

**ANTECEDENTS AND OUTCOMES OF
INTRANET PORTAL UTILIZATION IN
MALAYSIAN RESEARCH UNIVERSITY:
EMPLOYEE SATISFACTION AS MEDIATOR**

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by

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LIST OF ABBREVIATIONS

BO	Benefits Outcomes
ES	Employee Satisfaction
IM	Information Management
IPU	Intranet Portal Utilization
KS	Knowledge Sharing
PQM	Portal Quality Model
RU	Research University
SD	Self Development
SSS	Self-Service Support
TP	Task Productivity
UKM	University Kebangsaan Malaysia
UM	University Malaya
UPM	University Putra Malaysia
USM	University Sains Malaysia
UTAUT	Unified Theory of Acceptance and Use of Technology
UTAUT2	Extended Unified Theory of Acceptance and Use of Technology
UTM	University Teknologi Malaysia

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**PENENTU DAN HASIL FAEDAH PENGGUNAAN PORTAL INTRANET DI
UNIVERSITI PENYELIDIKAN, MALAYSIA:
KEPUASAN PELANGGAN SEBAGAI MEDIATOR**

ABSTRAK

Sebagai institusi berdaya saing dan berorientasikan perkhidmatan, universiti memerlukan penyampaian perkhidmatan dan perkhidmatan sokongan yang cekap. Portal intranet diperlukan di institusi pengajian tinggi untuk meningkatkan komunikasi, membantu organisasi untuk mengurangkan kos, memendekkan masa kitaran proses, kerjasama dan menawarkan perkhidmatan yang lebih cekap dan berkesan. Terdapat bukti kukuh bahawa portal mempunyai akses yang konsisten, sempurna, dan selamat dalam memudahkan proses kerja di universiti. Walau bagaimanapun, universiti menghadapi kesukaran dalam mengintegrasikan pencapaian maklumat yang berbeza-beza dari pelbagai jabatan. Ini menyebabkan pengumpulan dan penyebaran maklumat terlalu kompleks, menyebabkan pengurangan penggunaan portal intranet dan tiada keberkesanan. Kajian menyatakan bahawa penggunaan portal intranet yang tinggi membawa kepada banyak manfaat. Tetapi, ia masih tidak jelas berkaitan dengan 'kualiti' dan 'penerimaan penggunaan' yang diperlukan dalam portal intranet. Tujuan kajian ini adalah untuk mengkaji sejauh mana penggunaan portal intranet dan faedah di USM, UKM, UM, UPM dan UTM. Kajian ini menggunakan teori asas berdasarkan DeLone and McLean's Information System Success Model (2003). PQM dan UTAUT2, diintegrasikan ke dalam kajian ini untuk menyiasat hubungan 'kualiti' dan 'penerimaan penggunaan' untuk penggunaan portal intranet dan keberkesananannya. Kajian ini menggunakan kaedah kuantitatif dengan menggunakan soal selidik sebagai instrumen kajian. Sasaran kajian ini terdiri daripada pekerja

(pentadbiran dan staf akademik) dan pengguna portal intranet. Sumbangan utama kajian ini adalah untuk merapatkan jurang antara bidang dalam kualiti dan penerimaan dalam penggunaan intranet portal. Secara keseluruhan, 50 hipotesis telah dinilai dan diuji. Keputusan menyokong 39 daripada 50 hipotesis. Kajian ini mendedahkan juga bahawa beberapa pembolehubah dan dimensi dari demografi, kualiti portal intranet, penerimaan dan penggunaan teknologi, telah dikenal pasti mempengaruhi dengan ketara penggunaan portal intranet serta kepuasan pekerja dan memberi manfaat berhubung dengan produktiviti dan pembangunan diri. Dari aspek praktikal, penyelidikan ini akan membantu universiti terutama Jabatan Teknologi Maklumat (IT) untuk memberi keutamaan kepada faktor kualiti dan penerimaan bagi meningkatkan potensi portal. Oleh itu, adalah perlu untuk pekerja, jabatan ICT dan lembaga pengurusan universiti menekankan kepentingan pembolehubah dan dimensi bagi pengurusan portal intranet untuk meningkatkan produktiviti serta pembangunan diri.

