FROM DIGITAL ARCHIVES TO E-BUSINESS
A Case Study on Turning "Art" into "Business"

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Keywords: e-Business, Digital archive, Cross cultural product design, Cultural difference.

Abstract: Along with Information Technology progress, E-business is becoming a key concept in the Internet and electronic commerce world. However, in today's intensely competitive business climate, innovative products become central to E-business development. Furthermore, changes in consumer perceptions regarding innovation are also important in E-business. Recently, creative industries are continually emerging in electronic commerce and have the potential to become a key trend in E-business. Understanding the E-business models for creative industries and helping designers to design "culture" into products are important research issues, and issues not yet well covered. Therefore, this paper proposes an ABCDE approach to illustrate how to transform "Archive" into "E-business". In order to turn "Archive" into "Business", we first need "Creativity" and "Design"; only then can we transform innovative products into "E-business." Results presented herein create an interface for looking at the way E-business crosses over cultures, and illustrate the interwoven experience of E-business and cultural creativity in the innovation design process and electronic commerce world.

1 INTRODUCTION

Along with the progress of Information Technology, E-business has become a common concept in the Internet and electronic commerce world. However, in today's intensely competitive business climate, innovative products become central in E-business development (Amit & Zott, 2001; Ben Lagha, Osterwalder & Pigneyr, 2001). To be successful, innovative products must have a clear and significant difference that is related to a market place need. Furthermore, changes in consumer perceptions regarding innovation are also important in E-business. In addition, "Culture" plays an important role in the design field, and "cross cultural design" will be a key design evaluation point in the future (Lin, 2007; Lin et al., 2007). Designing "culture" into modern product will be a design trend in the global market. E-business is considered to be one of the pivotal components in cultural and creative design industries, and this will have a significant impact on consumer perception of innovation.

In the global market - local design era, connections between culture and E-business have become increasingly close. For E-business, cultural value-adding creates the core of product value. It's the same for culture; E-business is the motivation for pushing the development of cultural and creative industries forward. Recently, creative industries have been continually emerging in electronic commerce and can become a key trend in E-business. Obviously, we need a better understanding of E-business in cultural and creative design industries, and not only for the global market but also for local design. While cross-cultural factors become important issues for product design in the global economy, the intersection of E-business and creative industries becomes a key issue making both local design and the global market worthy of further in-depth study (Dubosson, Osterwalder & Pigneyr, 2002; Osterwalder & Pigneyr, 2002)..

The importance of studying E-business has been shown repeatedly in several studies in various areas of the design field (Amit & Zott, 2001; Ben Lagha, Osterwalder & Pigneyr, 2001). Despite the recognized importance of E-business in cultural and creative design industries, industries lack a systematic approach to E-business. Understanding the E-business models for creative industries and turning "arts" into "business" for designers are important research issues, and until now these topics

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have not been well covered. In order to transform "Archive" into "Business", we first need "Creativity" and "Design", only then can results be transformed into "E-business." (Ko et al., 2009). Therefore, this paper proposes an ABCDE approach for illustrating how to transform "Archive" into "E-business". The ABCDE approach integrates the difference between products and services of cultural and creative design industries into the E-business activities of current service development practice.

The ABCDE model provided illustrates how the National Taiwan University of Arts (NTUA) has established a link between E-business and cultural and creative industries through Our Museum, Our Studio and Our Factory respectively. Through the E-business approach, we have been able to merge design, culture, creativities and economy. The approach also further illustrates some other implications of the approach through the cultural perspective. Results presented herein create an interface for looking at the way E-business crosses over cultures, and illustrates the interwoven experience of E-business and cultural creativity in the innovation design process and electronic commerce world.

2 FROM OEM TO OBM

Taiwan's industrial design is developing along with its economic development. The design development could be represented as a smile face, proposed by the former ACER president Shi, from OEM (Original Equipment Manufacture), ODM (Original Design Manufacture), to OBM (Original Brand Manufacture) as shown in Figure 1 (Lin et al., 2007).

