Why not change libraries' position of supply-chain? A conceptual model for leaguing libraries and e-resource industry

This article is to propose a conceptual model for building a supply-chain partnership between the libraries of the institute of technology (hereafter referred as IOT) and electronic resource (hereafter referred as e-resource) industry in Taiwan. This conceptual model is conducted by evaluating the current relationship between the libraries and e-resource industries, and provides a new solution which focuses on the following issues. This article is organized into the following sub-headings：

1. Introducing the current situation and circumstance of e-resources supply

2. Description of relative issues

3. Reviewing relative objectives

4. Describing the conceptual model

5. Anticipated benefit

In Taiwan, the campus library of the IOT is usually at the downriver position of the e-resource supply chain. It means this kind of library spends a large sum of money for purchasing the e-resource, which includes e-books, e-journals, and other electronic databases, and it can only play the role of a purchaser. However, the main missions of the faculty in Taiwanese the IOT are equipping students with practical skills and cooperating with businesses and the industries involved; therefore, most of the

faculties' product are technical reports and industrial projects involved. The technical

reports and industrial projects are usually not appreciated by the e-resource provider

companies. This means, the technical reports and industrial projects have much less of

a chance of being collected than those academic research articles. The phenomenon is

not fair to the aforementioned faculties: are the teaching effort, educational

contributions and academic achievement of the faculty of the IOT less than those

mainstream universities?

Therefore, the conceptual model aims to present creative, practical and effective

blueprints for purchasing e-resource and offering new services for promoting

knowledge, and benefiting the IOT, students, libraries, and the e-resource industry.

Hopefully, the conceptual model of supply-chain partnership will contribute to

librarians, Library and Information Sciences (LIS), and the e-resource industry.

Background

Every year, the libraries of the IOT spend an inordinate amount of money for

purchasing e-resources, which include e-books, e-journals, and other electronic

databases. Most of the e-resources available are primarily made of other languages

other than Chinese. However, are those e-resources really helpful to the faculty and

students of the IOT? Librarians have a duty to think about this issue according to the

availability and usage of the e-resources.

In Taiwan, the IOT differs from university or colleges for two reasons. First, the main mission of the faculty in the IOT is equipping students with practical skills and cooperating with the industry, not educating them as scholars. Due to this mission, the main product knowledge of the faculty in the IOT are technical reports and industrial projects, and most of them are written in Chinese. The technical reports and industrial projects written in Chinese are usually not appreciated by the e-resource provider companies. Those technical reports and industrial projects are consequently collected and used much less than those academic research articles. Second, the students of the IOT are trained as professional technicians and with practical skills, so they are less interested in academic or research articles, especially those written in non-Chinese. Therefore, the e-resources are used less by those students.

<div align="center">Concerned Issues</div>

Why Do Libraries Only Play the Role of A Purchaser?

Since the product knowledge of the faculty of the IOT is collected less by the e-resource provider companies, and the students used less to the e-resources, why do libraries spend an inordinate amount of money to purchase the e-resources and can only play the role of a buyer? The phenomenon is not fair to the faculty of the IOT. Are the technical reports and industrial projects written in Chinese less valuable than product knowledge of universities?

Furthermore, it is a double lose for both technical institutes and Taiwanese industries/businesses. Although the product knowledge of the faculty in the IOT are greatly helpful for increasing the industrial knowledge and teaching skilled students and skilled labors, most of them only publish in the journals of their technical institutes. Few people can read them. In other words, the product knowledge of the faculty in the IOT can not be available for those Taiwanese businessmen or technicians unless it is being collected by the e-resource provider companies.

Change the Position of Publishing Supply Chain

The libraries should no longer be at the downriver position of the e-resource supply chain. The libraries of the IOT can not only purchase the e-resources from the provider companies, but also cooperate with them to collect the technical reports and industrial projects of the faculty of the IOT. In other words, the libraries could be at the headwater position of supply chain. A new collaborative relationship between libraries and e-resource providers needs to be established and will be an adventure in marketing library resources and services.

Libraries Work as E-Resource Providers?