**ANTECEDENTS AND OUTCOMES OF
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EMPLOYEE SATISFACTION AS MEDIATOR**

ABSTRACT

As a highly competitive and service-oriented institutions, universities require efficient service delivery and support services to achieve their business goals. Intranet portals predominantly are needed at higher education institutions to improve communications, helping organizations to reduce costs, shorten process cycle times and offer services more effectively and efficiently. There is a strong evidence to suggest that a portal would provide stakeholders with consistent, flawless, adaptable and secure access to university resources and ease transactions and processes. However, universities face difficulties in integrating information access points which vary from departments and service centers. This makes information gathering and dissemination overly complex, resulting in reduced intranet portal utilization and limited benefits to the stakeholders. Studies have highlighted that the high usage of the intranet portal can lead to numerous benefits. But, it is still unclear what type of attributes related to ‘quality’ and ‘acceptance of use’ are needed to achieve a high level of usage. The purpose of this study is to examine the extent of intranet portal utilization and the resulting outcomes in Malaysian Research Universities such as USM, UKM, UM, UPM, and UTM. This study used an underlying theory based on DeLone and McLean’s Information System Success Model (2003). Portal Quality Model (PQM) and extended Unified Theory of Acceptance and Use of Technology (UTAUT2), integrated into the model to investigate the relationship of ‘quality’ and ‘acceptance of

use' to intranet portal utilization and intranet portal utilization to outcomes with employee satisfaction as the mediator. This study applies the quantitative methodology by using a survey design with the questionnaire as an instrument. The targeted population of this study consists of the employees (administration and academic staffs), and an intranet portal users. The major contribution of the study is to bridge the gap between the areas of quality and acceptance of in intranet portal utilization. It also focuses on the outcomes and employee. In total, 50 hypothesized relationships were assessed and tested. The results supported 39 of the 50 total hypotheses. This study reveals that several variables and dimensions from demographics, quality of intranet portal, acceptance and use of technology, were identified to significantly influence the intranet portal utilization heading towards employee satisfaction and outcomes in relation to task productivity and self-development of employees in the Malaysian Research Universities. From a practical aspect, this research should help the universities, especially the Information Technology (IT) department to understand relevant quality and acceptance factors needed to enhance their portals to be maximum utilized and become one-stop centers to obtain information. This can enforce the employees more to practice self-service and perform daily tasks efficiently; benefiting employees in the universities and make them more productive, thereby increasing the universities' reputations. Therefore, it is necessary for employees, Information Communication Technology (ICT) department and the respective university management board get to know the most effective way of handling these variables and dimensions in order to manage and improve on the intranet portal utilization among the employees of Malaysian Research Universities purposely to improve their task productivity and self-development.

CHAPTER 1

INTRODUCTION

1.0 Introduction

Intranet portals are having a dramatic impact on the scope of business applications and have become the foundation for the world's new information infrastructure. Realizing the enormous potential at hand with intranet portals; many organizations have embraced intranet portals as a tool to help them achieve a competitive edge in collaboration and integration multi-management disciplines. No doubt it is a prime tool for bridging the gap between business and Information Technology services (Hanemann et al., 2005; Keller, 2005; Mathiassen & Pries-Heje, 2006; Mayerl et al., 2005; Stanley et al., 2005).

The emergence of information and communications technology (ICT) have contributed to the rapid growth of intranet portal technologies in many organizations environment (Norzaidi et al., 2007; Urbach et al., 2009). With the strong waves of globalization and liberalizations across the world ICT, intranet portal is believed to be the most cost-efficient tool to help brick and mortar educational institutions and have the potential ability to compete with another rival in serving the needs of business (Tan et al, 2009).

The promised benefits that can be found in intranet portal technologies that it can serve the needs of businesses in an educational environment and the service industry is regarding the usage. As a unique and competitive landscape, intranet portal can offer employees access its functionality (relates to the role and positioning within organizational structures) to increase levels of productivity (Anandarajan et al., 2000; Sikorski, 2006; Tojib et al., 2006; Zailani et al., 2007).

Its ability to help businesses reduce costs and shorten process cycle times will also contribute to improving communications and reduce information overload(s) (Anandarajan et al., 2000), or offer delivery and monitoring services more effectively and efficiently (Anandarajan et al., 2000; Tojib et al., 2006; Urbach et al., 2009).

