

# What Happens After Trade? Information Technology and the Structuration of the Offshore Fund Industry in Taiwan

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## Abstract

This study aims to provide an in-depth analysis concerning the interaction among industry structure, organizational practices and information technology. Drawing on the structuration theory, we conduct an empirical investigation on the development of the Taiwan offshore fund industry. The theoretical framework offers an analytical lens to explore the interaction and interconnections among the structures, agency action and information technology. We demonstrate that at the industry level, the changes to technology deployment and strategy reflect the structuration process in which human actions enforce or are constrained by social structure over time.

## Introduction

Over the years, scholarly interests in the strategic applications of information technology (IT) in the organization have created a stream of rich literature in the field of information systems. At a broad context, the information communication technology (ICT) has become more evident in shaping and reshaping the boundary of industry, the market structure or the intensity of competition within the industry [1]. However, comparing with the research attention given to the individual and organizational phenomena, industry-focused studies are relatively lacking and needed further investigation.

In analyzing the role of ICT at the industry level, although economics perspective dominates, researchers argue for the needs to place deeper interpretation on the intertwined relationship between technology and industry structure in the change process [2], in particular the importance of contextual elements in inter-organizational systems [3,4]. Furthermore, Chiasson and Davidson [5] stress the significance of social interaction and structure for industry-focused studies,

“if we adopt these embedded views (of IT in social settings), industry context is important to the meaning, design, use, and structure of IT artifacts” (p. 595)

In line with the above arguments, this paper aims to provide a valuable insight into the entangled relationship between organizations, industry structure and ICTs through an interpretive case study. The detailed narrative of historical reconstruction of an industry, in

this case the offshore fund<sup>1</sup> industry in Taiwan, allows us to capture how the development and implementation of ICT over time both conditions, and are conditioned by, the structural properties in that this particular industry. To analyze the iterative and recursive relations between actions and structure, we draw on structuration theory as our interpretive lens to guide the data collection and interpret data from the empirical fieldwork [e.g. 6,7,8,9].

The organization of this paper is as follows. We continue with the next section on the review of relevant IS literature at the industry level, which is followed by the overview of the main concepts of structuration theory. Research methodology and the narrative of case study are presented, which lead to the discussion on findings and themes arise from the theoretical framework. We conclude with implications from the case study.

## **Literature Review**

In this section, we review the existing literature concerning the impact of IT on the industry. We found that much of scholarly research in this area has been concentrated on the development and assimilation of interorganizational systems (IOS) [e.g. 3,4, 10, 11] and the electronic markets [12,13,14]. Survey the recent literature, there are more studies that look at the impact of technology in diverse industries. For instance, the diffusion of RosettaNet in Asia [15]; the assimilation of RosettaNet PIPs in the high-tech industry [16]; the failure of Covisint in the automotive industry [17]; the development of data standards in the US residential mortgage industry [18,19]; and the evolution of clearing process in financial markets [20].

Concerning the theoretical approach adopted in these studies, Crowston and Myers [1] conclude that economics approach is the dominant thinking in analysing the industry phenomena and thereby raise the attention on the benefit of alternative approaches,

“We agree this (economic perspective) is a valuable perspective, but suggest that industry studies in IS should draw on a wider range of perspectives. We suggest that the study of IT and industry transformation could be revitalized by an appreciation of two other perspectives- in particular, the institutional and the social and cultural perspectives.” (p.23)

In our review of the recent publications, our observation indicates that economic or institutional perspective remains popular [e.g. 16, 19, 21,22], socio-cultural perspectives are still relatively rare in literature. We argue that to capture a rich appreciation on the process of industry transformation, single-dimension analysis might fail to grasp the rich insight into how industry structure and organization actions impact, and are impacted by, the design and diffusion of particular IT artefacts in an organizational field. In this paper, following the arguments by Crowston and Myers [1] and Chiasson and Davidson [5], we draw upon the structuration theory to guide the empirical work and as the method of analysis of field data. Next section describes the key elements in structuration theory and its application in the field of IS research.

