THE ADOPTION OF WEB 2.0 TECHNOLOGY IN MALAYSIAN RETAIL-CHAIN BUSINESSES

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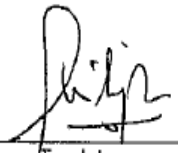

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Abstract

Motivation for this research derives from recognition that "Web 2.0" technology is being introduced and increased numbers of users. However, very little academic research has been done in reference to the phenomenon and its implications for Malaysian retail-chain businesses. This study attempts to answer three research questions; namely (1) What are the Web 2.0 technologies currently adopted by Malaysian retail-chain businesses? (2) What are the factors that influence Malaysian retail-chain businesses toward Web 2.0 technologies adoption? and (3) What are Malaysian retail-chain businesses perceptions towards Web 2.0 technologies? The research objectives are: (1) To identify the Web 2.0 technologies currently adopted by Malaysian retail-chain businesses, (2) To identify the factors that are likely to influence the Malaysian retail-chain businesses adoption of Web 2.0 technologies, and (3) To examine Malaysian retail-chain businesses perceived importance and satisfaction towards Web 2.0 technologies currently adopted. A theoretical framework for the organizational Web 2.0 adoption was built by reviewing the literature on information systems adoption and attitude towards behaviour. Based on the literature review, variables contexts such as perceived benefits, technology, organization, and environment were identified to predict the Malaysian retail-chain adoption of Web 2.0. Using a survey method, data were collected from 185 respondents in Malaysia. The data was analysed to test on eleven hypotheses. A research framework was proposed and tested using factor analysis, multiple regression analysis and Importance-Performance Analysis (IPA) grid techniques. Results showed that eight factors from the four contexts were found to play important role in the adoption of Web 2.0 except technology security, inter-organizational collaboration and organizational readiness. Lastly, this study provides empirical evidence that it is important to examine the organizations perception of importance and satisfaction toward different Web 2.0 technologies.

Keywords: Retail-chain business, Web 2.0 adoption, Institutional Theory, Malaysia

Abstrak

Kajian in dijalankan berdasarkan kemajuan teknologi Web 2.0 yang mencatat jumlah pengguna yang sangat tinggi. Walau bagaimanapun, kajian akademi yang telah dihasilkan amat rendah dibandingkan dengan prestasinya and impak terhadap rantaian perniagaan runcit di Malaysia. Kajian ini bertujuan untuk menjawab tiga persoalan kajian iaitu (1) Apakah teknologi Web 2.0 yang diterima pakai pada masa ini oleh rantaian perniagaan runcit Malaysia? (2) Apakah faktor-faktor yang mempengaruhi rantaian perniagaan runcit Malaysia ke arah penerapan teknologi Web 2.0? dan (3) Apakah persepsi rantaian perniagaan runcit Malaysia terhadap penerapan teknologi Web 2.0? Objektif kajian adalah seperti berikut: (1) Untuk mengenal pasti teknologi Web 2.0 yang diterima pakai pada masa ini oleh rantaian perniagaan runcit Malaysia, (2) Untuk mengenal pasti faktor-faktor yang mempengaruhi rantaian perniagaan runcit Malaysia menerima pakai teknologi Web 2.0. (3) Untuk mengenal pasti tahap persepsi terhadap kepentingan dan kepuasan teknologi Web 2.0 pilihan yang diterima oleh rantaian perniagaan runcit Malaysia pada masa ini. Satu rangka kerja teoritikal bagi mengatur penerapan Web 2.0 telah dibina dengan cara meninjau semula literature yang berkaitan dengan penerimaan pakai sistem maklumat, sikap terhadap tingkah laku dan pelbagai konsep Web 2.0. Berdasarkan sorotan literatur, pembolehubah konteks seperti manfaat jangkaan, teknologi, organisasi, dan persekitaran dikenal pasti untuk meramalkan Penerimaan Pakai Web 2.0 oleh Rantaian Runcit Malaysia. Sampel bagi kajian ini terdiri daripada ahli MRCA yang menggunakan teknologi Web 2.0. Dengan menggunakan kaedah survey, data telah dikumpulkan daripada 185 responden di Malaysia. Data telah dianalisis untuk menguji sejumlah sebelas hipotesis. Satu bentuk rangka kerja kajian telah dicadangkan dan telah diuji dengan menggunakan analisis faktor, analisis regresi berganda dan Analisis Kepentingan Prestasi teknik grid (IPA). Dapatan menunjukkan bahawa lapan faktor daripada empat konteks didapati memainkan peranan penting dalam penerimaan pakai Web 2.0 kecuali teknologi keselamatan, kerjasama antara organisasi dan kesediaan organisasi. Akhir sekali, kajian ini telah menemukan bukti empirikal iaitu adalah penting untuk mengkaji persepsi organisasi terhadap kepentingan dan kepuasan terhadap teknologi Web 2.0 yang berbeza-beza.

Kata Kunci: rantaian perniagaan runcit, Web 2.0, teori institusi, Malaysia

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List of Abbreviations

AD	Web 2.0 technology Adoption
EN	Environmental Context
ENC	Coercive pressures – customers
ENM	Mimetic pressures – competitors
ENN	Normative pressures
ETP	Economic Transformation Programme
IBM	International Business Machine Corporation
IDT	Innovation Diffusion Theory Model
IM	Instant Messaging
IPA	Importance-Performance Analysis
IS	Information Systems
IT	Information Technology
MRCA	Malaysian Retailers-Chain Association
OR	Organizational Context
ORR	Organizational Readiness
ORT	Top Management Support
PB	Perceived Benefits
PBC	Inter-organizational Collaboration
PBK	Knowledge Sharing
PBM	Market Share
RSS	Really Simple Syndication
TAM	Technology Adoption Model
TE	Technological Context
TECO	Technology Cost
TECX	Complexity
TES	Security
TOE	Technology, Organization, and Environment Framework
Web 2.0	Web 2.0 Technology

CHAPTER 1 INTRODUCTION

1.1 Introduction

This chapter provides an overview of this study. It elaborates the background of this study, and the role of Web 2.0 technology (Web 2.0) in Malaysia particularly to businesses. The problem statement, research questions and objectives, significance and scope of this study are also highlighted the importance in the context of Web 2.0 adoption among Malaysian retail-chain businesses.

1.2 Background of Study

The strategic use of Internet technology and the use of information system (IS) to achieve competitive advantage have received much attention (Porter & Miller, 1985; King, Grover & Hufanagel, 1989; Monteiro & Macdonald, 1996). The use of Internet and IS are considered strategic because competitive advantage is achieved by using these technologies. These technologies are more than merely improving internal operations, enhance efficiency, and also to increase market share and/or profit in business organizations including the retail businesses. The Internet technology becomes a major source of customer information and empowerment (Urban, 2003; Constantinides, 2008). Lately, many businesses have started to adopt a new generation of web technologies and applications such as blogs, Web 2.0 media, and social networking, commonly referred as Web 2.0. White and Pauxtis (2010) opined Web 2.0 help to enhance works more efficiently whereby businesses are now competing at a different level. In general, Web 2.0 is a second generation of World Wide Web technologies, which enable users' collaboration, including generating, reviewing,

editing and disseminating contents. Web 2.0 is a business support tools which are being deployed in business organizations of all sizes (Bughin, Chui & Miller, 2008).

There is a significant shift in Internet traffic due to the dramatic increase in the usage of Web 2.0. As of May 2013, Facebook had more than 665 million active users, and the average user had 130 friends (The Associated Press, 2013). In addition, Twitter had 200 million monthly active users (Fiegerman, 2012). In the business context that Harvard Business Review survey on nearly 2,100 companies worldwide, found more than 79% of companies were said to be pleased with the results of their investment in Web 2.0, and nearly three-quarters said their company plan to maintain or increase investments in Web 2.0 in future (Meghan, 2013).

1.2.1 The Role of Web 2.0 in Malaysia

Similar to other developing countries, Malaysia government considered the Internet as a powerful tool for national economic and social development. The Malaysia household access to Internet has grown at an encouraging rate. When the Internet was first introduced to Malaysia in 1995, only about one in a thousand citizens had Internet access. In the first quarter of 2012, Malaysia had about 17.5 million Internet users (MCMC, 2012). The number of the Internet subscribers in Malaysia is expected to increase as more advanced Information Technology (IT), IS and multimedia services are being introduced to the citizens (Wiki SMU, 2011). ComScore (2009) had revealed the top most visited web sites in Malaysia were social networking sites such as Facebook.com and Tweeter.com. Based on Socialbakers.com (2012), Facebook.com is very popular among Malaysian Internet users – 13.2 million users and ranked 18th in the world (SocialBakers.com, 2011). These statistics implied

that Malaysians are active Web 2.0 users and moving towards developing a network community amongst the fast developed Asian countries.

1.2.2 The Malaysian Retail-Chain Business

Retailing refers to activities involved in selling goods and services directly to final consumers for personal and non-business use (Armstrong & Kotler, 2003). Retail stores come in all shapes and sizes. The traditional retail outlets include permanent or temporary stalls to retailers who market their merchandise by using small types of transportation such as push carts, motorcycles, and van. In recent years, the specialist retail-chain stores have experienced rapid growth. The specialist retail-chain stores are a type of retail outlets that share a brand and central management. They usually have standardized business models and practices (Hayward, White, Fleek & MacIntyre, 1922). Retail-chain stores are starting to make a significant impact on the retail sector in Malaysia. The well-known retail-chain stores in Malaysia are Berjaya Singer and SenHeng Electric sell electrical goods and furniture, Popular book store, Parkson and Aeon departmental store. With a vast network of retail-chain outlets, these stores provide more than 60,000 job opportunities to Malaysians across the country. This number is expected to continue to expand (Tay, 2012).

Malaysian retailers achieved RM83.2 billion sales turnover in year 2011. Retail sales growths are also anticipated to be more 8.1% growth (News Straits Times Business Times, 2012). According to Malaysian Retailer Association, Malaysian consumers are expected to maintain their spending level despite declining consumer purchasing power. Retailers are also facing continuous increase in both cost of goods and operations due to higher oil price, natural disaster, and removal of government subsidies (News Straits Times Business Times, 2012).

The Malaysian government has also introduced Economic Transformation Programme (ETP) to transform Malaysia into a high-income economy by 2020. Under the ETP, twelve National Key Economic Areas (NKEAs) had been identified to be the drivers of economic activities and contributing to economic growth, including wholesale and retail sector has been identify as one of the NKEA in the ETP (KPKK, 2010).

1.3 Problem Statement

The retail-chain businesses are facing new challenges to meet the needs of a wide range of customers. Customers have the power to demand what they want from retailers (Lori, 2013). For instance, customers not only demand specific items, they now demand those items at certain price, via specific channels, delivered via the method they want (Lori, 2013). With the development of electronic commerce and expansion of Internet, the customers have more choices and this resulted fierce competition among retailers (Turban, King, Lee & Viehland, 2012). In order to reach more customers, retail-chain businesses have opened more outlets at various locations. By increasing the number of outlets retail-chain businesses experienced pressures to meet certain budgetary goals as well as to pursue businesses' mission (Beckman & Herman, 1938). It is important for retail-chain businesses to develop and manage the relationship with the customers (Lori, 2013). Moreover, with the multiple locations of the business, the organization had found handling the employees extremely challenging. The collaboration between employees working together to achieve the organization's the targeted goal is critical for retail-chain businesses (Clark, 1933). With effective employees collaboration practices, organizations may keep employees stay productive and motivated.

In addition to internal employees' collaboration, external coordination with suppliers is also important to ensure an efficient and effective supply chain. Retail-chain businesses with the multiple stores located throughout the country faced challenges on supply-chain activities in terms of streamline business process, reduce transactional and administrative cost in order to fulfill the customer's needs at the right time and right place (Shehzad, 2009). Retail-chain businesses must seek ways to reduce cost and increase revenues and profits through new collaborative channels to enhance customers' loyalty (Shehzad, 2009). Retail-chain businesses need to identify ways to enhance collaboration and knowledge sharing among employees, partners and customers in order to survive in today's turbulent business environment (Shehzad, 2009; Beckman & Herman, 1938; Lori, 2013). Hence, adopting Web 2.0 is crucial to retail-chain businesses where networking via Web 2.0 provides leverage and could revolutionize various business activities (Meghan, 2013). For instance, the Web 2.0 is being used for marketing, advertising, dissemination and gathering of information, helping managers and chief executives to enhance productivity and efficiency, corporate image, and knowledge management (White & Pauxtis, 2010).

Adopting appropriate technology has become a source of competitive advantage for business organizations. Past studies have investigated the adoption of Web 2.0 by the Malaysian education and business sectors (Zakaria, Watson & Edwards, 2010; Hassan, Shiratuddin, Hashim, Salam & Sajat, 2012). However to the researcher's knowledge, there is little research that examines the adoption of Web 2.0 among retail-chain businesses. Moreover, prior researches on Web 2.0 have been conducted by private organizations such as Gartner, Clearswift, PEW/internet and American Life Project and KPMG with limited academic research being conducted in Web 2.0 adoption among businesses (Shin, 2008). Moreover, many of these studies

were conducted in Europe and United States. Little academic and empirical research is being conducted on Web 2.0 to date, especially study that focus on Malaysia retail-chain businesses.

Prior researches about Web 2.0 have mainly focused on single Web 2.0 technology such as social networking, blogs or Wikis. These studies examined the adoption of Web 2.0 by end user as well as business organizations (Lorenzo-Romero, Constantinides & Alarcon-del-Amo, 2011; Nath, Sinha, Mukherjee & Dasgupta, 2010). With the study on single Web 2.0 technology may not be sufficient understand the overall perceptions of Web 2.0 adoption. In addition, none of the studies had identified users' perceived importance and satisfaction toward a plethora of Web 2.0 technologies being deployed by businesses. Given the nature of the retail-chain business industry, where extensive Web 2.0 technologies can be concurrently utilized in a business operation, this study attempted to identify the factors affecting retail-chain businesses' adoption toward a plethora of Web 2.0 technologies rather than a single Web 2.0 technology. Moreover, the setting of this study was to determine Malaysian retail-chain businesses perceived importance and satisfaction on a plethora of Web 2.0 technologies currently adopted which could provide a better understanding on Web 2.0 adoption among retailers from Malaysia retail-chain businesses.

Many prior researches had adopted Technology Adoption Model (TAM) or Value-based model to investigate technology adoption (e.g. Lorenzo-Romero *et al.*, 2010; Corrocher, 2010; Ramirez-Medina, 2009; Kisselburgh, Spafford & Vorvoreanu, 2010). These researches stream examine individual perceived ease of use and perceived usefulness of Web 2.0. However, perceived usefulness factors did not focus particularly on the benefits of the technology to increase market share, inter-

organizational collaboration and knowledge sharing. In addition, a majority of studies on Web 2.0 has been exploratory in nature based on private organizations. Only limited number of studies in area employed appropriate reference theories to investigate the factors influencing the adoption of the Web 2.0 in business organizations particularly retail-chain (Shin, 2008). The adoption on technology can best be explained by appropriate underpinning theory. In order not to replicate the weakness of past studies, a research model drawn from Rogers' (1995) Innovation Diffusion Theory (IDT), Tornatzky and Fleischer's (1990) Technology-Organization-Environment (TOE) framework, and Scott's Institutional Theory (1995) were adopted to layout as the theoretical foundation for this study. The research framework and the hypotheses derived from this framework are to identify the correlating factors that determined Web 2.0 adoption by Malaysian retail-chain businesses.

In addition to the gap in Web 2.0 literature discussed, other gaps exist in technology adoption literature. One of it is that very few studies have examined influence of the institutional external environment on organizational adoption of technology innovation using institutional theory. Another gap is that few studies incorporate the three main theories used in the organizational adoption of IT innovations (IDT, TOE and institutional theory). This study attempts to fill the gaps in Web 2.0 adoption as well as technology adoption literature.

1.4 Research Questions

In order to investigate the problem of the study, the researcher developed the following research questions:

- What are the Web 2.0 technologies currently adopted by Malaysian retail-chain businesses?
- What are the factors affecting Malaysian retail-chain businesses toward Web 2.0 technologies adoption?
- What are Malaysian retail-chain businesses perceptions toward Web 2.0 technologies?

1.5 Research Objectives

To answer the three research questions as stated in section 1.4, specifically the objectives of this study are:

- To identify the Web 2.0 technologies currently adopted by Malaysian retail-chain businesses.
- To identify the factors that are likely to influence the Malaysian retail-chain businesses adoption of Web 2.0 technologies.
- To examine Malaysian retail-chain businesses perceived importance and satisfaction towards Web 2.0 technologies currently adopted.

1.6 Significance of the Study

This study is conducted to provide information on thirteen components variables and eleven hypotheses of Web 2.0 adoption with specify reference to the Malaysian retail-chain businesses. The overall outcome of this study can add to the existing and body of literature on Web 2.0 adoption among businesses. This study is expected to contribute in the following standpoints namely; serve as resource for researchers, writers, readers and the retail industry practitioners who are keen to

examine or adopt Web 2.0. This study can contribute to management practices and to academic literature.

Management/ Practice – The result of this study could provide information on Web 2.0 currently adopted by retail-chain businesses, their perceived importance and satisfaction on adopting different Web 2.0 technologies. Knowledge of benefits and limitations of Web 2.0 can assist business organizations to incorporate Web 2.0 to their business operations. Knowledge of the benefits can also inspire non-user organizations to adopt Web 2.0 in their business operations. An awareness of the technology barriers and benefits when business organizations adopting Web 2.0 by businesses may lead to the development of solutions for overcoming these barriers in order to promote the use of Web 2.0 in the most effective manner.

The study also provides useful information to technology vendors as they attempted to identify potential adopters of Web 2.0. In addition, it also attempts to contribute to the effort by studying Web 2.0 adoption in the context of Malaysia, which is very different in many respects from the western countries. The findings of the study can be used for designing appropriate marketing and management strategies in reaching these potential adopters in the Malaysian retail-chain industry. Adopting and implementing appropriate technology has emerged as a source of competitive advantage for organizations through the integration of business processes with suppliers and customers. It is important to identify the factors that influence an organization's decision on the adoption of Web 2.0 due to its potential to provide resources for competitive advantage. By identifying the factors affecting organizations' decisions to adopt Web 2.0, technology vendors could educate

prospective adopters better on the potential benefits of Web 2.0 in order to increase the usage of Web 2.0.

Methodology – In providing answers to the research questions and the hypotheses being developed, this study advocates a research design relevant to the empirical confirmatory analysis of a representative sample of real life organizations. This methodology will be a significant contribution to the body of knowledge and important for further research into IS.

Theoretically – Three theories namely Innovation Diffusion Theory (IDT), TOE framework and Institutional theory were adapted to as appropriate reference theories provides explanation on the adoption of Web 2.0 in Malaysian retail-chain businesses. The framework can be applied in other IS research disciplines such as cloud computing and mobile computing.

1.7 Scope of this Study

This research limits its focus to investigate what factors affect retailers' attitudes towards Web 2.0 adoption and how their attitudes influence the adoption on Web 2.0 in the Malaysia retail-chain industry. This study is limited to Malaysian retail-chain stores. Retail-chain refers to retail store with a number of similar establishments (stores or restaurants) under one central administration. The study is conducted via self-administered survey and the sample of the study is delimited to Malaysian Retailers-Chain Association's (MRCA) members. The MRCA members were chosen for this study as the association had more than 200 retail-chain stores covering more than 10,000 outlets throughout Malaysia. The association facilitating stronger affinity with Malaysian government agencies and retail/tourism related

organizations (Tay, 2012). Therefore, other types of retail stores such as hawkers, peddlers and single-propriety shops were not assessed in this study.

Furthermore, in addition to the factors identified in this study, there may be some other factors that may influence attitude towards Web 2.0 adoption (e.g. external support, cultural differences). However, these factors were not measured.

There are many different Web 2.0 technologies used by business organizations such as podcast, blogs, and etc. Web 2.0 technologies identified in this study were limited to instant messaging (IM), Really Simple Syndication (RSS), Web 2.0 media, wikis, social networking, blogs, voice/video media, and forum. These technologies were chose because they have been widely used by business organizations (White & Pauxtis, 2010).

1.8 Organization of the Dissertation

Chapter 1 provides background of study on Web 2.0 in Malaysia, Malaysian retail-chain business, problem statement, research questions, research objectives, significant and the scope of study. Chapter 2 reviews the literature to develop the research theoretical framework to be tested in this study. Chapter 3 presents the research framework contains thirteen variables and eleven hypotheses are constructed based on the literature review. Chapter 3 also covers the methodology used in the study. In addition, this chapter describes the research sampling technique, development of the instrument, pre-test and pilot study, validity of the instrument, data distribution, and methods of data analysis. Chapter 4 presents the findings from administering the questionnaires. This chapter examines, in details, the data gather based on the members of MRCA. Chapter 5, draws the important findings and

conclusions of the study, identifies the limitation of the study and suggests future directions for research arising from the study.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

The background to the present study, the research problems and research questions were presented in Chapter 1. In order to establish the importance of Web 2.0 to business organizations and highlight the gaps in previous studies on adoption and benefits of Web 2.0, this chapter presents a review of the related literature. First, the chapter presents the definition of Web 2.0 and various types of Web 2.0 technologies. Next, the chapter presents the adoption and the growth of Web 2.0 in business organizations. The chapter then presents barriers and pressures to adopt Web 2.0 by business organizations and derived from literature of research on Web 2.0 adoption. Finally, the chapter presents the underpinning theories used to explain technological adoption namely; Innovation Diffusion Theory (IDT), Technology-Organization-Environment (TOE) framework and Institutional Theory.

2.2 Web 2.0 Definitions

There is no universally agreed definition of Web 2.0 in the literature. The term Web 2.0 was coined by Dale Dougherty, vice-president of O'Reilly, Media Inc. The term became better known across the industry after the O'Reilly Media Web 2.0 conference in 2004. Web 2.0 represents the things that typified post dot-com online companies as compared to companies that did not survive the bursting of the dot-com bubble (O' Reilly, 2005). Web 2.0 is used to describe the development of the web platform which provides an emphasis on use of the web technology to provide collaborative and communication services and a user-centric, as opposed to a previous environment in which the web was used primarily as a one-way publishing tool. Table

2.1 presents of the Web 2.0 definitions.

Table 1.1
Definitions of Web 2.0 and Illustrative References

Definitions	**References**
Web 2.0 is the network as platform, spanning all connected devices; Web 2.0 applications are those that make the most of the intrinsic advantages of that platform: delivering software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an "architecture of participation," and going beyond the page metaphor of Web 1.0 to deliver rich user experiences.	O' Reilly (2005)
Web 2.0 is a set of economic, social and technology trends that collectively form the basis for the next generation of the Internet - a more mature, distinctive medium characterized by user participation, openness, and network effects.	Lawton (2007)
"Web 2.0 is just a jargon, in fact we don't experience separated concepts of web usage, as the web development is constant and it is just an evolution not revolution".	Tim Bernes-Lee (2006)
"Web 2.0 is the catch-all descriptor for what is essential much more dynamic Internet computing".	McLean (2007)

As noted previously, there is no universally accepted definition of Web 2.0. Whatever the name it is, the concept remains the same and the trend it represents cannot be underestimated. Whether it is a revolution or a marketing hype, the Web 2.0 technology is now a reality gaining in importance and visibility. Therefore, in the context of the present study, Web 2.0 is a platform that provides business organization the services such as Blogs, Wikis, Real Simple Syndication (RSS), Social Networking (SN), Web 2.0 Media, Instant Messaging (IM), Voice/Video Media, and Forum, it is defined as interaction of web application features that facilitate users' collaboration

including generating, reviewing, editing and disseminating contents.

2.3 Web 2.0 Tools

The seven Web 2.0 tools commonly used by business organization including blogs, IM, RSS, web 2.0 media, voice/ video media, forum, social networking and wikis.

2.3.1 Blogs

Blogs are the contraction of the term “Weblog” which was created by Jorn Barger in 1997, arising from the amalgamation of two words “web” and “log” (Kaiser, Muller-Seitz, Lopes, & Pinae-Cunha, 2007). A blog is a site where a creator posts content and users can add their comments. A blog can be a one-way mechanism to simply distribute information to an audience. However, the more powerful and popular blogs are those that elicit interaction between the blogger (the person posting the blog entries) and the readers. Reader feedback helps bloggers understand what readers really want from a blog author.

Blog users can made up of multimedia components as the entries insert into blogs. Blogs also known as content management systems (Ras, Avram, Waterson, & Weibelzhal, 2005) as information stored chronologically by date and in themed categories. Blogs are used to consolidate resources that may otherwise be shared through an excessive number of emails, to advocate a position or personal point of view, to cover areas of interest too small for print publishing, and for news and commentary on any topic or area that requires frequent updating (Davison-Turley, 2005).

Queensland government of Australia (2013) had identified the benefits of using blogs for business organizations. The benefits of blogging for business including reaching new customers, developing brand or 'personality', gathering feedback, reviews and testimonials, responding to and managing complaints (Queensland Government of Australia, 2013). There are several types of organizational blog used in business including employee blogs; group blogs; executive blogs; promotional blogs and newsletter blogs (Lee, Park, & Hwang, 2008). Blog is a comprehensive platform that customer can issue what he has learned simply and conveniently. It helps to communicate with other person effectively and breezily, and can show the rich and colorful individuation (Yang & Hao, 2010). Collaboration blog, advertisement blog and knowledge base blog can be used to boost up the interaction between corporation and customers (Yang & Hao, 2010).

Sensis business survey (2012) had identified 68% of all internet users read online review or blogs – with 20-29 year olds the most likely to do so. Reader comments on blogs, particularly about customer experiences, play a vital role in influencing buyers.

Another example, International Business Machine Corporation (IBM) with a total of 500 employees over 30 countries using blog for software development projects and corporate strategy discussion (Barnett, 2005). IBM's corporate vice president Mike Wing believed that the blog written summary and informal nature is a great advantage. It is a comfortable, feel free to express the pipeline so that employees can write down his natural want to publish the matter". Another business organization, Motorola has more than 2600 internal blogs used to share knowledge or ideas between employees and replace email newsletters with a blog (Dearstyne, 2007).

