

CHAPTER 1

AN ECONOMIC ANALYSIS OF THE INTERNET BACKBONE AND SERVICE PROVIDER MARKETS IN MALAYSIA – AN INTRODUCTION

1.1 Introduction

The development of Internet¹ has spawned a revolution that has redefined the way our economy and society work. The velocity with which the Internet has come to dominate the world of communications is unprecedented with policy-makers and firms scrambling to integrate the Internet into every aspect of their plans and processes. Such prescient decision will likely to have significant long-term impacts for a nation's economic growth and development, including Malaysia's. In fact, the *infoDev*/World Bank (2000) argued that the Internet has transformed businesses positively, create opportunities for the poor, and improve governance and the delivery of government services.

¹ Although I have used the definition given by Mackie-Mason and Varian below, a more specific definition can found at the Federal Networking Council (FNC). The FNC defines the Internet as the global information system that (i) is logically linked together by a globally unique address space based on the Internet Protocol (IP) or its subsequent extensions/follow-ons; (ii) is able to support communications using the Transmission Control Protocol/Internet Protocol (TCP/IP) suite or its subsequent extensions/follow-ons, and/or other IP-compatible protocols; and (iii) provides, uses or makes accessible, either publicly or privately, high level services layered on the communications and related infrastructure described herein. Available at http://www.itrd.gov/fnc/Internet_res.html

The Internet is basically a network of networks² that all use connectionless packet switching communications technology (Mackie-Mason and Varian, 1993). One of the key success factors of the Internet is the ubiquitous reach it offers (the benefits of network externalities) to users at relatively low costs³, which is due to the greater capacity utilisation achieved for Internet usage, the economies of scale, and the fact that the Internet operates by utilising a packet-switching technology unlike conventional telephone networks that use circuit-switching technology.

While telephony and the Internet use different technologies, much similarity can be drawn from the telephone industry. The Internet is not the only industry that relies on interconnection between networks in order to enable access to end-to-end services. In the telephone industry, the Public Switched Telephone Network (PSTN) was designed and optimised for the transmission of the human voice. Upstream Inter-exchange Carriers (IXCs) provide the connection between the Local Exchange Carriers (LECs), and the downstream LECs have direct access to telephone users. It is thus not surprising to find that these companies are also the major players in the Internet industry. However, Internet Backbone Providers (IBPs) are not governed by any industry-specific interconnection regulations (as in other countries), unlike other providers of network services; instead each IBP bases its decisions on whether, how and where to interconnect by weighing the benefits and costs of each interconnection (Kende, 2000).

² Every computer that is connected to the Internet is part of a network, even the one in our home. When we connect to our ISP, we become part of their network. The ISP may then connect to a larger network and become part of their network. This constitutes what we call "the network of networks".

³ Of course, this excludes the fixed costs of purchasing the computer and other Internet-related accessories.

1.2 Objective of the Study

The objective of the study is to provide an economic analysis of the Internet industry with specific focus on the backbone and service provider markets in Malaysia. It is hoped that this study on the Internet industry will contribute to a better understanding of its development and give a more in-depth look into the various competition and regulatory issues related to interconnection and the local loop market. There is currently very little published information in this area. The study would be of considerable value to national planners, companies, and others involved in the Internet industry.

This research, which will take on a qualitative approach, is intended to shed light on several questions concerning the interconnection, competition and regulatory issues affecting Internet services. The data consists of mainly secondary sources as well as some findings from unstructured, qualitative interviews with the major players and the relevant authority. These inquiries will be directed to administrators, managerial-level officials in charge of industry development, and key tenants of the industry in order to assess as fully as possible the current state of competition between Internet backbones and service providers, and some regulatory concerns.

Through these open-ended interviews and conversations with the industry players, the research will look into the issues surrounding interconnection arrangements such as the Internet backbone market power issues, and the “Internet Balkanisation⁴” issue.

⁴ This is what Kende (2000) referred to as the situation where competing Internet backbones attempting to differentiate themselves from each other by offering certain new or existing services only to their own customer, thereby not interconnecting to provide all services.

Specifically, the study will provide a description of the size and shape of the Internet market, the degree to which consolidation is taking place and the level of competition, plus a tabular breakdown of the leading players. It will also examine the evolving competitive strategies of the major IBPs and ISPs, and the market entry strategies of the newer players.

1.3 Organisation of the Study

By examining recent literature on the economic aspects of the Internet as well as the theory of industrial organisation, this paper seeks to investigate the underlying economics of certain facets of the Internet, particularly those related to the Internet Service Providers (ISPs) and Internet Backbone Providers (IBPs). In addition to Internet-related economic matters, this paper attempts to address some of the interconnection, competition and regulatory issues concerning the ISPs and IBPs. The second section of the paper takes a peek at the development of the Internet and its industry before taking a closer look at the market structure and the major players in the industry. In the third section, I will discuss some of the competition issues with special emphasis on the various domestic Internet interconnection issues. The paper then evaluates the existing “under one roof” regulatory regime by drawing some lessons from other countries in the next section. The fifth chapter sums up the paper.