

IT enabled service delivery innovation from quality perspective

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Received: 2013-11-02; Accepted: 2014-01-1

Abstract

The objective is to understand how information and service quality to influence of IT enabled service (ITeS), then to enhance service delivery innovation (SDI). This study bases ITeS to elaborate two research questions by adopting Rodosek's business reference model. Consequently, we conduct a case study approach, by deriving proposals concerning the relationships among two quality perspectives, ITeS, and SDI in a Taiwanese publishing company. In the end, we concluded three related findings. Firstly, the company based on service orientated to provide basic service functions to encourage more users to enjoy their services, as well as facilitating collaborative work via the online discussion area. Secondly, the company adopted advanced service functions to extend their service scopes to end-users, such as download the news into handheld devices. Finally, the company utilized the supporting service functions to assist customers integrating the ideas and plans.

Keywords

Information technology enabled services; service delivery innovation; information quality; service quality



1. Introduction

Technology enabled new service delivery approaches, also brought some problems (e.g. dependence in a service provider, risk to lose know how) (Arun et al., 2004). Nowadays, companies, who have based on constructed IT capability, fully focused on developing new information technology (IT) components. A number of studies have shown influences of firms' a competitive advantage across IT researches (Lu and Ramamurthy, 2011; Ross et al., 1996). To be sure, Lu and Ramamurthy (2011) based on IT capability discussing IT proactive stance. He emphasised that if firms constantly keep current with new IT innovations, or seek new ways to enhance the effectiveness of IT use, they will create business opportunities. On the other hand, there are numerous related IT theories have explained user's behavioural intention to use behaviour by adopting IT, such as, technology acceptance model (TAM) (Davis et al., 1989), and unified theory of acceptance and use of technology (Venkatesh et al., 2003). Only the ISSM mentioned the quality is the key factor to impact on users intention to usage, and satisfaction, such as, in the healthcare system, in the knowledge management system. However, they do not mention the impact of quality on IT enabled service (ITeS). We consider ITeS as adopting services from an IT platform to access, share, and modify information. However, we argue that even if IT capability has provided proactive stance service, it still needs the quality concern in services and information from IS to enhance and preserve the firm's innovation capability.

We firstly go back to the fundamental perspective, therefore, adopted Rodosek's (2003) business reference model to understand two relationships (provider-centric and service-centric, and customer-centric). From the provide-centric to service-centric, Gorla et al. (2010) based on ISSM investigating the relationship between IS's quality and



organizational impact. They concluded information quality (IQ) and service quality (SQ) directly influence on organizational impact that contains service enhancement and information support is considered as the importance of IT. He also suggests that we must consider amidst the existence of a tension associated with the notion of the technology. Therefore, we focus two factors (IQ and SQ) to understand its influence in ITeS. From the service-centric and customer-centric, IT enabled capability associated with high innovations within an industry (Joshi et al., 2010), especially, service delivery. IT assists the firm to manage knowledge sharing and transfer (Lee and Lim, 2005). Therefore, the firm can adequately utilize ITeS to achieve service delivery innovation, such as tourists, who can accept new IT application services, and use its functions to contact others tourists from the online tourist community instead of books and magazines.

Recently, many researchers have conducted studies related to ITeS or related to Service delivery innovation (SDI) (Dholakia and Dholakia, 2010). However, few studies describing the relationship between ITeS and SDI. Moreover, a number of studies aimed to discuss ITeS with the issues of business outsourcing and offshore service processes (Davis et al., 2002). They also do not mention the impact of IQ and SQ on ITeS. In fact, in the publishing industry, IQ and SQ are the two main factors impacting on the quality in products, and services. Therefore, we analyse the ITeS issue and explore its environment in IS, especially analysing IS development process. In more detail, we employ a case study of a real company to understand their technical framework in the design stage of their new IT system and service characteristics from IT services. This paper is based on IT services and interpreting the relationship between IQ, SQ and SDI by investigating a publishing company. The objective is to investigate a professional publishing company in Taiwan to understand: (1) what are the influences of IQ and SQ on ITeS in the publishing company, and (2) how to use ITeS to enhance SDI.



For these objectives to be achieved, this study is structured as follows. The first part deals with the literature review for the development of the research. After which research framework and methodology are presented, with full details of the participants in the research, and of the instrument and procedures used. Results are then presented, with a through description of the adoption process at the travel publishing company. Finally, results are discussed, and conclusions are drawn.

2. Theoretical foundations

The theoretical background is organized into three sections. The first section describes quality perspectives in information and service. The second section explains the relationship between quality perspectives and ITeS. The third section concentrates on discussion ITeS to SDI.