2.3.2 Rich Site Summary (RSS)

Rich Site Summary or, alternatively, Real Simple Syndication (RSS) is used to share news, data exchange and web contents. RSS allows potential users to see some of website's content without them having to visit it directly. O' Reilly (2005) highlights that RSS is the most significant advance in web site architecture as it allows not just linking to a page but actually subscribing to it. A subscribing will get a notification every time the website page changes. O' Reilly (2005) calls it the "incremental web" or "live web".

Microsoft SharePoint is one of the popular applications that provide RSS feed functionality on items such as content, discussion forums, workflows, wikis and blogs. This is particular relevance to the collaboration solution for retail-chain businesses where it would be beneficial if the retail-chain stores received the updates from retail-chain headquarter as the news and changes. According to MarketingSherpa (2006), at least 75 million consumers and businesses are using RSS feeds in the United State (U.S.) and the United Kingdom (U.K.) in 2006. According to Moffat (2003), the main benefits of creating an RSS feed include (Moffat, 2003):

- RSS is an excellent and cost-effective way of driving traffic to, and increasing brand awareness of, any website that publishes content (e.g. news, jobs, events) regularly.
- Enabling others to syndicate their headlines, without any further work on their part.
- It is the dominant format for distributing headline content on the Web.
- It allows easy sharing of data between sites. Webmasters can use an RSS file to easily incorporate third party content into their own site.

- RSS content can be added to personal desktop news reading applications like Feedreader or AmphetaDesk.

2.3.3 Web 2.0 Media

Web 2.0 media might be defined as way Web property that provides user-generated media content, and promotes tagging, rating, commenting and other interactions among users and their media contribution (White & Pauxtis, 2010). One of the technologies for Web 2.0 media is podcasting. The technology for podcasting developed initially from a desire to have downloadable audio and video content delivered automatically to a user's digital media player like Apple's iPod or any other MP3 or MP4 player.

Podcasts in corporations can be used for both internal and external communications. Internal communications may include employee communications, training, morale boosting projects, and other internal communications messages. For external communications, companies may adopt consumer-focused podcasts (similar to radio shows) to provide direct product advertising or education or to build consumer confidence in a brand.

eMarketer (2008) estimates that the total U.S. podcast audience reached 18.5 million in 2007. Moreover, MarketingSherpa (2008) survey of business that are involved in technology purchases shows that 78% have listened to a podcast at least once and 26% listen to podcasts regularly which does indeed make podcasts interesting for marketing purposes. Podcasts also are an effective means of communicating product features, usage, and comparison to the customer enhancing the shopping experience. Another popular Web 2.0 media is YouTube, there are more

than one billion unique users visit YouTube each month (YouTube.com, 2013). YouTube.com is a video sharing website, owned by Google, on which allows registered users upload, view and share videos.

2.3.4 Social Networking

Web 2.0 has received much attention from a social networking perspective and the websites such as Facebook and MySpace are gaining enormous traction. Most social network services provide a variety of ways for users to interact, including email, chat, instant messaging and blogs.

Social networking refers to building online communities of people who share interests and/ or activities, or who are interested in exploring the interests and activities of others. Users of these social networking technologies are learning new ways to collaborate and communicate. According to Garside and Rushe (2013) Facebook lead the way with more than 1.11 billion monthly active users and mobile monthly active users were 751 million. The social networking components not only for socializing on the Internet but also support the communication and collaboration of projects specific information, making it accessible, editable and distributed among all team members which are conducive to global business (White & Pauxtis, 2010).

2.3.5 Instant Messaging

Instant messaging (IM) is a form of communication over the Internet, which offers an instantaneous transmission of text-based and/or voice-based messages from sender to receiver such as Yahoo Messager, Microsoft IM and Google Gmail package. Business organization make use of internal instant messaging for improving communication with off-site employees, including telecommunicates, and reducing e-

mail messages. In addition, collaboration has allowed employees to come together and share instantly (White & Pauxtis, 2010). IM is continuing to growth in popularity, with both consumers and corporate users. In 2012, the number of worldwide IM accounts will total over 2.7 billion. This figure is expected to grow at an average annual rate of 6% over the next four years, and reach 3.4 billion by year-end 2016 (Radicati, 2012).

2.3.6 Wikis

Wiki is a Hawaiian term for "quick" or "super fast" and was coined by Howard Cunningham to describe the new generation website that anyone can edit (McKiernan, 2005). Wikis are based on the concept that is should be easy to collaborate on content in real time and participate in the ongoing evolution of the content. Usually, only registered user of the site is able to add or edit web content. The wikis contents might be reviewed by a moderator, who helps to ensure some continuity to the site. Wikis can be one of the most cost-effective ways for a community to collaborate, with main requirement being people's time and willingness to participate in the effort. Many companies have encouraged employees to contribute to wiki to capture and document information about the company's policies, procedures and products in a central online location. In addition, employees may use wiki pages to share their work activity reports, contacts, user manuals, and other documents with co-workers and project team members.

In addition, wikis also allow to accumulate knowledge regarding a specific subject (e.g., developing a new product) and tap the employee's knowledge of that subject. There is also a heuristic value in that employees who were not previously cast in the role of product development are often the wiki's most prolific and valuable

contributors (Tim, 2005). Wikis commonly found over corporate intranet. Examples of companies who use wikis on their intranets include, Daimler-Chrysler, Disney, Microsoft, Motorola, Sun Microsystems, Kodak, Dresdner Kleinwort Wasserstein Bank, and Ziff Davis Publishing (Tim, 2005).

2.3.7 Forums

The American Marketing Association describes forums as an online community where visitors may read and post topics of common interest. Forums are unlike blogs because anyone can start a discussion, not just blogger. Moreover, forums' users cannot edit or delete messages. Generally, anybody can browse the forum but, only member is able to add content. Members can select their own user name, signature and avatars.

Forum exists on a variety of topics such as on hobbies, sports, entertainment, products and etc. Each forum site consists of forum administrators and moderators who can suspend a member for inappropriate activities. Moreover, the most difficult aspect for publisher may be handing the reins over to the audience. In the context of business forum, there are many forum related to business. For example, Malaysia Global Business Forum is intended to serve as a resource to support and assist Malaysian businesses. Moreover, the forum gathers global industry experts, leaders and specialists to share their views, knowledge and expertise to stimulate the growth and development of global business with Malaysia.

2.3.8 Voice/ Video Media

As the tools available have increased and broadband networks have become faster and more reliable, businesses have found other collaboration tools which are

equally effective. One of the popular collaboration tools is voice/ video media. Voice/ video media enables collaborative efforts, as many people can share in discussion using web camera and microphone. The popular voice/ video media include Skype, Google Talk and Microsoft LiveMeeting. All these applications allow phone and video conferencing via Internet Protocol network. Development of voice/ video media started in 2004, the introduction of mass-market VoIP services that utilize broadband Internet access, by which subscribers place and receive telephone calls in much the same manner as they would via the public switched telephone network (PSTN).

The voice/ video media's advantage lies in the ability to see and hear at the same time. With the faster broadband connections and improvements in graphics and webcams, voice/ video media are becoming mainstream collaboration tool. The voice/ video media strengths are cheaper in costs compared to Public Switched Telephone Networks (PSTN), less usage of cable, user-friendly, simple connectivity and, variety of services.

2.4 The Potential Benefits

Web 2.0 presents potential benefits to business organizations. The literature (e.g., Bughin, Chu & Miller, 2008a; Wilkins, 2009; Lee, 2008; Dawson, 2009) postulates the potential benefits of Web 2.0 to businesses in areas such as internal collaboration, customer-related purpose, and working with external partner or suppliers.

2.4.1 Internal Collaboration

Web 2.0 facilitates collaboration within the organization effectively by more efficient dissemination of information to employees and communication across the

organization, making it easier to uncover and connect with relevant expertise, either in people or embedded in documents and processes especially for retail-chain organizations with numbers of outlets. McKinsey Inc. survey indicated the primary internal usages of Web 2.0 among organizations are for managing knowledge and fostering collaboration (Bughin *et al.*, 2008a). For instance, Osborne, an electrical equipment manufacturer, had implemented an internal Wiki based solution to avoid duplicating effort and improve decision making processes within the organization (Brad, 2008). A popular driver for social media technologies within organization is the area of information management and knowledge management, with blogs and wikis being the tools particularly targeted.

Knowledge workers are often frustrated by the volume and variety of information they need to handle and process (Dearstyne, 2007). Wikis allow teamwork and collaboration on a document stored in a single location, along with a history of the document edit. Therefore, wikis could offer a straightforward solution to engaging collective intelligence and a viable alternative to formal knowledge management applications that frequently seem unduly complex and time-consuming. The popularity of wikis in many organizations includes high-profile firms such as Microsoft and IBM, and Cisco Systems would suggest that wikis adequately meet their need (Brynjolfsson & McAfee, 2007).

2.4.2 Customer-related Purpose

Web 2.0 can improve customer service in several ways. Web 2.0 also provides businesses a way to listen to customer conversation, identify customer service issues, and act on them before they harm sales or company reputation. Through emerging Web 2.0, businesses continue to reap the benefits of increased consumer relationship,

product and service awareness, reduce marketing and distribution costs. Web 2.0 has created an opportunity for businesses to promote their products and services in a way that it is customized for each potential consumer. For instance, RSS feeds give businesses the necessary capabilities to customize their product promotions together with the service they provide for each customer. Unlike traditional email based product promotions whereby similar message is sent to all subscribers. Another venue for promoting a company's product is through viral marketing. Businesses can employ Web 2.0 to promote their products or services in different format (video and audio). Businesses can either have their own multimedia sharing facility and social networking site to promote their products through these platforms.

2.4.3 Working with External Partners

Businesses need to collaborate and coordinate with strategic partners to ensure that the supply chain is both efficient and responsive to the dynamic market needs. Due to the fact that members of the global supply chain distribute over different locations, operate at different time zones, have different administrations, effective Web 2.0 will be needed to conduct supply chain collaboration. The supply chain collaboration reduces search costs, and lower inventory level.

Moreover, Web 2.0 offer flexibility, responsiveness, lower costs, and better resource utilization that is necessary to survive in the highly competitive and turbulent business environment (Liu & Liu, 2009). Vereecke and Muylle (2006) empirically proved that higher levels of collaboration among companies strongly show higher performance improvement. In a supply chain environment, through the use of social networking tools, employees as well as external supply chain partners can link together easily and updates and announcements can be disseminated to supply chain

partners rapidly (Liu & Liu, 2009). For example, through RSS, whenever there is a new product or changes in price, the formation from the supplier will be fed into their partners systems automatically. Similarly, when there is a delay in product delivery, the information can also be fed automatically into the supply chain partners systems.

2.5 Growth of Web 2.0

Blog was the first application introduced in Web 2.0. The blog sphere contained 70 million Web logs. About 120,000 new Web logs are created each day, containing 1.5 million posts per day (White & Pautxis, 2010). Bughin, Manyika, and Miller (2008b) survey shows that 80% of the companies globally that are interested in investing in Web 2.0 and different types of Web 2.0 technologies will be adopting Web services in their operations. Almost half of those companies are going to adopt collective intelligence and peer-to-peer networking tools over the next three years. Most of the companies plan to use Web 2.0 to manage collaboration internally, to interface with customers and to interface with suppliers and partners.

Other analysis indicates that the businesses Web 2.0 technologies market was valued at around $764 million in 2008 and grow to more than $4.6 billion by 2013 (Young, 2008). Forrester Research's the results found that 106 of 119 CIOs from companies with more than 500 employees are using at least one of Web 2.0 technology (Framington, 2007). According to Forrester Research, the future workplace will include Web 2.0 technologies such as RSS, blogs, tagging, virtual worlds, and wikis (Hoover, 2007). Juniper Research predicts revenue generated globally by Mobile Web 2.0 will grow from $5.5 billion in 2008 to $22.4 billion in 2013 (Pearce, 2008).

In the context of social media users, Americans spent around 121 billion minutes each month on social networks, a 37% increase on 2011 based on the report from Nielson, Inc. (Leggat, 2011). In the context of Web 2.0, Wikipedia started in 2001 and there were already more than 100,000 articles in 2003 and more than 7 million articles in 2008 (Wikipedia, 2012). Similarly, there were only 23 new weblogs at the beginning of 1999, in May 2007, blog search engine Technorati tracking more than 70 million blogs. Every day 120,000 new blogs are created and 1.5 million posts are made, it found during its quarterly survey (Sifry, 2007).

2.6 Web 2.0 Adoption Barriers

The major security risk for Web 2.0 lies in the maintenance of secure data. In other words, data is kept safe, free from vulnerability as well as corruption and data access is adequately controlled. Web 2.0 is a social phenomenon that encourages the process of connecting users and sharing data to be as easy as possible. Ironically that constitutes a clash of concepts between the principles of data security and the principles of simple data sharing which is one of Web 2.0's major advantages. Web 2.0 does not cause any genuinely new security threats, but it does make protection of threats more complex.

In general, businesses' technological vulnerabilities faced risks of exploitation from outsiders. More important, it is not to underestimate security issues that emerge from within the company from employees and colleagues, who can cause harm either deliberately or through human error (Kann, 2007).

Employee resistance or reluctance to use Web 2.0 can be a serious problem (Bennett, 2007). Past research suggest there was a 1:100 ration of content contributors

to user on participatory websites (Arthur, 2006), this would indicate disaster for most organizations that try to introduce Web 2.0. Based on a study of wikis usage in university administration context, Raman (2006) suggests that, organization need to consider issues such as sufficient user training, resource availability and support skills to minimize employee reluctance/ resistance to use Web 2.0.

The adoption of Web 2.0 requires an economic of its benefits and costs. Some are required plenty of investments on proprietary products, while others are open source software. Sterne (2010) used social metrics to create rough estimation of potential benefits prior to decide on the adoption of Web 2.0 in an organization.

2.7 Pressures to Web 2.0 Adoption in Business Organizations

Having presented the growth of Web 2.0 in previous section, this section presents the pressures leading to Web 2.0 implementation in business organizations. Based on the review of past literature, the pressures for the adoption of Web 2.0 come from customer demand and competitors pressures.

The increase in available bandwidth and computing power make possible for more interaction activities through Internet. There are two way communications, and users are consumers as well as suppliers of information. In the context of tourism industry, consumers not only used Internet for travel search, but they demand for Web 2.0 websites. According to O'Connor (2008), User Generating Contents (UGC) is increasingly part of the decision making process for travelers. Travelers review submitted content to be more up-to-date, reliable and enjoyable to read than information submitted by marketers (Gretzel & Yoo, 2008). The emergence of Web 2.0 has played a large role in altering how consumers relate their feedback of a

product or experience. Moreover, consumers demand more about the level of service now possible with online capabilities. They want accurate information delivered to them quickly, so they can make better, more informed decisions.

Market are evolving in all industry segments, demanding business-to-business application layer interactions. This forces industry players to adopt new technologies and provide Web services around them to cater to the interaction. Competitors are moving ahead with applications scaled to run on Web 2.0 frameworks, forcing others to do the same to remain competitive. Based on the Forrester survey (Young, 2007), competitive pressure was the second biggest driver for Web 2.0 adoption. From the findings, largest companies with more than 5000 employees faced higher competitive pressure than smaller companies. The organizations felt that they will be left behind their competitors and their customers if they did not adopt Web 2.0.

2.8 Past Research Studies on Web 2.0

Having reviewed the different types of barriers and pressures of Web 2.0 adoption, this section will examine previous studies on Web 2.0. As shown in the classification (Table 2.2), previous research studies on Web 2.0 can be classified into three major areas as follows: (i) Overall benefits and costs from Web 2.0, (ii) adoption of Web 2.0, (iii) impact of Web 2.0 and (iv) factors influencing/ explaining Web 2.0 use.

Table 2.2
Past Research on Web 2.0 Technology Adoption

Research Areas	**References**
Overall benefits and costs	Dawson (2009); Bughin *et al.* (2008a); Reid *et al.* (2008); Matuszak (2007); Nath *et al.* (2009); Lee (2008); Andriole (2010); Babushkina (2011)
Adoption of Web 2.0	Corrocher, (2010); Ramirez-Medina (2009); Kisselburgh *et al.* (2010); Au A. (2010); Philip (2010); Sigala (2011); Mazurek (2009); Gardner (2008)
Impact of Web 2.0	Ramirez-Medina (2009); Bughin (2008); Yang and Hao (2010); Murphy (2010); Lorenzo-Romero *et al.* (2011); Nath *et al.*(2010); Frost and Sullivan Asia Pacific (2010); Bell and Loanne (2010); Backhouse (2009), Andriole (2010); Kim, Lee and Lee, (2011); Currie (2009); Liu and Liu (2009)
Factors influencing Web 2.0 use	Bing (2010); Turban, Bolloju and Liang (2011); Cui *et al.* (2009); Dong-Hee Shin and Won-Young Kim, (2008); Wu, Lin, Liu, and Hsio (2010)

The majorities of research relating to Web 2.0 have been conducted by private organizations including inter alia Gartner, Clearswift, PEW/internet and American Life Project and KPMG. There is limited academic research being performed on Web 2.0 (Shin, 2008). In addition, these studies were conducted in the western countries and in the United States. Little academic and empirical research is done on Web 2.0 to date, especially at the Malaysia businesses. Only limited number of studies in area employed appropriate reference theories to investigate the factors influencing the adoption of the Web 2.0 in organizations. Without appropriate references theories, it will be difficult to understand the factors that influence organizational behavior towards Web 2.0 (Cheo, Grover & Sabherwal, 1993; Trice & Treacy, 1988). This study employs IDT, TOE framework and Institutional theory as the theoretical

foundation to investigate and examine the perceived benefits, technological, organizational and environmental factors that might explain organizational behaviour towards the adoption of Web 2.0 in an organizational setting.

Although research reports of private research firms and prior research suggest that organizational adoption rates for Web 2.0 are increasing at a rapid rate, and that Web 2.0 have great potential for organizations in many ways, little academic research is done as to why Malaysian retail-chain business organizations are willing to adopt Web 2.0.

Based on my review of the literature, it seems that one study examines the influence of the institutional environment on Web 2.0 technology adoption using institutional theory (MacKenzie, 2011). In addition, although IDT, institutional theory and TOE framework are used independently in prior studies to examine Web 2.0 technology adoption, non-of-the studies utilize these theories together to examine Web 2.0 adoption. It is important to combine more than one theoretical model to achieve a better understanding of the technology adoption phenomenon (Oliveira & Martins, 2009). Integrating these theories can allow for examination of broader factors that may affect organizational adoption of Web 2.0.

2.9 Theoretical Perspectives in IS Research Studies

In the past few decades, IS acceptance issues have been extensively studied. In contrast to earlier studies (e.g., Young and Watson, 1995; Poon and Wagner, 2001), which lacked appropriate theoretical foundations, more recent studies (e.g., Khalil and Elkordy, 2005; Wang and Yang, 2005) focus on theory-based models to investigate the factors that could explain individual's reactions to computers. Candidates among

these theories include the Activity Theory (AT) (e.g., Verenikina and Gould, 1997) and Technology Acceptance Model (TAM) (Davis, 1986). Following later studies, this study employs two theory-based models to investigate and examine the perceived benefits, technological, organizational, environmental factors that might explain organizational adoption of Web 2.0. These theories are recognized in the IS research domain because they enable researchers to gain a useful insight into the reaction of organization decisions toward computer technology and factors affecting their reactions. A brief discussion of TAM and AT theories is presented.

Activity Theory (AT) aims to explain the connection between human psychology and computer interface design in a social work environment. As a result, it establishes the relationship between human computer interactions and computer interface design by taking into consideration the context of the work environment (Verenikina and Gould, 1997; Hasan and Gould, 2001). AT is often used in the qualitative study involving case study. Research based on AT enables the unit of analysis to be investigated over a very long period of time (Hasan and Gould, 2001). Because the study uses a cross-sectional time dimension where unit of the analysis is observed at a point in time AT is not a feasible theory for this study.

TAM suggests how users come to accept and use a technology and proposes that when a person is adopting a new technology, a number of factors such as the perceived usefulness, perceived ease of use, attitude towards use and behavior intentions influence their decision about how and when he/she will use it. Nonetheless, a TAM doesn't explicitly examine organizational contextual factors such as environmental and organizational variables that can explain organizations' behavior towards adoption of Web 2.0.

2.9 Theoretical Underpinning

This study employs organizational behavior theories such as Innovation Diffusion Theory Model (IDT), Technology-Organizational-Environmental (TOE) framework, and Institutional Theory. In the past few decades, IS adoption issues have been extensively studied. In the earlier studies, focus on theory-based models to investigate the factors that could explain individual's reactions to Web 2.0. This study employs a theory-based model to investigate and examine the perceived benefits, technological, organizational, and environmental factors that might explain organizational behavior in adopting Web 2.0. These theories are recognized in the IS research domain because they enable researchers to gain a useful insight into the reaction of organization toward computer technology and factors affecting their reactions. Once the determinants that drive the adoption of Web 2.0 were identified, the theory will influence the study via the option of explanatory variables, hypotheses construction, and completes the research process with the results interpretation (Cao & Mokhtarian, 2007). The next section of this chapter will further elaborate these theories (IDT, TOE framework, and Institutional theory) used for this study.

2.9.1 Innovation Diffusion Theory Model (IDT)

IDT model is a theory that seeks to explain how, why and at what rate new ideas and technology spread through cultures in organization. IDT sees innovations as being communicated through certain channels over time and within a particular social system (Rogers, 1995). Based on the context of IDT, Rogers defines an innovation as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (Rogers, 1995). The theory serves as a fundamental theoretical base of innovation adoption research used to examine organization adoption of IT over the

prior decades. IT innovation adoption studies analyze the adoption by large aggregates such as companies, business units, agencies or departments (Fichman, 1992).

Within the context of IDT, Rogers describes innovation as “an idea, practice, or object that is perceived as new by an individual or unit of adoption” (Rogers, 1983). According to Walker (1969), an innovation is a program or policy which is new to those adopting it, no matter how old the program may be or how many others have adopted it. Thus, Web 2.0 can be considered a technology innovation for an organization. Rogers (1983) explained the process of innovation diffusion as one which is dictated by uncertainty reduction behavior amongst potential adopters during the introduction of technological innovations. Although innovations typically offer its adopters novel ways of tackling day-to-day problems, the uncertainty as to whether the new ways will be superior to existing ones presents a considerable obstacle to the adoption process (Green, 2005). Innovation adoption is a part of the innovation diffusion process. Rogers (1995) defines adoption as the decision of an individual or organization to make use of an innovation. IDT is used to explain innovation adoption issues, such as how, why, and at what rate innovations are adopted by individuals or other adopting units (Rogers, 1995). Rogers (1983) also had identified the following five characteristics namely relative advantage, compatibility, complexity, observability and trialability of innovations that consistently influence the adoption of innovation.

Each characteristic helps to reduce potential adopter’s uncertainty regarding the perceived benefits of innovation adoption. In prior innovation diffusion research on information systems, the characteristics of innovation have been extended to

include perceived benefits (direct and indirect), perceived costs (Chewlos, Benbasat & Dexter, 2003; Saunders & Clark, 1982), perceived risks (Tan & Teo, 2000), voluntariness of use and image (Moore & Benbasat, 1991). According to Ajzen and Fishbein (1980), attitudes towards an object and attitudes regarding a particular behavior relating to that object can frequently differ.

Based on IDT theory at firm level, Rogers identifies three groups of adoption predictors: individual (leader) characteristics, internal organizational structural characteristics, and external characteristics of the organization (Figure 2.1). Individual characteristics describe the leaders' attitude toward innovation and change toward organizations (Rogers, 2003). The characteristics were empirically supported by prior studies (Damanpour, 1991; Dewar & Dutton, 1986). In these studies, a favorable attitude has a positive relationship with organizational adoption of an innovation. Another studies by Thong and Yap (1995) and Thong (1999) found that small businesses that have adopted IT are more likely to have leadership that possesses positive attitude towards IT adoption.

The next component of IDT is internal characteristics of organizational structure. The internal characteristics of organizational structure consist of centralization, complexity, formalization, interconnectedness, organizational slack, and organizational size (Rogers, 1995).

According to Rogers (1995), centralization is the degree to which power and control in a system are concentrated in the hands of a relatively few individual. More concentrated decision-making is associated with a centralized organizational structure. Rogers (1995) suggests centralization is negatively associated with organizational adoption of an innovation. Although many studies have found centralization to be

negatively associated with technology innovation adoption and use (Damanpour, 1991; Hage, 1969; Drucker, 1998, Ettlie, Bridges & O' Kreefe., 1984), however, some positive associations have also been reported (Kimberly & Evanisko, 1981).

Formalization is the degree to which an organization emphasizes its members' following rules and procedures (Rogers, 1995). Rogers suggests that less formalized organizations are more likely to initiate innovation adoption because they are more likely to embrace new ideas. This proposition was supported empirical findings from prior studies (e.g. Ettlie *et al.*, 1984; Scuilli, 1998; Zmud, 1982; Chau & Tam, 1997).

Complexity is the degree to which an organization's members possess a relatively high level of knowledge and expertise. Rogers (1995) asserts that complexity is positively associated with innovation adoption. Prior studies (Thong, 1999; Ifinedo, 2008, Kuan & Chau, 2001) support this assertion. Organizational members' possess of a relative high knowledge are more willing to adopt and utilize new innovation (Thong, 1999).

Interconnectedness is the degree to which the units in a social system are linked by interpersonal networks (Rogers, 1995). Rogers (1995) indicates that interconnectedness is significant to innovation adoption because new ideas tend to flow more freely in organization (Rogers, 1995). This is empirically supported by prior studies conducted by Chong, Ooi, Lin and Raman (2009), Gunasekaran, Lai and Cheng (2008) and Teo, (2008).

Organizational slack is the degree to which uncommitted resources are available to an organization (Rogers, 1995). Prior theory predicting innovation rates highlights the role of organizational slack as an important condition that facilitates

exploration and, thus, contributes to a firm's innovativeness (Cyert & March, 1963; Greeve, 2003). Rogers (1995) suggests organizations that possess slack resources are positively related to organizational adoption of innovation, since it can be expensive to initiate and implement new innovations.

