography is appended.

Signature : [Signature]

Date : 2 MAY 2003

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ABSTRACT
The popularity of Internet nowadays has made headlines about E-Commerce, and also the vast growing application of Electronic Bill Presentment and Payment (EBPP). EBPP offers corporations the ability to send monthly bills or statements to its customers and process electronic payments via the Internet.

This paper studies on the business process reengineering in implementing the EBPP for Telekom Malaysia Berhad. It identifies the critical success factors for the EBPP system and also studies the viability of the proposed EBPP system.

ABSTRAK
Penggunaan Internet yang popular telah memberi penumpuan kepada E-Dagang (E-Commerce), dan juga aplikasi "Electronic Bill Presentment and Payment (EBPP)" yang kian meningkat dengan pesatnya. EBPP membolehkan syarikat-syarikat perniagaan menghantar bil atau penyata bulanan kepada para pelanggan dan juga dapat memproses pembayaran elektronik melalui Internet.

Kertas kerja ini mengkaji tentang pengubahan proses perniagaan (business process reengineering) yang berkenaan dalam proses perlaksanaan EBPP untuk Telekom Malaysia Berhad. Ia mengenai pasti factor-faktor kritikal (critical success factors) yang akan mempengaruhi kejayaan sistem EBPP dan juga keberkesanan serta kesesuaian sistem EBPP yang dicadangkan.
1. INTRODUCTION

Telekom Malaysia Berhad is a company that has been a pioneer in the telecommunications industry of Malaysia. The company’s principal activities are establishment, maintenance, and provision of telecommunications and related services under the licenses issued by the Ministry of Energy, Communications and Multimedia.

The major business of the company is telecommunications services, consisting both voice and data. Being the service provider, the collection of payment for the services has been a critical business process within the company that ensures effective cash flow within the organization.

Davenport & Short (1990) define business process as "a set of logically related tasks performed to achieve a defined business outcome." A process is "a structured, measured set of activities designed to produce a specified output for a particular customer or market. It implies a strong emphasis on how work is done within an organization."

Business Process Redesign or Business Process Reengineering is "the analysis and design of workflows and processes within and between organizations" (Davenport & Short 1990). Teng et al. (1994) define BPR as "the critical analysis and radical redesign of existing business processes to achieve breakthrough improvements in performance measures."

Concerning on the growth of Internet usage in Malaysia and the importance of the payment collection, a study is conducted on the business process reengineering with the implementation of the Electronic Billing Presentment and Payment (EBPP) for the organization.
The Internet usage has increased drastically in the country with the development of its infrastructure provided by the telecommunications companies in the country; hence increase the accessibility to the Internet.

Table 1: Internet Subscribers and Users Statistics, Computer Statistics In Malaysia

<table>
<thead>
<tr>
<th>Demographic</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
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<tbody>
<tr>
<td>Population (mil)</td>
<td>21.7</td>
<td>22.2</td>
<td>22.7</td>
<td>23.5</td>
<td>24.0</td>
<td>24.3</td>
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<table>
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<tr>
<th>Internet Subscribers (Dial-Up)</th>
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<tr>
<td>Total Subscribers (mil)</td>
</tr>
<tr>
<td>No. of Internet Users (mil)</td>
</tr>
<tr>
<td>% Annual Growth</td>
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<td>Penetration (persons per 100 population)</td>
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<tr>
<th>Information Technology</th>
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<tr>
<td>No. of active personal computers (mil)</td>
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<td>No. of computers per 100 population</td>
</tr>
</tbody>
</table>


The growth in the users of Internet and information technology has basically been growing at a near exponential rate. Much of the growth has taken place over the past two years as people become aware of the use of Information Communication Technology (ICT). This is in-line with the government effort by
allocating billions of ringgit towards increasing the usage and penetration of ICT in all walks of life.

The statistics recorded a total of 2.297 million number of Internet subscribers with 6.885 million Internet users in June 2002. The rise in Internet usage is not limited to high family incomes or large cities. The Internet usage grew among households in rural and urban areas. In other words, the Internet usage will increase and represents a healthy annual growth.

Electronic Billing Presentment and Payment (EBPP) offer a powerful new opportunity for a business to strategically use its billing processes to sharpen its competitive edge. EBPP systems are new forms of online payment systems for monthly bills. It offers the corporation the ability to send monthly bills or statements to consumers and process electronic payments via the Internet. Consumers can view, store and pay bills using their web browser.