There are a growing need and interest of portals in HEIs (Li & Wood, 2005; Masrek, 2007). Studies of portals in HEIs have investigated the strengths and weaknesses of corporate portal usage (Al-Busaidi & Al-Shihi, 2010; Pinto et al., 2007), the antecedents of portal's acceptance (Tolentino, 2011) and its support for educational knowledge management (KM) (Tikhomirova et al., 2008). With the growing development of new IT, universities should evaluate new IT within the educational context to make sure that their investments are worthy (Kelly, 2008). However, there has been no formal evaluation yet of portals in higher educations (Li & Wood, 2005). Thus, investigating the direct benefits that result from the usage of the portal will help HEIs in such decision (Awre, 2003). There are several theoretical and qualitative studies that have discusses the potential benefit outcomes of portals for higher education such as Li and Wood (2005), Murray (2003) and Tikhomirova et al. (2008), but very limited in empirical quantitative studies.

The success story behind intranet portal technologies as a 'single point of access' to enable the front-end integration of information, communication, knowledge sharing, applications, information management and business processes within academic and administration or other organizational structures is expanding yearly. According to Urbach et al. (2011), intranet portal is an established and primary tool to that employee can use to perform their work or improve upon their overall business performance.

Portals success in delivering intended benefits is dependent on the degree to

which people accept portals' technology and intend to use it on a continual basis (Liao et al, 2011) and users' perception of portals' quality and their satisfaction lead to future use (Liu et al., 2009; Urbach et al., 2010). Nevertheless, portals' success cannot be measured solely based on its reach; as one should not purely rely on 'hit counts' as a measure of achievement (Al-Mudimigh et al., 2011; Dominic et al., 2011).

Nonetheless, there are many success stories regarding intranet portals that can be addressed. Several questions, however, still remain unanswered as to whether the status of intranet portal utilization is comparable to those reported benefits in the academic research literature. Due to this, HEIs should be aware of the results of portals at both individual and organizational level to make sure the intended benefits are attained. Users may not use portals if they are not satisfied with what it can bring to them (Caglar & Mentis, 2012) or do not get any benefits or perceive any usefulness in enhancing the performance.

Consequently, due to this important issues, the focus of this research is designed to examine the intranet portal utilization (IPU) amongst employees in Malaysian Research Universities; especially, as it pertains to knowledge sharing, information management, and self-service support. The research will equally address exactly how far did the employees gain in a full reap of benefit outcomes due to the usage of the intranet portal, and the extensive usage of knowledge sharing compare to information management and self-service and vice versa. The research will also look at the possible predictor's value such as quality and acceptance and use towards the intranet portal utilization.

1.1 Background

The relevance of intranet portal utilization concerns is ever increasing in their importance and the particular effect they are displaying in relationship to business objectives or their performance benefits ratios.

This section provided background informations about intranet portal evolution, intranet portal, intranet portal in HEI and intranet portal utilization.

1.1.1 Evolution of Intranet Portal

An early definition for intranet portals, within the corporate context, first appeared in a Merrill Lynch report (Shilakes & Tylman, 1998). Intranet portal technology was considered as an application of technology that primarily integrates the organization's information flow patterns or processes in a decided fashion that provided users with a single interface. The global perception about portals has indeed been changing or evolving over time and is nowadays being reflected in the variety of different publications or professional journals in the field of study (Chan & Liu, 2007; Chan & Chung, 2002; Daniel & Ward, 2005; Detlor, 2000; Shilakes & Tylman, 1998). For the past few years, intranet portals have dramatically evolved from low-end intranets into highly integrated information systems. Moreover, now it enables the front-end integration of information, communication, applications, and business processes (Chan & Liu, 2007; Daniel & Ward, 2005) as stated in the Section 1.0.

The era of web based as an attractive tool for building workforce commitment according to Azzone and Bianchi (2000) became yielded benefits for organizations due to the 'flood-gate' opened in awareness globally and lacked personalization; and the earlier prototypes offered poor navigation and did not provide centralized access to information, which, often led to losses in productive employee labor time.

Thus, to overcome these various problems, many organizations began to implement portals (Tojib et al., 2006). According to Tojib et al. (2006), the portal is a web-based interface designed to access personalized information, resources, applications or e-commerce options with which employees can reach a wide-range of internal and external sources. This is mostly to be accomplished through a network connection that is inclusive of a password protected setting (Sugianto & Tojib, 2006). Consequently, with these business applications in place, it can tremendously increase levels of productivity, Schelp and Winter (2002) suggested it integrate into employee portals so that labor processes more productive workforce and enabled to meet consumer demands. Thus, the role of the intranet portal has become crucial in many organizations. Especially, when an entire business process can be completed by means of the portal (Chan & Chung, 2002).