Size is the number of employees of the organization (Rogers, 1995). Other scholars have measured organization size based on financial resources such as annual revenues or market share. Previous studies have shown that organizational size almost always positively associated with organizational adoption of an innovation (Thong & Yap, 1995; Premkumar & Roberts, 1999; Premkumar, 2003; Ahuja, Yang & Shankar, 2009). Conversely, a study by Gremillion (1984) found that size of organizations is insignificant to determine IS adoption. Another study by Love, Irani, Standing, Lin and Burn (2005) had also shown that organization size in terms of both turnover and number of employees has not effect on organization adoption of innovation.

The external characteristic of the organization refers to system openness (Rogers, 1995). The more interactions between organization and its external environment on information, the more inclined to adopt innovations for survival. Prior studies show that interactions with external environment are positively related to organizational adoption of innovation (Kaluzny, 1974; Tushman, 1977; Miller and Fresen, 1982; Hsu, Kraemer & Dunkle, 2006).

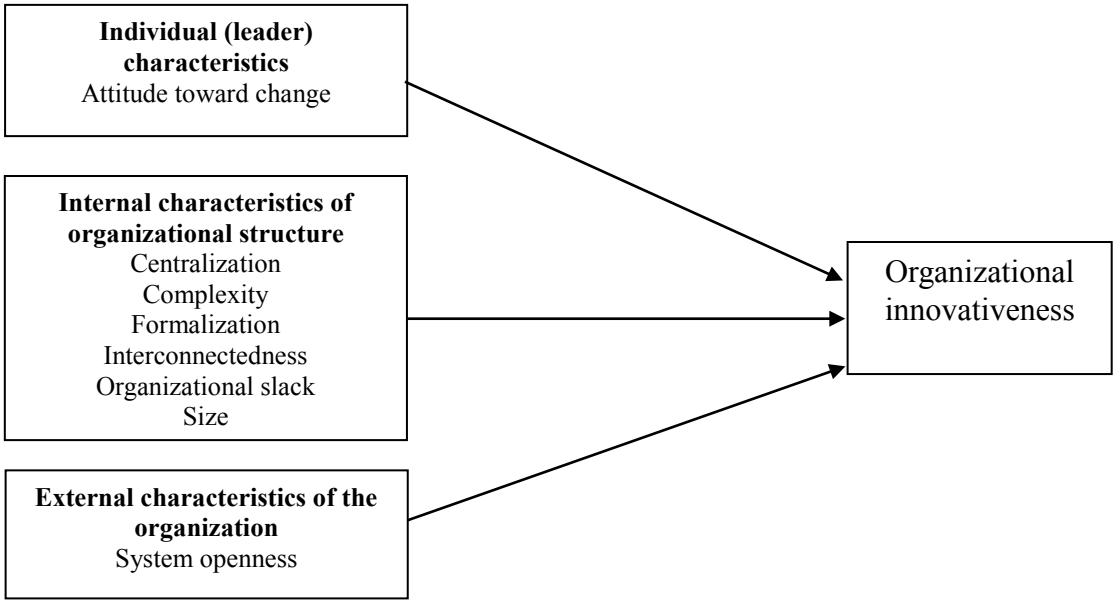

Figure 2.1
Diffusion of innovations (Source: Rogers, 1995)

In summary, IDT is used by academics and practitioners which primarily focus on the impact of innovation characteristics on potential adopters (e.g., organizations and individuals). In IDT components namely individual characteristics, internal and external characteristics of the organization are perceived to influence organizational adoption of technological innovations. Technology-Organization-Environment (TOE) framework developed by Tornatzky and Fleisher (1990) has been used as a comprehensive framework to examine IS adoption. The TOE framework enables IDT to explain organizational innovation diffusion (Hsu *et al.*, 2006). The TOE framework is described on next section.

2.9.2 Technology-Organization-Environment (TOE) Framework

To study adoption of general technological innovations, Tornatzky and Fleischer (1990) develop the TOE framework, which defines a "context for change". The process by which an organization adopts and implements technological innovation is influenced by the technological context, the organizational context, and

the environmental context (Figure 2.2).

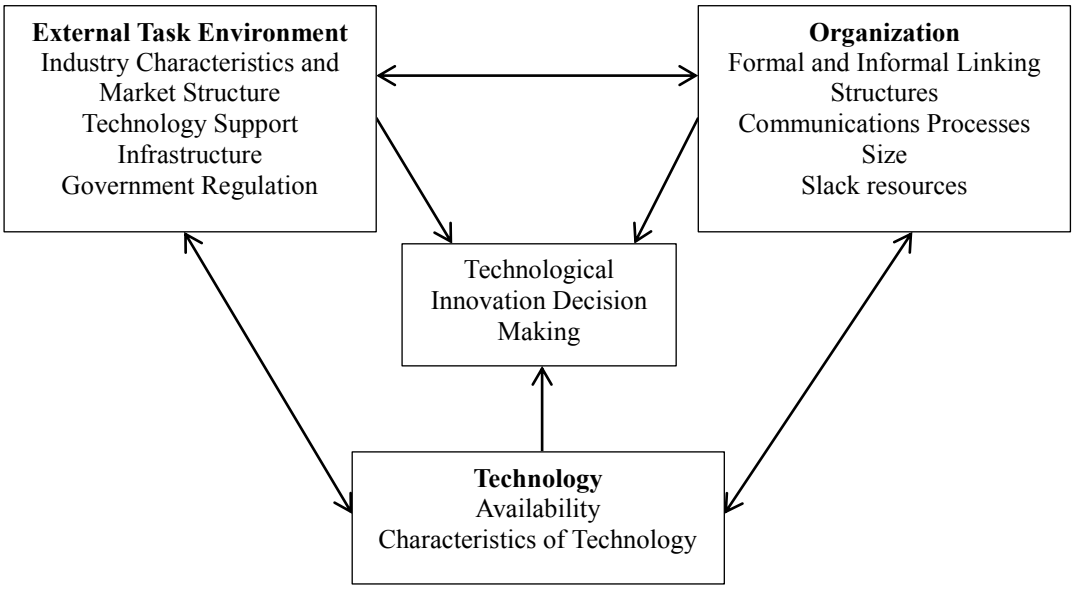

Figure 2.2
TOE Framework (Source: Tornatzky & Fleischer, 1990)

Technological Context

Technological context describes both internal and external technologies which are relevant to the organization. In other words, this context includes existing technology in the organization as well as the pool of available technologies in the market to be adopted (Thompson, 1967; Khandwalla, 1970; Hage, 1980). The main focus is on how technological characteristics can influence the adoption process (Tornatzky & Fleischer, 1990; Chau & Tam, 1997). Based on the prior studies, the technological characteristics that are perceived to influence adoption of innovation include perceived benefits, compatibility, complexity, perceived barriers, perceived risks, and costs (Kuan & Chau, 2001; Chau & Tam, 1997; Liu, 2008, Teo, Ranganathan & Dhaliwal, 2006). TOE framework found to be compatible to IDT. Characteristics such as relative advantage, compatibility and complexity are among the five IDT characteristics. Complexity, perceived risks, perceived barriers, and costs

are factors which frequently found to have significant influence on adoption innovation.

Organizational Context

Organizational context describes the characteristics of an organization that constrain or facilitate adoption of technological innovations. The organizational characteristics include firm size and scope, managerial structure (e.g., centralization, complexity, and formalization), top management support, and the amount of slack resources available internally (Tornatzky & Fleisher, 1990). Based on the prior studies, the organization characteristics influence adoption of IT innovation including top management support, organization size, and organizational readiness (Kuan & Chau, 2001; Chau & Tam, 1997; Liu, 2008, Teo *et al.*, 2006). Among these factors, top management support is frequently found to be a significant factor. In addition, most these studies identified organization readiness into two dimensions - technology readiness and financial readiness (Oliveira & Martins, 2009; Zhu, Kraemer & Xu 2006). Technical resources refers to the level of sophistication of IT usage and IT management in an organization, that can capture an organization's success to tangible and intangible technical resources for successful IT innovation adoption (Iacovou, Benbasat & Dexter, 1995). Financial resources refer to the financial resources available to pay for installation costs, implementation cost of any subsequent enhancements and ongoing expenses during usage (Iacovou *et al.*, 1995).

Environmental Context

The external environmental context is the arena in which an organization conducts its business such as the industry it belongs to, its competitors, regulations, access to resources supplied by others, and governments with which it deals with

(Tornatzky & Fleischer, 1990). Based on the past studies, most factors that pertain to the environmental context are various types of external pressure including industry pressure, government pressure, customers' pressure, competitor pressure, suppliers' pressure and intensity of competition and market uncertainty. Many past studies that examined IS adoption have combined TOE framework with institutional theory in order to have better understand on the impact of external pressure on organizational adoption innovation (Purvis, Sambamurthy & Zmud, 2001; Chatterjee, Grewal & Sambamurthy, 2002; Teo, Wei, & Benbasat, 2003; Jeyaraj, Rottman & Lacity, 2004; Gibbs & Kraemer, 2004). The TOE framework is a useful analytical tool for distinguishing between inherent qualities of an innovation itself and the motivations, capabilities and broader environmental context of adopting organizations (Dedrick & West, 2003).

The TOE framework is consistent with Rogers' IDT (1995) in organizations (Zhu *et al.*, 2006). Rogers (1995) emphasized leaders' characteristics (leader's attitude toward change), internal characteristics of the organization (centralization, complexity, formalization, interconnectedness, organizational slack, and size), and external characteristics of the organization (system openness) as drivers of organizational innovativeness. The difference between IDT with TOE framework is the environment context. The environment context in TOE framework presents both constraints and opportunities for technological innovation adoption.

Table 2.3 summarizes key empirical studies that adopted TOE framework to examine organizational adoption innovation. These studies have identified significant factors that pertain to the three contexts of the TOE framework.

Table 2.3
IT Innovation Adoption Studies Using the TOE Framework

Factors within TOE Contexts	Frequency & Relationship Direction	Related Work
Technological Context		
Perceived benefits/ Relative advantage	7(+)	Kuan & Chau, 2001; Chau & Tam, 1997; Thong, 1999; Scupola, 2003; Iacovou *et al.*, 1995; Zhu *et al.*, 2006, Chewlos *et al.*, 2003, Li, 2008; Teo, 2006.
Technology integration	4(+)	Oliveira & Martin, 2009; Zhu *et al.*, 2006; Oliveira & Martin, 2010; Chau & Tam, 1997)
Complexity	2(+)	Lee *et al.*, 2009; Li, 2008;
Perceived barriers	1(+)	Chau & Tam, 1997;
Compatibility	3(+)	Teo, 2008; Zhu, *et al.*, 2006; Li, 2008
Costs	2(+)	Teo, 2008; Zhu, *et al.*, 2006;
Organizational Context		
Firm size	2(+)	Teo, 2008; Zhu, *et al.*, 2006;
Top management support	1(+)	Li, 2008
Organizational Readiness	2(+)	Teo, 2008; Li, 2008
Information Sharing culture	1(+)	Teo, 2008
Firm Scope	1(+)	Zhu, *et al.*, 2003
Environmental Context		
Competitive pressures	5(+)	Zhu, *et al.*, 2006; Oliveira & Martin, 2008; Zhu, *et al.*, 2006; Zhu et al., 2005; Lin & Lin, 2008
Regulatory environment	4(+)	Teo, 2008; Zhu, *et al.*, 2006; Kuan & Chau, 2001; Chang *et al.*, 2007
Market uncertainty	1(+)	Chau & Tam, 1997;
User satisfaction	2(+)	Liu, 2008; Teo, 2008
Consumers readiness	1(+)	Zhu, *et al.*, 2006;
Trading partners readiness	2(+)	Zhu, *et al.*, 2006; Li, 2008

Based on the above empirical support TOE framework is an appropriate and comprehensive guideline to examine factors that influence organizational adoption of innovation.

2.9.3 Institutional Theory

In recent years, researchers have used the TOE framework with other theories

to examined IS adoption (Thong, 1999; Gibbs & Kraemer, 2004; Hsu *et al.*, 2006; Zhu *et al.*, 2006; Li, 2008; Soares-Aguiar & Palma-Dos-Reis; 2008, Chong *et al.*, 2009; Oliveira & Martins, 2010). Institutional theory is one of the theories used to study organization's innovation adoption level. Institutional theory emphasizes that institutional environments are crucial in shaping organizational structure and actions (Scott & Christensen, 1995; Scott, 2003). Based on the prior studies, researchers such as Gibbs and Kraemer (2004), Khalifa and Davison (2006) and Son and Benbasat (2007) have identified that organizations adopt IS innovations are due to environmental forces. They found that IS is not used by organization to improve operation efficiency and effectiveness, but also to gain legitimacy in their environments, in order to be accepted. These studies have provided new dimensions to identify others factors that influence an organization's adoption of Web 2.0 technology.

Institutional theory is concerned with external environmental pressures that lead organizations that reside in an organization environment that increasingly resemble each other, resulting in institutional isomorphism. This means that organizations in the same industry tend to become homologous over time, as competitive and customer pressures motivate them to copy industry leaders (Deephouse, 1996). Organizations are required to conform to these pressures because their conformance is rewarded with increased legitimacy and resources (Meyer & Rowan., 1977). According to DiMaggio and Powell (1983), the net effect of institutional pressures is to increase the homogeneity of organizational structures in an institutional environment. Organizations will adopt similar process, structures and strategies as a result of three types of external pressures: mimetic, coercive, and normative (DiMaggio & Powell, 1983).

Mimetic pressures occurs when organizations responses to uncertainty and adopt actions or innovation imitating their competitors that are perceived to be similar; closely connected by ties, including resources, information, and board interlock; have high status or prestige; and are more successful. Such mimetic behavior is rational because it economizes on search costs to reduce the uncertainty that organizations are facing (Cyert & March, 1963) as well as avoid first-mover risks (Lieberman & Montgomery, 1998). This bandwagon effect (Abrahamson & Rosenkopf, 1993) occurred when an organization faces high levels of mimetic pressures due to the increasing numbers of competitors in its environment that adopt a practice adopted by other organizations that is beneficial or successful.

The next pressure highlighted by Dimaggio and Powell (1983) is coercive pressure. This type of pressure used to explain by the relationship between subordinate organizations and their resource-dominant institutions. Subordinate organizations have to follow the requirements that satisfy the interests of the dominant actors in order to survive. Organization's stakeholders such as customers, suppliers, governments, trade associations and other bodies with regulatory power over other organizations can directly and indirectly exert force, threats, persuasion and invitations to adopt a certain innovation (Son & Benbasat, 2007; Khalifa & Davison, 2006; Srinivasan, Lilien & Rangaswamy, 2002; Dimaggio & Powell, 1983). For example, key customers or suppliers adopt technology innovation such as purchasing from Internet that can exert indirect coercive pressures on their associated organizations to sell products or services via online mode.

Normative pressure comes from dyadic relationships where companies share some information, rules and norms. In technology adoption perspective, normative

pressures emerge from direct or indirect ties of an organization to other organizations that have already adopted an innovative. Organizations conform to normative pressure by adopting business practices because they perceive such adoption to be the appropriate thing to do (Scott, 2003).

A number of empirical studies have examined institution theory and organizational adoption innovation (Table 2.4). These studies examine the effects of institutional pressures including mimetic pressures, coercive pressures and normative pressures towards organization adoption of IT innovation. The key results are summarized in Table 2.4. From the Table 2.4, mimetic pressures seem arise from competitors, while coercive pressures seem to primarily arise from customers and suppliers. Normative pressures seem to primarily arise from professional and trade associations. However, these pressures also can be exerted from customers and suppliers.

Table 2.4
Past Studies Organizational Adoption using Institutional Theory

Empirical Studies	**Types of Institutional Pressures**	**Institutions from which Pressures Arise**
Teo *et al.* (2003)	Coercive	Parent corporation, customers and suppliers
	Normative	Customers and suppliers, professional and trade associations, business bodies
	Mimetic	Competitors
Khalifa and Davison (2006)	Coercive	Customer
	Normative	Employee
	Mimetic	Competitors
Soares-Aguiar and Palma-Dos-Reis (2008)	Coercive	-
	Normative	Trading partners
	Mimetic	Competitors
Teo *et al.* (2003)	Coercive	Parent corporation, customers and suppliers
	Normative	Customers and suppliers, professional and trade association, business bodies

	Mimetic	Competitors
Son and Benbasat (2007)	Coercive	Suppliers
	Normative	Suppliers; professional and trade associations
	Mimetic	Competitors
Li (2008)	Coercive	government
	Normative	Trading partners
	Mimetic	-

2.10 Integrated Theoretical Framework

For the purpose of this study, an integrated theoretical framework was designed in an attempt to improve the TOE framework's power of explanation and adoptability of Web 2.0. In this study, IDT was used as a theoretical backbone to illustrate the theoretical relationships among the determinants identified in this chapter. As the TOE framework includes the environment context (not included in the IDT theory), it becomes better able to explain intra-firm innovation adoption. With the institutional theory added to the environmental context of the TOE framework external pressures, which include pressure from competitors and pressure exerted by trading partners and customers. By combining more than one theoretical model enabled to achieve a better understanding of the IT adoption phenomenon (Oliveira & Martins, 2009). In this research, an integrated theoretical framework is proposed and variables such as market share, inter-organizational collaboration, knowledge sharing, security, costs, complexity, top management support, organizational readiness, mimetic pressure, coercive pressure, and normative pressure were included into the framework in order to study the adoption of Web 2.0 in Malaysian retail-chain business. Chapter 3 will further discuss on the built up of the integrated theoretical framework.

2.10 Conclusion

The important conclusion that can be drawn from this chapter is that: (1) there is limited research on the actual use and perceived importance and satisfaction of Web 2.0 by Malaysian retail-chain businesses. As discussed, the classifications of Web 2.0 research studies presented in Table 2.2 shows that the majority of the research on Web 2.0 usage has been exploratory instead of theory testing, (2) only a limited number of research studies employed appropriate reference theories to investigate the factors that influence users' behaviour towards Web 2.0 adoption. Without a significant number of research studies with appropriate reference theories it will be difficult to understand the factors that might influence organizations' behaviour to use Web 2.0. Therefore the motivation for this study was due to the realisation that there is: 1) limited research on the actual use and perception towards Web 2.0 by Malaysian retail-chain businesses, 2) lack of appropriate reference theoretical foundation of 3) perceived benefits, technological, organizational and environmental variables in determining key factors for the adoption of Web 2.0.

Chapter 3 also presented a brief discussion on theoretical perspectives such as IDT, TOE, and Institutional theory used in IS research studies to gain useful insights into the reaction of people towards technology adoption and factors enabling such reaction. As a result the chapter established an alternative theoretical foundation based on IDT, TOE and Institutional for the present study.

Moreover, the chapter presented several research studies based on TOE and a number of research studies based on Institutional Theory as well as their backing for the use of both models as theoretical foundations in IS research studies. The next

chapter examines the research design and methodology as well as the operationalisation of constructs.

CHAPTER 3 METHODOLOGY

3.1 Introduction

In the previous chapter, literature review on Web 2.0 and the theoretical foundation of the present study were discussed. This chapter begins with the development of the research framework and hypotheses. In order to measure the constructs and to empirically test the hypotheses derived from the research model, this chapter presents the research design, research methodology and the operational measures of the constructs. Next, the rationale of the questionnaire design is presented. The chapter also describes the process used to obtain the pool of respondents, explains the research design used to gather and analyze data.

3.2 Research Framework and Hypothesis Development

The focus of this study was to investigate the adoption of Web 2.0 in the retail-chain industry at Malaysia. For this purpose, factors affecting organizations' attitudes towards Web 2.0 adoption are examined. A theoretical framework for organizational Web 2.0 adoption was developed by reviewing the literature on information systems adoption, attitude towards behavior, and various Web 2.0 concepts. Consistent with the IDT model, TOE framework and Institutional theory, the research model posits the predictors for Web 2.0 adoption within an organization context that influence organizational adoption. The predictors are categorized on perceived benefits, technological, organizational and environmental. In addition, prior studies (Beatty, Shim & Jones, 2001; Gibbs & Kramer, 2004; Iacovou *et al.* 1995; Kuan & Chau, 2001, Lin & Lin, 2008; Pan & Jang, 2008; Zhu *et al.*, 2006) advocate the use of perceived benefits in understanding and explaining organization behaviors' toward IT

adoption and usage. Factors that pertain to each context are being identified based on IDT, TOE framework and institutional theory.

3.3 Dependent Variable

The research model (Figure 3.1) proposes Web 2.0 adoption as a dependent variable. In the present model, Web 2.0 adoption will be examined due to the fact that different types of Web 2.0 available. The dependent variable was measured using a two items adapted from previous research by Carter and Belanger (2005); Elliot, Alex and Benn (2007) and Ifinedo (2008). Respondents were asked to indicate, on five-point Likert scales, their level of agree or disagree with the following statements: (1) Adopting Web 2.0 in the organization is a good choice; and (2) Using Web 2.0 in the organization would be pleasant. By using the above measurement of Web 2.0 adoption, this study will include only active users of Web 2.0 as adopters and exclude the retail-chain businesses that have not adopted the Web 2.0.

3.4 Perceived Importance and Satisfaction on Web 2.0 being adopted

Eight Web 2.0 technologies, which may be adopted by retail-chain businesses', the respondents were asked to evaluate the perceived importance and satisfaction on adopting the technologies. Each technology was rated using a five-point Likert scale, ranging from "Not at All Important" to "Very Important". Similarly, each technology was evaluated based on the satisfaction level ranging from "Not at All Satisfied" to "Very Satisfied" in the satisfaction section.

3.5 Independent Variables

Based on the research model (Figure 3.1), independent variables are categorized in three contexts of the TOE framework: (1) technological; (2) organizational; and (3) environmental. In addition to TOE framework, addition independent variables, perceived benefits are added in the research framework. All variables associated with each context are identified based on the review of IDT, TOE framework, institutional theory and prior studies conducted on organizational Web 2.0 adoption. The justification for each selected variable is presented as follows.

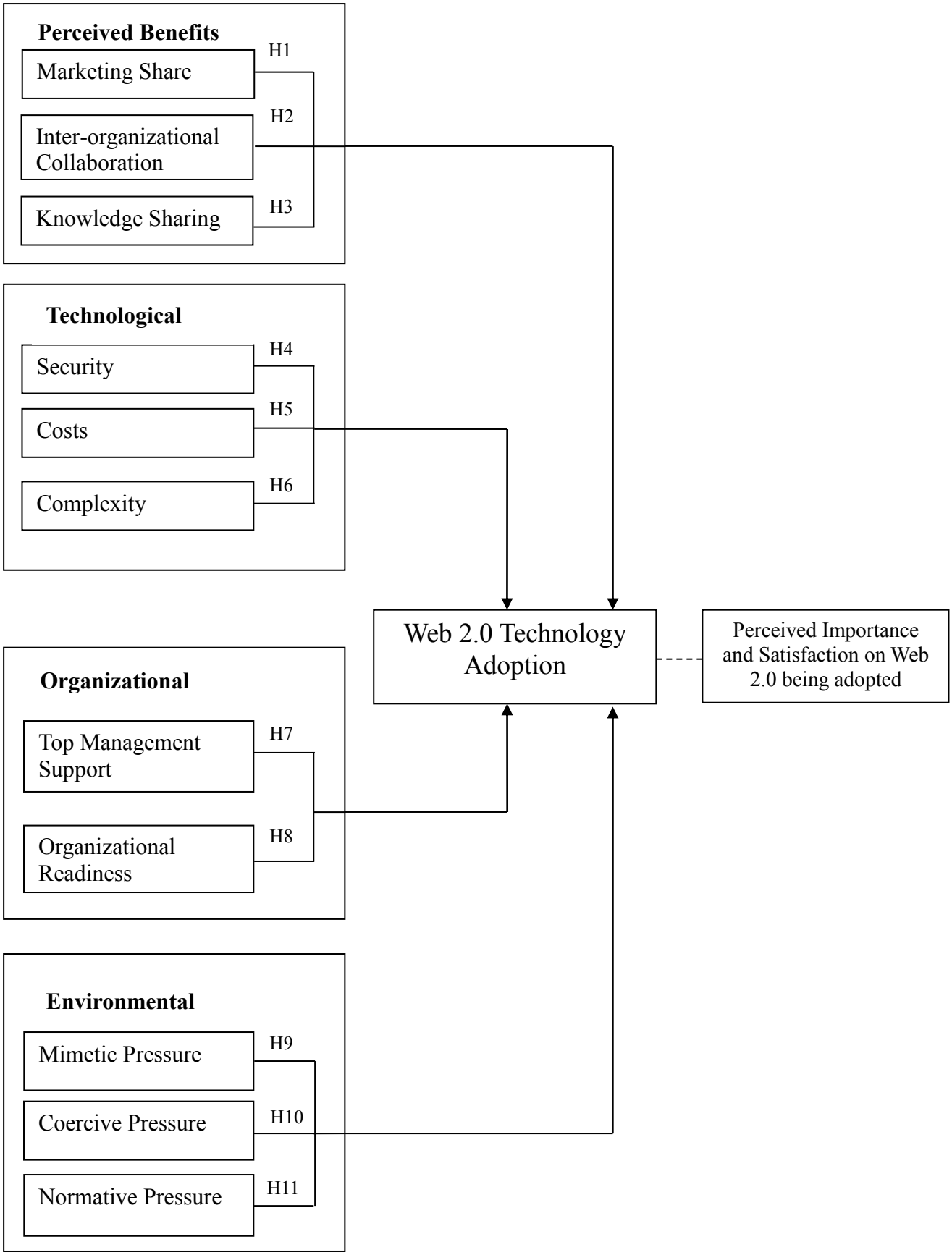

Figure 3.1
Research Model for Web 2.0 Technology Adoption

3.5.1 Perceived Benefits Context

Based on the IDT literature, perceived benefits are one of the drivers for IT innovation. The degree of perceived benefits is generally expressed as the degree of relative advantage that the innovation may provide to the organization. Thus, perceived benefits and relative advantage are used interchangeably in IT adoption literature (Iacovou *et al.*, 1995).