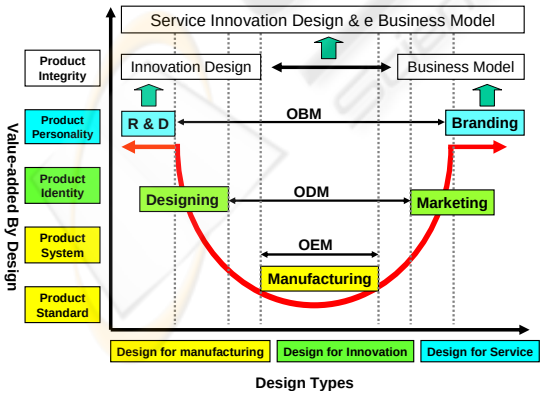

Figure 1: From OEM to OBM in e Business.

Before 1980, OEM vendors in Taiwan reduced costs to produce "cheap, high quality" products as a strategy to become successful in the global manufacturing industry. With the OEM style of having "cost" but without a concept of " price" in mind, or just by knowing "cost down" but not knowing " value up", these vendors created Taiwan's economic miracle by earning a low profit from manufacturing. Those dependent upon hard-working patterns from the OEM pattern became obstacles in developing their own design. These vendors were extremely busy producing products to meet manufacturing deadlines; there was no time to develop design capabilities, so that the environment could not nurture design talents (Lin, 2007; Lin et al., 2007).

After 1980, Taiwan enterprises began to develop ODM patterns to extend their advantages in OEM manufacturing. Taiwan's government addressed a series of measures to stimulate the nation's economic growth, including the "Production Automation Skill Guidance Plan", and the "Assisting Domestic Traditional Industrial Skill Plan". These plans were to guide vendors to make production improvements, to lower costs and to increase competition. Starting from 1989, the industry Bureau pushed the "Plan for Total Upgrading of Industrial Design Capability" over three consecutive five-year plans. The scheme established working models by experienced design scholars and students from universities for the purpose of working on design. The design students worked with the enterprises on specific projects to set up a working pattern of industrial design based on enterprises' real needs (Lin, 2007;Lin et al., 2007). Recently, product design in Taiwan has stepped into the OBM era. In addition, cultural and creative industries have already been incorporated into the "National Development Grand Plan", demonstrating the government's eagerness to transform Taiwan's economic development by "Branding Taiwan" using "Taiwan Design" based on Taiwanese culture (Lin, 2007; Lin et al., 2007).

There has been a recent shift from technological innovation to E-business based on discovering new opportunities in the marketplace. Companies are more focused on adapting new technologies and combining them in ways that create new experiences and value for customers. With the development of industrial trend, most companies gradually realized that the keys to product innovation are not only aspects of market and technology but also service innovation design (Baxter, 1995; Zhang et al., 2003). Ulrich and Pearson (1998) point out that service design has received increased attention in the academic and business communities over the past

decade. Both academics and practitioners emphasized that the role of service design in innovative product development relates not only to aesthetics, but also to aspects such as ergonomics, user-friendliness, efficient use of materials, and functional performance (Gemser & Leenders, 2001).

However, we now live in a small world with a large global market. While the market heads toward "globalization", design tends toward "localization." So we must "think globally" for the market, but "act locally" for design. While E-business is under tough competitive pressure from the developing global market, it seems that the local design should be focused on E-business in order to adapt innovation to product design (Gregoire & Schmitt, 2006).

3 CONCEPTUAL FRAMEWORK

After reviewing the development of Taiwan's industrial design, it is clear that E-business is the force pushing cultural and creative industries development forward. The main purpose of this paper is to study factors affecting the E-business model. These factors are discussed in order to understand E-business in cultural and creative design industries. Then, a conceptual framework is proposed for defining, classifying, assessing, and modeling the E-business model for the cultural and creative industries.

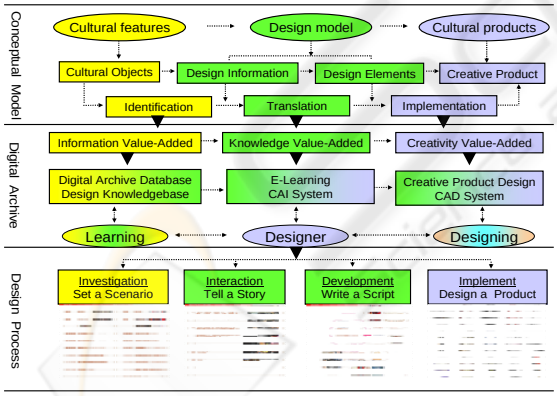

Figure 2: The conceptual framework .