In analyzing the evolution of public portals in the 90s, Eckerson (1999) identified three generations of portal evolution, which has labeled as referential, personalized and interactive. Additionally, Dias (2001) later extended the list to a fourth generations; 'generations of portals' (see Table 1.1) which emphasizes that “intranet portals have a potential to extend beyond the capabilities being offered by public portals”.

Table 1.1 Generations of portals

Generation / Category	Portals Composition	Focus / Emphasizes
First Referential (generic)	Using a search engine with each index entry; contain a description of the content object and a link to it.	Content management; Mass dissemination of information; decision support.
Second	Using an identification label and a password;	Privileged content; customized distribution.

Personalized	Create users' personalization, users' notifications, and updated information).	
Third	The portal embeds applications that improve employees' productivity, such as e-mail, workflow, project management, expense reports, calendars, schedules.	Add collaborative character to corporate portals; providing multiple types of interactive services.
Interactive (application)		
Fourth	Portals based on professional roles for managing specific corporate functions, such as sales, human resources, finances.	Connects corporate applications with the portal; allowing users to execute transactions, read, write and update corporate data.
Specialized (role)		

Source: Eckerson (1999); adapted by Dias (2001); Davey and Tatnall (2007)

Gartner suggested that the portal technology has evolved through multiple generations since portal products first emerged in 1997 (refer Table 1.2).

Table 1.2 Six generations of portal technology

Process Integration	Gen 6 (2008- 2009)	Product Angle & User Angle Client-Based/Server-Based Hosted
	<ul style="list-style-type: none"> • Portal Ubiquity • User-Managed Portal Aggregation • Peer Portal Federation 	
Application/Data Integration	Gen 5 (Mid 2005-2007)	Orchestration User experience management Portal as services
	<ul style="list-style-type: none"> • SOBA/PIP/PCA support • Advanced collaboration • WSRP V2 & JSR286 	
Application/Data Integration	Gen 4 (2004-Mid 2005)	Multichannel Interaction Personal Content JSR168 & WSRP
	<ul style="list-style-type: none"> • Advanced Web Services • Composite Applications • Micro-sites 	
Application/Data Integration	Gen 3 (Mid 2002-2003)	Knowledge Management Web Services Federated Search
	<ul style="list-style-type: none"> • Process Integration • Multiple Portal • Personalization 	
Application/Data Integration	Gen 2 (2000-Mid 2002)	Collaboration Management
	<ul style="list-style-type: none"> • Application Integration 	

Information Access/ Content Aggregation	• Mobile and Wireless	Tools
	• Gen 1 (1998-2000)	
	• Content Management / Aggregation	
	• Search / Categorization	
	• Personalization	
	• Lightweight Application Framework	

Source: Gartner: Portal Scenarios in 2008

1.1.2 Intranet Portal

The definition of the term “portal” (even though there is a general consensus regarding the definition (Tatnall, 2005) came from the Latin word ‘porta’ which means ‘gate’ or ‘gateway’. Many researchers would agree that the term portal could be described as a single personalized interface, whereupon prime users can access all the required information resources and services in a secure, consistent, and customizable manner (Bajec & Krisper, 2005).

However, Uden and Salmenjoki (2007) define a portal solely as a gateway to the information and services found on the World Wide Web (WWW) specifically to services being accessed on both the public Internet and on corporate intranets.

Meanwhile, an intranet is a computer network to share information, operational systems or services within an organization contrast to internet, a network between organizations. An intranet may host multiple private websites and constitute an important component and focal point of internal communication and collaboration. So to reflect these complexities concerning the definitions, this research have used or coined in terms of “portal”, “institutional portal”, “campus portal”, “corporate portal”, “knowledge portal”, “enterprise portal”, “information portal”, “university portal”, “employee portal” or “staff portal” interchangeable with “intranet portal” in line with HEI environments. Further explanations regarding this will be discussed in Chapter

Two.

The intranet portal is a website designed as 'first port of call' when a user goes online to aggregate information in one location or an organized manner for dissemination. The 'information technology explosion' of recent years has given rise to manage the overwhelming amount of information in a systematic way and offer services include search engines, email, maps, forums, chat, shopping, news, and options for customization. Intranet portals have evolved significantly over the past few years to cover a broad range of capabilities such as web content management, document management, and records management. This technology allows content to be broken into more granular and reusable components and, gives structure to unstructured content, and mainly aim to help employees to discover the information they need to do their jobs better, effective and efficient.

