Financial Inter-Organizational System Diffusion in Taiwan’s Fund Management Industry: A Social Shaping of Technology Perspective

Yu-Tzu Lin  
*National Taiwan University, d94725009@ntu.edu.tw*

Carol Hsu  
*National Taiwan University, carolhsu@ntu.edu.tw*

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FINANCIAL INTER-ORGANIZATIONAL SYSTEM DIFFUSION IN TAIWAN’S FUND MANAGEMENT INDUSTRY: A SOCIAL SHAPING OF TECHNOLOGY PERSEPECTIVE

Yu-Tzu Lin, Department of Information Management, National Taiwan University, Taipei, Taiwan, R.O.C., d94725009@ntu.edu.tw

Carol Hsu, Department of Information Management, National Taiwan University, Taipei, Taiwan, R.O.C., carolhsu@ntu.edu.tw

Abstract

Straight-through-processing (STP) is an emerging IT-based innovation for financial services that redefines the way organizations can exchange business-critical information without manual intervention during the transaction lifecycle. While some progress has been made in understanding STP phenomena, few empirical studies have examined how STP innovation is adopted and diffused across organizations. This study utilizes the concept of social shaping of technology (SST) in conjunction with Pettigrew’s contextualist approach to investigate the early adoption and diffusion of STP innovation among market participants in Taiwan’s fund management industry. The results provide insights into how different socio-economic contexts influence the assumptions and expectations of stakeholder groups regarding the constraints and affordances of STP innovation. We believe that the adoption of STP becomes an integral part of the larger social systems in which it is embedded. Collectively, the theoretical and practical implications of this study add to the processual understanding of STP innovation from its initial adoption to its subsequent diffusion by identifying the contextual issues that challenge such transitions.

Keywords: Social shaping of technology, Financial IOS, Contextualist approach, IT adoption and diffusion, Straight-through-processing
1 INTRODUCTION

Understanding how information technology (IT) influences individuals, organizations and societies is a complex task no matter what theoretical lens is adopted (Pozzebon et al. 2006). In recent years, scholars have paid increasing attention to the importance of the contextualist viewpoint on the diffusion process of IT-based innovation (Avergerou 2001; Chiasson and Davidson 2005; Crowston and Myers 2004). Researchers argue the value of the contextualist approach on the basis that the emergence of new industries may give rise to new issues that were unnoticed or not explained in prior studies (Chiasson and Davidson 2005; Crowston and Myers 2004; Davidson and Chiasson 2005). Moreover, different patterns of IT diffusion in these emerging industries present opportunities to broaden our understanding of the theoretical and practical implications of information systems (IS) phenomena (Chiasson and Davidson 2005). Avergerou (2001) observed that “the context of IT-based innovations varies across industries, economies and organizations.” Hence, a context-based study can describe in detail the adoption process and help explain how problems are solved and a consensus is developed through communication and negotiation among social actors in a particular setting (Pettigrew 1990).

The motivation for this paper arises from the need to move beyond commonsense explanations of the failure or success of the implementation process (Bartis and Mitev 2008). Our objective is to provide a more complex and richer account of IT innovation in a particular industry. We focus on Taiwan’s fund management industry, which has adopted and attempted to assimilate a new inter-organizational system (IOS) called Straight-Through-Processing (STP) in recent years. In light of global competition and growing cross-border trading opportunities, financial institutions are implementing STP to connect with their business partners in emerging markets. The major objectives of STP are to streamline cross-border transactions, improve efficiency, and reduce operational risks. Because of its mission critical features, STP has the potential to reduce costs and be further diffused beyond the initial regional boundaries. However, the diffusion of STP in Taiwan’s fund management industry has been painfully slow. Against this background, we consider three research questions: 1) How do members of the fund community make sense of STP innovation? 2) How do different adopting organizations take collective action to achieve a common goal? 3) What suggestions can we offer to help firms in the transition from the initial adoption to the wider diffusion of STP innovation?

The remainder of this paper is structured as follows. The next section contains a review of IOS literature, especially EDI-based systems. In Section 3, we discuss the design of the case study as well as the data collection and data analysis methods. The findings are presented with the analysis of the STP innovation informed by the SST perspective and contextualist approach, by illustrating the significance of context and technology affordance among the distributing banks, IT solution providers, and fund houses. Finally, we conclude with the discussion on the theoretical and practical implication of this research.