## **Theoretical Framework**

In this paper, the focus is to identify the intertwined connection and to trace the historical development between organizations using the ICT and the social structures conditioning the Taiwan offshore fund industry. Against this backdrop, we use structuration theory, developed

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<sup>1</sup> Offshore fund is defined as the fund offered by non-domestic organisational entities.

by Anthony Giddens [8,23], as the ‘sensitizing devices’ [24, p. 134] to unfold the recursive interaction between organization actions, industry structures and technologies. While Giddens rarely considered aspect of technological artefacts in his work, Jones and Karsten [24] explain the insightful value of structural analysis in an IS context,

“structuration is seen as a language for describing the social forces influencing technologies and their use, and a source of concepts for understanding the processes involved.” (p. 144)

Over the years, IS researchers have been adopting the structurational perspective to investigate the socio-organizational aspects of IS development and implementation [7, 2,9, 25,26,27,28]. In addition, a number of researchers have offered an extensive and comprehensive review on the application of structuration theory in an IS context [24, 29,30]. With regards to the unit of analysis, except for a few [3,13,31], majority of studies are focused on the organizational settings.

Structure theory is particularly valuable as a meta-theory since it transcends the subjective view of the social reality [32,33], emphasizing agency [34], yet also of theories stressing structure instead such as institutional analysis [35,36]. For purpose of analysis between agency and structure, Giddens proposes the notion of the *duality of structure*, which includes three dimensions: signification, domination and legitimation. As Figure 1 shows, each structure is both the medium and the outcome of interaction mediated through the associated modalities: interpretive schemes, facilities and norms. Interpretive schemes are the cognitive schema or stocks of knowledge that agents draw upon to make sense of their activities in an organizational setting, and the use of such interpretation sustains the signification structure in the organization. Domination structure involves the exercise of power by placing control over authoritative resources, which arise from the control over the coordination of human actions, or allocation resources, which arise from the command over material artefacts or other properties in the environment (e.g. information). In the process of resources distributions, the domination structure is drawn upon and thereby reproduced resulting from such deployment of resources. Regarding the dimension of legitimation structure, it comprises a set of norms and rules governing the human actions. By drawing upon legitimation structure, human agents can define what is allowed or not allowed in a particular context and in so doing, it reiterates the social structure of legitimation.

In addition, there are another two relevant concepts when applying a structurational perspective in the study of industry transformation. First, in analyzing the structuration process of an organizational field, researchers need to consider the temporal and spatial aspects of social practices [26]. That is, in the context of this study, in order to offer a richer appreciation on the entangled interaction between ICTs and industry structure, it is necessary to provide a historical reconstruction on the industry landscape from the past to the present time [2]. The second relevant concept is the agents’ ability and knowledgeability to reflectively monitoring their own and others’ actions/interactions in a social setting, and when necessary, agents can seek opportunities to intervene and modify the social structure over time. That is, the agents are aware of their actions, and knowledgeable that they “could have acted otherwise” [8, p.56]. Jones and Karsten [24] make a parallel point that both concepts link structuration theory to the emergent perspective on IT and organizational change in the taxonomy defined by Markus and Robey [37]. The description of the following case study follows the similar spirit of treating ICTs and industry transformation from an emergent perspective. Before presenting a structural analysis of the case, we describe the research approach adopted and provide the narrative of major historical events that are significant to the changes of the offshore fund industry in Taiwan.

## Research Approach

In this paper we use an interpretive case study to understand the process of production and reproduction of social practices in a specific industry setting. The context of empirical investigation in this research is the Taiwan offshore fund industry. There are a number of reasons why this industry is a great setting for this research. First, the Taiwan offshore fund industry is large and growing at an exponential rate since the mid-1980s when the government conditionally opened up the sales of offshore fund. According to the statistics from the Securities Investment Trust & Consulting Association (SITCA), the offshore fund size stood at USD 50 million in August, 2008. It was also reported that appropriately 90 % of the net sales of the mutual funds originated from in Asia in 2007 (SWIFT fund conference report). This prosperous market gives us a golden opportunity to examine the actions taken and emerged at the individual, organizational and industry level. Second, the prosperousness is tightly associated with the use of technologies. The impact of digital networks is the interconnectedness of different capital markets, which raised the liquidity and scale of global capital flow. As Sassen [38] puts it,