The main idea behind the portal technology, therefore, is to broaden business thinking and shift it away from IT-centric development to the business-centric way of thinking. Establishing mechanisms and processes that offer benefits to the employees (Ramos et al, 2004) and also break physical boundaries or extend the ability to collaborate with employees (Duane & Finnegan, 2000). Thus, an Intranet portal can provide some efficiency for the information technology infrastructure by consolidating and centralizing services such as unified user and security management types especially in knowledge sharing, information management, and self-service so that highly usage of it can increase employee productivity and self-service development.

1.1.3 Intranet Portal in Higher Education Institutions (HEIs)

In today's competitive academic environments some factors that enable educational institutions to attract and retain stakeholder(s) should be seriously studied. Universities

in Malaysia, for example, USM, UM, UPM, which like to derive a competitive edge in the future may need to begin looking for avenues or methods that are supportive of sustainability, or effective and creative ways to attract, hold and foster stronger relationships among stakeholders.

To offer benefits or business values, for the retaining of stakeholders, fast and updated information, or establishing efficient one-stop centers, in order to archive data as well as the damming of the "info-flood" is essential, it is a need to search for a tool to collect all data and information in one place, in which the modern technology offers, a portal on the internet. Moreover, single sign-on options or enhanced customer support variables, along with fitted configuration with partners are equally authorized. Differently, if it is not implemented appropriately, it will contribute to 'faith trips', and if it is not supported by the quality (assurances) determined to be acceptable by the average stakeholder and users. While, any set of expectations or levels of satisfaction from stakeholders or users that cannot be fulfilled through the university services, or channels, may result in the key factors for stakeholders to be withdrawn (Aldridge & Rowley, 1998). Furthermore, as rapid changes in the economic context continue to advance, it is certain that many HEI may be forced to turn to an intelligent organizational structure in order to enhance their global competitiveness, by any methods possible which, one of them is an intranet portal. Indeed, a portal of HEI support for the speed of organizational development has been appreciated for its capability and the employee development when they meet these challenges (Heraty, 2004).

In short, an HEI or university portal can provide students, employees and faculty (and potentially other users) with consistent, seamless, adaptable, and a secure means of access to university information resources for learning and teaching as well

as for their business processes. The need for a portal framework or structure operating in a university setting is driven by two major factors:

- 1) The current state of technology and its use in a society that impacts universities competitiveness.
- 2) Universities decentralized information services that create a difficult overall user interface with the organization as a whole.

The undeniable fact about today's users especially among employees and students, they expect to get more knowledge and information from the organization's web page than mere material is established. They expect to be able to transact significant business with relative ease and confidence as it benefits students and learners to explore the abundance of information. For example, some HEI or universities are offering significant on-line resources and services for students and all members of the respective HEI.

However, many of them are currently doing so in a way that displays the decentralized nature of an organization – with separate login functions for each site, along with a distinctive look-and-feel, from site to site, besides varying levels and methods for securing access. McNeill et al. (2007) have emphasized that business transaction(s) within university structures are monopolized or dominated by three methods or concerns. Firstly, 10% Self Service, secondly, 0% Generalist support, and thirdly, 90% Specialist support. However, nowadays many universities are moving to a model of 70% Self Service, 20% Generalist, 10% Specialist support with greatly extended hours for walk-ins and call center generalist services to facilitate this shift in both the organization and information in access and tools. This action must take place by looking at system integration modules and protocols and also aspects needed to

increase the accessibility and security of self-service transactions and information management, or knowledge sharing via an intranet portal.

There is also a strong evidence that an intranet portal is required in HEI due to the nature of the business, which requires maintaining stakeholder's databases, systems applications and a bundling of information to handle as well. The trends regarding intranet portal utilization in HEI where the processes and methods of integrating and the streamlining of services, allow for personalization, or improvements in administration, to embrace higher levels of efficiency, in order to enhance university's image and branding and also to improve and enhance the learning process (Ramayah, 2006; Ramayah et al, 2010)

In regards to the phenomena, upon which information overload will occur based on the transaction of data handled in the HEI, we certainly can establish that the driving force behind the implementation of an intranet portal is, in fact, the growing awareness of its impact in information overload to both employees and students in HEI. Englert (2003) had indicated that streamlining access to information and services as well as providing targeted services are popular reasons for deploying intranet portals (based on 47 institutions surveyed in recent accenture research).