2 LITERATURE REVIEW

In this section, we review works on IOS and STP, and also discuss our theoretical framework.

2.1 Relevant IOS Literature

The widespread use of inter-organizational systems (IOS) in various industries has generated a great deal of interest among IS researchers and motivated the study of their adoption, governance and organizational consequences (Robey et al. 2008). Electronic data interchange (EDI), in particular, has attracted a great deal of attention, and a number of scholars have researched different aspects of its adoption and use in and across organizations (Chwelos et al. 2001; Hart and Saunders 1997; Iacovou et al. 1995; Kuan and Chau 2001; Kumar and van Dissel 1996; Premkumar et al. 1994; Premkumar et al. 1997). In these studies, variables like innovation characteristics, organizational readiness and environmental pressure are seen as the most important factors that influence the adoption and impact of EDI in organizations. Besides EDI research, the diffusion process of RosettaNet, a non-profit
consortium that shares business-to-business (B2B) information in the high-tech industry, has also attracted the attention of IOS researchers in recent years (e.g., Boh et al., 2007; Malhotra 2005; Bala and Venkatesh, 2007).

As the use of IOS has become more widespread in different contexts, several researchers have considered the impact of socio-economic and institutional factors on the adoption and implementation of IOS (Christiaanse and Huigen 1997; Damsgaard and Lyytinen 2001; Hsiao 2007; Kumar et al. 1998; Teo et al. 2003). As Robey et al. (2008) point out: “These [economic and social] challenges are likely to multiply as IOS implementation expands and as organizations linked by IOS become more globally dispersed” (p.498). In other words, rather than focusing on rational intra-organizational and technological criteria, the alternative perspective considers that the adoption of IOS is embedded in institutional networks and calls for a deeper understanding of the socio-economic context in which a firm is situated.

2.2 Related STP Studies

The digitalization of globally integrated markets over the last decade has facilitated a significant growth in the trading volumes of cross-border financial transactions. To increase their operational efficiency and maintain competitiveness in the marketplace, firms are developing IOSs to automate the trading and settlement process for both domestic and cross-border transactions. The US Securities Industry Association (SIA) defines STP as “the seamless integration of systems and processes to automate the trade process from end to end – trade execution, confirmation and settlement – without the need for manual intervention.” Ten years ago, Alan Greenspan, the chairman of the US Federal Reserve, observed that “Achievement of straight through processing will significantly reduce costs of settlement, including the growing costs of resolving errors in the documentation and processing of trades, and it should create scalable capacity that can meet future increases in trading volumes.” Therefore, the general industry expectation is that implementing STP will enable firms to increase productivity and efficiency by reducing operational costs, mitigating risks to participants, and eliminating volume sensitivity to enable the business to grow (Kirby 1999). Although the demand for STP has been in the market for more than 10 years, to date, very few academic papers have focused on STP phenomena. In fact, despite a thorough review of IS and management related literature, we only found three papers that focus on STP technology as the core research topic. Hee et al (2003) provided an overview and clarified the concept and characteristics of STP. Huang et al (2006) proposed a framework of STP readiness assessment from a global perspective of electronic business. Finally, because of the increasing pressure on companies to comply with the Sarbanes-Oxley Act (SOX), Chen et al (2007) studied STP from a risk assessment and control perspective and provided a list of implementation challenges. However, none of these works conducted an empirical study on how STP is adopted and diffused within and across organizations.

We argue that the IOS literature calls for an increasing focus on the socio-economic contexts that shape the diffusion of particular IT-based innovations. Given the dearth of empirical studies on the adoption and assimilation of STP, we see this research as potentially valuable in addressing the gap in these research areas. Next, we discuss the theoretical lenses adopted in this research.

2.3 Theoretical Framework

The framework adopted in this work is drawn from two theoretical perspectives: the social shaping of technology (SST) and contextualism. Since these two streams of thought share several philosophical assumptions, we consider that combining them can offer richer insights into the factors that affect the implementation of STP in Taiwan’s fund industry.