2.1 Information quality dimension in IT

IQ is a term that describes the quality of the content in information systems (IS). It is often pragmatically defined as “The fitness for use of the information provided”. IQ focuses on the quality of IS output (Nelson et al., 2005). It is a sophisticated research area in the IS field. In order to address the needs of information users, IQ should be evaluated. Previous research has used IQ to measure information system success (Iivari, 2005), and e-commerce success (DeLone and McLean, 2004). Accordingly, IQ is a multidimensional concept measured by dimensions such as content, format, relevance, accuracy, and completeness (Nelson et al., 2005; Gorla et al., 2010). Nelson et al. (2005) remarks that the evaluation of different information characteristics from a user’s perspective is fairly subjective and relative to the context and task at hand. Especially, the case company sees



service innovation as a critical issue in the publishing industry. Therefore, this paper takes the same aspects of IQ with Nelson et al. (2005) and Gorla et al. (2010), to classify IQ into lists across three categories (information relevance, information format and information content).

2.1.1 Information relevance

Information relevance (IR) is the extent to which information is applicable and useful for assisting decision-making. Poor IQ can be detrimental to system usability and hinder operational performance bringing the heightened risk exposure, and cause significant capital losses (Raghunathan, 1999). Cheung et al. (2008) mentioned IR is the critical element influencing information usefulness and adoption in the online communities. On the other hand, Pearson et al. (2012) provided the similar point of view, through IR can be pertinent to the user's needs. For example, when a tourist intends to visit a country or create an itinerary, they will get help from travel books to plan the trip. As a travel book has vivid photos and shows the content with clear markers on a map, it helps the tourist easily understand the relations of the attractions, allowing people to highlight the attractions and place it into their itinerary.

2.1.2 Information format

Information format (IF) refers to the degree to which the information is well presented and pleasing (Lin et al. 2009). Poor IF can cause ambiguity of the information. Therefore, Lee et al. (2012) emphasized the importance of the IF, which is related to the concept of consistency, to sustain compatible information. It affects the customer responses, such



as, style presentation and easy to understand. Jeong and Lambert (2001) implied that IF include its design, format and links to be unambiguous, clear or readable because IF related to the layout format assist customer ease of use and gathering of information on the Internet (Davis et al., 2002). Especially on e-commerce websites, Hong et al. (2004) conducted two results (displaying only one product in each row and displaying more than one product in each row) formats used to organise multiple product information on Webpages. With digitalised information, these aspects of format are significantly enhanced. Therefore, a publishing company who wishes to establish a tourism platform should follow the same aspects and functions to support tourists finding consistence useful information from the database and completing their itineraries.

2.1.3 Information content

Information content (IC) is defined as the degree of valuable source of information or communicated material on a website (Cudmore et al., 2011), such as using tourist website for organizing tourist purpose. IC should take responsibility for reducing the personal uncertainty, such as when organising itineraries, whilst facilitating choice and arrangement. The IC perceived quality in terms of accurate, complete, concise, useful and relevant for decision-making (Nelson et al., 2005; Gorla et al. 2010). From information consumer's perspective, the content of the information is one of the main characteristics of a website. The value of the website may not be assessed independently of the quality of the information content that it provides (Herrera-Viedma et al., 2006). However, a majority of Internet users will not visit the web site again if they do not find it useful (Singh, 2009). The content of the website should also meet the needs, and the presented information should also consider the credibility for encouraging people who enjoy



involving in contributing their works (Cudmore et al., 2011). Therefore, we take the same aspect as other research because information, data, experience or knowledge is considered a valuable asset to a business. The publishing company regarded content as their core business.

2.2 Service quality dimension in IT

The definition of service quality is controversial and SQ identified as a critical success factor for helping organisations build competitive advantages (Parasuraman et al., 1985), especially high quality of services generate customer satisfaction, and the good image of the company. SQ is defined as the degree of discrepancy between customers' normative expectations for a service and their service performance perceptions (Gorla et al., 2010). The concepts of IT service quality are reflected via IT enabled service meeting user expectations, such as satisfying users by providing services to promise. However, Four dimensions are widely discussed reliability, responsiveness, assurance, and empathy (Gorla et al., 2010; Kettinger et al., 2009).