Consequently, only a few empirical studies on portal evaluation have been published to date. Some studies have investigated single aspects of portal success. However, none of the studies reviewed took a comprehensive and integrated approach. While, some studies that measure employee satisfaction with employee portals, like Sugianto et al. (2007) and Tojib et al. (2008) proposed using the B2EPUS model. In which, it goes back to the work of Doll and Torkzadeh (1988) and Masrek (2007) who have proposed another approach to assessing user satisfaction with campus portals. As something, which is based on an extract of the updated DeLone & McLean Information

Systems Success model (D&M). A similar framework for investigating corporate intranet effectiveness has also been suggested by (Hussein et al., 2008).

Yang et al. (2005) developed and validated an instrument based on different conceptual models in the areas of Information System (IS); meanwhile, technology adoption focusing on user-perceived service quality of web portals (Carvalho et al., 2008; Davis et al., 1989) analyzed the effects of technological and organizational features on intranet portal use mainly based on the technology acceptance model.

Yet, no study has been specifically aimed at a comprehensive examination of the success of intranet portals as they are focused on employees or their task productivity. Establishing a host of benefits that have had universities across the globe racing to exploit intranet portal technologies for their use. Such developments are extremely significant in today's competitive business environment. Whereupon, the ability to improve internal communication and open up access to information among employees that can be used to increase revenues, advances in employee productivity, or efficiency standards are remarkable.

Another example is to improve access to information on the departmental level. An intranet portal can be used effectively as repositories for useful information and data collection or storage, along with powerful consequences for enhancing productivity. Employees, for example, can look up commonly requested information, as and when they need it or get the answers they require much more quickly than when confronted with traditional 'information bottlenecks'. By making important documents available to a much a wider and often unanticipated audience employees can identify and utilize previously unknown sources of knowledge to the company's or the university's advantage.

Intranet portals are promising immense savings to universities or businesses,

by substantially cutting the costs associated with daily operations. Business environment factors can be divided into four major categories which are markets, consumer demands, technology, and societal (Turban et al., 2011), so all these attributes of business should be posted in the building of intranet portal. Savings, which include reduced publication, distribution, storage costs as well as reductions in the headcount required for communications or reporting together within existing support services. Intangible savings can also be seen or levied in the reduced time required to access information. Currently, within a typical university-hub environment, ICT center has become an important enabler in disseminating and sharing of knowledge through teaching, learning, research and supporting services. No doubt it also opens the landscape of information management to become more efficient. Thus, it is important that the body responsible for delivering the ICT services within a university campus re-orientate the mode of delivery to that of a service provider and also changing the paradigm and mindset of the knowledge workers to become more intellectually proficient and responsible, or IT literate (Sulaiman & Abdullah, 2008).

Increasingly, today most HEIs have quality (assurance) policies and manuals. Previously, however, people dreaded making revisions in their documents, because someone had to re-type them manually and distribute them through inter-office mail, or "snail-mail" to make sure that everybody read and implemented the revisions. In using intranet portal technology occasionally some of these troublesome aspects of manually designed or paper-based systems can be avoided altogether and the resultant digital process management can effectively be supported. The intranet was declared as a powerful tool enabling effective information and knowledge accessibility or the communication that is supporting the quality assurance factors (Buniyamin & Barber,

2004) to bring about more sustainability.

In order to improve the flow and management of information a number of researchers (Hussein et al., 2008; Chin, et al., 2004; Lari, 2002) propose the integration of quality assurance with information technologies (ITs) by using intranet portals in order to continuously improve operational excellence and achieve the strategic objectives of the organization to become the dominant frontend to knowledge management (Benbya et al., 2004; Zailani et al., 2006). Consequently, the university must let their portal become more powerful and with facilities that can reap the employee's productivity and by merely clicking to use it.

Portal users are facing several challenges from their development phase until implementing and towards maintenance. In implementing a portal, one can be facing many different challenges. All users need to invest time to get used to it since perhaps they were working previously in more traditional ways, or working alone, in project teams and face to face meetings, instead of using portal's communications services. Consequently, implementing a portal is considered an investment, because it implies acquisition of new hardware and software, along with the time and resources allocated in implementation. Then upon implementation, the intranet portal needs to be maintained because it can be overloaded. For example, there are many features and levels of functionality that sometimes users, in the beginning, can get confused with if they are looking for something that readily may not be supported by a quality portal.