People may ask: why libraries of the IOT fail to work as the e-resource provider companies and collect the technical reports and industrial projects of the faculty themselves? The reality is that the libraries need to prepare and maintain the facility,

technicians, and marketing strategies in order to establish the e-resource collection.

Since the libraries can not offer the increasing budget of purchasing collections

annually, nor do they have the manpower or budget for building the e-collection. This

is why the libraries should cooperate with e-resource provider companies.

<div align="center">Relative Objectives</div>

Institutes of Technology vs. Universities

The first institute of technology and polytechnics has existed at least since the

18th century, but became increasingly popular post-World War II with the expansion

of technical education, associated with the new needs created by generalized

industrialization (http://en.wikipedia.org/wiki/Institute_of_technology). Institutes of

technology are designations employed in a wide range of learning institutions,

awarding different types of degrees and operating often at various levels of the

educational system. The IOT may refer to a vocational education institution

specialized in technical education, or a mixture of both. In other words, the

designation of the IOT is related with the technological character of those institutions,

which is as well as a higher education that specializes in the sciences and technology

(http://educationusa.state.gov/graduate/glossary.htm).

In some cases, the IOT are engineering schools or technical colleges. More rarely,

institutes of technology are considered universities when they have autonomy to offer

masters and doctoral degrees. They are at the same time independent research institutions. These conditions are necessary to be formally considered a university. This is very similar to the current situation in Taiwan.

Universities are academic organizations which grant undergraduate and graduate degrees in a variety of fields and support at least two degree granting professional schools that are not exclusively technological (such as medicine, journalism, or agriculture). It is composed of a number of "Schools" or "Colleges", each of whom encompass a general field of study (http://www.hartdistrict.org/placerita/terms.htm). Focus on extending and teaching knowledge and academic performance, there are at least three main goals for universities:

    1. Teaching graduate and undergraduate programs

    2. Finding new knowledge and more ways to use old knowledge

    3. Making its findings and teachers valuable to society

There are still differences which exist between the IOT and universities. Universities is a term which is usually used to describe an educational institution of the highest level with teaching and research facilities consisting of at least one graduate school and professional schools that award master degrees and doctoral degrees in addition to an undergraduate division that awards bachelor degrees (http://www.tulsacc.edu/page.asp?durki=972). In comparison with the goals of

universities, the goals of the IOT are:

1. Primarily teaching undergraduate or lower programs

2. Putting projects into practice according to both old and new skills and giving

more ways to apply update knowledge or theories

3. Making its products (skills and professional facility) available to the industry

4. Connecting students with the industry and ensuring students' future jobs

Because of the differences of aims and missions, the learning products of the

IOT differ from the learning products of universities. Most of the e-resource provider

companies prefer to collect the learning products of universities, which are more

academic than practical.

Supply Chain

Supply chain is not a recent phenomenon. It has been in existence for many

centuries, starting with the trading supply chains dating back to the Phoenicians of

4500 BC. Until late into the 20th century, the supply chain operates in a vastly

different environment. Capacity now outstrips demand for almost any product or

service demanded by an end user, and the execution time is measured in day, and,

sometimes, minutes. The Supply Chain Research Group at the University of

Tennessee defines supply chain management (2006) as "the systemic, strategic

coordination of the traditional business functions within a particular company and

across business within the supply chain, for the purposes of improving the long-term

performance of the individual companies and the supply chain as a whole" (p.22).

According to Mentzer et al. (2001), "Supply chain has been defined as "three or more

companies (suppliers, focal companies and customers) linked together by flows of

products, services, information and finance, which may include manufacturing"(p.5).

In other words, a supply chain consists of multiple firms, with each firm engaging in

multiple functions in a combined effort to meet common goals, while simultaneously

coping with its individual needs to meet its own firm and functional goals. There are a

multitude of processes, sub-processes, and activities in any supply chain, whether it is

made up of large or of small firms (Foggin et al. 2004). This gives libraries an

opportunity to think about the publishing supply chain.