“Interconnectivity, simultaneity, decentralized access, all contribute to multiply the number of transactions, the length of transaction chains (i.e. distance between instrument and underlying assets), and thereby the number of participants.” (p.19)

In the case of offshore fund industry, this translates to the growing numbers and value of cross-border transactions. The global ICT infrastructure provides the channel that both asset management firms and investors can maximize their economic benefits without confining to national economies and floor trading. Third, the Taiwan offshore fund industry has been going through structural changes over the past few years, for example, the enactment of the Regulations Governing Offshore Funds in 2005 and the implementation of straight-through-processing (STP), which is an IT-enabled development to eliminate the manual fund processing. Therefore, it offers a perfect setting to study the cause and outcome associated with these structural changes.

Finally, as Walsham [39] pointed out, gaining access to fieldwork “entails strong elements of chance, luck and serendipity.” (p.322). One of the researchers was able to develop and maintain good relationship with a major institution involved in the offshore fund value chain. The good relationship not only allows the researcher to develop insights on both historical and ongoing developments, but also gain access to other key agents in the chain through the referral process. Put together, all leads to an excellent setting for a researcher to explore sources and outcomes of the interplay between individuals, organizations, industry and technologies.

### Data Collection and Analysis

Our data sources consist of in-depth interviews, documents, conference participation and observation since 2004. The primary data source was in-depth face-to-face interviews with participants involved in STP initiatives from different part of offshore fund value chain: four distributing banks, one information technology vendor, SWIFT organization (messaging standard organization), two fund STP solution providers and two fund houses. Some interviews have conducted more than once, for example, three times with SWIFT, and twice with one fund house. Each interview session lasted between one and two hours. In addition, one of the researchers also did one two-hour group interview with representative members in Asia Fund Automation Consortium (AFAC), which was formed by ten fund institutions, in Hong Kong. Informal interviews and observation notes were carried out by attending various

relevant industry conferences between 2005 and 2008: SWIFT Taiwan Business Forum, Fund Distribution and Operation Conference, and Fund Automation Forum. We also collect documents from primary and secondary sources. The primary sources of documents range from the meeting minutes and powerpoint presentations at the forums. The secondary sources include government and industry reports, regulation governing the offshore fund, company press release and news report. During this period, we also visited the trust department at one commercial bank where we observed the process of offshore fund operation.

To present the structuration process of Taiwan offshore fund industry, we use narrative analysis as the method of organizing and presenting our qualitative. After collating materials collected, we first develop the key event in chronological order. The use of multi data sources, such as interviews, observation notes and documentation, allows us to increase the validity of description. Following the chronology of the events, we interpret the data in accordance with the theoretical framework to unfold the role of technology during the structuration process of offshore fund industry from its early development to the modern days.

## **The Case Study**

In this section we trace the origins of Taiwan offshore fund industry and develop the historical account of how the structure of this industry changes over the past two decades and the role of ICT within this context.

### **Taiwan offshore fund market- 1980s and 1990s**

Since the strong economic growth in the 1980s, the government began a series of financial reform to facilitate the growing demanding for accessing overseas investment opportunities. Examples of financial deregulations include an ease on the foreign exchange control, and permission to invest in foreign equities and bonds. In 1983, the government amended the Securities and Exchange Act to allowing the offering of domestic mutual fund by the domestic banks, securities brokers and securities investment enterprises. Following this development, another policy was announced to conditionally open up the sales of offshore fund. While the offshore fund companies are not allowed to offer the direct sales, the policy states that investors in Taiwan can purchase offshore fund through three channels: 1) investors contact offshore fund company (located outside Taiwan); 2) through securities brokers under foreign securities brokerage agreements and 3) the trust enterprises, normally banks, under non-discretionary trust of money arrangement. For method 1 and 2, both would rely on the investors' own ability in searching fund information by themselves and their English capability. Given these constraints, banks, which have the expertises and Chinese-version of fund information, naturally become the major intermediaries between offshore funds institutions in Europe and the potential investors based in Taiwan.