Assurance focuses on the ability to inspire trust and confidence (Yang and Coates, 2010), such as professional knowledge, good manners and trustworthiness of service staff. We use assurance to understand users' confidence in content support. For instance, a tourist publishing company utilize their professional knowledge and reputations to develop a website for delivering and sharing touchable tourist information. Reliability is defined as the ability to deliver the promised service dependably and accurately, and concerns keeping promises, which includes delivery, complaint handling, etc. (Brandon-Jones et al., 2010). We use to evaluate the range of services in a tourist publishing company to improve the information service to their users. Responsiveness describes the willingness



to help customers and provide a quick service (Krepapa et al., 2003). For instance, the company adopts the responsive design ensure that visitors can easily read and use the website from any device, which is an essential feature for a tourism website. Empathy measures personal attention and cares to stress the treatment of customers as individuals (Liu et al., 2011). For instance, a tourist publishing company develops the tourism website based on user's perspective to design the clear interface with basic functions to provide friendly personal empathy with customers.

2.3 IT enabled service centric from quality perspectives

ITeSs are the latest buzzword in the IT industry. We focus on the relationship between IQ and SQ and explain the basic concepts and issues involved in ITeS. For example, in call centers, they have a customer relationship management (CRM). On the other hand, the system has provided correct customer information, and ease delivered to useful interface functions for indoor sales that can quickly response solutions to customers. Therefore, IT enables business by improving the quality of service is ITeS. Several studies written on ITeS sectors in different countries, especially in Philippines (Tschang, 2005) and Fiji (Davis et al., 2002), with most discussing the rise of ITeS outsourcing or business process outsourcing (BPO) that has allowed these countries to start a new export sector focused on business services (Davis et al., 2002; Tschang, 2005; Lahiri and Kedia, 2011). However, ITeS consists broadly of the whole gamut of business and technical services that can be outsourced, including customer interaction services, back office operations, transcription and translation services, content development, and other services, which include engineering services and research development.

However, because IT has become increasingly prevalent and integrated, developing clear



boundaries around the technologies to be explored in IT related research is not always been straightforward (Lewis, 2008). Schmidt et al. (2010) mentions that the co-creation of value in IT service processes could benefit from social software, as well as considering the value of the co-creation of IT services. To co-create value, interaction between the service provider and the customer has to advance along the entire value chain. It solves the interoperability problem between different concept sets by providing a specified collaboration platform, where concept designers can make agreements on the equivalence of heterogeneous concepts created in different contexts (Guo et. al, 2011).

In this paper, we define ITeS as a service model through IT to achieve two things to enhance services. The first converts the integration of IT and critical knowledge into digitalised data that are presented in different platforms (e.g.: digital libraries). The second uses ICT to deliver content to different devices through the enabling technology to trigger the services (e.g. Google). Hence, content providers must facilitate collective actions to enhance IT enabled capabilities in order to use them to develop content or treatments while simultaneously co-creating or collaborate with their customers and providing customised business innovations within individual customer relationships.

2.4 Thinking in customer centric to service delivery

A service is a method of delivering value to customers that facilitate the outcomes for customers and needs to be accomplished without costs and risks (Best Management Practice, 2007). Innovation in services can be regarded as the interplay of service concepts, service delivery practices, client interfaces, and service delivery technologies. IT service delivery is what an outsourcing company does for companies in order to help them find the optimal integration between IT and business. The provided IT service



enables clients to manage the relationship between people, processes, technology and information to enhance new goods and new distribution mechanisms (Chen et al., 2009).

Specialised markets are developing for low-skilled services, such as data processing and customer service delivery, as well as for critical knowledge-intensive field service activities, such as R&D and engineering design. As discussed above, the content providers must facilitate collective action to improve IT-enabled process capabilities. This paper is based on SAP's SDI discussions to examine the characteristics of successful SDI, which includes four key characteristics (Dawson, 2007):

- (1) A networked community: Professional services organisations are ultimately collections of individuals, extremely specialised professionals who create their ability to create value for clients or interaction with clients. Therefore, the community needs to create relationships among its participants, such as, common values, shared history, and policies (Leung et al., 2010).
- (2) Collaboration: If a company provides “black box” services without collaboration it will quickly become a commodity service provider. A professional service provider needs to provide effective support and continuously collaborate in the process with their clients to create greater value and lock in clients for the long term. However, Hefetz and Warner (2012) indicated that collaboration is the better solution for uncertain service delivery.
- (3) Continuous service: SDI is an ongoing process that must be embedded in the way a professional service provider functions and develops new products and services. Most importantly, the company ensure that the entire service process must continually seek better ways to deliver services to the customer (Zhang and Xu,



2011). To this end, creativity, opinion, knowledge, experience, critique, and suggestion from users will always bring continuous service improvement.