The conceptual framework in Figure 2 consists of three main phases; *conceptual model*, *digital archive method*, and *design process*. The conceptual model focuses on how to extract cultural features from cultural objects and then transfer these features to the design model. The digital archive method consists of three phases; *identification* (extract cultural features from original cultural objects), *translation* (transfer them to design information and design elements) and *implementation* in the final design of a cultural product (Lin, 2007; Lin et al., 2009).

3.1 Conceptual Model

The conceptual model is shown in the top of Figure 2 and includes three stages: *identifying cultural features*, *building the design model* and *designing cultural products*. To accomplish the goal, there are four steps including: *selecting cultural objects*, t*ransforming design information*, *extracting design elements*, and *designing creative design products*. Then, implementation of the goal is broken into three phases: *identification*, *translation* and *implementation* which are described as follows (Lin, 2007; Lin et al., 2009):

Identification phase**:** the cultural features are identified from original cultural objects including the outer level of colors, texture, and pattern, the mid level of function, usability, and safety (Holzinger, 2005), and the inner level of emotion, cultural meaning, and stories (Heimgärtner, Holzinger & Adams, 2008). The designer uses the scientific method and other methods of inquiry and hence is able to obtain, evaluate, and utilize design information from the cultural objects.

Translation phase: the translation phase translates the design information to design knowledge within a chosen cultural object. The designer achieves some depth and experience of practice in these design features and at the same time is able to relate this design knowledge to design problems in modern society. This produces an appreciation for the interaction between culture, technology, and society.

Implementation phase: the implementation phase expresses the design knowledge associated with the cultural features, the meaning of culture, an aesthetic sensibility, and the flexibility to adapt to various designs. At this time, the designer gains knowledge of cultural objects and an understanding of the spectrum of culture and value related to the cultural object. The designer combines this knowledge with his strong sense of design to deal with design issues and to employ all of the cultural features in designing a cultural product.

3.2 Digital Archives Database

How to build a digital archive database is shown in the middle of Figure 2 and includes information value-added, knowledge value-added, and creativity value-added. The application of cultural features is a

powerful and meaningful approach to product design. Consumers nowadays require a design which is not only functional and ergonomic, but which also stimulates emotional pleasure. Lin (2007) took a cultural object called the Linnak as the example to build a digital archive database for learning culture through the internet and e-learning environment. The data collected after studying its appearance, usability, and cultural meaning is shown in Table 1. A design-related format was used to match the different items based on tribe, name of object, type, image, material, color, appearance, usability, pattern, form grammar, form structure, form style, inner content, and original resource. These items covered three levels of cultural characteristics and basic information such as imagery icon, tribe, and name. We propose that this information will serve as a reference for designers during the product design phase (2005; Hsu, 2004; Lin, Cheng & Sun, 2007).

Table 1: The format of the cultural features of Linnak.

Object	Linnak or twin cup
Type	Drinking container
Tribe	Paiwan, Rukai
Picture	
Material	Wood
Color	Natural wood color or painting with colors
Pattern	Figure, human-head, long-hooded pit viper pattern, Deer pattern
Principle of formation	1. Embossment on handles with a variety of patterns. 2. Total length from 43cm to 91cm, pitch from 29cm to 42cm, and cup capacity from 300 to 600c.c. 3. Single cup with a rectangular column shape and handle on both sides. 4.The Linnak contains two rectangular cups, a beam bridge in between and a handle on both sides.
Classification	Twin-cup, Single-cup and Tri-cup.
Operation	Two drinkers are required to hold the handles with left and right hand on each when drinking alcohol.
Using Scenario	1. Single cup is created only for the chief to drink liquid in the Paiwan tribe. Sometimes it was used to contain rice alcohol and to reward a hunting hero for demonstrating valor. 2. The twin -cup was created for use in wedding ceremonies where the bride and groom were required to drink alcohol together. 3. The Tri-cup was created for the groom and bride and chief (a witness), who stands between groom and bride to drink alcohol together which represents the greatest honor and wish for the couple.
Cultural content	1. The long- hooded pit viper or ancient figure pattern on the cup enhances the value of cup. 2. The twin-cup was mostly used in festival ceremonies to demonstrate a warm and harmonious spirit. 3. To drink with the twin cup represented the commitment in love between a male and female. 4. Drinking together represents eternal friendship.