Looking at fund processing flow in a bank, a customer can purchase an offshore fund by completing the paper order form at the counter of a branch or talk to customer services via the call centre. With respect to the frequency of investment, customers have the options of monthly direct deposit or a single lump sum payment. For banks, to process a fund transaction, it would first aggregate all orders (including fund purchase, redemption or switch) around 3pm at its trust department. Having consolidating all individual orders, the trust department will fax the paper form to the transfer agents overseas which are in charge of handling the orders for the fund houses. Depending on the volumes, this task can be completed as late as 8pm at night. Staff at banks then would normally follow up with a telephone call to confirm the receipt of these forms. Transfer agents tend to send the unit confirmation or what so called net asset value (NAV) back to the banks one or two days later.

This is because a transfer agent needs some time to collect all faxes received, organize these orders and confirm with each offshore fund manager before faxing the confirmation back to the bank. This has a subsequent impact on when customers receive the information concerning their offshore investment. Sometimes, this process will be further delayed in the event of missing faxes or mistakes arise from the blurred hand-writing.

Since 1990s, several economic and political affairs contributed to the emergence and the growth of offshore fund in Taiwan. For instance, the 1995-1996 Taiwan Strait Crisis created nervous political tension as China launched a series of guided missile tests in the East China Sea close to Taiwan. The 1997 Asia Financial Crisis resulted in the loss of demand and confidence for the domestic equity market. Consequently, offshore fund appeared to be a safer investment alternative other than investing equities in the domestic stock market.

### **Taiwan offshore fund market- since 2000**

Stepping into the new millennium, offshore fund continues to attract the interest of investors resulting from both the ill-performance of Taiwan stock market and the active promotion from the bank financial advisors. In addition, resulting from the diffusion of online banking, customers are able to carry out their fund transaction online. For instance, a report from one commercial bank indicated that in 2002, online fund transactions consist of appropriately 47% of major fund sales at that particular bank. All in all, by April 2002, the overall offshore fund size in Taiwan has reached 1.3 billion USD. As a result, this continuing popularity of offshore fund investment led to two new regulatory and technology developments: 1) the enactment of Regulations Governing Offshore Funds in 2005; and 2) the emergence of STP initiative.

### **Enactment of Regulations Governing Offshore Funds**

Facing the flourishing fund market, the financial supervisory commission (FSC), the regulatory body for the financial institutions in Taiwan, began to consider the need to set up a better regulatory framework overseeing asset management industry. During that time, obtaining accurate and updated details about sales statistics for offshore funds is very challenging. These funds were managed by foreign fund companies and sold to investors by banks through methods described earlier. In these circumstances, without a mandatory reporting mechanism, the FSC faces difficulties in acquiring the exact figure of offshore fund sales in Taiwan. In the light of this concern, the government first enacted the “Securities Investment Trust and Consulting Act” in June 2004. In accordance with this new law, the FSC subsequently planned to draft regulations governing the operation of offshore fund in the country.

With respect to the content of the regulation, FSC decided to establish a “master agent” with the central responsibility of reporting to the FSC concerning the sales and management of offshore fund in Taiwan. The concept is to ask an offshore fund institution appointing a single “master agent” to represent it in the offering and sale of the funds in Taiwan. On behalf of overseas fund organizations, a master agent will bear the central responsibility of reporting to the FSC concerning the sales and management of their funds in Taiwan. In order to set up an efficient reporting mechanism, the FSC asked the support from the central securities depository organization and the Securities Investment Trust and Consulting Association (STICA) to establish this information reporting platform. One interviewee from the central securities depository commented on the strategic development,

“In order to automate this (reporting) process, the FSC first consulted the Securities Investment Trust and Consulting Association (STICA) for the development of the information reporting system. However, STICA did not have sufficient funding for this. Our company made the offer of providing financial support and technical expertise.”