- (4) Enabling technology: Technology is a key trigger of SDI. Each of the characteristics of SDI discussed so far requires a technology platform that is modular, flexible and re-configurable. In addition, this platform embraced by the workforce to improve organisational efficiency and effectiveness (Jones, 2012). Moreover, it must integrate smoothly with external systems and processes to support client and supplier collaboration, and best-of-breed international resources. Therefore, enabling technology facilitates the migration of services by providing solutions for improved interoperability.

3. Research framework

Rodosek (2003) mentions a business reference model that provides three aspects that need to be addressed: service centric, provider centric and customer centric. From the service centric, which refers to elements of a service, which are independent of any provider- or customer-centric issues, takes about the service functionality and quality. In the provider centric addresses the argument that services, respective of service functionality, can be provided in different ways by independent providers, and includes three key elements, (i) steps on how to provide, operate and withdraw services; (ii) the quality of services offered by providers, and (iii) policies on how to operate services. Finally, customer centric refers to a facility provided by a service provider that can be offered to different customers. The framework of this paper is based on three aspects of Rodosek's Model to investigate why a publishing company looks for a solution to help them use their professions to deliver new services to users.



We will continue with a detailed specification of the attributes of the three identified parts of service. In the provider centric view, IT service providers are currently facing a variety of challenges, which move from devices and application-oriented, to service oriented management and newly created issues, especially Web-based IQ, technology enabled SQ or mass customisation for IT services.

The information might be not clear or lack accurate definitions that both cause a mismatch to happen with users. Larry (2005) identifies some of the critical IQ problems in collecting, preparing and presenting information for business intelligence and data mining, along with IQ principles for explanation or prevention. Zeithaml et al. (2002) determine that SQ contains the differences between expected service and perceived service from companies.

For customers, convenience refers to a generous amount of available service delivery points that are available when customers need them. Some studies note that IT-based service options might indirectly improve customer service because of service providers gathering customer information to improve operational efficiency and SQ (Randle, 1995).

In the service-centric approach, managing IT might be similar to managing other services that utilise equipment to provide at least part of the service product, with IT service providers having to focus on defining certain components such as reusability and being standardised to optimise IT service delivery.

In the customer-centric approach, it is more urgent today that companies have tools to create connections with their users, tools that can directly communicate and understands users demands. Nokia (2010) stress that flexible service delivery, addressing the transformation of service delivery to initiate a customer-centric approach, converged and



content-based service infrastructure for voice and data services is important for their operation.

4. Research Methodology

It is necessary for us to have an in-depth understanding of a new field. Therefore, understanding the implementation of a new idea like Web 2.0 into the publishing and tourism industries is essential because downstream companies (publishing companies and tourism companies) do not use a significant business reference model, whilst upstream companies (Apple Inc. and Google Inc.) are still developing new technology and creating new ideas to attract more customers.

By using a case study method and based on the business reference model, this study examines the relationship between IQ, SQ, ITeS and SDI in a company. Based on this information, this study will then provide generalise findings or lessons for other cases in the publishing and tourism industries.

4.1 Case selection and description

In Taiwan, every year the Ministry of Economic Affairs conducts an “Optimizing the business of innovation and network plan” to encourage companies in different industries. They need to submit their proposal for review by a committee. These proposals are reviewed in two main different stages (application proposal and progress report). All stage four and five domain experts were invited to help investigate. In 2009, seventy companies submitted proposals. After the first review step, the committee chose sixteen potential companies to attend the last review cycle, with four representative companies



eventually getting help. The case company is selected from one of four companies that got help in the 2010 plan. Our selected company is a traditional publisher, MPUB (pseudonym), who intended to take advantage of IT for building Web 2.0 based communities up, namely "TravelPass system" to make more services and improve the way they deliver services to users.

4.2 Data Collection

The research data collected from the report on the TravelPass system implementation process, which helped us better understand how MPUB to generate the new service model form the system. Our data gathering concentrated on the business reference model to discuss IT influences of SDI. Personal interview was conducted with director, project managers and senior managers. On the other hand, the focused group meeting were conducted with the programmers, team leaders, and editors. On average, each interview lasted between one and two and a half hours, during which field notes were taken.

We set two key data collection rounds, and numerous informal observations. Our fieldwork was focused on MPUB project teamwork and conducted by four researchers. The first two researchers conducted most of the onsite interview and investigation while the after two researchers played the role of neutral coder and experimented with an alternative analysis of the case. In the first period (from October 2009 to November 2010), we interviewed a total ten times with MPUB's directors, senior managers, project managers, and team leaders. It the first period of interview work, we discovered two key disciplinary in the case. The first disciplinary was during the investigation between the content management, and publication processes, and the second was found during the investigation of the four vital processes relating to the information systems use:



submission queue, submission review, submission editing, and issue management. Table 1 summaries our interview work.