1.1.4 Intranet Portal Utilization in Malaysian Higher Education Institutions

The Higher Education Institutions (HEIs) are facing intense pressure to increase operational efficiency and effectiveness due to the increasing number of educational institutions, employees, and students. As Canals (2011) stated in his study that in order

to meet the objectives as a high educational institution, the organizations must develop analytical competence, alertness, innovativeness, resiliency, creativity, and other fresh capabilities which are difficult to cultivate in their executive and managerial teams and resulting tension among business schools and educational organizations. Hamid et al. (2016) stated that the employee portals are utilized by many companies to get better companies' information exchange, communication, and employee collaboration, as well as to better support their business processes, and this can be imposed on the users within the HEI too. As a matter of fact, higher education is a service and can be characterized by a great amount of interpersonal communication, difficulty, disagreement, and customization compared to other services businesses (Patterson et al., 1998) as this business is related to the future of a person, of a student. This is suit to the philosophy of National Education to produce a human capital (Modal Insan), so the business must deliver the best for students in order to achieve the philosophy. Mohamad (2012) said that human resource development is an essential element in the pursuit of national development goals as they are the asset of Malaysian community, and this effort to produce human capital will be successful if the goal of the National Education Philosophy (FPK) into reality. Thus, these educational institutions are being forced to adapt to the quickly changing environments globally and compete among each other in delivery the knowledge and information. HEIs in light of this changing environment are taking advantage of intranet portals to enhance individual effectiveness and efficiency and consolidate a variety of information and services, thus competition occurs at the middle of the situation. Positively, there are a large number of intranet users know how to use or operate the intranet portal such as the increase of the page read and the readers as shown in Figure 1.1 below;

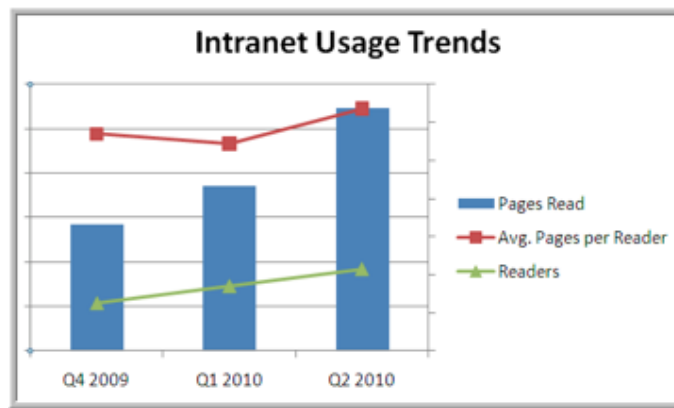


Figure 1.1 Intranet usage trends
Source: tractionsoftware.com

However, in the context of Malaysian users, intranet portal utilization, as a channel has become widespread and almost every organization is treating it as a technology that is valued and needed (Masrek, 2007). However, again questions loom regarding its optimizing utilization (Masrek, 2007). Investigation on the utilization in knowledge sharing (Hasan et al., 2011), information management (Ling et al., 2013) and self-service support (Hussein et al., 2008; Hussein et al., 2011; Siddiquee, 2008) is significant for the organizations get the benefit in economic terms, performance and satisfaction. Table 1.3 shows the statistics of academicians that support the academic world in HEI from the year 2010 to 2014. This numbers expected to be the number user of the intranet portals in their own institutions.

Table 1.3 Numbers of academicians in HEI (2010-2014)

Year	2010	2011	2012	2013	2014
IPTA	28571 academicians	29198 academicians	29769 academicians	32516 academicians	31917 academicians
IPTS	32992 academicians	26438 academicians	25574 academicians	24476 academicians	36185 academicians

Source: Malaysia Informative Data Centre
[http://http://mysidc.statistics.gov.my](http://mysidc.statistics.gov.my)

It is quite impossible to manage university information flows that are more complex than effluent flows (based on numbers of stakeholders in universities; see Table 1.3. University information needs to be able to supply accurate summary information for a wide-range of employees and departments. In short, universities may have the opportunity to host a wide-range of systems that connect databases to narratives; which, in turn, may create different databases, or different narratives (Ellis et al., 2007).

1.2 Problem Statement

Information technology (IT) provides tactical and operational advantages to organizations. But, according to Spohrer and Riecken (2006), lack of technology utilization problems may hinder IT advantages.