Web 2.0 adoption studies had provided empirically evidence that perceived benefits of Web 2.0 drive organizations to adopt the Web 2.0. Prior studies (Corrocher, 2011; Kosalge & Tole, 2010) found that organizations adopt the Web 2.0 because they perceived a relative advantage of the Web 2.0 to the businesses. In addition, organizations found that perceived benefits to internal organization, customer-related purposes and external partners/ suppliers (Bughin *et al.*, 2008). In the context of Web 2.0 adoption, the perceived benefits' are gain in market share, knowledge sharing, and inter-organizational collaboration.

Market Share

Increasing market share is one of the most important objectives of business. Market share is the percentage of a market (defined in terms of either units or revenue) accounted for by a specific entity. Based on the review of Web 2.0 literature, adopting Web 2.0 provides a number of benefits in customers-related areas of organizations. With regard to customer communities, business organizations use Web 2.0 for their sales and marketing and customers related operations.

Businesses spend enormous amounts of money to attract customers to their business and lock in sales (Novak, Hoffman & Yung, 2000). Web 2.0 technologies

such as blogs and RSS are able to provide new ways of contacting and engaging potential customers. For example, retailers such as Tesco, Amazon, Sainsbury's and HMV are effectively using data feeds to announce the launch of new products, promotions, store opening, and etc. (Jain & Ganesh, 2011). In addition, RSS gives businesses the necessary capabilities to customise their product promotion together with the services they provide for each customer (Jain & Ganesh, 2011).

Blogs brings together people with common interest, which is an effective way of promoting products to potential customer base. The approach is based on proactively engaging the online sources of customer influence (blogs, podcasts, online forums, etc.) as customer influence tools (Constantinides, 2008). The objective is to attract the attention of leading blogs or users' forums so that they review, discuss, comment or even recommend using the firm's products.

A study conducted by Deloitte Touché reported 80% of consumers says that reading consumers generated reviews has affected their buying intentions and 98% of them found these reviews reliable (Constantinides, 2008). In addition, this enables immediate access to target market even to very specific market segments at a fraction of the costs required by traditional media. Another Web 2.0 to promote product or services is Web 2.0 media. Web 2.0 media such as the video sharing sites YouTube, Flickr and others as broadcasting media for distributing advertising materials by businesses. Commercials related video uploaded to these sites can be viewed by thousands or even millions of viewers in hours distributed among users at practically no cost compared with expensive mainstream media such as TV or newspapers.

Understanding what customer value, especially when they are in the Web 2.0 environment is especially important to marketers in order to identify market

experiences, new market needs, and hear early warnings about products problems indicating the need to improve, modify or drop products. Compared with traditional market research such as surveys and focus group, Web 2.0 can provide precious and high quality information at a fraction of the time and cost. In other words, Web 2.0 creates holds enormous potential for businesses to get closer to customers and by doing so, facilitate increased revenue, cost reduction and efficiencies. Hence, positive relationships between perceived benefits' in term of increase market share by adopting Web 2.0 is proposed:

H_1: Increased in market share is positively related to the adoption of Web 2.0.

Inter-organizational Collaboration

Mattessich and Monsey (1992) defined inter-organizational collaboration as a mutually beneficial and well-defined relationship entered into by two or more organizations to achieve common goals. The relationship includes a commitment to: (1) a definition of mutual relationships and goals, (2) a jointly developed structure and shared responsibility, (3) mutual authority and accountability for success and (4) sharing of resources and rewards.

Inter-organizational collaboration among members is also to improve the overall supply chain performance (Handfield & Nicholas, 2002). Business organizations need to collaborate and coordinate with their strategic partners to ensure the supply chain is both efficient and responsive to the dynamic market needs. The objective of supply chain collaboration is to improve the overall supply chain performance (Handfield & Nicholas, 2002).

Supply chain collaboration reduces search costs, lower inventory level, and tightens links to customers (Handfield & Nicholas, 2002). Vereecke and Muylle (2006) empirically proved that higher level of collaboration among business organizations showed improved performance.

Web 2.0 has the potential to enable peer-to-peer interactions and foster collaboration (Ganesh & Srinivash, 2007). The collaboration will work for business organizations and their suppliers with a large project team spread around the world. In addition, synchronous and asynchronous communication from Web 2.0 can also reduce some of the problems associated with having collaborators in multiple time zones. For instance, IM chats can be archived and saved. The chat is most effective when at least a group of people share information and ideas in real time. The use of open access Web sites and blogs offer new opportunities to move collaboration to the next level. By tapping into the collective wisdom of the group, this type of collaboration could lead to better decisions and help in problem solving. Businesses (e.g. Cisco, Motorola) are using Web 2.0 especially blog and wiki to collaborate both intra and inter organizational setup (Shuen, 2008). Web 2.0 enable collaboration with suppliers in organization's operations mainly product development and sales (Dearstyne, 2007; Cook, 2008). Customers and suppliers are important business partners for a business organization. Business organizations can pass on feedback to their suppliers for more effective planning, forecasting and replenishment. This collaborative product customization could be end-user driven or community-driven based on the number of users interacting with the businesses. In other words, Web 2.0 can help retail-chain businesses actively contribute to business's operation by using collaborative features of Web 2.0. Therefore, positive relationships between inter-organizational collaboration and Web 2.0 adoption are proposed.

H_2: Inter-organizational collaboration is positively related to the adoption of Web 2.0.

Knowledge Sharing

Knowledge sharing is an activity through which knowledge (i.e. information, skills, or expertise) is exchanged among employees in business organizations. Knowledge refers to a mixture of values within social context (Lin & Lee, 2004), the construction of new experiences based on past experience elaboration in memory (Waitt & Head, 2002). With regard to knowledge sharing, Web 2.0 making it easier to uncover and connect with relevant expertise, either in people or embedded in documents and processes. An essential aspect of Web 2.0 is focuses on the transfer of information in multiple formats (text, pictorial, video, and audio) establishing a web of connections to sub-applications and provide an instantaneous feedback loop to users (Murphy, 2010).

Web 2.0 technologies such a space, blog and wiki allow businesses (e.g. Cisco) to accumulate knowledge from different sources and locations. Murphy (2010) had identified three benefits in relation to achieving knowledge sharing goals. The first benefit is Web 2.0 can help management and technical personnel overcome complex issues and problems by acting as an effective boundary spanning mechanism between otherwise disconnected sources of insight and knowledge.

The second benefit is its flexibility, with a number of alternatives suitable for a range of objectives depending on the nature of the organization, the capabilities of its personnel and desired outcomes. The third benefit from an operational perspective is the scalability of Web 2.0, able to respond effectively to meet the requirements of the

user and the enterprise.

Web 2.0 can be used for four processes of knowledge management namely creation of knowledge, transfer of knowledge, integration of knowledge, and leveraging knowledge (Tanriverdi, 2005). First, blog and wiki can facilitate knowledge creation such as an online read and write space for an employee and is easily accessible from multiple locations over the internet. Cisco (2012) makes use of Web 2.0 to accumulate knowledge from different sources and from different locations.

In the context of knowledge transfer in business organizations, a wiki facilitates accumulation of employee's problem solving experience which eventually turns into a repository for problems and solutions. Any employee can access that repository looking for a viable solution and that employee can also add a solution to the problem thus enriching the repository. Next, knowledge integration, blogs facilitates problem solving (e.g. technical support) in a slightly different way by providing a transparent cyberspace where employees can interact with experts to solve problems. Web 2.0 technologies such as tagging and social bookmarking are facilitating and organizing the knowledge embedded within the organization.

Therefore, positive relationships between knowledge sharing and Web 2.0 adoption is proposed. Hence, the hypothesis is therefore formulated as follows:

H_3: Increase in knowledge sharing is positively related to the adoption of Web 2.0.

3.5.2 Technology Context

Many studies have found technological characteristics are related to IT innovation adoption (See Table 2.6 in Chapter 2). Based on these IT adoption studies

that employ the TOE framework to identify which technology characteristics were more prominent in influencing the adoption decision among organizations. This study considers three innovation characteristics in the Web 2.0 context namely security, costs, and complexity. The first variable, security concern, is identified based on prior Web 2.0 adoption studied by Lee (2008) and McLean (2007). Prior Web 2.0 adoption studies found security concern is a factor that inhibits organizations from adopting the Web 2.0. Other technological variables, costs and complexity are also identified based on prior technology adoption studies. The review of prior technology adoption studies suggest that complexity and costs are frequently found to be significant factors that influence organizations adoption of new technology.

Security

The first dimension of technology characteristics to be discussed is perceived security. In this study, security is defined as the safeguard of systems or information from unauthorized outflows or invasions (Wang *et al.*, 2003). Security is known as one of the determinants that affect Web 2.0 adoption by business organizations (Lee, 2008; McLean, 2007). By using Web 2.0, organization's network is connected with the outsiders, this causes the access from unauthorized users that deliver threats in new ways. Web 2.0's security threats can be include malicious code in RSS and information leakage through inappropriate blogging or use of collaboration tools. Web 2.0 attack vectors are different compared with Web 1.0. Web 1.0 was victimized by "push" model threat propagation and static attack code distributed via email as well as network-based denial of service attacks. In contrast, Web 2.0 enables the "pull" model of malware distribution that target Web 2.0 browser-based clients and ready to be executed without the end user's knowledge. The Scansafe's (2008) web stat report

analyzing malware trends, which reported between May 2007 and May 2008:

- The volume of threats confronting web surfers had increased 220%;
- Risk of exposure to exploits and compromised websites had increased 407%; and
- 68% of web-based malware exposure was via compromised websites.

According to Kisselburgh *et al.* (2010), security was the leading concern for Web 2.0 adoption by business organizations. Business organizations had identified fear of security issues as the main reason Web 2.0 are not being used more widely in their business. Malware infections, data leak and information over exposure were the most common types of security incidents (Warren, 2009) in Web 2.0. The data leak or information overexposure might have happened in organization without awareness of the owners. The financial loss associated with Web 2.0 security incidents was high. Average business organizations lost almost $2 million (Kisselburgh *et al.,* 2010). Therefore, security is an important factor that will influence the adoption of Web 2.0.

In other words, organizational is concerns about the Web 2.0 as an insecure platform will affect use of the Web 2.0 for business. Therefore, a negative relationship between Web 2.0 security and Web 2.0 adoption is proposed.

H_4: Greater security concern of organization to Web 2.0 is negatively related to the adoption of Web 2.0.

Technology Costs

One of the important factors that affect new technology adoption is costs. In this study, technology costs can be defined as the category of costs associated with the purchase of hardware, software, training and maintenance of technology assets. Rogers (1983) stated that the less expensive an innovation, the more likely it will be adopted. Tornatzky and Klein (1982) stated that if the perceived cost associated with a new technology is low, it is more likely to be adopted. Fink (1998) suggests that it is imperative that managers should consider elements of IT hardware and software costs closely during IT adoption process. Researchers (Hochstrasser & Griffiths, 1991; Love & Irani, 2004; Love *et al.*, 2005) had identified costs of IT include hardware, software, pre-implementation costs (e.g. training) and post-implementation costs (e.g. maintenance and development) that need to be taken into consideration for IT implementation.

In the context of Web 2.0, the costs are likely to play an important role in the adoption decision. Web 2.0 requires distributed applications running in large data centres to support millions of users. The costs data centre including the hardware infrastructure such as memcached servers, web servers, database servers, racks and switches, power and cooling infrastructure, and operating expenditure. Deficient IT investment decisions can impose impact organizational profitability (Ghobakhloo, Benitez-Amado, Arias-Aranda, 2011). If the perceived costs of Web 2.0 are more than the perceived benefits occurred by Web 2.0, organizations are unlikely to adopt the technology. Hence,

H_5: High cost of technology is negatively related to the adoption of Web 2.0.

Complexity

Complexity can be defined as the degree to which an innovation is perceived as relatively difficult to understand and use (Rogers, 1983). Innovation diffusion theory suggests that complexity of an innovation has a negative relationship with innovation adoption. Therefore, scholar predicts that when a Web 2.0 is difficult to understand and use, the organization is unlikely to adopt the Web 2.0.

Complexity acts as a drawback for IT adoption since implementing a complex new technology requires learning both at the individual and organizational levels. Acquiring the technical knowledge necessary to successfully use a complex innovation requires great effort potential users (Corrocher, 2011). In addition, complexity does not only influence the adoption decision, but it also negatively affects the use of the technology after its adoption by hampering the complete use or assimilation of the new technology (Fichman, 2000). For similar reasons, scholar predicts that similar effects on Web 2.0 adoption.

Based on Andriole (2010) study on business impact of Web 2.0, there is a relationship between technology adoption and complexity of Web 2.0. The study found that most business organizations adopt blogs, wikis compared with social networks and RSS filters due to the tools complexity issue. In addition, learning to operate and skills required to use Web 2.0 that are perceived to be difficult by business organization will affect their decision to adopt Web 2.0. Corrocher (2011) had showed that video sharing services has a positive effect of the complexity on the intensity of usage while social networking has a negative effect. Therefore, retail-chain businesses, complexity of Web 2.0 are an important issue to consider adopting Web 2.0 technology. Hence,

H_6: Complexity of Web 2.0 has a significant negative relationship with Web 2.0 technology adoption.

3.5.3 Organizational Context

According to the TOE framework, organizational context includes firm size and scope; the centralization, formalization, and complexity of its managerial structure; the quality of its human resource; and the amount of slack resources available internally (Tornatzky & Fleischer, 1990). These characteristics of the business organization were the most often examined to identify the impact on the adoption of technological innovation by organization (Tornatzky & Fleischer, 1990; Turban *et al.*, 2011). Some of the widely examine organizational factors as determinants of decision of innovation adoption are top management support and organizational readiness.

Top management support

Top management support refers to the extent of top management support the adopting Web 2.0 for business use. The IS literature has the notion that top management support in IS implementation leads to more successful computer use in business organizations. Jeyaraj *et al.* (2006) highlighted that top management support is one of the three best predictors for IT innovation adoption by organizations. Premkumar and Roberts (1999) stated top management support is critical for providing a supportive atmosphere and proved sufficient resource for adoption of new technology. In addition, prior IT studies that employ TOE framework also suggests that top management support plays an important role in adoption and diffusion of innovations in organizations (Premkumar & Ramamurthy, 1995; Nelson & Shaw,

2003; Lederer & Mendelow, 1998; Lerwongsatien & Wongpinunwatana, 2003). Lucas (1981) asserts that top management support ability to ensure sufficient resources on financial, technical and human for an IT adoption. Furthermore, visible top management support creates a positive environment for IT innovation and encourages positive users' attitude toward use of IT and reduces organizational resistance to adopt IT (Quin, 1985). Srinivasan *et al.* (2002) and Grant (1996) found that top management support improve the quality of information systems and facilitate radical IT adoption.

Prior Web 2.0 adoption studies found that an organization's decision to adopt the technology is influenced by top management support (Daniel *et al.*, 2010). Top management support and commitment towards Web 2.0 adoption is one of the key cornerstone of higher level of IS success and satisfaction. Web 2.0 project requires top management such senior executives to be role models and lead through informal channels. For instance, CIO of Lockheed Martin used blogs and wikis for his subordinate reporting and the result was widespread acceptance and collaboration across company's divisions (Cui, Miller & Robert, 2009). Overall, top management support on Web 2.0 is an important factor when adopting Web 2.0. The following hypothesis is therefore proposed:

H_7: Top management support has a significant positive relationship with Web 2.0 technology adoption.

Organizational Readiness

Organizational readiness refers to the availability of financial and technological resource of the organization (Iacovou *et al.*, 1995). Financial resources refer to the ability to pay for installation costs, implementation cost of any subsequent

enhancements, and on-going expenses during usage (Iacovou *et al.*, 1995). Technological resources refers to the level of sophistication of IT usage and IT management (hardware's technical skills, developers and a competent project leader) in an organization (Iacovou *et al.*, 1995), which can capture an organization's success to IT innovation adoption. IDT suggests organizational resource availability influences organizational adoption of innovation. In this study, organizational readiness refers to available financial and technical resources of the organization to adopt Web 2.0. Past studies which have investigated the relationship between organizational readiness and innovation technology adoption include Swanson (1994), Iacovou *et al.* (1995), Mehrtens, Cragg and Mill (2001), Chewlos *et al.* (2001) and Turban *et al.* (2011).

Turban *et al.* (2011) who revealed that internal expertise consisting of employees, supervisors, or top management are powerful determinants of IT adoption. Lack of in-house IT expertise has influence on IT adoption (Chau, 1995; Cragg & Zinatelli, 1995; Fink, 1998). In relation with Web 2.0, FAST (2007) found lack of resources in term of number of IT supports staff hamper the implementation of Web 2.0. As implementation of IT system and its components require long term investment (Nguyen, 2009), only organizations having adequate financial resources would regard adoption of IT as a feasible project to undertake (Thong & Yap, 1995). With regard to this view, organizations that have invested sufficient financial resources, the probability of successful IT adoption is higher. Hence,

H_8: Higher organizational readiness has a significant positive relationship with Web 2.0 technology adoption.

3.5.4 Environmental Context

According to TOE framework (Tornatzky & Fleischer, 1990), environmental context can be defined as the arena in which a firm conducts its business. Review of Web 2.0 adoption studies suggests that pressures from organization's institutional environment (e.g., customers, competitors, and stakeholders) are found to be significant factors that influence an organization's Web 2.0 adoption. Therefore, scholar predicts that institutional environmental pressures may affect organizational adoption of Web 2.0.

IT researchers have begun to explore the organizational behavioral components (social perspective) of IT adoption, implementation and design, which have brought "greater sensitivity to the cognitive, political and strategic dynamics of organizational life in the IT literature" (Orlikowski & Braley, 2001). Prior studies by Barret and Walsham (1999), King *et al.*, (1994), and Kling and Lacono (1988) have investigated how institutional environments have impacted on the technology adoption. These studies found that organizational adoption of IT can be influenced by coercive pressure, mimetic pressure and normative pressure. Mackenzie (2011) suggests that these three environmental pressures may also drive organizational adoption of Web 2.0.

Mimetic Pressure

In institutional theory, mimetic pressures occur when organizations voluntarily replicate the behavior and activities of other organizations (DiMaggio & Powell, 1983). According to Haunchild and Miner (1997), mimetic pressures are exerted on an organization in three ways. The first, is frequency-based imitation, which is influenced by behavior mirrored by large numbers of organizations. The second is

trait-based imitation, where an ideal model is mirrored, and third is outcome-based imitation, where processes of role model organizations that are successful in terms of output are mirrored (Haunchild & Miner, 1997). The two reasons why organizations imitate the actions of other organizations in its environment when they face mimetic pressure are:

- They do not want to be seen as a laggard by its stakeholders or competitors, because imitation reduces uncertainty of the action,
- Their organization's management believes it should follow the action in order to reduce fears of losing competitive advantages.

Prior studies on IT adoption using institutional theory found mimetic pressure from competitors have a positive influence on an organization (Teo *et al*., 2003; Flanagin, 2000). For instance, Flanagin (2000) found that mimetic social pressure operating at inter-organizational level strongly influenced the decision of organizations to adopt IT such as Internet, despite the lack of any proven or anticipated benefit from the innovation itself.

Mackenzie (2011) also found that mimetic pressures from competitors have a positive influence on an organization's intent to adopt Web 2.0. The study found that organizations quest to mirror the social networking tools adoption practices of competitors perceived to be leading in their use and application. In addition, the organization being pressured to adopt social networking tools for business purpose are more likely to adopt the tools.

The following hypothesis regarding the effects of mimetic pressures:

H_9: Mimetic pressure originated from the competitors is positively related to the Web 2.0 technology adoption.

Coercive Pressure

Coercive pressure occurred when organizations adopt behavior and activities as a response to external pressures applied by other organizations which they rely (DiMaggio & Powell, 1983). Liao (1996) identified that coercive pressure is one of the most relevant explanations for IT investment decision-making processes. Organization conforms to this type of pressure adopting business practices or organizations might otherwise appear illegitimate to their stakeholders (Deephouse, 1996). Coercive pressure can also manifest in the form of customer driven pressure. For example, in adopting a new technology for an organization, consumers can plays a very important role in terms of what is expected from an organization. Prior studies on IT adoption using institutional theory, powerful and dominant customer can exert direct and indirect pressures such as expectation, demand and encouragement toward the organizations (Teo *et al.*; Son & Benbasat, 2007; Khalifa & Davison, 2007).

Web 2.0 has spread widely among consumers over the past few years. Social-networking Web sites, such as Facebook, have more than 500 million monthly active users in 2010 and increase to 1.11 billion monthly active users. As the popularity of Web 2.0 users grown, companies have realized the intense consumer engagement and creativity surrounding these technologies. Therefore, many business organizations are keen to harness the benefits of Web 2.0. A study from Cisco on 850 organizations' that have adopted Web 2.0, customers' demand for innovative products and services encouraged 30% of the surveyed companies to invest in video and Web 2.0 technologies (Gardner, 2008). In addition, the fundamental elements of Web 2.0 is what is widely known as Customer-Generated Content (CGC) which enable users add values to Web 2.0 technology by generating, reviewing, editing and disseminating

content. Powerful customers demand or compel organization to adopt Web 2.0 technology. Therefore, the following hypothesis is formulated:

H_{10}: Coercive pressure from the customers is positively related to Web 2.0 technology adoption.

Normative Pressure

Normative pressure occurs when organizations aligned their behavior and practices with external professional norms. Normative pressure also known as the "fashion perspective" as it occurs where organizations are influenced by key industry bodies, professional groups, or associations outside of the group (Abrahamson, 1991).

IT literature reveals that many researchers found strong empirical evidence for normative pressures as predictors of intention to adopt technologies (Teo *et al.*, 2003; Son & Benbasat, 2007; Soares-Aguiar & Palma-Sos-Reis, 2008). These studies shown pressures from customers and suppliers as well as professional and business associations has positive influence on an organization's intent to adopt IT. The normative pressures from these studies included the extent of adoption of IT innovation adoption by suppliers, customers and influences from professional, trade and business associations that promote IT innovation adoption. Teo *et al.* (2003) studied the adoption of Financial Electronic Data Interchange (FEDI) that facilitates inter-organizational linkages. They confirmed that resource-dominant suppliers, customers, and parent corporations have exerted coercive and normative pressures through frequent contacts with other adopters (whether suppliers, customers or trade organizations). The results show that firms behave similarly" in their adoption practices (Teo *et al.*, 2003).

This study expects to examine normative influences on Web 2.0 adoption by retail-chain businesses. As the result of the recent rise of the Web 2.0 industry reflected in general practitioner literature, and the related professional organizations that are promulgating that industry. Likewise, Mackenzie (2011) suggests the normative pressure may influence organizational adoption of Web 2.0. Furthermore, consulting groups including McKinsey, McAfee, Gartner, and Forrester have suggested that adopting Web 2.0 can be beneficial to business and forecast more organizations will adopt Web 2.0. These professional bodies included normative pressure on organizations to adopt Web 2.0. The positive discourse from professional bodies about an innovation, organizations are more likely to adopt the innovation because they learn the norm and values regarding the innovation adoption (Spell & Blum, 2005). Therefore, the following hypothesis is formulated:

H_{11}: Normative pressure is positively related to the adoption of Web 2.0.

3.6 Definition of Research Design

Kerlinger (1986) defines research design as a plan and structure of investigation so conceived as to obtain answers to research questions. According to Kerlinger, a plan is an overall scheme or program of the research. Although research designs are invented to enable the researcher to answer research questions as validly, objectively, accurately and economically as possible, research plans are deliberately and specifically conceived and executed to bring empirical evidence to bear on a research problem (Kerlinger, 1986). This study addresses broadly the question of what factors affecting Malaysian retail-chain businesses' behaviors on the adoption of Web 2.0. Specifically, the study investigates the following research questions:

- What are the Web 2.0 technologies currently adopted by Malaysian retail-chain businesses?
- What are the factors that influence Malaysian retail-chain businesses toward Web 2.0 technologies adoption?
- What are the Malaysian retail-chain businesses perceptions toward Web 2.0 technologies?

The aspects of research design and methodology for the present study (Table 3.1) were guided by the work of Sekaran (2003). A detailed discussion of the aspects of research design and methodology are provided as follows:

Table 3.1
General Aspects of Research Design and Methodology

Research Design	**Methodology**
Research Approach	Quantitation
Nature of Study	Exploratory, Explanatory, Descriptive
Research Setting	Field
Data Collection Method	Self-Administered

3.6.1 Research Approach

In this study, quantitative research approach will be employed. Quantitative research involves numerical representation and manipulation of observations for the purpose of describing and explaining the phenomena that the observations reflect. Furthermore, quantitative studies emphasize the measurement and analysis of causal relationship between variables, and not process (Casebeer & Verhoef, 1997). The quantitative research approach utilizes a deductive mode in testing the relationship between variables and to provide evidence for or against the hypotheses (Neuman, 2003).

3.6.2 Nature of Study

Three common nature of research used in social science research studies are exploratory, explanatory and descriptive studies (Sekaran, 2003; Babbie, 2004). In exploratory studies, fieldwork and data collection may be undertaken prior to definition of the research question and hypotheses. Exploratory research is often employed to develop a preliminary understanding of some phenomena. Explanatory research is carried out to discover and report relationships among different aspects of the phenomena. According to Gay (1996), descriptive research design is appropriate for studies which seek to describe the status of subjects, objects or events. Gay (1996) highlighted that descriptive study is concerned with the assessment of attitudes, opinions, demographic information, conditions and procedures.

The primary purpose of the present study is to investigate factors that can drive the adoption of Web 2.0 in any retail-chain business organizations. In addition, this study aims to identify the current status, the nature and the scope of Web 2.0 adoption in Malaysian retail-chain businesses. Therefore the nature of the study is exploratory, explanatory, and descriptive.

3.6.3 Research Setting

In case studies researchers systematically gather in-depth information on a single entity using a variety of data gathering methods. Field studies allow researchers to establish cause and effect relationships using the same natural environment in which an organization function. A field study setting enables data to be gathered on a number of ongoing and uncontrolled situations (Sekaran, 2003). Also, a field study is deemed to be the most economical method in examining complex phenomena. In addition, field studies produce relatively strong effects of independent variables on

dependent variables and thus enhance the statistical conclusion (Ditsa, 2004).