In the second period (December 2010-April 2012), we selected filed workers, who have IT provision and know the publication process, and conducted onsite personal interview. We concentrated on mapping the relationship among quality perspectives, ITeS and SDI. The project team was asked to provide their in-depth stories relating to their daily works. We proceeded to analyze the IT tasks and trace their contributions in the team. By integrating the stories, we restored a fuller picture of the ITeS and service delivery innovation from the quality perspectives. To put it simply, in the interview process, we asked team members followed list of concepts (content formulation, information delivery method, promotional functions, creation of service value or challenges from new IT) answering our interview questions. After that, we used Atlas.ti helping us to classify and visualize our resources. We performed the pattern-matching method, which is a useful technique for linking data to propositions, to help generalise the interview and secondary data into different categories by following the theoretical discussion.



Table 1 The list of interviews and participants

<i>Participant</i>	<i>Purpose</i>	<i>Period 1</i>	<i>Period 2</i>
		<i>October 2009- November 2010</i>	<i>December 2010-April 2012</i>
		<i>Understanding the organization and project purpose</i>	<i>Investigating the IT, services processes and proper terms</i>
Management Layer	Director	3	1
	Senior managers	3	3
	Project managers*	1	5
Operational Layer	Team leaders*	3	4
	Web designers		2
	Editors		2

4.3 Data Analysis

The analytical process involved two tasks. Firstly, we analyzed the project team's investigation process, rather than the technical infrastructure of travelling system. Secondly, we asked the project team members to give the detailed descriptions of the benefit from the travelling system implementation. Following, we investigated the proper terms, and focused on the team members' perspectives in dealing with their new travelling system. The project team should continuously collate the use of new functions during the testing period of travelling system. We paid attention to the points when the team members starting to adopt the new function or allocation company's



resources into the community. Likely, uploading, listing or presenting the related travel information was investigated to construct on the travelling system. To ensure the functions and applications usability, we invested the whole design process to interact with the designers and noted in our research process.

We analysed reiteratively alongside data into three stages (provider's quality concerns, ITeS as a service platform, and new SDI to customers). In the first stage, we presented the provider's quality concern basing on two quality perspectives (information and service). IQ and SQ are a critical issue because MPUB wants to expand their publishing process, whilst, at the same time, giving accurate and precise information to customers, following the steady growth in Internet infrastructure and the development of online communities. It is noteworthy that users can obtain information from the website and discuss issues with friends or bloggers who need more time to verify that the information is correct. However, this has a bearing on the publication and print media because this paper is starting by observing the IQ and investigating the functions of TravelPass system, and based on three elements (content, format and relevance) from theoretical aspects of evaluating IQ and discussing the relationship between IQ and ITeS. Our detail analysis lesson shows in the table 2.



Table 2. Analysis lessons in the quality perspective

Provide-centric	Related variables	The quality of contents
Information quality	Relevance	<ul style="list-style-type: none"> • Search (keywords, themes, itineraries) • Menu functions • Plugin external social network linkages • Introduce attractions • Download (Web Apps, itineraries, news) • Grading and collecting attractions • Subscribe to RSS • Teaching guide • Multimedia presentation (contexts, photos, virtual reality, videos)
	Format	
	Content	
Service quality	Assurance	<ul style="list-style-type: none"> • Online survey and voting • Plugin external social network linkages • Links to related blogs, travel agencies, tourism bureau • Attractions' maps and street views • Request cooperation • Online registration • Upload personal comments • Email to instructors • Teaching guide
	Reliability	
	Responsiveness	
	Empathy	

With regard to IQ and SQ, MPUB is a professional publisher that must control the publishing process to confirm the travel content is accurate. The same for the community, MPUB must create professional travel content, share their travel experience and provide the latest and newest travel information to customers. Consequently, more real-time information as a backup provides accurate information that can attract more customers to use the content service offered by MPUB,



with their partners being more willing to pay to participate in TravelPass system. On the other hand, MPUB should be more responsive about not only the content service but also the service functions designed TravelPass system to push more customers to choose IT enabled service-oriented functions from TravelPass system.

Finally, based on the four aspects of service delivery by Dawson, this paper thoroughly investigates the characteristics of TravelPass system and discusses the relations between SDIs and managing IT services, and involves a number of members' practices to ensure that IT enabled services provide what has been agreed between the service provider and customers. Service delivery capabilities should help better manage evolving customer requirements and execute the end-to-end execution of several new services. MPUB utilises TravelPass system to handle many service providers, customers and content.