In one internal FSC meeting in late January 2005, it was agreed to have the central securities depository organization developing the system. This led to the write-up of Article 13 in the regulation,

“On each business day, the master agent shall report the..... items as prescribed by the FSC to the FSC or an institution designated by the FSC in the format and with the content specified by the FSC through information transmission system designated by the FSC.” (Article 13, Regulations Governing Offshore Funds)

In August 2005, the FSC announced the “Regulations Governing Offshore Funds”. On September 12, the information reporting and observation system was officially launched.

### **Emergence of STP development**

Parallel to the regulatory development, the prosperous offshore fund industry in Taiwan also led to challenges in the existing practices of manual-based fund processing. Not only the rising fund size, but the volume has becoming the major drivers that push for fund process automation. One banker told us that the difference in fund trading behaviours between Taiwanese investors and those in the developed countries have contributed to the high volumes of fund transactions,

“Attitudes towards fund investment are very different in Taiwan and in Europe. People in Europe tend to consider mutual fund as the investment option for retirement or long term purpose. Here, Taiwanese investors trade funds similar to securities trading. Thus, it generates a high turnover rate of fund transactions. Volumes make STP necessary.”

With the mounting volumes and turnover rate, the representative fund offices in Asia are facing pressures from their European headquarters to automate the rising transaction traffic. The idea is to implement STP without resort to manual intervention as same as what has been done in Europe. Given this background, the fund houses’ Asia offices started working with SWIFT, the global market infrastructure for the standardized financial messages, to promote the implementation of STP at the distributor banks in Taiwan. SWIFT has been working with the global fund industry to agree on ISO 20022 standards and market practices for mutual funds since early 2000s, and banks in Taiwan are also SWIFT users. At the outset, it was anticipated to be a project with a quick adoption. Nevertheless, it turned out to be otherwise. As one manager at SWIFT explained,

“Eight years ago, when a fund house came to see us about automating fund process. We had this assumption that it will be easy. Banks are already the SWIFT users and we were talking about two messages, orders and redemption. We felt this should be immediate up-take. The problem is to do with our assumption, there were a disconnection between wholesale and retail banking services in Taiwan. Wholesale banks have been a major SWIFT user, but we learnt that people at retail side know little about what SWIFT is.”

A senior manager of a global bank based in Taiwan elaborated this phenomenon further,

“This has to do with how local banks use and perceived SWIFT. The system was only used and located in international banking department. Only a handful of people can access system and the system is mainly used for remittance. So when people at the local bank heard about SWIFT, they can associate it with money, not as messaging standard! In Europe, SWIFT message is a common thing for users in the financial institutions. For example, for us working in the international bank, we just think SWIFT as an encrypted e-mail message for business communication.”

Realizing this problem, between 2004 and 2008 SWIFT has launched a MasterClass on fund automation. By inviting all relevant participants involved in the fund value chain, this conference serves the educational purpose of informing the Taiwan distributor banks about the development of ISO 20022 standards and the benefits of streamlining fund processing. Beside SWIFT, the central securities depository organization and other STP solution providers also held similar conferences on offshore fund automation process for the past years.

In addition, to generate collective power, the top ten fund houses jointly formed were formally formed the Asia Fund Automation Consortium (AFAC) in September 2006. The strategy was to have fund institutions working together as a team to agree on the common fund automation standards for the Asia region. Meanwhile, Taiwan distributor banks also established fund operation groups in 2006 to work with SWIFT and AFAC on messaging requirements based on the local market practices. Put together, with common messaging standards and having top ten fund houses on the network, it gradually increases the incentives for distributor banks to implement STP since the economic benefits are more significant resulting from the reduction in testing requirements (one standard with all fund houses) and the achievement of operational economies of scales (number of volumes automated). The head of IT department at one earlier adopter bank confirmed this,

“Economies of the scale are one of major determinants. Without volumes, it will be difficult to ask support for implementing STP... And once the messaging standard has been set, it is now very easy for other Taiwanese distributor bank to implement. They simply just adopt the messaging format that we have created.”

At the stage of this research completed in early 2009, there are five local distributor banks have implemented STP solutions and it was reported that few more banks are considering STP in the coming year.