The acceptance, utility, and usability plus the benefits of an intranet portal has increasingly become a central aspect in terms of services offered in organizations. Employee acceptance is fundamental for the success of any change program where once employees participate more in the change process, they tend to accept it more as well (Razali & Vrontis, 2010; Remus, 2007).

Recently, Yahoo Korea (kr.yahoo.com) withdrew its services from the Korean market, which drew attention to the survival strategy of web portal services. In fact, Altavista and Lycos, once dominant players in the web portal market, are now forgotten by the public (Kopelman & Chiou 2010). This indicates that portals need a good strategy to retain users (Argenton & Prüfer, 2012).

According to Daigle and Cuocco (2002), major reason for deploying portals is to improve productivity by increasing the speed and customizing the content of information provided to internal and external constituencies; and to serve a knowledge

management function by “dealing with information glut in an organized fashion.” However, the detailed comprehension of how the adoption and utilization factors influence services offered is lacking (Norzaidi & Salwani, 2009). The productivity gain that can be achieved by corporate portals is often undermined because the users of the portal are not sufficiently informed about the portal’s capabilities (Elsner, 2013).

In Malaysian context, Intranet portal utilization, as a conduit has become widespread and almost every organization is treating it as a technology that is valued and needed (Masrek, 2007). However, again questions loom regarding its optimizing utilization (Masrek, 2007).

The tremendous increase globally in mechanisms of sharing knowledge and providing communication, information management or using e-services in higher education institutions is affecting Malaysian institutions as well. Higher education institutions are in the knowledge business since they are involved in knowledge creation, dissemination and learning (Azman et al., 2010). However, not many higher education institutions get the most benefit out of managing their knowledge (Aziz et al., 2010). Most of these institutions are so busy delivering knowledge that they fail to capture the best practices in their knowledge delivery (Raman, et al., 2014). It, therefore, becomes imperative to study the usage of intranet portals as they are being assigned, referenced and studied with the extra ordinary benefits but currently not optimized across all aspects of usage, functions and applications in existence today. Consequently, it provides limited services to their stakeholders.

However, in Malaysia, it is said to focusing on the research about intranet portals is certainly lacking in the academic research community and especially in the Malaysian context. Explicitly, there are limited sources or articles which provide

information and factors about the usage of intranet portals or satisfaction issues and benefits that are applying to employees in HEIs, especially in the Malaysian context.

Investigation on the utilization in knowledge sharing (Hasan et al., 2011), information management (Ling et al., 2013) and self service support (Hussein et al., 2008; Hussein et al., 2011; Siddiquee, 2008) is significant for the organizations get the benefit in economic terms, performance and satisfaction. Consequently, developing a model through quality and acceptance and use that considers intranet portals' specific requirements can make significant changes to organizations but many organizations lack a suitable framework and strategy to implement portals for their products and services due to some critical factors.

1.3 Research Objectives

This research intends to address the core issue that the influence of intranet portal utilization as a promising area of study or practices that have the potential to provide significant benefits, especially to employees. Therefore, the objectives of this research are as follow:

- 1) To examine the level of IPU amongst employees in Malaysian Research Universities.
- 2) To study the relationship of quality on IPU.
- 3) To study the relationship of acceptance and use on IPU.
- 4) To examine the relationship between IPU and employee satisfaction (ES).
- 5) To examine the relationship between ES and Benefit Outcomes (BO).
- 6) To evaluate the mediating effect of ES on the relationship between IPU and BO.

1.4 Research Questions

This research is designed to examine the IPU amongst employees in Malaysian Research Universities as the focus of the study, the relationship of the antecedent variables and the outcome benefits variables. Specifically, it will attempt to answer the following questions:

- 1) What is the level of IPU amongst employees in Malaysian Research Universities?
- 2) To achieve the objective of the relationship of quality on IPU, the research questions proposed:
 - a. What is the relationship of quality towards knowledge sharing on IPU?
 - b. What is the relationship of quality towards information management on IPU?
 - c. What is the relationship of quality towards self-service support on IPU?
- 3) In order to achieve the objective of the relationship of acceptance and use on IPU, the research questions proposed:
 - a. What is the relationship of acceptance and use towards knowledge sharing on IPU?
 - b. What are the relationship of acceptance and use towards information management on IPU?
 - c. What is the relationship of acceptance and use towards self-service support on IPU?
- 4) Furthermore, in order to achieve the objective of the relationship between IPU and employee satisfaction (ES), the research questions proposed:
 - a. What is the relationship between knowledge sharing towards portal content, portal design, portal personalization and portal community