3.6.4 Data Collection Methods

Survey questionnaires can be administered through face-to-face, self-administered questionnaires, telephone survey, focus groups or home delivery survey (Babbie, 2004). In this study, self-administered questionnaires are chosen for number of reasons. In self-administered questionnaires respondents are requested to complete the questionnaires themselves. Mail survey is the most common form of self-administered questionnaires. Mail survey is administered by mailing the questionnaires through mail, and/or by personal delivery to the respondents.

3.7 Operationalization of Variables

The conceptual framework of the present study consists of six constructs (Figure 3.1). These constructs include factors related to factors related to *perceived benefits (PB)*, *technological context (TE), organizational context (OR), environmental context (EN), Web 2.0 technology adoption (AD) and Web 2.0 technology evaluation (EVA)*. The independent variables are *PB, TE, OR* and *EN*. The dependent variable is *AD and EVA*.

3.7.1 Measurement of Variables

The development of the survey focuses on formulating and categorizing key research questions clustered around the concept of perceived benefits, technological, organizational and environmental in Web 2.0 adoption, and the survey variables and items are evaluated and refined.

The items used to measure the variables were adopted from relevant studies (as shown in Table 3.2) with validation and wording changes to suit the specific technology application studied, which is Web 2.0. The questionnaires are intended to provide data about Web 2.0 and its adoption, and to enhance understanding of the factors related to Web 2.0 adoption.

Table 3.2
Research Variables and Measurements

Constructs	Sources
Adoption of Web 2.0	Carter and Belanger (2005); Elliot *et al.* (2007); Ifinedo (2008)
Increase of Market Share	Constantinides *et al.* (2008)
Knowledge Sharing	Lee (2008); Dawson (2009); Bughin *et al.* (2008)
Inter-organizational Collaboration	Lee (2008); Dawson (2009); Bughin *et al.* (2008)
Security	Goodhue and Straub (1991); Dawson (2009)
Costs	Zhu *et al.* (2006)
Complexity	Ifinedo (2008)
Top Management	Teo *et al.* (1997); Grover (1993)
Organizational Readiness	Ifinedo (2008)
Mimetic Pressure	Teo *et al.* (2003); Son and Benbasat (2007)
Coercive Pressure	Khalifa and Davison (2006)
Normative Pressure	Son and Benbasat (2007)

The questionnaires of the study were divided into five sections: (1) Organization Profile Information, (2) Web 2.0 Technology Adoption, (3) Current Usage and Evaluation of Web 2.0 Technologies, and (4) Adoption Factors and (5) Respondents Profile Information.

3.7.2 Organization's Demographic Information

Organization's demographic information section consists of six items to ensure that the variances observed can be attributed to the theoretical variables included in the study. The questions are industry sector, organizational age, the number of employees, and annual sales. In this part, researcher states the question as

directly as possible, and the answer of each question is given in terms of the answer choices provided. In the context of retail-chain study, addition questions on number of outlets operate in Malaysia, the country origin for the organization and whether the organization has an IT department was also asked.

The questions on organization's demographics information.

SECTOR. Please specify below the retail industry sector to which your organization belongs.
IT_DEPT. Does your company have an IT department?
ORIGIN. Does your company origin from Malaysia?
OUTLET. How many outlets does your organization operate in Malaysia?
SIZE. Approximately how many employees does your organization have in total?
SALES. What were the approximate annual sales or revenues in the last financial year?

3.7.3 Web 2.0 Technology Adoption

The second section of the questionnaires was designed to assess the current status of Web 2.0 adoption by Malaysian retail-chain business organizations. The adoption of Web 2.0 is defined as using Web 2.0 to support operations, management, and decision making in the business. The dependent variable was adapted from previous research by Carter and Belanger (2005) and Elliot *et al.* (2007). There are five measures for the dependent variable. The first question identify whether the company had adopted Web 2.0. The subsequence items on Web 2.0 adoption were measured based on the five-point Likert scale, ranging from "Strongly Agree" to "Strongly Disagree". The items on Web 2.0 technology adoption were as follow:

ADOPT1. Does your company use of Web 2.0 technology?
ADOPT2. Adopting Web 2.0 technology in the organization is a good choice.
ADOPT3. Using Web 2.0 technology in the organization would be pleasant.

3.7.4 Perceived Importance and Satisfaction on Web 2.0

The third section of the questionnaires listed eight types of Web 2.0

technologies that may be currently adopted by business organizations. These technologies attributes were evaluated on the perceived importance and satisfaction level of respondents. In this section, each technology was measured based on the five-point Likert scale, ranging from “Very Importance” to “Not at All Importance” as well as “Very Satisfied” to “Not at All Satisfied”.

3.7.5 Adoption Factors

This section describes the manner in which all of the constructs associated with the four contexts namely perceived benefits, technological, organizational and environmental associated with Web 2.0 adoption. The respondents will be asked to assess Web 2.0 by indicating the extent of agreement or disagreement with a list of items measuring the constructs. The Likert scale is selected to represent the respondents’ feedback. Sekaran (2003) mentioned that the Likert scale was designed literally to examine how strongly the respondents agree or disagree with the provided statements on five point scale.

3.7.6 Perceived Benefits (PB)

Based on the prior IT adoption studies by Iacovou *et al.* (1995) and Wang and Tsai (2002), perceived benefits were operationalized as the advantages of technology adoption. Lertwonsatien and Wongpininwatana (2003) stated that perceived benefits refer to the extent of management recognition of the relative advantage that an innovation can provide to the firm. In this study, perceived benefits items refer to market share, knowledge sharing and inter-organizational collaboration and were adapted from Lee (1998), Dawson (2009) and Bughin *et al.* (2008). These studies focused on Enterprise 2.0 that refers to firms moving towards Web 2.0 (Miller, 2007). Enterprise 2.0 helps employees to work together to build networks of like-minded

people and share information. Furthermore, perceived benefits items of marketing context were adapted from Constantinides *et al.* (2008). In addition, the items in the scale reflected the main benefits that were also highlighted in the Web 2.0 literature.

Market Share (PBM)

Market share items were adapted from Constantinides *et al.* (2008). Minor changes were made to make the statements relevant to Web 2.0 technology. The items are as follows:

PBM1. Adopting Web 2.0 technology allows us to listen to our customer's feedback.
PBM2. Adopting Web 2.0 technology allows us to conduct market research.
PBM3. Adopting Web 2.0 technology improves public relationship.
PBM4. Adopting Web 2.0 technology creates direct marketing.
PBM5. Adopting Web 2.0 technology allows us to reach the new influencers.
PBM6. Adopting Web 2.0 technology allows us to receive product reviews from customers.

Knowledge Sharing (PBK)

Knowledge sharing items were measured using a five-point Likert scales and minor changes were made to make the items relevant to this study. The items are as follows:

PBK1. Adopting Web 2.0 technology enhances search.
PBK2. Adopting Web 2.0 technology increases openness of knowledge.
PBK3. Adopting Web 2.0 technology creates transparency in our company.
PBK4. Adopting Web 2.0 technology increases knowledge sharing.

Inter-organizational Collaboration (PBC)

Interacting with suppliers was operational with four items and minor changes were made to the items related to Web 2.0. The items are as follows:

PBC1. Adopting Web 2.0 technology allows us to achieve better integration with suppliers.
PBC2. Adopting Web 2.0 technology allows us to lower purchasing costs from suppliers

PBC3. Adopting Web 2.0 technology allows us to get supplier participation
PBC4. Adopting Web 2.0 technology allows us to carry out supplier process.

3.7.7 Technological Context (TE)

Security (TES)

Security concern was measured in terms of the survey respondents' perceptions about the security of Web 2.0 for retail-chain businesses. The first item was adapted from Goodhue and Straub (1991). Respondents were asked to rate the extent to which they were satisfied with the security environment of Web 2.0. The others two items were adapted from Dawson (2009), with minor changes to make the statements related to Web 2.0. The questions were as follow:

TES1. The constraints of adopting Web 2.0 technology include security and privacy.
TES2. Confidential and competitive information can be leaked to outsiders from adopting Web 2.0 technology.
TES3. Adopting Web 2.0 technology can make IT more vulnerable to malware.

Complexity (TECX)

Complexity was measured using a three reflective scale items adapted from Ifinedo (2008). Minor changes are made to the statements related to Web 2.0. The items are as follow:

TECX1. The use of Web 2.0 technology requires a lot of mental effort.
TECX2. The use of Web 2.0 technology is frustrating.
TECX3. Web 2.0 technology is complex for our business operations.

Technology Cost (TECO)

This study measures Web 2.0 infrastructure cost, using four reflective scale items adapted from Zhu *et al.* (2006). Minor changes are made to the statements related to Web 2.0. The items are as follow:

TECO1. The costs of hardware for Web 2.0 technology adoption are prohibitively expensive.
TECO2. The costs of software for Web 2.0 technology adoption are prohibitively expensive.
TECO3. The costs of maintenance for Web 2.0 technology adoption are prohibitively expensive.
TECO4. The costs of training for Web 2.0 technology adoption are prohibitively expensive.

3.7.8 Organizational Context (OR)

Top Management Support (ORT)

In operationalizing top management support, four items were identified. The top management support items were adapted from Teo *et al.* (1997) and Grover (1993) studies. Minor change is made for the items to be relevant to Web 2.0. The items are as follow:

ORT1. Our company's top management encourage employee to use Web 2.0 technology.
ORT2. Our company's top management is interested in the use of Web 2.0 technology in the operations.
ORT3. Our company's top management is aware of the benefits of Web 2.0 technology adoption.
ORT4. Our company's top management has shown support for Web 2.0 technology adoption.

Organizational Readiness (ORR)

Organizational readiness was operationalized with four reflective scale items. The four items were adapted from Ifinedo (2008). Minor changes are made to make the items relevant to Web 2.0. The items are as follow:

ORR1. Our company knows how Web 2.0 technology can be used to support our operations.
ORR2. Availability of financial resources from out company able to meet the costs of adoption and implementation of Web 2.0 technology is high in our company.
ORR3. Our company has the necessary technical, managerial and other skills to implement Web 2.0 technology.
ORR4. Our company has a good understanding of how Web 2.0 technology can be used.

3.7.9 Environmental Context (EN)

Mimetic Pressure (ENM)

Competitors' pressures refer to the level of intensity and the competitiveness of the environment within the industry where the firms operate. This study operationalized mimetic pressure using four items were adapted from Teo *et al.* (2003) and Son and Benbasat (2007) studies. Minor changes were made to make the items relevant to Web 2.0. The items on mimetic pressure are follows:

ENM1. Many of our competitors are currently adopting Web 2.0 technology.
ENM2. Many of our competitors will be adopting Web 2.0 technology in the near future.
ENM3. Many of our competitors that adopt Web 2.0 technology are benefiting greatly.
ENM4. Many of our competitors that adopt Web 2.0 technology are perceived favorably by their customers.

Coercive Pressure (ENC)

Customer's pressures refer to pressure exerted by customers on organizations to adopt Web 2.0. This study operationalized customer's pressure using a three items adapted from Khalifa and Davison (2006). Minor changes were made to make the items relevant to Web 2.0 technology. The items are as follows:

ENC1. Many of our customers expect we use Web 2.0 technology.
ENC2. Many of our customers encourage us to use Web 2.0 technology.
ENC3. Our company may not retain our important customers without Web 2.0 technology.

Normative Pressures (ENN)

Normative pressure refers to pressure exerted by professional and trade association, customers and suppliers to adopt Web 2.0. Seven items adapted from Son and Benbasat (2007). Minor changes were made to make the items relevant to Web

2.0. The questions are as follows:

ENN1. Many of our customers are currently adopting Web 2.0 technology.
ENN2. Many of our customers will be adopting Web 2.0 technology.
ENN3. Many of our suppliers are currently adopting Web 2.0 technology.
ENN4. Many of our suppliers will be adopting Web 2.0 technology.
ENN5. Large pressure is placed on our firm to adopt Web 2.0 technology by industry sources (e.g., industry or trade associations).
ENN6. Our company actively participates in industry, trade, or professional associations that promote Web 2.0 technology adoption.
ENN7. Our company often receives information regarding Web 2.0 technology from external sources (such as industry associations, professional associations, or trade newsletters).

3.7.10 Respondent Profile Information

The final section of the survey consisted of items to solicit demographic background of respondent such as gender, age, education level, current position and numbers of year in current position.

3.8 Population and Sample

The aim of this study is to collect data to provide a broad picture of Malaysian retail-chain businesses towards Web 2.0 adoption. The population of this study comprised of all retail-chain business organizations located in Malaysia as listed in Malaysian Retail-Chain Association's (MRCA) directory. The MRCA acts as an excellent avenue for retail businesses to engage networking and exchanging ideas, share resources and to promote the healthy growth of the retail industry in Malaysia and abroad. MRCA is one of the largest and more influential retail associations in Malaysia. The association is acknowledge as one of the government's key driving force in shaping Malaysia's retail industry. MRCA has more than 200 established members from diverse retail sectors and over 6,500 stores throughout Malaysia. Many of the MRCA members are market leaders that have gained a strong foothold in their respective industries. Researcher had selected all Malaysia Retail-Chain Association's

members (235 companies) for the study and no sampling technique was conducted. Majority of the member of MRCA businesses' headquarters are located at the Klang Valley.

Either IT manager, IT executive, or general manager from each retail-chain company was the respondents for this study. Depending on the institution, alternative titles are used to represent this position. They were selected to participate in this study because they were responsible for the IT and computer systems in their respective businesses. General managers were also participate in this study because they were involved in with driving the analysis and re-engineering of existing business processes, identifying and developing the capability to use new tools, reshaping the enterprise's physical infrastructure and network access, and with identifying and exploiting the enterprise's knowledge resources.

3.9 Data Analysis

The data obtained was coded and analyzed using a statistical package software and spreadsheet software. Data analysis methods such as descriptive statistics, factor analysis, reliability, multiple regression analysis and Importance-Performance Analysis were used for this study.

3.9.1 Descriptive statistics

Description statistic was used to determine frequency distribution for demographic profile of participants and business organizations. Descriptive analysis for demographics, mean, and standard deviation was conducted to get an idea of the characteristics of the data. Sekaran (2003) stated that a series of observations in a data

set should be described parsimoniously, and in a meaningful way, which would enable individuals to get an initial idea of the characteristics of the respondents.

3.9.2 Factor analysis

The second type of analysis conducted included factor analysis with VARIMAX rotation was used to identify the underlying dimensions of perceived benefits' variables, technology's variables, organization's variables and environment's variables. Factor analysis is an interdependence method, which aims to identify the correlations between the variables in the analysis (Hair, Black, Barbin & Anderson, 2010). Factor analysis provides the platform to analyze the correlations between the variables by grouping the interrelated variables into specific groups or factors. Through factor analysis, the factors are formed to maximize the entire variable set representation and explanation, and strictly not to predict a particular dependent variable. Variables play a key role in any multivariate analysis.

The common and reliable criterion used for extracting factors is based on eigenvalues. All factors with eigenvalues greater than 1.0 were be retained, because they account for at least the variance of a single variable (Kaiser, 1974). In addition, all items with a factor loading above 0.4 were included, while items with factor loading lower than 0.4 were removed. The remaining items were factor analyzed again, using the principal component method with VARIMAX rotation procedure. In order to ensure the suitability of using factor analysis, the Kaiser-Meyer-Oklin (KMO) measure of Sampling Adequacy and the Bartlett test of Sphericity were performed.

3.9.3 Reliability of variables

Cronbach's alpha was computed to test the reliability of variables retained in each factor. Coefficients values of greater than or equal to 0.5 were considered acceptable and a good indication of construct reliability (Nunnally, 1967). Sekaran (2003) stressed that the reliability analysis results indicate the extent to which the measured items used in the instrument are error free for further data analysis. In simple terms, it is an indication of the instrument's stability and consistency in measuring the concepts of the study (Sekaran, 2003).

3.9.4 Multiple linear regression

In this study, multiple linear regression analysis was also conducted to predict the relationship between dependent variable and independence variables The purpose of using multiple regression analysis in this study was to determine the influence of the independent variables on the dependent variables that is the adoption of Web 2.0 technology.

3.9.5 Importance-Performance Analysis

The next analysis was the Importance-Performance Analysis (IPA). Many analysts in marketing research have taken advantages of IPA since 1976 (Martilla & James, 1977). The underlying assumption of the IPA technique is that the customers' level of satisfaction with the attributes is mainly derived from their expectations and judgment of the product's or service's performance (Martilla & James, 1977). The importance-performance analysis grid serves to identify and classify attributes that affect the success or failure of a strategic plan (Go & Zhang, 1997). IPA has become a popular managerial tool and broadly used to identify the strengths and weaknesses of

brands, products, services, and retail establishments (Chapman, 1993). Martilla and James (1977) noted that IPA can yield important insights into aspects of the marketing mix a firm should devote more attention, as well as identify areas that may be consuming too much organizations' resources.

The importance-performance matrix is divided into four quadrants, distinguish between low and high importance and between low and high performance (i.e. satisfaction). To complete the matrix, the two mean values of each variable related to importance and satisfaction level of Web 2.0 adoption were calculated. Then, a vertical and a horizontal line representing the overall means of importance and satisfaction level of those variables to form a matrix. The matrix was divided into four quadrants (Chu & Choi, 2000):

- Quadrant I: Attributes are perceived to be very important to respondents, but performance levels are fairly low. This sends a direct message that improvement efforts should concentrate here.
- Quadrant II: Attributes are perceived to be very important to respondents, and at the same time, the organization seems to have high levels of performance on these activities. The message here is 'To Keep up the Good Work'.
- Quadrant III: Attributes are with low importance and low performance. Although performance levels may be low in this cell, organizations should not be overly concerned since the attributes in the cell is not perceived to be very important. Limited resources should be expended on this low priority cell.
- Quadrant IV: This cell contains attributes of low importance, but relatively high performance. Respondents are satisfied with the performance of the organizations, but organizations should consider present efforts on the attributes of this cell as being over-utilized.

Finally, each of attributes was located on the matrix as a form of point (Figure 3.2).

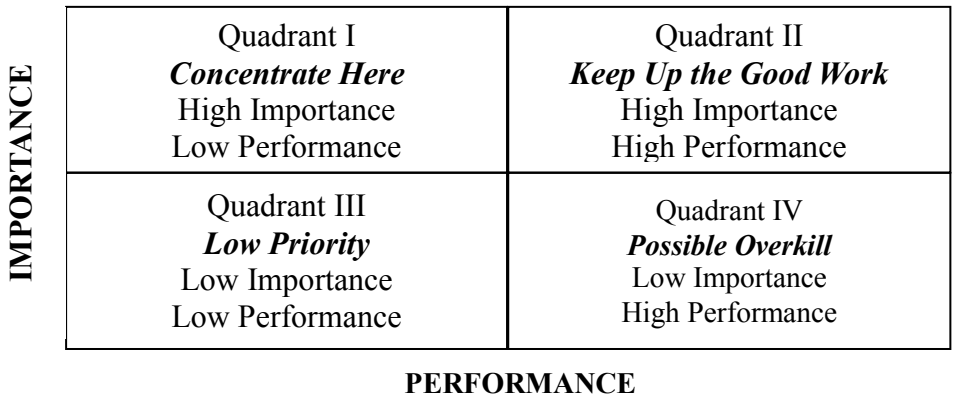

Figure 3.2
Importance-Performance Analysis (IPA) Grid

3.10 Pre-test and Pilot study

The pre-test was carried out on 30 academicians with postgraduate degree of IT from SEGi Berhad, Malaysia. Based on the suggestions and comments from the pre-test, testers have pointed out that the some instruments were long and ambiguous in wording. The few questions were rephrased for clarity based on their recommendations. As a result, a panel of experts who were IT professionals verified the instrument to ensure the content validity of the questionnaire.

Pilot study provides an initial view of the questionnaires. It is conducted to examine the validity and reliability of the instrument as well as assess its comprehension and to estimate its average completion time. Reliability analysis was conducted to examine the stability and internal consistency of each measurement item in the instrument that measures a particular concept and assists in determining the "goodness" of a measure (Sekaran, 2003). The rationale for internal consistency is that the individual instruments of scale should all be measuring the same constructs

and thus be highly inter-correlated (Hair *et al.*, 2010). Cronbach's alpha will be used to measure internal consistency between the items in the measures. Based on the rule of thumb from Hair *et al.* (2010), stated alpha's coefficient value of 0.7 and higher is adequate and signifies high reliability.

In the pilot test, Cronbach's alpha was performed to test the reliability and internal consistency of the constructs. The results showed that the alpha coefficients for each dimension concluded as reliable. The results suggested that the instrument were reliable and no further changes to the items were required (Table 3.3).

Table 3.3
Cronbach's Alpha for the Constructs

Constructs'	**Number of Items**	**Value**
Market share	6	0.982
Knowledge sharing	4	0.899
Inter-organizational collaboration	4	0.967
Security	3	0.867
Complexity	3	0.933
Technology costs	4	0.799
Top management support	4	0.954
Organizational readiness	4	0.977
Mimetic pressure	4	0.928
Coercive pressure	3	0.968
Normative pressure	7	0.979
Web 2.0 Adoption	2	0.966

3.11 Conclusion

Chapter 3 discusses the underpinning theory for this such as IDT model, TOE framework and Institutional theory used in IS research studies to gain useful insights into the reaction of organization towards technology and factors enabling such reaction. The chapter established an alternative theoretical framework based on DOI theory combined with TOE framework and Institutional theory. The chapter further presented the research model derived from DOI theory, TOE framework and

Institutional theory. Thirteen variables were derived from literature to develop the research framework. The next chapter analyzes data collected from the respondents that comprised of retail-chain businesses.

CHAPTER 4 RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the respondents' response based on the questionnaires and was organized into five main sections. There are the respondents' and company profile, importance and satisfaction analysis on Web 2.0, factor analysis, multiple regression analysis, and hypotheses testing. The respondents' profile consists of demographic data including gender, age, respondent's education background, employment position, years of experience in current employment position. The companies' profile consists of demographic data, namely industry classification, number of employees, number of outlets, revenue, company origin, and the existence of IT department. Factor analysis was conducted to examine the factor loadings of the measured items for all the constructs used, as well to further examine the instrument's construct validity. Regression analysis was conducted to find the relationship between all the variables discussed in chapter three and the hypotheses testing to complete the proposed theoretical framework for this study. The final section represents the businesses' perception of the usage on the eight different Web 2.0 technologies.

4.2 Profile of Respondents

In this study, descriptive statistic is used to describe the demographic characteristics of the respondents regarding their response on using Web 2.0. The population in the study was composed of members of Malaysian Retail Chain Association (MRCA) (N=235). The survey forms were self-delivered to the respondents located at Klang Valley. Overall, this study had a total response rate of 82.1% (n=193) responses. After screening through the returned questionnaires, only

185 responses were found to be usable (with no missing data).

4.2.1 Respondent profile

The respondents' characteristics are divided into five groups namely gender, age, education attained, position held and years in present position.

Table 4.1 shows there were 185 respondents in total. Approximately three-quarter (79.5%) of the respondents were male, and 20.5% were female. This result inters male dominance in IT sector. Out of the 185 respondents, the highest age group comes from 40-49 years old (43.3%), and followed by 30-39 years old (41.6%).

Based on the results, the respondents' are well educated. The highest education level obtained is the Bachelor's degree (62.1%). This is followed by the Postgraduate degree at 15.7%. Only 7.6% respondents reported they obtained a school certificate. As shown in Table 4.1, almost two-third of the respondents is IT manager (64.8%). This result reflected the importance of IT manager position toward a retail-chain business. As frequency analysis of the respondents by years in the current position, we could remark in terms of years of service, the majority of the respondents (46.5%) have been in the current company for less than 5 years. This information revealed that only small proportion 10.3% respondents (with the company for more than 10 years) are familiar with their companies' current business activities and needs.

Table 4.1
Profile of Respondents

Demographic Characteristics	**Frequency**	**Percent (%)**
Gender		
Male	147	79.5
Female	38	20.5
Age		
20-29	17	9.2
30-39	77	41.6
40-49	80	43.3
Above 50	11	5.9
Education Attained		
Certificate	14	7.6
Diploma	27	14.6
Degree	115	62.1
Postgraduate degree	29	15.7
Current Position		
IT Manager	120	64.8
IT Executive	7	3.8
General Manager	58	31.4
Years in Position		
0-5	86	46.5
6-10	80	43.2
11-15	12	6.5
16-20	7	3.8

n=185

4.3 Company profile

Table 4.2 shows the Malaysian retail-chain companies were represented in the survey. Four sectors have accounted for 53.5% of the respondents. The largest proportion recorded is 25.4% by Food and Beverage sector, 11.9% by Services sector, 8.6% by Clothing, 7.6% by Education, 6.5% by Beauty and Health, 5.2% by Consumer Electronics, while 34.8% of companies were distributed between the other seven sectors of retail-chain industry. As shown in the Table 4.2 around 40% of the companies surveyed were companies with 50-200 employees, followed by about 22.7% of companies with 201-400 employees, and only 5.4% of companies have less than 50 employees. As frequency analysis of the companies by the number of outlet, we could remark that the majority of the companies have 11-30 outlets (33.5%),

followed by less than 10 outlets (25.9%) and 31-50 outlets (17.8%). Only 2.7% of participating companies have of 81-100 outlets. Table 4.2 below reveals that 15.1% of the surveyed companies has revenue more than RM200 million. The largest proportion of companies (36.8%) generated revenue between RM26-100 million, followed by 23.8% with annual revenue between RM6-25 million. The companies with annual revenue of less RM5 million accounted for not more than 8.1%. About three quarter (71.9%) of the total participating companies has of IT department and finally, as 77.3% of the companies is Malaysian owned companies.