　　The publishing industry has a long history. As early as 600 BC, scribes were

known to have copied poems, speeches, and orations on these scrolls to sell at high

prices. Publishers held a position of power in the pre-computerized age. Booksellers

held a prominent and profitable position within the trade. The following figure

developed by Viluksela (2007) may explain the traditional publishing supply chain (p.

4). In this figure, libraries do not even exist in the chain! Libraries may be viewed at
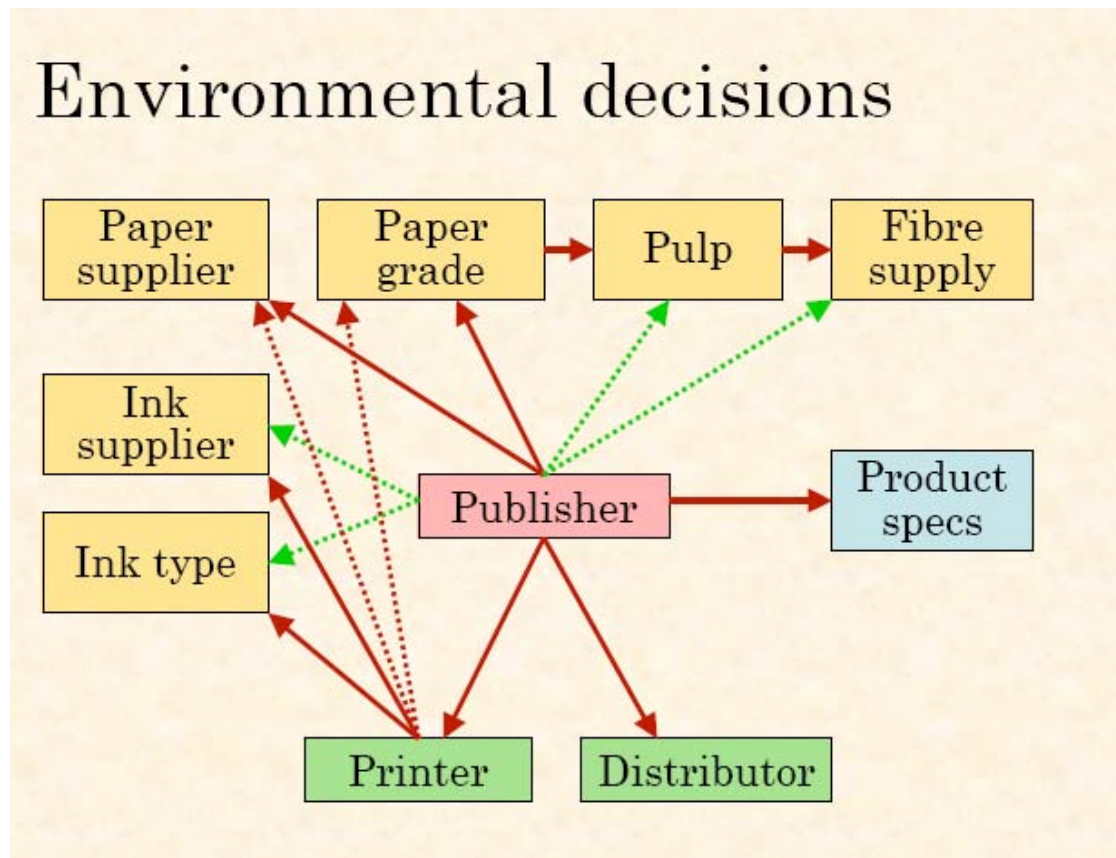
best as "readers".

Fig. 1. Description of environment impacts on the decisions of publish supply chain,

adopted from Viluksela (2007)

E-Publishing and Electronic material

Vastly different from the concept of traditional publishing supply chain,

according to Stevens (2006), "Electronic forms of bibliographic data began to emerge

during the 60's, since then, the amount of information produced to support published

material is huge, and is, for the most part, created and maintained by the industry

(including libraries with information specific to support their collections)"(p.3).

Inevitably there is now considerable duplication of effort and storage of this

information, resulting in higher costs for all involved.