2.3.1 Social Shaping of Technology (SST)

Because of the degree of social and organizational change involved in the adoption of STP, we employ the social shaping of technology perspective (SST) as our analytical lens. This perspective is grounded in Berger and Luckmann’s (1967) basic premise that all events, objects, and knowledge are socially constructed through the interaction of various individuals’ understanding and perceptions.
Scholars in the IS field have adapted key notions of the SST perspective to understand the process of IT implementation and adoption within and across organizations (Orlikowski and Gash 1994; Walsham and Sahay 1999). Williams and Edge (1996) argued that the SST approach provides a range of valuable conceptual tools to analyse the construction of socio-technical entities. In contrast to the deterministic view of technology, this approach considers technology implementation as the outcome of social processes of negotiation between networks of social actors. SST examines the content of technology and explores the particular processes and contexts that frame technological innovation (Howcroft et al. 2004). Some researchers argue that the ‘black box’ of technology should be opened up for sociological analysis (Bijker and Law 1992) and this can only be achieved by paying special attention to the process and content of the technology itself.

The concept of relevant social groups is an important aspect of SST and it is particularly pertinent to the focus of this paper. Relevant social groups are different sets of people with common interests or backgrounds who interact with a technology. The groups might be line managers, vendors, technologists, shareholders or end users in the organizational context. According to Bijker and Pinch (1987), it is necessary to identify relevant social groups before one can define the problems and trace the common understanding shared by various organizational players. The relevant social groups in an organization tend to define problems in diverse ways; hence, each group assigns different meanings to the surrounding artifacts or technology and subsequently takes different actions. In the literature, the context in which individuals are located might constrain and elaborate their interpretations of an object or event, and therefore lead to different understandings and actions as a consequence. This explains the distinct implementation results of two geographical information systems (GIS) by two different groups: geographers and computer scientists. Robey and Sahay (1996) observed that the contrasting perceptions of space held by these two groups resulted in different decisions about how the GIS should be implemented (Bhattacharyya et al. 1997; Robey and Sahay 1996). Thus, in this paper, we consider the organizational context and relevant social groups, and include contextualism as an additional theoretical lens.

2.3.2 The Contextual Approach

The contextual approach views the process of IT implementation as the interplay between the social and cultural aspects of an organization and the broader environment (Avgerou 2001; Walsham and Sahay 1999). Avgerou posited that researchers should go beyond the boundary of the organisational context when studying IS innovation. This argument is rooted in the contextual approach proposed by Pettigrew (1990, 1997). After accumulating a wealth of knowledge from his research into strategic decision-making and leadership in organisations, Pettigrew (1987) developed the contextual approach as an alternative way to study the decision-making process. The approach considers three basic elements, namely, content, context and process and their relationships. According to Pettigrew,

“The development of strategic change in the firm takes on the character of a political learning process, a long-term conditioning and influence process designed to establish the dominating legitimacy of a different pattern of relation between strategic content, context, and process.” (Pettigrew 1987, p. 666)

In the IS field, researchers contend that the contextualist approach is comprehensive enough to capture the dialogical reasoning with multiple interpretations of research phenomena (Klein and Myers 1999). Several studies have adopted the approach to investigate how various contextual elements influence the adoption and assimilation of IT innovation (Crowston et al. 2001; Hsiao et al. 2005; Huang et al. 2002; Kumar et al. 1998). To investigate the process of STP adoption and diffusion in the fund management industry, we follow Pettigrew’s model of content, context and process. We look for continuity and change, the behaviour patterns and actions of relevant social groups, and the role of the organization’s context and structure in the process of STP adoption and diffusion over time (Pettigrew 1990).

Therefore, we propose an integrated framework that combines the social shaping view of technology and contextualism. The framework forms the basis of our empirical work and helps us identify the relevant social groups and issues that arise during the adoption and diffusion of STP. In the next
section, we explain our qualitative methodology, which has been selected in order to better capture the complexity of the STP phenomenon.

3 METHODOLOGY

As mentioned earlier, we employ the concept of SST and the contextualist perspective as the interpretive lens to analyze the adoption and diffusion pattern of STP innovation. Our purpose is to elaborate on the theoretical ideas and empirical evidence so that we can make sense of the social phenomenon in which STP diffusion takes place. The interpretive approach allows us to capture the richness of contextual elements and as well as better understand the ‘intersubjectivity’ among them (Klein and Myers 1999). Next, we describe the methods used for our in-depth interpretive case study and data collection.