Table 4.2
Profile of Respondents' Company

Demographic Characteristics	**Frequency**	**Percent (%)**
Sector		
Food and Beverage	47	25.4
Education	14	7.6
Departmental Store	7	3.8
Hypermarket	5	2.7
Consumer Electronics	10	5.2
Pharmaceuticals	5	2.7
Convenience Retail Store	8	4.3
Clothing	16	8.6
Beauty and health	12	6.5
Home furnishing	4	2.3
Jewellery	6	3.2
Lighting Store	2	1.2
Services	22	11.9
Others	27	14.6
Number of Employees		
<50	10	5.4
50-200	73	39.5
201-400	42	22.7
401-600	30	16.2
>600	30	16.2
Outlet		
<10	48	25.9
11-30	62	33.5
31-50	33	17.8
51-80	22	11.9
81-100	5	2.7
>100	15	8.2

Revenue		
<5 million	5	8.1
6-25 million	44	23.8
26-100 million	68	36.8
101-200 million	30	16.2
>200 million	28	15.1
IT Department		
Yes	133	71.9
No	52	28.1
Origin from Malaysia		
Yes	143	77.3
No	42	22.7

n=185

4.4 Current Web 2.0 Technology Adoption

Figure 4.1 represents the respondents' adoption on eight different types of Web 2.0 technologies. Majority of the respondents (93%) have adopted blogs and social networking in their companies, however no company used Wikis. This reveals that practically social networking and blogs are the most popular Web 2.0 technologies.

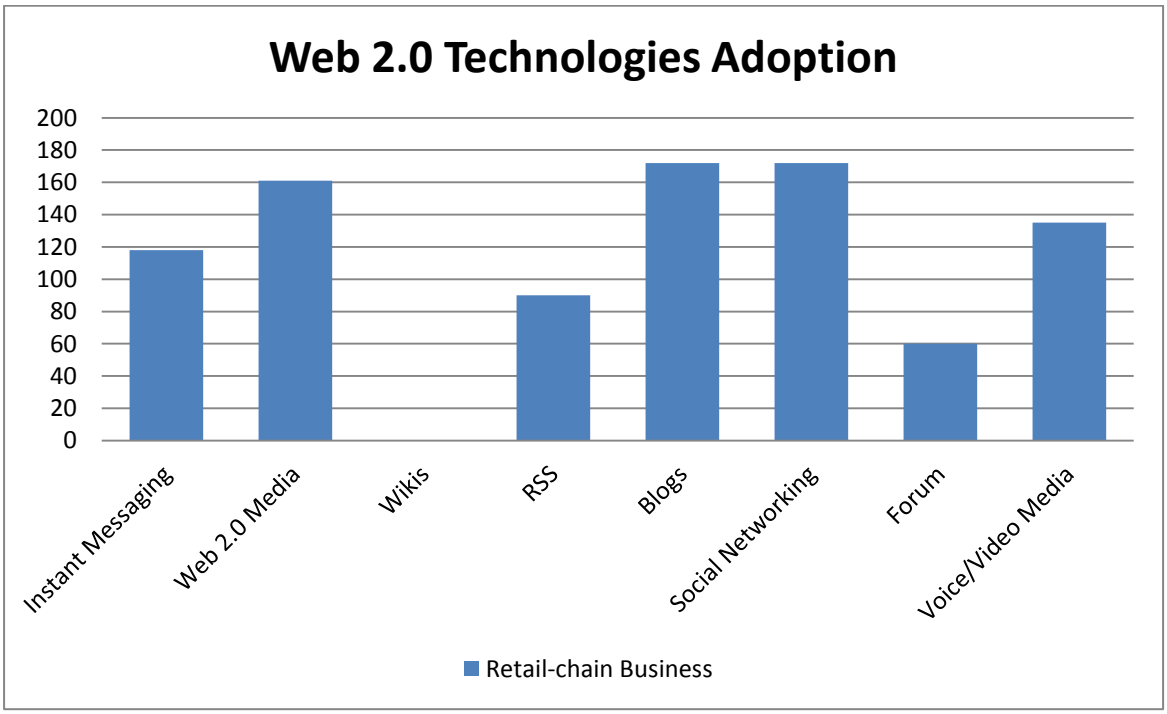

Figure 4.1
Web 2.0 Technologies Adopted by Retail-Chain Businesses

4.5 Perceived Benefits Context

4.5.1 Perceived Benefits Context Attributes

In order to determine the respondents' overall perceptions on perceived benefits, the descriptive mean scores and standard deviations of the 14 items representing the perceptions of technology were reported in Table 4.3. The mean ratings ranged from 2.44 to 3.59 and the standard deviations ranged from 0.80 to 1.20. The respondents indicated that "Adopting Web 2.0 technology enhances search." (3.59) was the strongest item that would influence the way they would feel about their Web 2.0 adoption behavior. In addition, the respondents also provided higher rating on the items, "Adopting Web 2.0 technology increases knowledge sharing." (3.48), "Adopting Web 2.0 technology allows us to listen to our customer's feedback" (3.48). This revealed that the purpose of retail-chain business adopting Web 2.0 are improving customer relationship and increase knowledge sharing within their organization.

On the inter-collaboration benefits, the majority of the respondents disagreed with the statement "Adopting Web 2.0 technology allows us to get supplier participation." (2.44), "Adopting Web 2.0 technology allows us to carry out supplier process." (2.69), "Adopting Web 2.0 technology allows us to lower purchasing costs from suppliers" (2.74) and "Adopting Web 2.0 technology allows us to achieve better integration with suppliers." (2.96).

Table 4.3
Perceived Benefits Context Attributes

Attributes	Mean	SD
Adopting Web 2.0 technology allows us to listen to our customer's feedback.	3.48	0.92
Adopting Web 2.0 technology allows us to conduct market research.	3.36	0.90
Adopting Web 2.0 technology improves public relationship.	3.38	0.86
Adopting Web 2.0 technology creates direct marketing.	3.32	0.88
Adopting Web 2.0 technology allows us to reach the new influencers.	3.31	0.83
Adopting Web 2.0 technology allows us to receive product reviews from customers.	2.97	0.96
Adopting Web 2.0 technology enhances search.	3.59	0.91
Adopting Web 2.0 technology increases openness of knowledge.	3.44	0.89
Adopting Web 2.0 technology creates transparency in our company.	3.44	0.80
Adopting Web 2.0 technology increases knowledge sharing.	3.48	0.89
Adopting Web 2.0 technology allows us to achieve better integration with suppliers.	2.96	1.20
Adopting Web 2.0 technology allows us to lower purchasing costs from suppliers	2.74	1.11
Adopting Web 2.0 technology allows us to get supplier participation.	2.44	1.08
Adopting Web 2.0 technology allows us to carry out supplier process.	2.69	1.16

Scale: 1=Strongly Disagree; 2=Disagree; 3=Neutral; 4=Agree; 5=Strongly Agree

4.5.2 Underlying Dimensions of Perceived Benefits Context

In order to identify dimensions of perceived benefits on adopting Web 2.0 technologies, factor analysis was used to group the items. Two statistics were used to

test if the factor analysis was appropriate for this study. First, the Kaiser-Meyer-Olkin (KMO) overall measure of sampling adequacy (MSA) was 0.829, which was considered middling (Hair *et al., 2010*). Second, the overall significance of the correlation matrix was 0.000 with a Bartlett Test of Sphericity value was 1037.32. These measures indicated that the items had good predictive power for the underlying dimensions. 14 items were initially factor analyzed using VARIMAX rotation to delineate the underlying dimensions that were associated with perceptions of technological innovations. However, four items were removed due to factor loading lower than 0.5 in the factor structure. Ten items were factor analyzed again, resulting in three underlying dimensions. All three factors had eigenvalues greater than 1.0, accounting for 73.39% of the total variance. The results of the factor analysis were shown in Table 4.4.

The three underlying dimensions that identified were given a label. First dimension was labelled as “Market Share” which explained 45.96% of the variance with a reliability coefficient of 0.89. The second dimension was labelled as “knowledge sharing”, which accounted for 16.18% of the variance with a reliability coefficient of 0.92. The third dimension labelled as “inter-collaboration” and explained 11.25% of the variance with a reliability coefficient of 0.74.

Table 4.4
Underlying Dimensions of Perceived Benefits Contexts

Attributes	Factor loading	Eigen value	Variance explained	Reliability coefficient
Factor 1: Market Share		4.60	45.96%	0.89
In my perception, adopting Web 2.0 technologies will allow us to listen to customer's feedback.	0.85			
In my perception, adopting Web 2.0 technologies will allow us to create public relationship.	0.84			
In my perception, adopting Web 2.0 technologies will allow us to reach the new influencers.	0.86			
Factor 2: Knowledge Sharing		1.63	16.18%	0.92
In my perception, adopting Web 2.0 technologies will allow us to increase openness of knowledge	0.88			
In my perception, adopting Web 2.0 technologies will make the organization's operations become more transparent.	0.89			
In my perception, adopting Web 2.0 technologies will allow knowledge sharing.	0.84			
Factor 3: Inter-organizational Collaboration		1.13	11.25%	0.74
Adopting Web 2.0 technology allows us to achieve better integration with suppliers.	0.70			
Adopting Web 2.0 technology allows us to lower purchasing costs from suppliers	0.78			
Adopting Web 2.0 technology allows us to get supplier participation.	0.63			
Adopting Web 2.0 technology allows us to carry out supplier process.	0.80			
Total Variance Explained			73.39%	

4.6 Technological Context

4.6.1 Technological Context Attributes

In order to determine the respondents' overall perceptions of technology, the descriptive mean scores and standard deviations of the 10 items regarding the respondents' perceptions of Web 2.0 were reported in Table 4.5. The mean ratings ranged from 2.65 to 3.95.

The respondents indicated that "The use of Web 2.0 technology requires a lot of mental effort." (3.95) was the strongest agreement that would influence the way one would feel about their declined technology adoption behavior. This revealed that the user-friendliness of Web 2.0 influence the adoption of Web 2.0. On the other hand, the majority of the respondents were not deferred by the following attributes: "The costs of maintenance for Web 2.0 technology adoption are prohibitively expensive." (2.65) and "The costs of software for Web 2.0 technology adoption are prohibitively expensive." (2.66). The standard deviations were below 1.0, ranging from 0.45 to 0.92 and did not show a large variation of agreement among the respondents.

Table 4.5
Technology Contexts Attributes

Attributes	**Mean**	**SD**
The constraints of adopting Web 2.0 technology include low security and privacy.	3.48	0.91
Confidential and competitive information can be leaked to outsiders from Web 2.0 technology.	3.56	0.81
Adopting Web 2.0 technology can make IT more vulnerable to malware.	3.64	0.86
The use of Web 2.0 technology requires a lot of mental effort.	3.95	0.45
The use of Web 2.0 technology is frustrating.	3.76	0.82

Web 2.0 technology is complex for our business operations.	3.82	0.80
The costs of hardware for Web 2.0 technology adoption are prohibitively expensive.	3.58	0.84
The costs of software for Web 2.0 technology adoption are prohibitively expensive.	2.66	0.82
The costs of maintenance for Web 2.0 technology adoption are prohibitively expensive.	2.65	0.88
The costs of training for Web 2.0 technology adoption are prohibitively expensive.	3.66	0.92

Scale: 1=Strongly disagree; 2=Disagree; 3=Neutral; 4=Agree; 5=Strongly Agree

4.6.2 Underlying Dimensions of Technological Context

In order to identify dimensions of individual perceptions of technology, factor analysis was used to group the individual-level items. Two statistics were used to test if the factor analysis was appropriate for this study. First, the Kaiser-Meyer-Olkin (KMO) overall measure of sampling adequacy (MSA) was 0.521, which was considered to be middling (Hair *et al.,* 2010). Second, the overall significance of the correlation matrix was 0.0000 with a Bartlett Test of Sphericity value 552.473. These measures indicated that the items had good predictive power for the underlying dimensions.

10 items were initially factor analysed using VARIMAX rotation to delineate the underlying dimensions that were associated with perceptions of technological innovations. However, 4 items were removed due to factor loading lower than 0.5 in the factor structure. 6 items were factor analysed again, resulting in four underlying dimensions. All three factors had eigenvalues of greater than 1.0, accounting for 82.3% of the total variance. The results of the factor analysis were shown in Table 4.6.

The three underlying dimensions were identified were labeled. First dimension

was labeled as “Technology Security” which explained 36.2% of the variance with a reliability coefficient of 0.95. The second underlying dimension named as “Technology Costs” and accounted for 18% of the variance with a reliability coefficient of 0.91. The third dimension labeled as “Technology Complexity” and explained 28.1% of the variance with a reliability coefficient of 0.81.

Table 4.6
Underlying Dimensions of Technology Context

Attributes	**Factor loading**	**Eigen value**	**Variance explained**	**Reliability coefficient**
Factor 1: Technology Security		2.98	36.2%	0.95
Confidential and competitive information can be leaked to outsiders from Web 2.0 technology.	0.96			
Adopting Web 2.0 technology can make IT more vulnerable to malware.	0.95			
Factor 2: Technology Costs		1.21	18%	0.91
The costs of hardware for Web 2.0 technology adoption are prohibitively expensive.	0.94			
The costs of training for Web 2.0 technology adoption are prohibitively expensive.	0.94			
Factor 3: Technology Complexity		1.44	28.1	0.81
The use of Web 2.0 technology is frustrating.	0.90			
Web 2.0 technology is complex for our business operations.	0.89			
Total Variance Explained			82.3%	

4.7 Organizational Context

4.7.1 Organizational Context Attributes

Table 4.7 presents the mean and standard deviation scores of the 8 items of a wide range of organizational contexts on top management support and organizational readiness, which might influence the inclined Web 2.0 adoption behavior. As

indicated in Table 4.7, the mean ratings of statements ranged from 3.36 to 3.86 with the standard deviations ranging from 0.70 to 0.94.

The items with mean scores over 3.5 included "Our company's top management encourage employee to use Web 2.0 technology" (3.86), "Our company top management has shown support for Web 2.0 technology adoption" (3.77), "Our company knows how Web 2.0 technology can be used to support our operations" (3.55) and "Our company has a good understanding of how Web 2.0 technology can be used in our business" (3.50). This revealed that top management support is critical to the adoption of technology innovation. Relatively, the statements with the lowest mean scores, rated by the respondents, were "Our company top management is interested in the use of Web 2.0 technology in our operations" (3.36), and "Our company's top management is aware the benefits of Web 2.0 technology adoption" (3.38). One possible explanation is that top management may not have sufficient knowledge of Web 2.0, they do not perceive Web 2.0 adoption as being strategically important.

Table 4.7
Organizational Context Attributes

Attributes	**Mean**	**SD**
Our company's top management encourage employee to use Web 2.0 technology.	3.86	0.70
Our company's top management is interested in the use of Web 2.0 technology in our operations.	3.36	0.89
Our company's top management is aware of the benefits of Web 2.0 technology adoption.	3.38	0.94
Our company's top management has shown support for Web 2.0 technology adoption.	3.77	0.79
Our company knows how Web 2.0 technology can be used to support our operations.	3.55	0.79

Availability of financial resources to meet the costs of adoption and implementation of Web 2.0 technology is high in our company.	3.46	0.83
Our company has the necessary technical, managerial and other skills to implement Web 2.0 technology.	3.49	0.85
Our company has a good understanding of how Web 2.0 technology can be used in our business.	3.50	0.85

Scale: 1=Strongly disagree; 2=Disagree; 3=Neutral; 4=Agree; 5=Strongly Agree

4.7.2 Underlying Dimensions of Organizational Context

The factor analysis with VARIMAX rotation was used to generate the factors on underlying 8 items on top management and organizational readiness. However, 2 statements were removed due to factor loading lower than 0.5 in the factor structure. 6 items were factor analyzed again, resulting in two underlying dimensions. The eigenvalues suggested that a two-factor solution explained 87% of the overall variance. The Kaiser-Meyer-Olkin (KMO) overall measure of sampling adequacy (MSA) was 0.743, which was considered middling (Hair, *et al.*, 2010). The overall significance of the correlation matrix was 0.000 with the Bartlett Test of Sphericity value of 908.616. These measures indicated that the variables had good predictive power for the derived dimensions.

Table 4.8 summarizes the factor analysis results. The derived two factors were labeled as "Top Management Support" and "Organizational Readiness". The first underlying dimension was labeled as "Top Management Support" which had explained 57.7% of the variance with a reliability coefficient of 0.93. The second dimension was named as "Organizational Readiness", which accounted for 29.3% of the total variance with a reliability coefficient of 0.94.

Table 4.8
Underlying Dimensions of Organizational Context

Attributes	Factor loading	Eigen value	Variance explained	Reliability coefficient
Factor 1: Top Management Support		3.46	57.7%	0.93
Our company's top management is interested in the use of Web 2.0 technology in our operations.	0.54			
Our company's top management is aware the benefits of Web 2.0 technology adoption.	0.54			
Factor 2: Organizational Readiness		1.76	29.3%	0.94
Our company knows how Web 2.0 technology can be used to support our operations.	0.81			
Availability of financial resources to meet the costs of adoption and implementation of Web 2.0 technology is high in our company.	0.83			
Our company has the necessary technical, managerial and other skills to implement Web 2.0 technology.	0.83			
Our company has a good understanding of how Web 2.0 technology can be used in our business.	0.82			
Total Variance Explained			87%	

4.8 Environmental Context

4.8.1 Environmental Contexts Attributes

The mean ratings of 14 environment context attributes are displayed in Table 4.9. The mean scores range from 2.99 to 4.10. The attribute with the highest mean score is "Many of our suppliers are currently adopting Web 2.0 technology" (4.10), followed by "Many of our suppliers will be adopting Web 2.0 technology" (4.02) and "Many of our customers will be adopting Web 2.0 technology" (3.54). The results reflected the importance of the current types of technology usage by customers and

suppliers in acquiring innovative technologies in their business operations. In addition, this revealed that the concept of organizational isomorphism because retail-chain business adopting Web 2.0 because suppliers have already adopted them.

Table 4.9
Environmental Context Attributes

Attributes	**Mean**	**SD**
Many of our competitors are currently adopting Web 2.0 technology.	3.36	1.01
Many of our competitors will be adopting Web 2.0 technology in the near future.	3.21	0.94
Many of our competitors that adopt Web 2.0 technology are benefiting greatly.	2.99	0.92
Many of our competitors that adopt Web 2.0 technology are perceived favorably by their customers.	3.19	0.89
Many of our customers expect we use Web 2.0 technology.	3.34	0.81
Many of our customers encourage us to use Web 2.0 technology.	3.37	0.82
Our company may not retain our important customers without Web 2.0 technology.	3.39	0.83
Many of our suppliers are currently adopting Web 2.0 technology.	4.10	0.67
Many of our suppliers will be adopting Web 2.0 technology.	4.02	0.79
Many of our customers are currently adopting Web 2.0 technology.	3.39	0.79
Many of our customers will be adopting Web 2.0 technology.	3.54	1.02
Large pressure is placed on our firm to adopt Web 2.0 technology by industry sources (e.g., industry or trade associations).	3.46	0.87
Our company actively participates in industry, trade, or professional associations that promote Web 2.0 technology adoption.	3.37	0.79
Our company often receives information regarding Web 2.0	3.00	0.86

technology from external sources (such as industry associations, professional associations, or trade newsletters).

Scale: 1=Strongly disagree; 2=Disagree; 3=Neutral; 4=Agree; 5=Strongly Agree

4.8.2 Underlying Dimensions of Environmental Context

The results of factor analysis are presented in Table 4.10. For the 9 environmental context attributes, the Bartlett Test of Sphericity with a value of 811.27; the overall significance of the correlation matrix was 0.000. The measure of sampling adequacy (MSA) of 0.8.14 was middling (Hair, *et al.*, 2010). The factor analysis indicated that a three-factor solution was appropriate. All three factors had eigenvalues greater than 1.0, and accounting for 68.64% of the total variance. All factors had relatively high reliability coefficients ranging from 0.72 to 0.89. Moreover, all factor loadings indicated a reasonably high correlation between the delineated factors and their individual items.

The first dimension was labeled as "Mimetic Pressures" which explained 46.2% of the variance with a reliability coefficient of 0.87. The relatively large proportion of the total variance for the factor might be attributed to the fact that competitors' pressure toward organization is a major factor towards Web 2.0 technologies adoption. The second dimension was labeled as "Coercive Pressures", which accounted for 17.0% of the total variance with a reliability coefficient of 0.89. The final dimension was named "Normative Pressures" which explained 12.2% of the variance with a reliability coefficient of 0.72.

Table 4.10
Underlying Dimensions of Environmental Context

Attributes	Factor loading	Eigen value	Variance explained	Reliability coefficient
Factor 1: Mimetic Pressures		4.16	46.2%	0.87
In my perception, many of our competitors are currently adopting Web 2.0 technologies.	0.78			
In my perception, many of our competitors will be adopt Web 2.0 technologies in the near future.	0.84			
In my perception, many of our competitors that adopted Web 2.0 technologies are benefiting greatly.	0.68			
In my perception, many of our competitors that adopted Web 2.0 technologies are perceived favorably by their customers.	0.87			
Factor 2: Coercive Pressures		1.53	17.0%	0.89
In my perception, many of our customers expect we use Web 2.0 technologies.	0.86			
In my perception, many of our customers encourage us to use Web 2.0 technologies.	0.87			
In my perception, we may not retain our important customers without Web 2.0 technologies.	0.85			
Factor 3: Normative Pressures		1.10	12.2%	0.72
Many of our suppliers are currently adopting Web 2.0 technology.	0.89			
Many of our suppliers will be adopting Web 2.0 technology.	0.81			
Total Variance Explained			68.64%	

4.9 Web 2.0 Technology Adoption Context

Table 4.11 illustrates the items to operationalize respondents' Web 2.0 adoption. The mean and standard deviation for Web 2.0 adoption are 3.44 and 0.89

respectively. The mean value for the respondents' Web 2.0 adoption shows the respondents favorably agree to use the Web 2.0 technology in their retail-chain businesses in Malaysia. In this study, four items were analysed, item that scored highest mean is "adopting Web 2.0 in my organization is a good choice" with 3.44 and 0.89 standard deviation values and "using Web 2.0 in my organization would be pleasant" with 3.38 mean and 0.88 standard deviation values respectively.

Table 4.11
Web 2.0 Technology Adoption Context Attributes

Attributes	**Mean**	**SD**
Adopting Web 2.0 technology in my organization is a good choice.	3.44	0.89
Using Web 2.0 technology in my organization would be pleasant.	3.38	0.88

Scale: 1=Strongly Disagree; 2=Disagree; 3=Neutral; 4=Agree; 5=Strongly Agree

4.9.1 Underlying Dimensions of Web 2.0 Technology Adoption

The factor analysis with VARIMAX rotation was used to generate the factors on underlying 2 statements on Web 2.0 technology adoption.

The results of factor analysis are presented in Table 4.12. For the two Web 2.0 technology adoption context attributes, the Bartlett's Test of Sphericity with a value of 105.727; non zero correlation exists at the significance level of 0.00. The measure of sampling adequacy (MSA) of 0.500 was middling (Hair, *et al.,* 2010). The factor analysis indicated that a factor solution was appropriate. The factor had eigenvalues greater than 1.0, accounting for 83.16% of the total variance. Both items had relatively high reliability coefficients are 0.91.

Table 4.12
Underlying Dimensions of Web 2.0 Technology Adoption

Attributes	Factor loading	Eigen value	Variance explained	Reliability coefficient
Factor 1: Web 2.0 Adoption		1.63	83.16%	0.80
Adopting Web 2.0 in my organization is a good choice.	0.91			
Using Web 2.0 in my organization would be pleasant.	0.91			
Total Variance Explained			83.16%	

4.10 Hypotheses Testing

In order to explore whether the independent variables of 11 factors had statistically significant impacts on the dependent variable, Web 2.0 adoption, multiple linear regression analysis was conducted. 11 factors derived from the factor analysis were used as the input variables in the analysis. The results of the regression analysis are presented in Table 4.13.

Table 4.13
Regression Model of Predicting Web 2.0 Technology Adoption Behaviour

Factors	Std.β	*t*	*p*	VIF
Perceived Benefits				
Increase of Market Share	0.167	3.763	0.000	1.847
Inter-organizational Collaboration	0.020	0.601	0.549	1.560
Knowledge Sharing	0.238	5.166	0.000	2.020
Technology				
Security	0.039	0.903	0.354	1.704
Costs	0.117	3.470	0.001	1.109
Complexity	0.182	3.910	0.000	1.779

Organization				
Top Management Support	0.159	4.920	0.000	1.222
Organization Readiness	-0.092	-1.803	0.073	2.196
Environment				
Mimetic Pressure	0.150	3.027	0.003	2.184
Coercive Pressure	0.308	4.877	0.000	3.252
Normative Pressure	0.100	2.054	0.041	1.470
Constant		-6.301		

R^2=0.822; Adjusted R^2=0.810; F=72.51; p<0.05

4.10.1 Perceived Benefits Context on the Web 2.0 Technology Adoption

According to the adjusted R^2 of this regression model, 82.2% of the variation of the overall technology adoption was explained by the eleven independent variables together. The significant F-ratio (F=72.51, p<0.05) indicated that the satisfactory level of the "Goodness-of-Fit" of this regression model. Of the three independent variables from perceived benefits context, "Market Share" (t= 3.763, p<0.001) and "Knowledge Sharing" (t= 5.166, p<0.001), were found to be significantly related to adoption of Web 2.0.

Of the three factors, "Knowledge Sharing" (β=0.238) and "Market Share" (β=0.167) were the highest in explaining the overall level of Web 2.0 technology adoption, followed by "Collaboration" (β=0.020). There was not a high degree of collinearity among the independent variables because all VIF for all three technology factors were between 1.560 and 2.020, which was less than 10.0.

Based on the results of regression analysis, hypotheses 1 and 3 were supported as the predicted path from all two factors from perceived benefits context to Web 2.0 technology adoption were statistically significant at the 0.01 level. Hypotheses 2

which postulates that the inter-collaboration affect their adoption of Web 2.0 technology was not supported (p=0.549).

4.10.2 Technology Context on the Web 2.0 Technology Adoption

Multiple regression analysis was used to determine whether the three technology factors had significant influence on the dependent variable. Three factors were derived from factor analysis that was used as the input variables in the analysis. The results of the regression analysis are presented in Table 4.13.