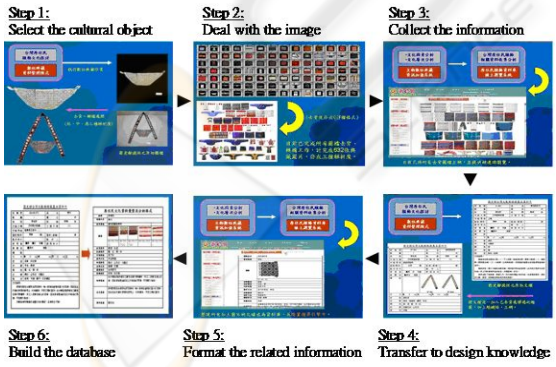

Figure 3: Process of building the database.

According to Table 1, a digital archive database was built to help to understand both the hard and soft contents of the cultural object. A process of building a digital archive database included six steps (Figure 3): (1) select the cultural object, (2) deal with the image, (3) collect the information, (4) transfer the information to design knowledge, (5) format the related information, and (6) build the database. In addition, a friendly interface was provided to the designer for accessing the database easily as shown in Figure 4 and 5 (Hsu, 2004; Lin, Cheng & Sun, 2007).

Figure 4: Interface of the database.

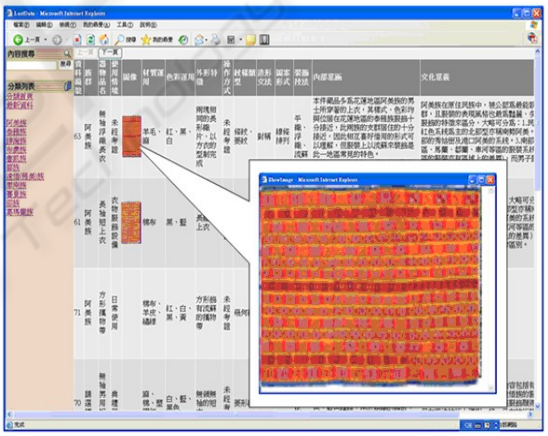

Figure 5: Interface for referring the pattern.

3.3 Design Process

Based on the cultural product design model, the cultural product is designed using scenario and story-telling approaches. In a practical design process, four steps are used to design a cultural product: *investigation* (set a scenario), *interaction* (tell a story), *development* (write a script), and *implementation* (design a product) as shown in the bottom of Figure 2 (Hekkert, 2003; Leong & Clark, 2003).

The four steps of the cultural product design process are described as follows:

Step 1 / Investigation / Set a scenario: The first

step is to find the key cultural features in the original cultural object and to set a scenario to fit the three levels: the outer 'tangible' level, the mid 'behavioral' level, and the inner 'intangible' level. Based on the cultural features, the scenario should consider the overall environment such as economic issues, social culture, and technology applications. This step seeks to analyze the cultural features in order to determine the key cultural features to represent the product.

Step 2 / Interaction / Tell a story: Based on the previous scenario, this step focuses on a user-based observation to explore the social cultural environment in order to define a product with cultural meaning and style derived from the original cultural object. Therefore, some interactions should be explored in this step, including interaction between culture and technology, dialogue between users and designers, and understanding the user's needs and cultural environment. According to the interaction, a user-centered approach is used to describe the user need and the features of the product by story-telling.

Step 3 / Development / Write a script: This step addresses concept development and design realization. The purpose of this step is to develop an idea sketch in text and pictograph form based on the developed scenario and story. During this step, the scenario and story might require modification in order to transform the cultural meaning into a logically sound cultural product. This step provides a means to confirm or clarify the reason why a consumer needs the product and rationale of how to design the product to fulfill the users' needs.

Step 4 / Implementation / Design a product: This step deals with previously identified cultural features and the context of the cultural products. At this point, all cultural features should be listed in a matrix table which will help designers check the cultural features in the design process. In addition, the designer needs to evaluate the product features, product meaning, and the appropriateness of the product. The designer may make changes to the prototype based on results from the evaluation, and implement the prototype and conduct further evaluations.