EBPP functions as an efficient vehicle for providing online customer care; building customer relationships, and enabling targeted marketing and pre-emptive customer communication. [1]

1.1. PROBLEM STATEMENT

Telekom Malaysia Berhad existing billing system encounters problems- on the billing, in which affects the customer satisfaction and cash inflow. With the existing traditional system, the bills were sent to the customers by post, which is not timely and also unreliable as the bills might be lost.

The implementation of Electronic Billing Presentment and Payment (EBPP) depends greatly on the acceptance of the users of the system, which
are the customers of the organization. Factors contributing to the acceptance of the system include the reliability, viability and practicality of the system.

This study will focus on the factors contributing to the success of the EBPP system for the organization, including the accessibility, security, reliability, strategic planning and system design.

1.2. HYPOTHESES

There are several hypotheses on the study of factors contributing to the success of the EBPP system. The hypotheses are as the following:

\( H_0 \ 1 \) : Security of the EBPP system ensures the confidence of users on the system

\( H_0 \ 2 \) : Strategic planning of the system implementation determines the success of the system

1.3. OBJECTIVES

a) To study the implementation of an e-billing system

b) To study the critical success factors of Electronic Billing Presentment and Payment (EBPP)

c) As a proposal to the management for the implementation of the Electronic Billing Presentment and Payment (EBPP)
1.4. IMPORTANCE OF STUDY

The initial response of the market to various commercial applications regarding the Electronic Billing Presentment and Payment (EBPP) is indicative of the future potential such systems hold in becoming contenders for a permanent place in worldwide Internet infrastructure. According to the industry analysis, the majority of bills will be presented and paid electronically within 3 to 5 years.

Hence, the implementation of Electronic Billing Presentment and Payment (EBPP) which is very essential for an organization such as Telekom Malaysia Berhad to sharpen its competitive edge in the Net Economy. It is important for the organization to keep on the track with the fast emerging of the Internet growth, whereby the usage of Internet among the Malaysian household has increased drastically.

This study will serve as the platform to consider the implementation of EBPP in the organization, in which comprises of the benefits of EBPP, the acceptance of EBPP by the customers, and also the proposal of an EBPP system for the organization which includes the system design and also the security features to enhance the reliability of the system.

1.5. SCOPE OF STUDY

The study covers the model and benefits of Electronic Billing Presentment and Payment (EBPP) system. It will study the existing models of EBPP and suitability for Telekom Malaysia Berhad and also the benefits acquired from its implementation.
On top of that, this study also includes the analysis on the acceptance by the customers that is taken from a sample of random population. The study on acceptance by both customers and the staff involves the system design. This system design consists of user interface and design, and also the process flow of the proposed system.

2. LITERATURE REVIEW

2.1. Strategies for Business Process Reengineering

The paper "Strategies for Business Process Reengineering: Evidence from Field Studies" by Earl, Michael J., Sampler, Jeffrey L. and Short, James E. (1995) reports on early results from case study research into the relationship between business process reengineering (BPR) and strategic planning. First a framework for analysis is proposed based on the concept of alignment. This "process alignment model" comprises four lenses of enquiry: process, strategy, information systems, and change management and control.

2.2. Implementing Business Process Reengineering

The paper "The Implementation of Business Process Reengineering" by Grover, Varun, Jeong, Seung Ryul, Kettinger, William J. and Wang, Shouhong (1995) stated that the issues in implementing BPR projects become a major concern. This field research seeks empirically to explore the problems of implementing reengineering projects and how the severity of these problems relates to BPR project success.
Analysis of the results clearly demonstrates the central importance of change management in BPR implementation success. Resolutions of problems in other areas as technological competence and project planning were also determined to be necessary, but not sufficient, conditions for reengineering success. Further, problems that are more directly related to the conduct of a project such as process delineation, project management, and tactical planning were perceived as less difficult, yet highly related to project success. This situation was also true for human resource problems such as training personnel for the redesigned process. These findings suggest that reengineering project implementation is complex, involving many factors.

To succeed, it is essential that changes are more contextual (e.g., management support and technological competence) as well as factors that pertain directly to the conduct of the project (e.g., project management and process delineation). As one of the first pieces of empirical evidence based on a field study, this research emphasizes the importance of addressing BPR implementation within the broader context of organizational change in a complex socio-technical environment.