Of the three independent variables, two factors, "Complexity" (t=3.910, p<0.01), and "Costs" (t=3.470, p<0.01) were each found to be significant variables in the model. Two factors, "Complexity" (β=0.182) carried the highest values in explaining the overall level of Web 2.0 technology adoption, followed by "Costs" (β=0.117), and the lowest value was "Security" (β=0.039). There were no high degrees of collinearity among the independent variables because all VIF for all 3 technology factors were between 1.109 and 1.779, which were less than 10.0.

Hypothesis 4, 5 and 6 which postulates that the technology negatively affects retail-chain businesses on the Web 2.0 adoption were not entirely demonstrated because one factor (Security) was found statistically to be insignificant. Based on the results of regression analysis, hypotheses 5 and 6 were supported as the predicted path from all two factors from technology context to Web 2.0 technology adoption were statistically significant at the 0.01 level. Hypotheses 4 which postulates that the security affect their adoption of Web 2.0 technology was not supported (p=0.354).

4.10.3 Organization Context on the Web 2.0 Technology Adoption

Having identified the two factors of organizational context, multiple

regression analysis was conducted to investigate whether and to what extent the independent variables have significant influence on the dependent variable.

Based on the results, there was significant relationship between these two organizational factors and the dependent variable of the Web 2.0 adoption. Positive relationships found for "Top Management Support" (β=0.159, p=0.000□. However, "Organizational Readiness" (β= 0.092, p=0.073) was not significant in relation to the Web 2.0 adoption. There was not a high degree of collinearity among the independent variables because all variance inflation factor (VIF) for the two organizational factors were 1.222 and 2.196, which were less than 10.0. Variance inflation factor (VIF) was less than 10.0 which indicated that collinearity among the independent variables was sufficiently low and will not to affect the stability of the regression analysis.

4.10.4 Environment Context on the Web 2.0 Technology Adoption

Multiple regression analysis was performed to explore whether the three environment factors had a significant impact on the dependent variable. Table 4.13 shows the results of regression analysis.

Three factors, "Mimetic Pressure" (t=3.027, p<0.01), "Coercive Pressure" (t=4.877, p<0.001), and "Normative Pressure" (t=2.054, p<0.05), were each found to be significant related to Web 2.0 adoption.

From the Table 4.13, it was noted that the factor "Coercive Pressure" (β=0.308) was the most important determinant factor in explaining the Web 2.0 adoption behaviour. Followed by "Mimetic Pressure" (β= 0.150) and "Normative Pressure" (β=0.100).

Based on the results, hypothesis 9, 10 and 11, which postulates that businesses' environment factors were perceived to have an impact on the Web 2.0 adoption was entirely supported. All three factors were found to be statistically significant in the entire regression model. Thus, Hypothesis 9, 10 and 11 were supported.

4.11 Adoption of Web 2.0 by Respondents' Organization Size

One-way Analysis of Variance (ANOVA) was used to determine whether there was a significant difference in the Web 2.0 technology adoption based on organizations' size. The demographic profiles of organizations' size examined including number of outlet, number of employees, and annual sales. The dependent variable was the adoption of Web 2.0. The results of ANOVA test was shown on Table 4.14. The ANOVA test showed there was a significant difference in Web 2.0 technology adoption based on organization of annual sales ($F=11.43$, $p<0.001$), number of employees ($F=12.97$, $p<0.001$), and number of outlets ($F=17.76$, $p<0.001$).

Table 4.14
Web 2.0 Technology Adoption Differences by Organization's Demographic Profiles (Organization Size)

Demographic Variables	**Web 2.0 Adoption**
Number of Outlets	*F*=17.76*
1. < 10	2.74
2. 11 – 30	3.36
3. 31 – 50	3.85
4. 51 – 80	3.77
5. 81 – 100	4.00
6. > 100	4.00
Number of Employees	*F*=12.97*
1. < 50	2.70
2. 51 – 200	3.04
3. 201 – 400	3.69
4. 401 – 600	3.72
5. > 600	3.85

Annual Sales (RM million)	*F*=11.43*
1. < 5	2.50
2. 5 – 25	3.14
3. 26 - 100	3.47
4. 101 - 200	3.85
5. > 200	3.71

p*<0.001,*p<0.01*

4.11.1 Comparison of Respondent Number of Retails Outlets with Adoption of Web 2.0

A one-way ANOVA was conducted to examine whether there were statistically significant differences among retail-chain businesses in different number of outlets groups relation to their Web 2.0 technologies adoption (Table 4.15). The results revealed statistically significant differences among the number of outlets groups, (F=28.83, p<0.001). Post-hoc LSD tests revealed statistically significant differences between retailers with less than 10 outlets, and those 11-30 (M=0.62, SD=0.129) and those 31-50 (M=1.11, SD=0.152) and those more than 50 (M=1.18, SD=0.142). In addition, the results also revealed statistically significant differences between retailers with 11-30 outlets, and those 31-50 and those more than 50 (M=0.068, SD=0.156). All pairs of retail-chain businesses reported significantly on the adoption of Web 2.0 technologies except for the pair of 31-50 outlets and more than 50 outlets.

Table 4.15
Number of Retail Outlets and Web 2.0 Adoption

OUTLET	OUTLET	Mean Difference	Std. Error	Sig.
<10	11 - 30	-0.615*	0.129	.000
	31 - 50	-1.108*	0.152	.000
	>50	-1.177*	0.142	.000
11 - 30	<10	0.615*	0.129	.000
	31 - 50	-0.493*	0.144	.001
	>50	-0.561*	0.134	.000
31 - 50	<10	1.108*	0.152	.000
	11 - 30	0.493*	0.144	.001
	>50	-0.068	0.160	.663

**p*<0.005

4.11.2 Comparison of Number of Employees with Adoption of Web 2.0

A one-way ANOVA was conducted to examine whether there were statistically significant differences among retail-chain businesses in different number of employees groups relation to their Web 2.0 technologies adoption (Table 4.16). The results revealed statistically significant differences among the number of employees groups, F=24.63, p=0.000. Post-hoc LSD tests revealed statistically significant differences between retailers with less than 200 employees, and those 201-400 (M = 0.69, SD=0.137) and those more than 400 employees (M=0.78, SD=0.1222). Retail-chain businesses with less than 200 employees and 201-400 employees reported significantly on the Web 2.0 adoption compared with retail-chain businesses with pair of 201-400 employees and more than 400 employees.

Table 4.16
Number of Employees and Web 2.0 Adoption

(I) SIZE	(J) SIZE	Mean Difference (I-J)	Std. Error	Sig.
Less than 200	201-400	0.690*	0.137	.000
	>401	0.783*	0.12221	.000
201-400	Less than 200	0.690*	0.137	.000
	>401	0.093	0.145	.523
>401	Less than 200	0.783*	0.122	.000
	201-400	0.093	0.146	.523

*p<0.005

4.11.3 Comparison of Sales Revenues with Adoption of Web 2.0

For the sales revenue groups, the results revealed statistically significant differences among the sales revenue groups, F=17.68, p=0.000. Post-hoc LSD tests revealed statistically significant differences between retailers with less than 25 million, and those 26-100 million (M=0.496, SD=0.132) and those more than 100

million (M=0.810, SD=0.138). All pairs of retail-chain businesses reported significantly on the adoption of Web 2.0 technologies (Table 4.17)

Table 4.17
Sales Revenues and Web 2.0 Adoption

(I) SALES	(J) SALES	Mean Difference (I-J)	Std. Error	Sig.
< 25 million	26-100 million	0.496*	0.132	.000
	>100 million	0.810*	0.138	.000
26-100 million	< 25 million	0.496*	0.132	.000
	>100 million	0.314*	0.133	.019
>100 million	< 25 million	0.810*	0.138	.000
	26-100 million	0.314*	0.133	.019

*$p<0.05$

4.12 Perceived Importance and Satisfaction Level of Web 2.0 Technologies

In order to address the perceived importance and satisfaction level of Web 2.0 technologies, means and standard deviation of respondents, perceived importance and satisfaction on Web 2.0 technologies were computed. Then, the mean scores of the eight types of Web 2.0 technologies were plotted on the IPA grid according to their perceived importance and the satisfaction levels. Cross-hairs (vertical and horizontal lines), using mean values of the perceived importance and performance parts of the eight type of Web 2.0 tools, were generated to separate the two attributes into four identifiable quadrants.

Table 4.18
Mean Ratings of Perceived Importance and Satisfaction Level of Web 2.0 Technologies

Web 2.0 Technologies	Importance[1]			Satisfaction[2]		
	Mean	SD	Rank	Mean	SD	Rank
Instant Messaging	2.81	0.86	5	3.92	0.53	3
Web 2.0 Media	4.00	0.70	3	2.24	0.82	6
Wikis	-NA-	-NA-	-NA-	-NA-	-NA-	-NA-
RSS	2.13	0.67	7	2.18	0.66	7
Blogs	4.13	0.58	1	2.28	0.76	5
Social Networking	4.05	0.70	2	4.11	0.58	2
Forum	3.87	0.39	4	3.85	0.40	4
Voice/Video Media	2.77	0.87	6	4.14	0.65	1
Grand Mean	3.39			3.25		

Scale 1: 1=Not at all important; 2=Little important; 3=Neutral; 4=Important; 5=Very important
Scale 2: 1=Not at all satisfied; 2=Little satisfied; 3=Neutral; 4=Satisfied; 5=Very satisfied
-NA-: Not applicable

4.12.1 Perceived Importance of Web 2.0 Technologies

Results presented on Table 4.18 are based on the rankings of mean scores. Four types of Web 2.0 technologies currently adopted in the retail-chain businesses had a mean score higher than 3.0, ranging from 3.87 to 4.13. The standard deviations of those attributes ranged from 0.39 to 0.87 and did not show a large variation among the respondents. The top three most important technologies were “Blogs” (4.13), “Social Networking” (4.05), and “Web 2.0 Media” (4.00), indicating the importance of these attributes. “Instant Messaging” (2.81), “Voice/ Video Media” (2.77) and “RSS” (2.13) were perceived as the least important attributes.

4.12.2 Perceived Satisfaction of Web 2.0 Technologies

The mean ratings of the perceived satisfaction of the Web 2.0 technologies were also calculated. The results were shown in Table 4.18, based on the rankings of mean scores. It was shown that the mean scores for all eight Web 2.0 technologies

currently adopted in the retail-chain businesses, ranged from the highest mean satisfaction score of 4.14 to the lowest of 2.18. The range of the standard deviation of the Web 2.0 technologies attributes was from 0.40 to 0.82. Participating retail-chain businesses gave top ratings to "Voice/ Video Media" (4.14), "social networking" (4.14), and "Instant Messaging" (3.92). In contrast, the three lowest ratings perceived by the businesses were "RSS" (2.18), "Web 2.0 Media" (3.36), and "Blogs" (2.28).

4.13 Importance-Performance Analysis (IPA)

Importance-Performance Analysis (IPA) was applied to compare the importance and the satisfaction of Web 2.0 technologies as perceived by retail-chain businesses. The mean ratings of the perceived importance and satisfaction of the eight Web 2.0 technologies were calculated (see Table 4.18). The results of the analysis were plotted in the IPA grid (in Figure 4.2). The grand means for importance and satisfaction level were used for the placement of the axes on the matrix.

In the Figure 4.2, X-axis represents the perception of satisfaction (i.e., performance) scores relaying to the retail-chain businesses' experience of Web 2.0 technologies, which are currently adopted in their organizations. The Y-axis represents the perception of importance scores of the same technology attributes. The four quadrants (Concentrate Here, Keep up the Good Work, Low Priority, and Possible Overkill) are constructed based on the mean scores of the importance and satisfaction ratings. The mean importance rating for the pooled data (i.e., grand mean) was 3.39 and the mean satisfaction rating was 3.25. As illustrated in Figure 4.2, 2 attributes were identified in the Concentrate Here quadrant, 2 in the Keep up the Good Work quadrant, 1 in the Low Priority, and 2 in the Possible Overkill quadrant.

4.13.1 Concentrate here quadrant

The attributes loaded in the concentrate here quadrant were “Blogs” and “Web 2.0 Media”. These technologies were evaluated above average for importance but below average on satisfaction. These technologies, particularly used for sales and marketing operation, and customer services were located in the quadrant.

4.13.2 Keep up the good work quadrant

The keep up the good work quadrant captured two technologies, including, “Social Networking” and “Forum”. These items were rated above average for both importance and satisfaction level. These results convey the message that in general, retail-chain businesses have performed well in the above respects.

4.13.3 Low priority quadrant

Among eight Web 2.0 technologies used for the study, “RSS” was identified in the low priority quadrant. This was evaluated below average for both importance and satisfaction. The results indicated that even if the satisfaction level was below average, efforts should not be overly concentrated on this technology, as attributes identified here were rated as low importance by the respondents, compared with other technology attributes.

4.13.4 Possible overkill quadrant

There were 2 technologies “Instant Messaging” and “Voice/Video Media” in this quadrant. This implied that the attributes were evaluated as lower than the average of the importance level, and that the satisfaction level of the technology was higher than the average.

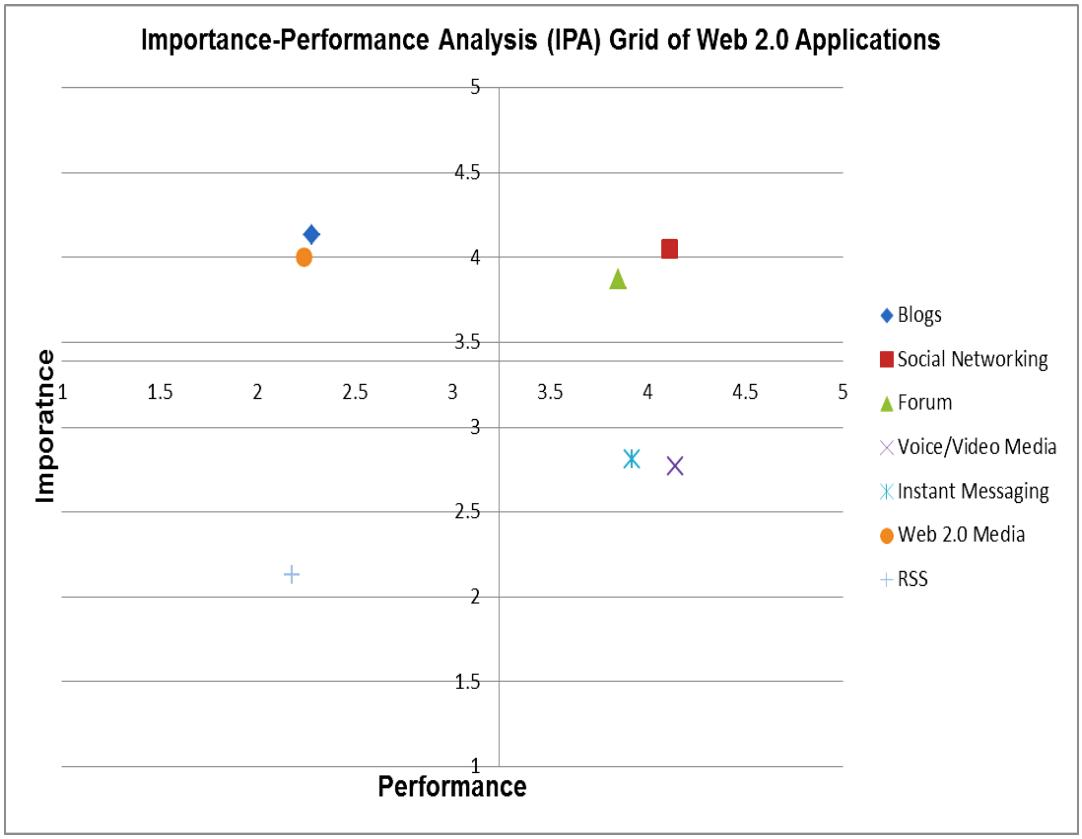

Figure 4.2
Importance-Performance Analysis (IPA) Grid for Web 2.0 Technologies

4.14 Conclusion

This chapter presents the results of the data analyses for the present study. Results of multiple regressions had supported eight out of eleven hypotheses, while three were not supported. Web 2.0 adoption were significantly related to organization's market share, knowledge sharing, technology complexity, technology costs, top management support, mimetic pressures, coercive pressures, and normative pressures.

Chapter Five will presents the conclusion and implications of this study. Future directions and limitations of the study will also be presented.

CHAPTER 5 CONCLUSIONS AND RECOMMENDATION

5.1 Introduction

This study attempted to answer three research questions namely: What are the Web 2.0 technologies currently adopted by Malaysian retail-chain businesses? What are the factors affecting Malaysian retail-chain businesses toward Web 2.0 technologies adoption? What are the Malaysian retail-chain businesses perceptions towards Web 2.0 technologies being adopted?

To answer the above research questions, data were collected from 185 businesses from Malaysia retail-chain businesses which comprised of different sectors. Descriptive analysis, hypotheses testing and inference statistics were used to provide answer to this study. Data collected were also subjected to Importance-Performance Analysis. The main contributions and implications to this study are discussed, the limitations of the study are highlighted and the future studies are suggested in this chapter.

5.2 Research Findings

The first research question of the study was "What are the Web 2.0 technologies currently adopted by Malaysian retail-chain businesses?" The results of this research revealed that the adoption Web 2.0 technologies among Malaysian retail-chain businesses are high. Social networking, blogs, Web 2.0 media and Voice/ Video were the most adopted Web 2.0 technologies by retail-chain businesses. Other Web 2.0 technologies such as RSS and forum were the least number of retail-chain businesses being adopted. No retail-chain business had adopted Wikis. The reasons for this could be a lack of knowledge of these Web 2.0 technologies and how they can

be used for their business.

The second research question of the study was "what are the factors that influence Malaysian retail-chain businesses toward Web 2.0 technologies adoption?" One of the research objectives was to identify the factors that are likely to influence the Malaysian retail-chain business adoption of Web 2.0 technology. Based on the existing IDT model (Rogers, 1995), TOE (Tornatzky & Fleischer, 1990), Institutional theory (DiMaggio & Powell, 1983) and the literatures review, the study has identified eleven determinants that influence the retail-chain businesses' adoption of Web 2.0 technology in Malaysia. The eleven determinants are market share (Constantinides, 2008), inter-organizational collaboration (Dawson, 2009; Bughin *et al.*, 2008), knowledge sharing (Dawson, 2009; Bughin *et al.*, 2008), security (Goodhue & Straub, 1991; Dawson, 2009), complexity (Zhu *et al.,* 2006), technology costs (Ifinedo, 2008), top management support (Teo *et al.*, 1997; Turban *et al.*, 2011), organization readiness (Ifinedo, 2008, Turban *et al.*, 2011), mimetic pressure (Teo *et al.*, 2003; Son & Benbasat, 2007), coercive pressure (Khalifa & Davison, 2006), normative pressure (Son & Benbasat, 2007).

Based on the data analysis, perceived benefits' attributes of market share and knowledge sharing have positively influence retail-chain business on the Web 2.0 adoption. On the other hand, inter-collaboration was found to be insignificant with the Web 2.0 adoption. The technology's attributes namely costs and complexities have negative influence retail-chain businesses on adoption of Web 2.0. However, the technology security had no influence on Web 2.0 technologies adoption. In this study, organization's attributes namely top management, positively influence retail-chain businesses to adopt Web 2.0. However, organization readiness had no influence on

Web 2.0 adoption. All the environment attributes namely: mimetic pressure, normative pressure, and coercive pressure are found to have positive influence on retail-chain business adoption of Web 2.0.

The third research objective was to determine Malaysian retail-chain business perceived importance and satisfaction on Web 2.0 technologies currently adopted. Based on the eight Web 2.0 technologies, the top three most important technologies were blogs, social networking and Web 2.0 media. Similarly, the top three most satisfied Web 2.0 technologies perceived by retail-chain businesses were voice/ video media, social networking and instant messaging. The grand mean was 3.61 for importance and 3.42 for satisfaction ratings. Overall importance values close with satisfaction values of the total eight technologies. This indicated that, overall, retail-chain businesses are satisfied with the Web 2.0 because it enhanced job-related tasks. An IPA grid illustrated that two Web 2.0 technologies was located in the Concentrate Here quadrant, two Web 2.0 technologies were located in the Keep up the Good Work quadrant, one Web 2.0 technology in Low Priority quadrant, and two Web 2.0 technologies were in the Possible Overkill quadrant.

Concentrate Here Quadrant had captured two Web 2.0 technologies (Blogs and Web 2.0 Media). These technologies were core functions of retail-chain businesses to capture attention from the customers on their company products and services. Retail-chain businesses could be relies heavily on these technologies in their daily marketing activities such as advertising and promoting products and services. Their expectations of these technologies can be relatively high. Therefore, it is suggested that continuous efforts and special attention should be directed and concentrated on the enhancement of these applications to accomplish a higher level of satisfaction in utilizing them for

marketing related tasks.

Secondly, the Keep up the Good Work Quadrant consists of two Web 2.0 technologies including social networking and forum. These Web 2.0 technologies were considered satisfactorily in meeting retail-chain businesses' needs in relation to personal communication, customers' interaction, and business conferences. Resources should be directed to improving and maintaining the quality of those essential Web 2.0 technologies to ensure daily communication activities and then, to be competitive against others retails business establishments (Kim, 2004).

Third, the Low Priority Quadrant identified only RSS Web 2.0 technology. Retail-chain businesses were not satisfied and they perceived RSS to be less important when compared with other Web 2.0 technologies. RSS was perceived as least important by the retail-chain businesses. The reasons could be RSS did not benefit them. This implied that relatively fewer efforts and resources should be expended in the low priority quadrant (Kim, 2004).

The fourth quadrant, Possible Overkill Quadrant, captured two Web 2.0 technologies namely instant messaging and Voice/ Video Media. This quadrant indicated that they were rated as lower than the average of importance, and that the satisfaction level was higher than average. Instant messaging and Voice/Video Media (e.g. Microsoft Messaging, Skype, and Video Phone Calls) are Web 2.0 technologies for collaboration to share of information and communicate among users. Since these technologies identified in the quadrant were considered the most standardized applications for daily tasks, which are normally accompanied by typical hardware or operating system, efforts should be towards maintaining a high level of standards without overspending resources in this area. They tend to be relatively highly

standardized across retail-chain organizations, not showing a strong variation of their quality and performance. Therefore, in order to take advantages of these technologies in improving the process of job-related tasks, effort should be focused towards maintaining quality without over-utilizing resources in the area, while maintaining the current satisfaction level.

5.3 Research Implications and Suggestions

This study provides a better understanding and explaining empirically the adoption of Web 2.0 in Malaysian retail-chain businesses. As mentioned in literature review, prior studies had examined the benefits and impact of individual type of Web 2.0 such as social networking tools. However, this study conducted on 185 Malaysian retail-chain businesses helped to explain the factors that influence the adoption of Web 2.0. It was found that perceived benefits, technological factors, organizational factors and environmental factors had an influence the adoption of Web 2.0. This empirical study was the few studies to have examined factors influencing Web 2.0 adoption by Malaysian retail-chain business. Moreover, this study had included perceived benefits constructs and environment construct based on institutional theory into TOE framework. It aimed at integrating three constructs from institutional theory with environment component along with perceived benefits, technology, and organization into the modified IDT model.

In Chapter 4, the Pearson Correlation Analysis, and Multiple Regression Analysis were conducted to investigate the relationships among the variables in the conceptual model for the adoption of Web 2.0 by the Malaysian retail-chain businesses. Eleven hypotheses were tested in this study. The findings have been summarised in Table 5.1. The research implications and suggestions are discussed.

Table 5.1
Results

Hypotheses	Hypotheses Outcome	Results
H_1	Increased in market share is positively related to the adoption of Web 2.0.	**Supported**
H_2	Inter-organizational collaboration is positively related to the adoption of Web 2.0.	**Not supported**
H_3	Increase in knowledge sharing is positively related to the adoption of Web 2.0.	**Supported**
H_4	Greater security concern of organization to Web 2.0 is negatively related to the adoption of Web 2.0.	**Not supported**
H_5	High cost of technology is negatively related to the adoption of Web 2.0.	**Supported**
H_6	Complexity of Web 2.0 has a significant negative relationship with Web 2.0 technology adoption.	**Supported**
H_7	Top management support has a significant positive relationship with Web 2.0 technology adoption.	**Supported**
H_8	Higher organizational readiness has a significant positive relationship with Web 2.0 technology adoption.	**Not supported**
H_9	Mimetic pressure originated from the competitors is positively related to the Web 2.0 technology adoption.	**Supported**
H_{10}	Coercive pressure from the customers is positively related to Web 2.0 technology adoption.	**Supported**
H_{11}	Normative pressure is positively related to Web 2.0 technology adoption.	**Supported**

5.3.1 Implications

Based on the data analysis, the implications on all four main constructs namely; perceived benefits, technological constructs, organizational constructs, environment constructs are discussed below.