### **Analysis from A Structuration Perspective**

In this section, we use structuration theory as the basis of analysis to provide a deeper interpretation on the choice, development and use of technologies through the historical transformation of the offshore fund industry in Taiwan. Here we will show how changes to technology deployment and strategy reflect the structuration process in which human actions enforce, modify or are constrained by, social structures over time, and in particular, via the modalities of interpretive schemes, facilities and norms. The analysis is presented in two sections. The first section starts with the placing of contextual boundaries that frame the practices of offshore fund industry. The second section analyzes the complex relations between structure, technology and human actions.

#### **Contextual boundaries for the offshore fund industry in Taiwan**

Tracing the historical development, we see the evolution of offshore fund industry in Taiwan is conditioned by the broader socio-economic systems. The rationale for the regulator to allow offshore fund investment reflects the signification structure that comprises the notion of economic demand for the variety of investment alternatives. The term offshore fund then becomes part of interpretive schemes which mediate the communication between investors and banks about their financial plan. Furthermore, in this case, we see that the policy disallowed the offshore fund institution carrying out direct sales activities in Taiwan, but allowed the investors purchasing offshore funds via the designated method and channel, e.g.

via banks under non-discretionary trust of money arrangement. The legal and contractual language represents the interpretive schema that creates the understanding on the process of buying and selling funds for the investors, banks, offshore fund houses and others in the fund value chain. In this case, we also witness how banks classify investors in accordance with their earning and saving capability. Staff of a bank would then draw on this interpretive schema to offer its customers appropriate investment strategy, i.e. via monthly direct debit or one single purchase. This also illustrates while the structure defines the process of fund transactions, through banks' action, over time the structure is also modified by the different payment methods created by banks on the purchasing of offshore funds.

As indicated in the theoretical framework, structure of domination signals the relationship of power in the process of social interaction. In this regard, Giddens [40] considers two different types of resources as a source of power in social interaction: authoritative resources and allocative resources. In the case of offshore fund industry, within its authoritative power, the regulator has the capability to organize and design the activities of different participants involved in the fund value chain. The coercive power enables the regulatory authority to influence the process of fund buying and selling activities. In terms of industry competition, access to potential investor base and the provision of offshore fund information become major allocative resources for domination. In the first instance, the exercise of power shows up on the competition between banks and securities brokers. In comparison, banks have a much wider customer base than securities firms (people will have at least one bank account, but not necessarily a securities trading account). That is, offshore fund houses are more willing to negotiate and work with banks given its potential customer base. Customers in return are more willing to invest via banks since there would be more offshore funds available. This generates what so called network effect. The second issue on the provision fund information is relevant to what just described earlier. Constrained by the legal requirements, offshore fund institutions are not allowed to perform direct sale activities. Thus, banks again become the best intermediaries where the potential investors can find the translated information of different funds. Put together, the domination structure which is drawn up in the possession and distribution of these allocative resources are reproduced and strengthened by the use of such resources. Banks gradually become the most powerful channel in the offshore fund value chain.

The third dimension of structure concerns with legitimation that defines the codes of practices governing the actions of the social actors, i.e. what is allowed and not allowed in the transaction process. In this empirical case, the norms and rights are embedded in the legal and contractual obligations. For example, banks would process all orders at the trade day and are obligated to inform the investors on the net asset value (NAV) of the fund purchased, when such information are received from the respective transfer agents. On the other hand, banks also have the rights to terminate or postpone the transaction should customers fail to complete the payment before 3pm or have insufficient amount in their monthly direct debit account. As the electronic commerce prospers, such norms and practices are embodied into the online banking systems to monitor the adequacy of the payment and the execution of fund transaction.

### **Change to the industry structure and the emergence of information technology**

The pervious section traces the origin and stabilization of offshore fund industry in Taiwan prior to the new millennium. In this section, we describes the changes to the industry with a particular focus on the role of information technology involved in the process of structural changes in this context.