5. Research discussions and findings

In recent years, tourism has become the most popular leisure activity in Taiwan, whether domestic tourism or travelling abroad. Most people like to plan free individual travel (FIT) and look for related tourism information on the Internet (blog and forums), instead of in newspapers and travel agencies because in the past, travellers could only get tour information from travel agencies, newspapers and international travel fairs, books and magazines. The travel agencies are focusing on selling packages and addressing other schedules for travellers at the limited time when they are in the trip.

On the other hand, whether books or magazines provide attractive photos, well explained context and in-depth coverage, travellers need to pay more money to compare similar books or magazines. It is hard to engage travellers to pay for this. The most crucial issue is when the books or magazines published because the introduced attractions might have



changed and the travellers will not recognise this change. Then, when they arrive at their destination, they will feel anxious and complain why the publishing company has out of date information.

Because published information cannot immediately renew information and time is needed for republication, the travellers will see the differences. For example, maybe one hotel has cheap accommodation in Taiwan and is immensely popular, but a few years later, the hotel might have moved to another location. With the hotel still being recommended at the old address it will lead to displeasure by travellers.

However, the Internet technology environment has been developing. People tend to get free information from blogs and forums, therefore, travel agencies found this trend, then followed it to develop their own e-commerce platform by providing travel information and directly selling packages on the Internet. Both issues impacted on the publishing business. Therefore, MPUB must to consider the new directions to reduce the number of lost customers and their market share.

MPUB proposed two solutions, integrating the internal publishing process immediately to support the content in TravelPass system and implementing three functions (basic, advanced and supporting service functions) to delivery new service operations in TravelPass system.

5.1 Information integration options enhance IQ in content formulation to achieve the content services in ITeS

MPUB uses the experience of Pixnet Media in the online community to improve their publishing skills and develop social networking to establish a portal to provide tourism



information. To achieve this goal, MPUB integrated information from their internal and external resources in the two stage processes.

The first was a tagging process, which not only helped MPUB's in-house team tag articles and photos but they also collected information from their partners, communities and previous publications. On the other hand, MPUB spent a lot of time digitising their paperback information and separating the contents and photos into MPUB's publishing database (MPUB's DB), achieving data reutilisation. For ease of access, MPUB executed the tagging process by separating tourism data into fewer labels and categories (photographs, explanations, advertisements, restructured editions and blogger interactions).

Data stored in MPUB's DB provides information to the content management system (CMS), and in order to create a consistent data structure and have efficient artwork and text editing, helped the CMS provide relevant information. Therefore, the data tagging process not only improve the reutilisation of materials, but also reinforced the amount of relevant information to increase its accuracy. Especially, it helped the editors to quickly search the database and immediately gather information.

After MPUB's DB and CMS was implemented, MPUB utilised CMS to consolidate the processed data and used the concept of patterns to apply articles and photos into the new layout format, which would be electronic and proceed using a multichannel. For example, the tagged data was connected to CMS, which helped MPUB optimise portable document format (PDF) files and use the characteristics of eXtensible Markup Language (XML) to export the content into different size handheld devices.

Second, MPUB performed the modular process, which is based on structured content



delivering value-oriented travel information on the different layout formats. Therefore, MPUB uses a variety of information formats so that they can be presented on different devices. MPUB not only try to deliver quality content and faithful information services but also redesigned the publishing process of the existing environment (books and magazines) for their customers. Therefore, MPUB had to extend the range of services into developing the community or the digital content to improve the publishing speed. Furthermore, MPUB sought to attract, maintain and develop the tourism information and service functions in TravelPass system, which users or partners might depend on for accurate tourism information, to gather the latest business details and create a service continuity mechanism. The modular process provided the different sized layout formats in the multichannel, helping MPUB immediately present the latest information to customers.

Concerning real-time information, IQ is a critical issue, especially to a professional tourism publishing company to upgrade materials and proper publication content or customised content information for their customers to adopt a Web 2.0 based community to increase customer satisfaction and accelerate the updating of information. Hoskins (2007) suggests that an automated tagging capability ensures that all content within the source link is consistently and accurately categorised, regardless of when it is added to the portal. The modular process is both a process and product discipline offering a wide variety of advantages in the entire construction process. The modular process is applied at the product level and realised in the design development and production. The tagging and modular process helped MPUB with data management, contributing to the speed of information delivery and reutilisation of materials, supplementing accurate information to attract more partners to collaborate with MPUB. Therefore, information relevance and information format are key issues that have helped MPUB reduce the publication and



response times for partners and increased the reusing of materials.