The publishing industries and libraries continue to change. Publishing has

expanded from books to the many kinds of media now available. The revolution

currently taking place promises to completely change the traditional supply chain that

has supported the industry since its origins. During the late 90's, the Internet came of

age and is now completely established with e-commerce, e-books, MP3s, online

journals and self-publishing the norm. High speed, constant access to the internet,

cheap hardware, and the development of open standards and web services are

allowing far greater collaboration and aggregation of information to be delivered to

wherever it is needed.

Library vs. E-resource Providers/Vendors

As information technology has matured, a tremendous opportunity has arisen for

libraries to reinvent themselves by regenerating their resources, challenging their

competitions and reforming their traditions (Edgar, 2007). In this age, the library is

synonymous as an electronic-library, digital-library, or wall-less-library; therefore, the

description and mission of current libraries must be given.

According to Weber (2007), "Digital libraries are organizations that provide the

resources, including the specialized stall, to select, structure, offer intellectual access

to interpret, distribute, preserve the integrity of, and ensure the persistence over time

of collections of all digital works so that they are readily and economically available

for use by a defined community or set of communities" (p. 227). Therefore, it is obvious that digital works are a single kind of collection in current libraries.

In this study, the digital works will be referred as an e-collection, which include databases, electronic journals, books and other electronic resources, and are made available to users electronically. Most of e-collections are organized and promoted by the e-resource provider companies. More than producing the e-collection, the e-resource providers/vendors also provide assistance, information or services wanted or needed to the campuses. Sometimes, the libraries may be also online with information useful to act as the e-resource providers.

The campus libraries or academic libraries and e-resource provider/vendors are commensally. First, thinking about the faculty, students and adjacent communities, the libraries are the most canonical and proper units to purchase the e-resources. Second, as far as most people are concerned, the databases, electronic journals, books and other electronic resources are too expensive to own. Based on the above two reasons, the e-resource providers/vendors always keep close relationship with campus libraries.

Indeed, today relationship management is becoming a strategic function and a key factor in competitive positioning. The issue is already highlighted by research effective relationships with supply chain partners and may be of strategic importance

(Napolitano 1997; U.S. General Accounting Office [USGAO] 1997; Magnet 1994).

The primary reasons for the emphasis on supply chain partners are changes that have witnessed consolidation of firms within industries, continuous product evolution and constant pressure on maintaining a budget. Supply chain partner relationships will become more critical in the future. Although relationship management is of strategic importance to a firm, good relationships between customers and suppliers are elusive. Firms realize that collaborative business relationships improve their ability to respond to the new business environment by allowing them to focus on their core business and to reduce costs within their businesses. The libraries and e-resource vendors have the same duties (collecting and distributing human knowledge) and the same users (faculty, students, community citizens); therefore, libraries and e-resource vendors need to emphasize aspects that enhance supply chain partner relationships. They may work inter-functionally.

Inter-functional coordination is defined as working together in close relationships across functions or departments to achieve common company goals (Min 2001). Narver and Slater (1990) equate this to a symphony orchestra. The common goal is a beautifully played piece of music. Each function (strings, percussion, horn, etc.) has its own individual responsibilities; however, all functions must work together and harmonize to successfully achieve the end goal.

Inter-functional coordination requires both interaction and collaboration to achieve

high performance (Kahn and Mentzer 1998).

However, the inter-functional coordination needs interaction, which emphasizes

communication in the form of meetings. Information flows between the different

functions, whereas collaboration implies mutual understanding, a common vision and

shared resources. Both communication and collaboration promote close relationships

among the functions (Kahn, Reizenstein, and Rentz 2004).

Collaboration is a common understanding of what drives each function toward

the company's overarching goals. It is important to remember that true collaboration

is not just interaction through a series of inter-functional meetings and document

exchanges (i.e., mutual goals, targets and rewards). Rather, it is associated with

greater interdependence to succeed. Therefore, the libraries and e-resource vendors

should understand their relationship is symbiotic. They need to cooperate in the

publish supply chain. More so, it is time for them to change their positions in the

e-publishing supply chain. The e-publishing supply chain may work diversely and

create more educational benefits for libraries, e-resource venders, faculties and

end-users. Therefore, the basic footstones for conducting this conceptual model are

first, inter-functional coordination and second, communication. The two basic

footstones are also the anticipated achievement of this model.