2.3. EBPP – Consumer and Biller Expectations

The article “Electronic bill presentment and payment – Is it just a click away? “ by Alexandria Andreeff, Lisa C. Bimmoeller, Eve M. Boboch, Oscar Cerda, Sujit Chakravorti, Thomas Ciesielski and Edward Green (2001) stated the consumer and biller expectations on EBPP.

Consumer expectations include convenience, time/cost savings, control over payments, universal payment
mechanisms, privacy and security, reliability and also dispute resolution.

On the other hand, the biller expectations consist of cost reductions, dispute resolution mechanism, reliable delivery mechanism, ability to up-sell and cross-sell, control over customer data and broad distribution / reach.

### 2.4. Security for Internet Billing Systems

The paper “Conceptualizing and Implementing an Information Strategy Billing Systems” by Panagiota Papadopoulou, Nicholas Kolokotronis, Panagiotis Kanellis and Drakoulis Martakos (2000) emphasized that Internet billing must be thought of as a Servicescape, the environment within which direct interactions between the customer and the business occur.

The richness of information about individuals that can be gleaned from the Internet makes it an enormously powerful marketing medium, which encourages relationship building with the customer because of its real time and interactive nature.

The achievement of customer acquisition and retention and strategic goal like increasing market share are directly related to the reliability of the network infrastructure of organizations.

In the paper, security is advocated as the independent variable for the success of the EBPP system. Any information security strategy should be formed taking into account the business vision and the business strategies adopted to meet the vision. The definition of any effective security strategy should thus be well planned and concentrated effort
at the corporate level, and not seen only as a local technology issue.

The key-points an organization's information security strategy is expected to address are confidentiality, integrity, authentication, access control, and availability of service. When an inter-organizational system provides its customers with e-commerce solutions, non-repudiation and time-stamping techniques are mainly used to facilitate dispute resolution.

2.5. Internet Security – SSL and SET

The most frequently cited limitation to e-commerce is the perceived lack of Internet security. Furthermore, one of the customer and company requirements in the EBPP system is the security of the transactions. Hence, the issues of the security should be the major concern for the EBPP implementation.

This paper study on the two technologies designed to address the security issues associated with conducting electronic transactions via the Internet – Secure Sockets Layer (SSL) and Secure Electronic Transactions (SET).

<table>
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<th>Table 2: Comparison between SSL and SET</th>
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<tr>
<td><strong>Purpose</strong></td>
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<tr>
<td>Provide privacy and reliability between two communicating applications</td>
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<tr>
<td><strong>Objective</strong></td>
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<tr>
<td>---------------</td>
</tr>
<tr>
<td>(i) To secure</td>
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<tr>
<td>connections</td>
</tr>
<tr>
<td>between two</td>
</tr>
<tr>
<td>parties</td>
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<td>through</td>
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<td>cryptographic</td>
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<tr>
<td>security.</td>
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<tr>
<td>(ii) To ensure</td>
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<td>interoperability</td>
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<td>between</td>
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<tr>
<td>independent</td>
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<tr>
<td>implementations of SSL.</td>
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<tr>
<td>(iii) To ensure</td>
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<td>extensibility by</td>
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<td>creating a</td>
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<td>framework into</td>
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<td>which public key</td>
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<td>and bulk encryption</td>
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<td>methods can be incorporated.</td>
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<tr>
<td>(iv) To handle</td>
</tr>
<tr>
<td>cryptographic</td>
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<td>computations and network activity relatively efficiently.</td>
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</table>

SSL meets several of the business objectives defined for SET. For example, SSL provides a secure “electronic pipe” for transactions. Data sent through this pipe is encrypted and therefore provides confidential communications between the parties involved in the transaction. [2] Through the use of encryption, SSL is also able to ensure the integrity of transmitted data. Through its integration with the dominant browsers and web servers, SSL has achieved interoperability and application independence. [3]

In addressing the business objectives above, SET provides other important benefits that differentiate it from SSL: authentication of both the consumer and merchant, heightened security for credit card information, and the technical infrastructure to provide non-repudiable transactions.[4]

2.6. **Electronic Bill Presentment and payment (EBPP) – a Powerful Customer Loyalty Tool**

The article “Electronic Bill Presentment and Payment (EBPP) – a Powerful Customer Loyalty Tool” by Garry Young (15 June 2001) highlights the EBPP as a tool for enhancing customer loyalty and also cost reduction for the company.