Since the late 1990s, we see how the broader political and economic situations brought changes to the offshore fund industry in Taiwan. In the years of cross-strait tension and

regional financial crisis fuelled the demand for offshore funds. Technology advancement in the electronic commerce, especially online banking, increases the convenience for the investors to execute fund transactions with the bank. The increasing popularity of offshore funds and the rising amount of capital outflow generated caused the regulator's concern about its capability to command and monitor the distribution of economic wealth in the country. By drawing on its authoritative resources within the structure of domination, the financial regulator attempted to bring about changes by introducing a new regulation governing the sales of offshore fund. As described in the case, the FSC is able to alter the traditional agreements between overseas fund houses and Taiwan distributor banks by creating a new organizational role, i.e. master agent, in the fund value chain. In addition, the new rule mandates the mater agent to regularly report or disclose fund-related information to the FSC. To achieve this, a system was developed to automate the process of this reporting. In this sense, the reporting system with the embedded rules and requirements becomes a major facility for the mediation of the domination structure in relations of power. Consequently, the routinization of engagement with the reporting system reproduces the interpretive schemes of understanding on the landscape of offshore funds industry in Taiwan as well as reaffirming the legitimacy role of a mater agent.

In addition, we observe that over the years, the growing fund size is also accompanied with an unintended consequence, which is related to the trading behaviours of Taiwan investors. As mentioned earlier, the domestic investors are used to buy and sell equities in the stock market, which is normally a short-term trading strategy. When offshore funds become available, while legal and contractual language defines the official process of buying and selling funds, investors appear to draw upon their cognitive schemes of their previous trading knowledge as a means of understanding how to formulate their investment strategies and decisions. Such knowledge was rooted in their experience in equities transactions, which tend to be short-term trading. As time went by, the nature of mutual fund investment started to develop differently in Taiwan in comparison with their counterparts in the western countries where fund investment were for long-term purpose. That is, the local investors consider fund trading as the same as equities transaction to earn short-term profit. Consequently, as the interests on offshore fund grow, the culture difference in fund trading led to the expanding volumes and high turnover rate of transactions in Taiwan.

Furthermore, as pointed out in the theoretical framework, social structures are not static, but can be reproduced through the agents' action. Agents are constantly and reflectively monitoring their own and others' actions and interactions in a social setting and searching for opportunities to change. Noticing the high turnover rates, this prompt the offshore fund institutions to search for a solution that can manage the fund processing more efficiently and effectively. This resulted in the development of STP to replace the manual handling of fund purchasing/redeeming order forms. With the existing practices in Europe, SWIFT and offshore fund houses attempt to quickly replicate the implementation model in Europe into the Taiwan market. Nevertheless, difficulties arose from the different cultural understanding about the role of SWIFT and the lack of information about what STP technology is. Since banks have the command over financial resources on whether to invest STP products, SWIFT and fund institutions began to work collectively to win over the hearts of the Taiwan banks towards STP technology. For instance, to increase the stock of knowledge hold by IT staff working in the banks, SWIFT hold a series of conferences to inform Taiwan banks about the role of SWIFT and the concept of STP as a means to modify the structure of signification that the banks draw upon in the context of fund processing. Fund institutions even put their conflict of interests aside and form the AFAC in order to strength the authoritative resource as the source of power in persuading the banks to adopt STP. In addition, ISO 20022 standards become the standardized interpretive schema in communicating about STP implementation

since this standard is mechanism to formalize and encode the contractual agreements between banks and offshore fund houses. Over time as IT department become more knowledgeable, the STP technology gradually becomes an accepted and legitimate mechanism to formalize the information processing activities in the fund value chain, as indicated by the numbers of adoption at the time of this research.

## Conclusion

In this research, the objective is to demonstrate the entanglement of industry structure, organizational practices and information technology. Drawing on the structuration theory, our findings show that the development of offshore fund industry in Taiwan is shaped by the broader socio-economic systems, and by the deployment of new information and communication technology. Furthermore, our empirical illustration indicates that the stability of industry structure can be altered resulting from the change of agent's action or the availability of new technologies. Giving the importance of information and communication technology on industry transformation, our research hopes to motivate further studies in this area.

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Figure 1: Structuration Framework