Conceptual Model

The speed of change within the library supply chain is constantly increasing, with all formats of publication (including books, audio-visual material and journals). One could argue that if this has worked for so long, why bother changing it? The evidence is becoming increasing. In order to survive, change is inevitable. All parts of the e-publishing supply chain need to embrace a new way of working, supported by new information technological applications, to deliver the best experience and value to all library users.

Conceptual models usually combine diagrams and descriptions to represent a system, because conceptual models are the easiest to build and understand, they are the best choice for achieving a shared understanding of the supply chain, and also a good choice to represent the author's idea of building a new publishing supply chain for libraries and e-resource publishers.

Although the conceptual model is generally less precise, its combination of diagrams, descriptions and scenarios often capture the nature of the chain flow. Regardless of how to express a conceptual model, according to Taylor (2004), "the key is to find the right balance between precision and ease of communication"(p.93). Therefore, this study conducts the following model to express the new concept of leaguing libraries and the e-resource industry into a collaborative supply chain.
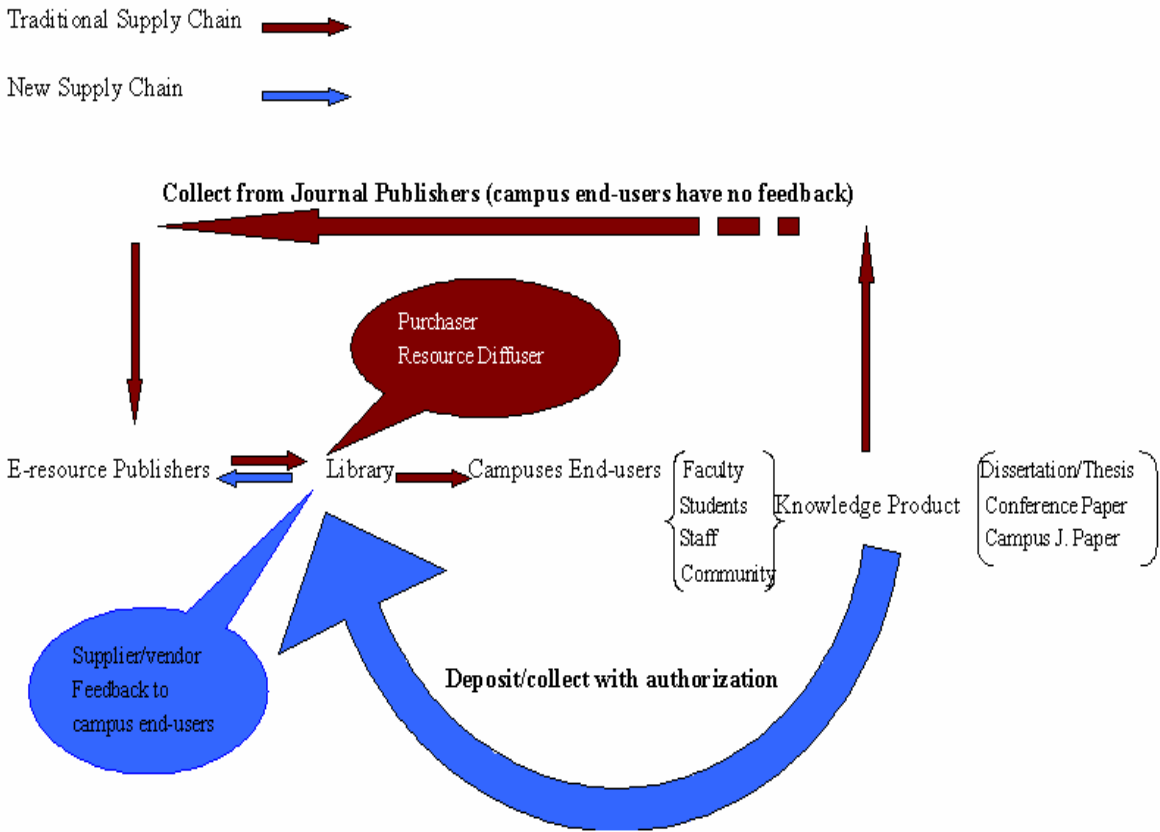
Fig. 2.   A new conceptual model of the publishing supply chain, developed by the

researcher.