Based on the cultural product design model, Figure 6 shows how to transfer the original object -- 'Pottery-pot' from the Paiwan tribe into a design for a modern bag. Different cultures use textile containers designed for their own storage and transportation needs. Unlike bags or containers made from rigid materials such as clay or glass, textile containers offer flexibility of use by adapting to whatever item they are carrying. they also have the great advantages of being non-breakable and easy to store. Figure 7 shows how to use the Taiwan aboriginal garments as the original cultural objects to design modern bags. In addition, Figure 8 demonstrates the cultural features extracted from Taiwan aboriginal garment culture and then transformed into modern bag design.

Figure 6: The modern bag designed from a pottery pot.

Figure 7: The process of designing modern bags from cultural objects.

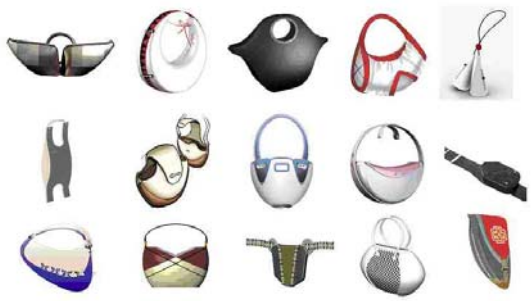

Figure 8: Various bags from the Taiwan aboriginal garment culture.

4 E-BUSINESS MODEL

After explaining why business executives and academics should consider a rigorous approach to E-business models, we introduce a new E-business

Model for the cultural and creative industries. The new model is called "ABCDE Plan" which shows that to turn "Art" into "Business", we need "Creativity" and "Design", which allows the creative products to be transformed into "E-business" as shown in Figure 9.

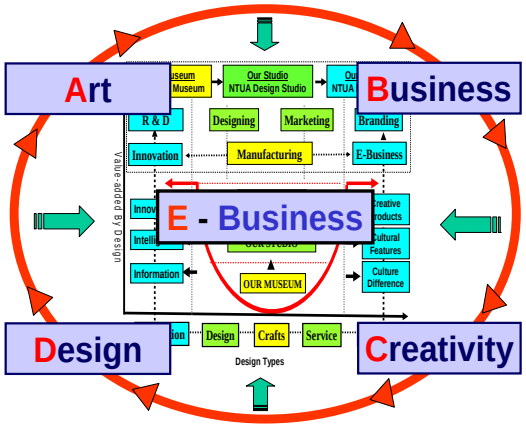

Figure 9: The concept of e-Business model.

To implement the ABCDE plan, National Taiwan University of Arts (NTUA) established an art museum, known as "Our Museum", in 2007 for the purpose of linking professional teaching with the museum's research, education, and display functions. At the same time the museum would present cultural and aesthetic ideas about art and artifacts to the public. Developing craftsmanship and creativity as well as competences related to the arts are of strategic importance to NTUA. Therefore, a design studio, known as "Our Studio", was subsequently set up in the College of Design in NTUA with the purpose of providing innovative products. NTUA is located in the Taipei metropolitan area, one of the most competitive regions in Taiwan. This area contains a significant concentration of craftsmanship and research establishments, linked by various formal and informal networks. Due to the challenging nature of the cultural and creative industries, NTUA is devoted to developing its regional and international networks by operating a cultural and creative industry park, known as "Our Factory." NTUA has established the link between "Art" and "Business" and has combined "Creativity" and "Design" through Our Museum, Our Studio and Our Factory respectively. It is a new approach that integrates design, culture, artistic craftsmanship, creativities and service innovation design in cultural and creative design industries (Roy & Riedel, 1976; Stevens, Burley & Divine, 1999).

With the increasing globalization of the economy, rapidly developing information technology, rapidly growing market competition, shortening life cycles of products and services, and increasing customer demands, companies and public sector actors will find it increasingly difficult to survive based on their past operating models. Therefore, based on the previous review of service design change, we propose a conceptual framework to innovation service design of cultural and creative design industries by using the smile paradigm as shown in Figure 10 (Ko et al., 2009; Lin et al., 2009).