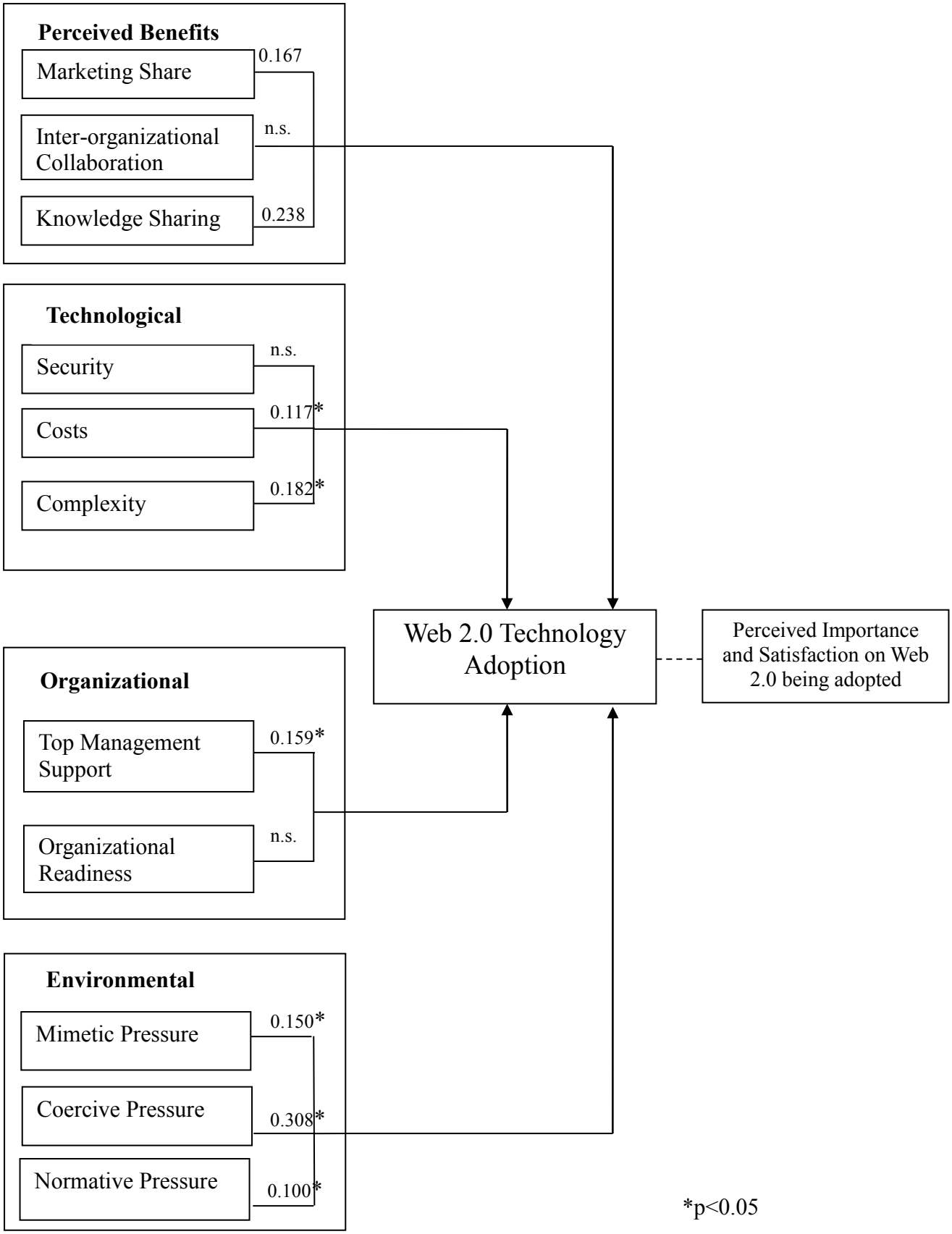

Figure 5.1
Research Model for Web 2.0 Technology Adoption

Perceived Benefits Context

Three hypotheses (H_1, H_2, and H_3) were constructed to determine the relationship between perceived benefits context from Web 2.0 adoption. As shown in Table 5.1 and Figure 5.1, Web 2.0 adoption has significant influences market shares (H_1) and knowledge sharing (H_3) at the 0.000 level of significance. These findings supported past literature on Web 2.0 adoption (e.g. Constantinides, 2008; Novak *et al.*, 2000; Murphy, 2010). With the Web 2.0, retail-chain business had the opportunity to reach to millions of customers, sent out messages, get fast feedback, and experiment with offers at relatively low costs reach market beyond what could be achieve in traditional marketing channels.

Overall, retail-chain businesses can optimize their Web 2.0 in order to continually expanding their market share. With the adoption of Web 2.0, retail-chain businesses may gain advantage by engaging with community of employees and providing knowledge that can be leveraged on organisations' strategies, products and services. However, for many retail-chain businesses, developing Web 2.0 communities will necessitate a cultural shift. For instance, adopting retail-chain businesses of Web 2.0 practices must move away from structured command and control systems towards collaboration and from a process-centric to a people-centric approach.

On the other hand, inter-organizational collaboration was no statistical significant with Web 2.0 adoption. One possible explanation for this finding is that retail-chain businesses adopt Web 2.0 because of pressure by their trading partners but not on inter-organizational collaboration factors. For instance, business organizations adopted Web 2.0 simply because their customers, suppliers and competitors have

already done so.

Technological Context

Three hypotheses (H_4, H_5, and H_6) were constructed to determine the relationship between technology context and Web 2.0 adoption. As shown in Table 5.1, technology's costs (H_5) and complexity (H_6) have significant influences on Web 2.0 adoption at 0.001 level of significance. These findings are consistent with findings by prior study on IT innovation and Web 2.0 adoption (e.g. Thong, 1999; Tornatzky and Klein, 1982; Li, 2008; Andriole, 2010). Technology's complexity was found to have the strongest influence on Web 2.0 adoption. This shows that Web 2.0 users are very concerned about user friendliness on the technology. The retail-chain users expect the application to be understood easily and handled without much training required. Web 2.0 technologies such as social networking site, forum and blogs are easier to use.

Next, the retail-chains are concerned with technology's costs itself. As any new technology requires installation of new hardware and software, training and maintenance, hence, organization must have sufficient financial resources when adopting new technology. These findings support prior studies on IT and Web 2.0 adoption. This infers that technology costs have influence on retail-chain businesses adoption of IT and Web 2.0 (Ghobakhloo *et al.*, 2011; Love *et al.*, 2005).

On the other hand, security has no significant relationship with Web 2.0 adoption. This finding is inconsistent with prior studies, which suggested that security concerns are a barrier to organizational adoption of the Web 2.0 (e.g., Kisselburgh *et al.*, 2010; Warren, 2009). One possible explanation for this conflicting finding is that the benefits of convenience, cost, and revenue generated from Web 2.0 exceeded

security risk. Therefore, future studies should examine the effect of security concern in times of economic turmoil. Another possible explanation for the conflicting finding is that retail-chain businesses adopt Web 2.0 simply because their competitors and customers are adopting Web 2.0, without focusing too much attention on Web 2.0 security risks.

Organizational Context

Two hypotheses (H_7 and H_8) were constructed to determine the relationship between top management support and organizational readiness on Web 2.0 adoption. As shown in Table 5.1, only top management support has significant influence on Web 2.0 adoption at p=0.000 level of significance. This finding suggests that organizations must have top management support to adopt IT. The finding supports prior studies that suggest top management support is positively related to organizational adoption of IT and Web 2.0 adoption (Jeyraj *et al.*, 2006; Lucas, 1981; Srinivasan *et al.,* 2002, Turban *et al.*, 2011). Top management support is related to the organizational context and culture. It is good for top management encourage employees to use Web 2.0 to communicate because it allows close collaboration between other employees and customers. However, organization should provide guidelines or policy such as assign person responsible to monitor the content (Dearstyne, 2007).

On the other hand, organization readiness has no statistical relationship with Web 2.0 adoption (H_8). The finding is contradictory to the findings of past literature on IT adoption. The findings suggest that financial and technical resources and knowledge of employees are important predictors on organizational adoption of IT (Iacovou *et al.*, 1995; Fink, 1998). One plausible explanation is that employees have

knowledge and experience on using the Internet, this resulted the pervasive use of Internet and organizations adoption of Web 2.0. Another possible explanation for the contradictory finding is that retail-chain businesses have adopts Web 2.0 because of pressures from the external environments. For instance, business organizations adopted Web 2.0 because their customers, suppliers and competitors have already done so. Therefore, organizations may not be overly concerned whether their businesses are ready to adopt Web 2.0.

Environmental Context

Three hypotheses (H_9, H_{10}, and H_{11}) were constructed to determine the relationship between mimetic pressure, coercive pressure, normative pressure and organizational adoption of Web 2.0. As shown in Table 5.1, mimetic pressure, coercive pressure, normative pressure have significant influence on the Malaysian retail-chain businesses adopt of Web 2.0. Coercive pressure was found to be highly significant predictor on organizational adoption of Web 2.0 at p=0.000 level of significance. Mimetic pressure is also a significant predictor at p=0.01 level of significance, while normative is a significant predictor p=0.05 level of significance. These findings suggest that environmental factors play important role in influencing organization adoption of Web 2.0. More importantly, these finding provide strong empirical support that the factors rooted in institutional theory are key predictors of Web 2.0 adoption. This is being validated empirically the institutional theory in the context of Web 2.0.

Coercive pressure (0.31) was found to have the stronger influence on Web 2.0 adoption. Retail-chain businesses adopt Web 2.0 simply because of pressure being exerted by their customers to adopt Web 2.0. Based on literature review, this is

consistent with the findings of prior studies, which observed effect of coercive pressures (e.g. Teo *et al.*, 2003; Gardner, 2008; Khalifia & Davison, 2007; Young, 2009). Web 2.0 has become popular among consumers. It is ideally suited for customer collaboration and offer opportunities for reach, access and intimacy that simply not available with other channels. To successfully exploit the potential of Web 2.0 toward consumers, businesses need to create strategies that deliver tangible value in return for customers' time and attention.

Mimetic pressures from competitors were found to have found to have positive impacts on the organizational adoption of Web 2.0. Similar finding was reported by Mackenzie (2011) and Young (2009). Businesses adopt Web 2.0 as what competitors did in order to achieve organizational legitimacy. They perceived that competitors that have adopted Web 2.0 have benefited or succeeded. It is important for business organization to align Web 2.0 with business strategy in order to gain and maintain their competitive edge.

In addition to mimetic pressures, normative pressures were found to have positive and significant impacts on the organizational adoption of Web 2.0. Similar finding was concluded by Mackenzie (2011) and Young (2009). Retail-chain businesses perceived Web 2.0 adoption as norm, appropriate and valuable as their partners. The norms and values learned from business and professional associations play significant roles in influencing retail-chain to adopt Web 2.0. To encourage the more Malaysian retail-chain business to engage in Web 2.0, businesses and Malaysian Government should look into the issues influencing the Web 2.0 adoption, and creating awareness on the available of Web 2.0 technologies.

5.3.2 Theoretical Implications

The current study has contributed to IS research by integrating IDT, TOE framework and institutional model. This research incorporating normative, coercive and mimetic pressure into environment context to determine the relationship of these variables with the adoption of Web 2.0 in Malaysian retail-chain businesses. Normative, coercive and mimetic pressures from institutional model help to measure the influence on the organizational adoption of Web 2.0. These three pressures have been proven to be the important determinants and affect the adoption of Web 2.0 in Malaysian retail-chain businesses. This finding contributes to the theoretical elucidation of retail-chain businesses adoption of other IT innovations. The empirical evidence from the study provides a better understanding on retail-chain businesses adoption of Web 2.0. It also found that market share, knowledge sharing, top management support, technology costs, technology complexity, mimetic pressure, coercive pressure and normative pressure have significant influences on organizational adoption of Web 2.0. In addition, it provides information for Web 2.0 service providers to develop Web 2.0 technologies for retail businesses.

This study provides empirical evidence that it is important to examine environment factors in the retail-chain businesses adoption of Web 2.0. This study has highlighted environment factors rooted in institutional theory have an impact on retail-chain organization adoption of Web 2.0 compared with perceived benefits, technology factors and organization factors. In other words, environment factors play an important role in retail-chain businesses adoption of Web 2.0.

5.3.3 Practical Implications

This study examined Web 2.0 adoption in relative to perceived benefits,

technology, and organization and environment factors. First, this study identified a demonstrated gap between the perceived importance and satisfaction level of Web 2.0 adopted by Malaysian retail-chain businesses. In particular, this study showed that perceived benefits, technology, organization and environment factors played a significant role in determining Malaysian retail-chain businesses adoption of Web 2.0. The findings have critical implications for Malaysian retail-chain businesses and technology vendors.

This research determined the perceived level of importance and satisfaction of currently adopted Web 2.0 through an Importance-Performance Analysis (IPA). Based on the importance and satisfaction indicators, Malaysian retail-chain businesses should strategically allocate resources and efforts to develop Web 2.0 to gain an "extensive" as well as "balanced" selection of Web 2.0 contributing for their retail-chain operations.

In addition, Malaysian retail-chain businesses may need to pay attention to environment factors when adopting Web 2.0 to avoid being left out of their industry. However, Malaysian retail-chain businesses' top management need to ensure their support towards Web 2.0 by providing training to ensure the employees able to use the technology. The findings also suggested that Malaysian retail-chain businesses were frequently discouraged due to the financial constraints and costs when adopting Web 2.0. Adequate budget or strategic planning by retail-chain businesses should be designed to undertaken to initiate financial supports along with motivation in adopting Web 2.0.

For technology vendors, as the retail-chain business hesitated to adopt Web 2.0 when recognizing the costs incurred on acquiring hardware, software, maintenance

and training. Similarly, they were highly motivated by the increase market share, improved employees performance and customers' relationship, and knowledge sharing culture in the organization. The findings of this part of the study had significant implications for technology vendors as they attempt to identify potential Web 2.0 technologies adopters. To discover factors affecting retail-chain businesses' decision to adopt Web 2.0 are crucial for expanding the adoption of Web 2.0 technologies. The findings of the study will help technology vendors to develop better marketing strategies and to gain competitive advantage.

5.4 Limitation and Future Research Direction

Several limitations existed in this study. First and foremost, the sample size of the study was moderate and the study focused on retail business industry. All the respondents are the members of MRCA. If the study was conducted for all retail-chain businesses' in Malaysia, the findings may differ from the study conducted by the researcher. This study focuses mainly on the retail-chain businesses' IT manager. Further study might be replicated this study with different functional areas of managers and different levels of employees to examined if perceived similarities or differences exist between different functional areas of IT users, managerial level IT users and non-managerial level users.

Second, in order to solicit respondents' co-operation, questions were employed throughout this study. Although the choices for each question were adapted from the elicitation study and amended according to the responses from several pilot tests, all possible alternatives might not have been included. Besides, showing the respondents the list of potential answers could have caused biases in their responses. In addition, quantitative analysis could not provide a more in-depth examination of attitudinal

changes and behavioural patterns of retail-chain businesses' Web 2.0 adoption, usage, and implementation behaviour. On the other hand, qualitative inquiry provides initial understanding and sound pedestal for further decision making, based on the quality, meaning, context, and image of reality in what people actually do. Qualitative research could be an effective methodology in the situation. A series of interviews and focus group discussions with the MRCA's, for example, would be a method to obtain critical information for building well-structured IT environments for the retail-chain businesses.

Finally, this study may have omitted other factors that might explain organizations Web 2.0 adoption. There may be other factors, which may influence decision to adopt Web 2.0 by the retail-chain businesses. Specifically, the announcement of the economic recession risk was high in the Malaysia may have impact on the businesses' decision to adopt Web 2.0. However, these issues were not considered in this study. Future research could explore whether other factors (e.g. cultural differences, triability, formalization, and leaders' innovativeness) are associated with Web 2.0 adoption.

5.5 Conclusion

This study has provided empirical evidence and knowledge on the adoption of Web 2.0 in Malaysian retail-chain businesses. The proposed modified IDT model has been analyzed to determine the retail-chain businesses perceptions on Web 2.0 adoption in their businesses. The study has identified eleven factors that influenced retail-chain businesses adoption of Web 2.0. These factors are market share, collaboration, knowledge sharing, security, costs, complexity, top management, organizational readiness, mimetic pressure, coercive pressure and normative pressure.

Findings from this study had provide information for Malaysian retail businesses who plan to implement Web 2.0 by emphasizing the relevant criteria at each phase necessary for a successful adoption process. In addition, it is hopeful that this study would be the catalyst for more studies in this area and the recommendations given can be implemented by IT vendors to increase the current number of Web 2.0 users in Malaysia.

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Appendix

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QUESTIONNAIRE

THE ADOPTION OF WEB 2.0 IN MALAYSIAN RETAIL-CHAIN BUSINESS

Please answer all questions. All of the information given is confidential and would be used only for research purposes. Your cooperation and willingness to participate in this questionnaire is highly appreciated. Thank you.

Researcher
Eng Yong Keong

CONSENT TO PARTICIPATE IN RESEARCH

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the proposed procedures. It describes the procedures, potential risks and discomforts, payment as well as confidentiality of the study. Anywhere, you have right to withdraw from the study at any time.

PURPOSE OF THE STUDY

In this study will determine what are the factors affecting Malaysian retail-chain businesses' attitudes toward Web 2.0 technology adoption and the relationship between Malaysian retail-chain businesses' attitudes toward Web 2.0 technology adoption.

PROCEDURES

If you volunteer to participate in this study, I would ask you to do the following things:

You will be asked to complete a survey that includes questions about your company information, several self-report measure regarding the adoption of Web 2.0 technology, the different factors might affect the technology adoption and demographic information. It is estimated that the survey will take on average anywhere from 10 – 15 minutes to complete.

POTENTIAL RISKS AND DISCOMFORTS

There are no anticipated risks or discomforts associated with participating in this study.

PAYMENT FOR PARTICIPATION

There is no direct compensation for participating in this research

Web 2.0 Technology	Definition
Instant Messaging (IM)	Instant messaging is a set of communication technologies used for text-based communication between two or more participants over the Internet or other types of networks. IM - chat happens in real-time. e.g. Windows Live Messenger
Podcasts	A downloadable digital media file – usually audio or video delivered automatically to a user's digital media player like Apple's iPod or any other MP3 or MP4 player
Wikis	A wiki is a website whose users can add, modify, or delete its content via a web browser using a simplified markup language or a rich-text editor. Wikis are typically powered by wiki software and are often created collaboratively by multiple users.
Rich Site Summary (RSS)	Also known as Real Simple Syndication, where "feeds" can come from other sources electronically. Such "feeds" might be news items posted automatically to blogs and other web sites.
Blogs	A blog is a site where a creator posts content and users can add their comments.
Social Networking	Interaction on online communities, generally with user supplied profiles. The best known social networks are Facebook and MySpace.

The Adoption of Web 2.0 Technology in Malaysian Retail Chain Business

Thank you for agreeing to participate in this research. Your answers will be kept confidential and will be destroyed after the study is complete. Please answer the following questions by choosing only ONE answer for each question or by filling in the blank.

SECTION 1: YOUR COMPANY PROFILE

Please choose only ONE answer for each of the following questions.

1. Please specify below the retail industry sector to which your organization belongs.
   [ ] Food and Beverage
   [ ] Education
   [ ] Departmental Store
   [ ] Hypermarket
   [ ] Consumer Electronics
   [ ] Pharmaceuticals
   [ ] Convenience Retail Store
   [ ] Clothing
   [ ] Beauty and Health
   [ ] Home furnishing
   [ ] Jewelry
   [ ] Lighting Store
   [ ] Services
   [ ] Others.

2. How many outlets does your organization operate in Malaysia?
   [ ] < 10
   [ ] 10 – 30
   [ ] 31 – 50
   [ ] 51 – 80
   [ ] 81 – 100
   [ ] > 100

3. Approximately how many employees does your organization have?
   [ ] < 50
   [ ] 51 – 200
   [ ] 201 – 400
   [ ] 401 – 600
   [ ] > 600

4. What were the approximate annual sales or revenues for the last financial year (in RM)?
   [ ] < 5 million
   [ ] 5 to 25 million
   [ ] 26 to 100 million
   [ ] 101 million to 200 million
   [ ] > 200 million

5. Does your company have an IT department? [ ] Yes [ ] No

6. Does your company origin from Malaysia [ ] Yes [ ] No

SECTION 2: ADOPTION OF WEB 2.0 TECHNOLOGY
Please choose only ONE answer for each of the following question and statements.

1. Does your company use Web 2.0 technology?
   [ ] Yes
   [ ] No

2. Adopting Web 2.0 technology in my organization is a good choice.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

3. Using Web 2.0 technology in my organization would be pleasant.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

SECTION 3: CURRENT WEB 2.0 TECHNOLOGIES
The following is a list of selected Web 2.0 technologies that may be currently adopted in your company operations. For each of following Web 2.0 technologies please choose the level of "Importance" AND "Satisfaction" from 1 to 5. Please use the following TWO scales, importance and satisfaction:

Whether the Web 2.0 technology is Important for you when you perform your job-related tasks? (e.g., priority, frequency, preference)	How Satisfied with the Web 2.0 technologies adopted by organization when you utilize them? (e.g., speed, availability)
1. Not at all important 2. Little important 3. Neutral 4. Important 5. Very important N/A Not Applicable	1. Not at all satisfied 2. Little satisfied 3. Neutral 4. Satisfied 5. Very Satisfied N/A Not Applicable

Web 2.0 Technologies	IMPORTANCE						SATISFACTION					
Instant Messaging	1	2	3	4	5	N/A	1	2	3	4	5	N/A
Web 2.0 Media	1	2	3	4	5	N/A	1	2	3	4	5	N/A
Wikis	1	2	3	4	5	N/A	1	2	3	4	5	N/A
RSS	1	2	3	4	5	N/A	1	2	3	4	5	N/A
Blogs	1	2	3	4	5	N/A	1	2	3	4	5	N/A
Social Networking	1	2	3	4	5	N/A	1	2	3	4	5	N/A
Forum	1	2	3	4	5	N/A	1	2	3	4	5	N/A
Voice/ Voice Media	1	2	3	4	5	N/A	1	2	3	4	5	N/A

SECTION 4: ADOPTION FACTORS

The following is a list of factors which might influence your desire to adopt Web 2.0 technologies in your organization. Please choose a number from the scale which represents how strongly you agree or disagree with each statement.

	1	2	3	4	5
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

1.	Many of our competitors are currently adopting Web 2.0 technology.	1	2	3	4	5
2.	Many of our competitors will be adopting Web 2.0 technology in the near future.	1	2	3	4	5
3.	Many of our competitors that adopt Web 2.0 technology are benefiting greatly.	1	2	3	4	5
4.	Many of our competitors that adopt Web 2.0 technology are perceived favorably by their customers.	1	2	3	4	5
5.	Many of our customers expect that we use Web 2.0 technology.	1	2	3	4	5
6.	Many of our customers encourage us to use Web 2.0 technology.	1	2	3	4	5
7.	Our company may not retain our important customers without Web 2.0 technology.	1	2	3	4	5
8.	Many of our customers are currently adopting Web 2.0 technology.	1	2	3	4	5
9.	Many of our customers will be adopting Web 2.0 technology.	1	2	3	4	5
10.	Many of our suppliers are currently adopting Web 2.0 technology.	1	2	3	4	5
11.	Many of our suppliers will be adopting Web 2.0 technology.	1	2	3	4	5
12.	Large pressures are placed on our firm to adopt Web 2.0 technology by industry sources (e.g., industry or trade associations).	1	2	3	4	5
13.	Our company actively participates in industry, trade, or professional associations that promote Web 2.0 technology adoption.	1	2	3	4	5
14.	Our company often receives information regarding Web 2.0 technology from external sources (such as industry associations, professional associations, or trade newsletters).	1	2	3	4	5
15.	Our company's top management encourage employee to use Web 2.0 technology.	1	2	3	4	5
16.	Our company's top management is interested in the use of Web 2.0 technology in our operations.	1	2	3	4	5
17.	Our company's top management is aware of the benefits of Web 2.0 technology adoption.	1	2	3	4	5
18.	Our company's top management has shown support for Web 2.0 technology adoption.	1	2	3	4	5
19.	Our company knows how Web 2.0 technology can be used to support our operations.	1	2	3	4	5

20.	Availability of financial resources to meet the costs of adoption and implementation of Web 2.0 technology is high in our company.	1	2	3	4	5
21.	Our company has the necessary technical, managerial and other skills to implement Web 2.0 technology.	1	2	3	4	5
22.	Our company has a good understanding of how Web 2.0 technology can be used in our business.	1	2	3	4	5
23.	The constraints of adopting Web 2.0 technology include low security and privacy.	1	2	3	4	5
24.	Confidential and competitive information can be leaked to outsiders from Web 2.0 technology.	1	2	3	4	5
25.	Adopting Web 2.0 technology can make IT more vulnerable to malware.	1	2	3	4	5
26.	The use of Web 2.0 technology requires a lot of mental effort.	1	2	3	4	5
27.	The use of Web 2.0 technology is frustrating.	1	2	3	4	5
28.	Web 2.0 technology is complex for our business operations.	1	2	3	4	5
29.	The costs of hardware for Web 2.0 technology adoption are prohibitively expensive.	1	2	3	4	5
30.	The costs of software for Web 2.0 technology adoption are prohibitively expensive.	1	2	3	4	5
31.	The costs of maintenance for Web 2.0 technology adoption are prohibitively expensive.	1	2	3	4	5
32.	The costs of training for Web 2.0 technology adoption are prohibitively expensive.	1	2	3	4	5
33.	Adopting Web 2.0 technology allows us to listen to our customer's feedback.	1	2	3	4	5
34.	Adopting Web 2.0 technology allows us to conduct market research.	1	2	3	4	5
35.	Adopting Web 2.0 technology improves public relationship.	1	2	3	4	5
36.	Adopting Web 2.0 technology creates direct marketing.	1	2	3	4	5
37.	Adopting Web 2.0 technology allows us to reach the new influencers.	1	2	3	4	5
38.	Adopting Web 2.0 technology allows us receive product reviews from customers.	1	2	3	4	5
39.	Adopting Web 2.0 technology enhances search.	1	2	3	4	5
40.	Adopting Web 2.0 technology increases openness of knowledge.	1	2	3	4	5
41.	Adopting Web 2.0 technology creates transparency in our company.	1	2	3	4	5
42.	Adopting Web 2.0 technology increases knowledge sharing.	1	2	3	4	5

43.	Adopting Web 2.0 technology allows us to achieve better integration with suppliers.	1	2	3	4	5
44.	Adopting Web 2.0 technology allows us to lower purchasing costs from suppliers	1	2	3	4	5
45.	Adopting Web 2.0 technology allows us to get supplier participation	1	2	3	4	5
46.	Adopting Web 2.0 technology allows us to carry out supplier process.	1	2	3	4	5

SECTION 5: INDIVIDUAL PROFILE
Please choose only ONE answer for each of the following questions.

1. What is your gender? [ ] Male [ ] Female

2. What is your age?

   [ ] 20 – 30
   [ ] 30 – 40
   [ ] 40 – 50
   [ ] Above 50

3. What is your highest level of education obtained?

   [ ] Certificate
   [ ] Diploma
   [ ] Degree
   [ ] Postgraduate Degree

4. Current position

   [ ] IT Manager
   [ ] IT Executive
   [ ] General Manager
   [ ] Others

5. Years in current position

   [ ] 1 – 5
   [ ] 6 – 10
   [ ] 11 – 15
   [ ] 16 – 20
   [ ] 21 and above