One new distribution concept is Content as a Service (CaaS), whose technical foundation is referred to as data streaming to the concept of the much discussed Software as a Service (SaaS). A content provider might decide to collaborate in the delivery of such content as a service for mobile devices (this corresponds to a new type of service). The publishing company is pursuing the delivery of first-hand and corrected information to customers. Therefore, they consider the advantages of the best content formulation running the Website, and developed three stages (information relevance, information format and information content) to help the publishing company establish a bridge between relations and labels. MPUB strengthened their experience in digital publishing to achieve the purpose of using their CaaS, assisting MPUB to become a content-service provider and make their services easy to access and release. MPUB uses the concept of CaaS to provide different service options and helps them become an information content provider. Therefore, this study proposes the listing of three sub-findings.

- (1) Information relevance allows the connection between database and materials to help the publishing company to reduce the time needed to search for useful information and increase information accuracy.
- (2) The information format focuses on a different layout to allow users to easily get in-time information from the multichannel and improve the quality of the content.
- (3) The information content is accessible and consistent, making the publishing company a content service provider and focused on CaaS to provide suitable information.



5.2 Designing interactive functions for the Website to help users easily access service functionalities in ITeS.

MPUB initially established a Website in 1999, focusing on the style of the Website presentation and integrating information. MPUB tried to provide a tourism channel to deliver tourism news to customers. However, during this period running the Website, they faced two crucial problems leading to the Website failing. First, MPUB did not have any ideas about the concept of the pattern design. MPUB only feeds the travel information into the system; when users visited the Website, an unstructured page layout without a search function made it hard for users to find useful information. Finally, the users gave up and went looking for their information on other sites. Secondly, MPUB aimed to deliver travel information on different experiences to readers, provide clear itineraries to customers and request travel support from agencies to complete the itineraries on the Website.

However, the travel agencies protested about their itineraries because the itineraries and prices were visible and included confidential business information. Therefore, the Website crashed. MPUB used this experience of failure and adopted new community technology to design interactive functions that attract customers. MPUB designed several service functions to support more internal tourism information and gathering customer experiences by posting them on the Website to increase the value of the content and push partners collaborate with the services. MPUB took their professional experience and integrated information from travel agencies and bloggers' opinions through TravelPass system in order to attract more users. TravelPass system not only supported users collecting information but also allowed them to create their own page and save information related to their trips. MPUB integrated tourism itineraries posted on



TravelPass system, provided new applications supporting handheld devices and allowed customers to inspect and learn the newest tourism information from anywhere.

On the other hand, MPUB intended to create more enriched information in TravelPass system. Therefore, they provided interactive functions (online itinerary discussions, augmented reality, virtual reality, Google Map and Google Street View) and set the member functions to users. In order to integrate real-time tourism news, they provided multi-functional services, and connect to customers' handheld devices to enable the technological experience to bring greater differentiation in the marketplace. Therefore, the flexibility and digitised layout allowed MPUB to push forward SDI to enable TravelPass system to connect to new technological applications and achieve distinction in the marketplace to meet more users' needs. MPUB also designed free discussion areas on Triapss and Feacbook to attract more users, and to collect more relevant information. At the same time, MPUB also shared daily tourism news, helped users forward travel news and share tourism information with more friends to help MPUB look for more potential customers and prompt their services from TravelPass system.

In addition, MPUB designs critical interactive functions integrating Google Map and Google Street View services, and their overseas project team to collect accurate information to provide precise location data. MPUB utilised those functions to support users to gather information and make their own tour itineraries more precisely. MPUB provided a remarkable searching function. The user could quickly select "search companion", which includes popular items, delicacies and shopping locations to obtain related search results. On the other hand, MPUB also set the VR shows the street view or the hotel room, to help user get visual information to make more appropriate decisions. MPUB provides several service functions supporting customer experiences to increase



service functionality and collaborative value. Therefore, this study proposes three sub-findings.

- (1) New service function, which includes interactive functions and connective different resources helped increase the reliability of system.
- (2) New service function adoptions helped MPUB quickly update news and attract more customers to collaborate in discussions, increasing information assurance and availability.
- (3) MPUB designs the interactive functions and adapts to free open resources helping users not only rapidly organise their itineraries but also directly collaborate with their online friends increasing service availability.

5.3 Using ITeS integrates backend support from IQ and SQ to deliver a suitable layout interface enhancement for the functions of SDI.