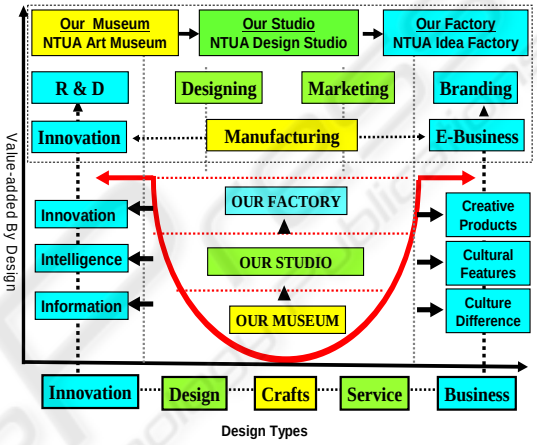

Figure 10: e-Business for creative industries.

According to the smile paradigm, craftsmanship is a part of Cultural creativity, and like the mouth in the smile face, it must still go up through innovation design and branding before it can become a "business". However, craftsmanship is not the entirety of culture, nor is creativity the whole of business; good craftsmanship at best earns outsourcing money, like an OEM vendor. The key to innovation design is to blend craftsmanship, creativity and service design, and "branding" is the key to any business (Ravasi & Lojacono, 2005).

In general, craftsmanship is the use of local materials to develop localized skills; localization is an important force behind the globalization of any international conglomerate, especially in the employment of cultural creativity. Crafted products produced in small volume seek to represent the spirit of "attention to details", and are a demand on the person, a representation of the person, an expression by the person, and a story from the person. Craftsmanship plumbs the depth of skills, while creativity seeks the height of impression, and branding asks for the width of acceptance. Only through culture and creativity, by allowing craftsmanship and creativity to facilitate branding,

can one makes one's way in this field (Yair et al., 1999, 2001;Veryzer, 1998; Voss & Zomerdijk, 2007).

The goal of the cultural and creative park is to combine artistic craftsmanship and economy with service design, and ultimately establish NTUA as a distinctive trademark associated with the park. To accomplish this goal, NTUA aims to combine artistic craftsmanship from "Our Museum" with cultural creativities from "Our Studio" in order to result in aesthetics in business for "Our Factory". Creativity and business are the elements for reaching an aesthetic economy. It is the concept of "Think Globally - Act Locally" to process the "Digital Archive" of Our Museum through the cultural creativities of Our Studio, producing cultural products in Our Factory in order to establish a local industry making aesthetic and economical products (Ko et al., 2009; Lin et al., 2009).

The current development of the Cultural Creative Park at NTUA is based on creative knowledge of crafts elements and materials from Our Museum and Our Studio. This cultural information is then transferred into the creative industry. In the near future, we will further implement this distinctive mode of cultural creative production to promote the concept of "Savoring Culture" which has the potential to become a "Taiwan industry concept". We are encouraging more and more creative products which contain colourful Taiwanese culture and styles. By supporting the development of cultural creative industry of NTUA, we can enjoy the fruitful success of an aesthetic culture in the creative industry (Lin et al., 2009).

5 CONCLUSIONS

With increasing global competition, E-business in service innovation design is not merely desirable for a company; it is a necessity. The importance of studying E-business as part of service innovation design has been shown repeatedly. However, there is no systematic approach that covers E-business in cultural and creative design industries. Therefore, a new approach was proposed by applying E-business in service innovation design in the domain of cultural and creative design industries. The E-business in service innovation design model is presented herein to provide designers with a valuable reference for designing "service" into a successful cross-cultural product. The purpose of this paper is to fulfill the aesthetic experience by connecting design and culture. This is turn will synthesize technology, humanity, cultural creativities. Finally, we will achieve the aim of promoting service design amongst the general public.

For future studies, we need a better understanding of the acculturation process not only for the E-business in service design, but also for innovative product design. While cultural features become important issues in the interactive experiences of users, the acculturation process between human and culture becomes a key issue in cultural product design and worthy of further in-depth study. However, the effectiveness of using E-business in cultural and creative industries can be further enhanced. This can be done by incorporating more information of best practice in service industries into E-business in cultural and creative design industries.

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