Electronic Bill Presentment and Payment (EBPP) can make a significant cost-savings over the long-winded, manually intensive and antiquated alternative. The desire to save money is not the most strategic reason for putting EBPP in place, but it is nevertheless a powerful motivation at this stage in the market. Billing is a highly repetitive, resource-intensive, and process-driven task which is crying out for further automation.
There are significant costs involved in resolving disputed bills, including the cost of staffing a customer call center and the elapsed time involved in recovering the money owed; which can be reduced by EBPP.

The market research shows that EBPP’s ability to enhance and deepen the customer relationship is the greatest incentive for its adoption. EBPP delivers convenience and control into the hands of the consumer. With EBPP, the billers will be able to build up an excellent profile of how valuable their customers are, their creditworthiness and payment habits. Organizations can further attract customers with differentiated value-added services, such as financial analysis services and the promotion of targeted products.

2.7. EBPP Solution Models

The article “Electronic Bill Presentment and Payment White Paper” (1999) described the two types of solutions of presenting bills on a corporate web site: the direct billing model and the consolidation model.

2.7.1 The Direct Model

In the direct model, a biller uses its corporate web site to present bills to customers and/or send bill summary notices via email. Payers must visit the web site to review bill summaries and details and pay the bills. The direct model enables a biller to maintain full control of the display of bills, other services and marketing content. It also allows the biller to preserve in-house control of important customer profiles and billing data.
The direct model approach of EBPP can launch a company into e-commerce by putting in place the mechanisms for electronic billing and payment. A biller is then able to profile its customers and cross-sell additional products and services in real time. Direct billing will be the first model adopted by billers and will likely be part of a broader customer care solution that companies will use to differentiate themselves. Telecommunications companies, faced with fierce competition and unprecedented demand for new services, are creatively using EBPP as a powerful relationship builder. Large billers will provide EBPP as an alternative to more costly EDI systems for their small and medium-sized business customers.

Ultimately, customers will request statements through channels other than direct billing, but it is important to note that any channel customers may use will rely on a solid infrastructure built first on a direct billing model. For example, for customer care, relationship management and targeted marketing initiatives, customers will generally go to the biller's web site. An initial direct billing implementation that addresses these issues will allow billers to successfully extend EBPP through additional channels.

2.7.2 The Consolidation Model

In the consolidation model, a biller sends billing data to a third party called a bill consolidator. The consolidator then aggregates data from multiple billers and prepares bills for presentment through its third-party arrangements with financial institutions or popular Internet portals. Customers access their bills from their favorite bill payment web site and enjoy the conveniences of one-stop bill payment.
Consolidation requires billers to expose customer data to the consolidator and relinquish direct control over the presentation of content and marketing opportunities.

Two distinct types of bill consolidators are emerging. “Thick consolidators” which gather billing data, include transaction details, from billers. “Thin consolidators”, on the other hand, collect and aggregate only bill summary information. By preparing all billing data, including transaction details for presentation on their own web sites, thick consolidators eliminate direct contact between billers and consumers. In contrast, thin consolidators collect and prepare only bill summary information from billers; customers requiring transaction details are sent to the specific biller’s web site, enabling the biller to directly provide customer service options and marketing. Thin consolidation has developed in response to billing companies that desire the broad reach of consolidation while retaining the strategic marketing and in-house data control of direct presentment.

Of the two types of consolidation, thin consolidation best meets the need of customers for one-stop bill paying, as well as the needs of billers for data control and building customer relationships. Through thin consolidation, billers are able to achieve the broadest reach and still attract customers to their web sites for bill details, customer care and targeted marketing programs while leveraging their investments in a direct billing site.
2.8. EBPP Strategy

Selecting the appropriate EBPP model poses critical challenges for billers considering EBPP. In defining their strategies, billers need to analyze their data control policies, customer profiles, customer service objectives, and marketing goals. In other words, the biller must understand its requirements and also the customers' requirements [1]

2.8.1 Company (Biller) Requirements

The Company wants to capitalize on the benefits of EBPP require an affordable, reliable system. It needs to offer online customer care and targeted marketing, control proprietary data, integrate with current systems and databases, and ensure broad distribution and adoption rates. The system must be flexible and expandable to support the solution.

(a) Cost Reduction

The company benefits most when the EBPP solutions provide a significant return on investment (ROI). The EBPP system must provide cost efficiencies over paper-based billing, customer service and dispute resolution processes.

(b) Reliability

Billing is a mission critical process for Telekom Malaysia Berhad. Interruption or delay in bill delivery can have a devastating effect on cash flow and customer service. Therefore, the billing process must be based upon solid, proven hardware and software systems.