The traditional publishing supply chain is the campus end-users (e.g. faculty and graduate students). They submit their papers to journal publishers, and e-resource providers work with the journal publishers to set up a database to save those papers. Then the e-resource providers become the vendors for selling the databases expensively to the libraries. The librarians then train campus end-users to search for those papers. After reading those papers, the campus end-users may produce a new paper and submit it to the journal publishers. It is a cycle and the traditional publishing supply chain.

We learn from this model that libraries may get the authorization of and collect the product knowledge of campus end-users, then sign contracts collaboratively with the e-resource providers/vendors to establish an e-collection database and promote those products along with the e-resource providers/vendors. Then the goal of changing libraries position of publishing supply-chain may be achieved.

<div align="center">Anticipated Benefits</div>

For E-resource Suppliers/vendors

Currently, the same information is provided to multiple outlets, with each institution holding its own copy of the core data. Surely in today's distributed environment, data used by the industry in general should be made available in such a way that it does not matter where the information is held, and access to that

information is based on one's choice and the value of that information to the person requiring it. Publishers constantly deliver new price and availability data which is aggregated and delivered to institutions using intermediaries. It costs facility and human resources. The searching time and collecting cost may be reduced via such a conceptual model. Commercial publishers should find themselves struggling to provide value to the users in an online world where communities are likely to take the lead at the expense of commercial players.

For Libraries

The major benefits that libraries can expect to gain from adopting the conceptual model and new position of the supply chain include:

1. Reduced cost of collecting and building a knowledge product database

2. Richer experience for their clients

3. Collaborated processes and followed closely with e-publishing

4. Greater visibility in corporate services and thus uplifting the library's image

6. More choices to use best of the hybrid solutions

7. Increased participation with the authorities or institutions, either regional or

    national

For Campus Users

While the requirements of higher education have been of a more complex nature,

it seems sensible that all libraries should have the same standards of service and

supply. Journal and e-book purchases are likely to become campus users' preferred

choice to support the growing trend in e-learning from wherever the user is located.

There are enormous efficiency gains yet to be realized in the purchasing of this

material. Supply is changing to further meet the needs of its customers, and to move

towards simpler standards. From the conceptual model, the campus users cooperate

with libraries and work as self-publishing. Although small, it is still beginning to

become a viable alternative to mainstream options, especially within the e-publishing

industry. Via this model, the practical knowledge of the faculty and students of

institutes of technology may be distributed all over the world, so that their reputation

may be advanced

IN conclusion, the study is to find the libraries new position of supply chain of

e-publishing, and is to create threefold winning for libraries, users and e-resource

providers/companies.

May the libraries of instates of technology not only purchase the e-resource, but

also require the e-resource providers/companies to collect their faculty's knowledge

products? Let the e-resource providers/companies collect the faculty's knowledge

products, and meanwhile, let the e-resource providers/companies promote the

faculty's product knowledge globally. There is no need to continue to view libraries as

clients and buyers, the libraries may stand on the headwaters of e-publishing supply chain.

Once doing so, the following efficiency will emerge, which is also the anticipation of the conceptual model:

1. Increasing the visibility and reputation of the faculty of the IOT, and encourage the faculty to become more passionate with teaching and researching passion.

2. Increasing the collaborative willingness of industry and institutes technology, and benefit to students and industry human resource.

3. Saving the collecting time of e-resource providers/companies.

Campus libraries are not only places of knowledge storages, the librarians can also play the roles of collectors, providers and disseminators of information. This conceptual model tries to overturn the traditional library image by changing the position of e-publishing supply chain. It also attempts to benefit the libraries, students and faculty of the IOT, industries, and e-resource provider companies.

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