After the observation process, TravelPass system functions can be divided into three main categories. Users not only want to gather tourism information from TravelPass system but also intend to interact with the company, travel agencies, other users and relevant partners in different ways. Therefore, the first function is the basic service function, which support reading, discussion and searching in TravelPass system, or connect to other community and Websites. The second function is the advanced service functions, which have a member function and personal space; travellers can leave their experience, opinions and collections on Triapss. The final function concerns supporting service functions, which have the newest technology support and latest software applications in TravelPass system. One supports the content, MPUB developed TravelPass system based on their database to improve the quality of information. TravelPass system receives information from MPUB's DB and complements partners to



generate supporting information, such as itineraries, tourism advertisements and recommended travel locations. Moreover, MPUB, based on the service-oriented function, uses TravelPass system as a tourism channel to connect to the three main service functions.

Consequently, MPUB established TravelPass system based on the features of ICT and the concept of Web 2.0. Firstly, bloggers can share information anywhere and tell a friend where are they, which attract uses to improve their mobility. Secondly, MPUB adopted new business reference model using advanced technology and turned their content into digital information to enhance the skill of CaaS. Thirdly, MPUB opened the discussion area to attract travellers, bloggers, experts and travel agencies to share tourism news and experiences.

Concerning basic service functions, TravelPass system supports accurate travel information, which will attract not only customers but also partners to participate in the development of TravelPass system. Therefore, MPUB uses TravelPass system as a service bridge to collect or connect related travel information and exchange travel knowledge or experiences with other people (bloggers, editors, writers), so that users can instantly access service-oriented functions such as searching for attractions, travel themes and recommendations from TravelPass system.

The second is advanced service functions. TravelPass system helped users consider their opinions and offer a personal service. It even provides several digital formats to extend their service to users' handheld devices to not only provide ongoing services but also to increase information reliability, customer loyalty and satisfaction. Finally, MPUB established new supporting service functions, created a Web 2.0-based community and addressed the functions (views in VR, AR and Google Map with Street View or creating their own itineraries) to engage users, who spread the travel notes.



MPUB also encouraged greater empathy with the service building a collaborative and co-creation platform that is easier for users.

6. Conclusion

This paper firstly adopted Rodosek's business reference model discussing two relationships: provider-centric and service-centric, and service-centric and customer-centric. We used this model to explore the relationships between IQ and SQ related ITeS and analyse how IT affects SDI. This study used a case study method to provide an in-depth understanding of the four constructions and descriptions that have influenced the company.

We proposed the follows findings. The first, IQ affects ITeS in content formulation, which includes three elements supporting accuracy, ease of understanding, accessibility and consistent information to customers. The following, service quality impacts on information technology enabled services in the service functionalities. Therefore, the publishing company started thinking about customer demand, redesigned the interactive interfaces and added the latest technologies from free open resources to improve customer satisfaction.

Finally, the publishing company uses backend supplements supporting the three fundamental functions in the frontend interface. They designed suitable interfaces to achieve service delivery innovation affecting the networking community, pooled clients and partnered everyone to join to the collaborative environment delivering continuously service. A publishing company wants to speed up their business process and utilise e-business to enhance digital rights management and use a transactions information



platform to establish a charging mechanism. A publishing company needs to adopt the modular IT approach, which aims to help companies reduce publication processes and accelerate the speed of publication, whilst the technology still sustains innovation and any kind of handheld devices that progressively become popular. Therefore, this study concludes that,

- (1) The company developed basic service functions, based on service-oriented functions supporting certain fundamental functions and connecting to outer communities to encourage more users to enjoy their services, as well as to facilitate collaborative work via the online discussion area.
- (2) Advanced service functions are connected to individual services, encouraging users to participate in TravelPass system activities (writing travelling notes and sharing itineraries with other members) and download the news into handheld devices to extend services to end-users.
- (3) Supporting service functions enable the new applications to provide location-based services, which helps members have general ideas about the location and organise their itineraries.

Due to time and resources limits, this study has some areas that need to be improved. This research used the case study method to have an in-depth understanding about the situation. By using an interview method to collect the data, we found that there are some biases related to the respondents. Respondents with individual perspectives will affect some related information. Respondents without enough of a perspective and guided by others made some wrong assumptions for this study, posing a problem for future research. On the other hand, the authors probed the impact from a personal perspective, making improper judgments or conclusions. In addition, this study only focused on a single



company. That may be a problem and include some biases because in this case, these problems may have been processing for few months, but applying the findings to other cases may not be appropriate. Therefore, the results do not represent whole industry. Nevertheless, this exploratory study could be an extremely useful starting point for future research, which aims to study in depth what factors influence the design in the industry. Therefore, future research can focus on the business process reengineering issue to discuss the impact of changing processes in a company.

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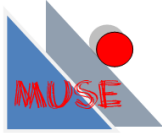
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