3.1 Data Collection

Our field research was longitudinal in style and took place from Sept 2006 to 2010. We interviewed people mainly in distributing banks, including senior management in the Trust department and MIS department. In total, we conducted 50 semi-structured interviews, which allowed us to investigate responses through more complex dialogues and discussions with the respondents. The majority of the early interviews were recorded by taking extensive field notes to facilitate openness and trust-building. Some of the later interviews were tape recorded and subsequently transcribed. In addition to these formal interviews, we had a wide range of informal contacts with adopters and potential adopters of STP during our attendance at several fund industry related conferences. Table 1 details the sources and types of data collected during our field work.

3.2 Data Analysis

When analyzing our data, we adopted the concept of relevant social groups used in SST studies. This is because group members tend to develop similar frames of reference that guide their understanding and uses of technology in similar ways. In our research, the relevant social groups (RSGs) are: (1) distributing banks, which share a common geographic location and socio-economic status; (2) IT solution providers, which share a common belief in the application of STP and its functionality; and (3) fund houses, which share common assumptions about STP value added business solutions. We try to identify convergence and divergence in terms of perceptions, expectations and concerns regarding back-office fund processing and the role of STP. Furthermore, we consider how different social, economic and political contexts might shape and reshape the interpretation of different relevant social groups during the diffusion process. Only by interpreting and fully understanding the meanings that different stakeholders ascribe to interacting with technology and STP implementation will we be able to build a rich and complex picture of STP diffusion. Our analysis started with our early understanding of STP and Taiwan’s management industry as a whole. Then, through interviews with participants and observation of business practices, we were able to refine our understanding of the whole process. If we encountered conflicting or incomplete interpretations of a certain event or statement, we went back to the participants and asked for clarification. To analyze the data, we read our field notes and interview materials several times between researchers to verify the dialogical process between the data and the theory (Klein and Myers 1999).

<table>
<thead>
<tr>
<th>Research Methods</th>
<th>Examples</th>
<th>Data Collection</th>
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<tbody>
<tr>
<td>Semi-Structured interviews</td>
<td>Interviewees were selected members from TFOG and AFAC, personnel directly in charge of STP projects from Trust department and MIS department, and person-in-charge from custodian banks. In total, we conducted 50 interviews.</td>
<td>Intensive field-notes, audio-recorded and then transcribed.</td>
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Participant Observation

Site Visits
Two half-day visits to observe fund transaction operations in Trust department at distributing banks that had adopted STP.
Two 2-3 hr visits to IT solution providers for familiarization with their STP solutions

Many audio-recorded, on-site photos taken, intensive field notes taken, not transcribed.

Industry Conferences
Taiwan Fund Automation Group
Industry Meetings in 2007 & 2008
Fund Distribution & Operation Conference, 2008
Fund Automation Forums, 2006 ~ 2008
Funds and Securities Automation Summit, 2009

Weekly consultation between researchers

Secondary Data
Fund automation forum and conference presentation slides, online newsletters, whitepapers, memorandum of understanding (MOU), STP solution brochures, and technical specifications of fund automation process

Table 1. Details of the research activities

4 CASE STUDY AND FINDINGS

4.1 Prior to Adopting STP

The case study focused on back-office implementation of straight-through-processing (STP) to automate and standardize fund transaction data. The implementation took place under the auspices of the local distributing banks, global IT solution providers, and European fund houses in Taiwan’s fund management industry. STP as a technological innovation originated in financial markets when the U.S. Securities and Exchange Commission (SEC) decided to shorten the settlement cycle for securities transactions from the T+3 (trade-plus-three-day clearing) to T+1 (trade-plus-one-day clearing). As a result, key players in the financial markets had to develop capabilities to cope with the challenges arising from this impending change. To meet these challenges, Taiwan’s fund management industry recognized the need to harmonize the exchange of information between firms and across borders. AutoP, O-pass, CleanSettle, and GoFast (pseudonyms) are some of leading global IT vendors that provide seamless communications with external counterparts by using the ISO 15022 messaging standard, which promises to deliver end-to-end transaction visibility. The AutoP system was developed based on industry standards to address firm and industry-wide STP initiatives, using an unified integration architecture. There are two main parties in the fund management industry: distributing banks (DB), which sell investment products to the individual customer; and fund houses (FH), which develop the investment fun products. In 2003, the prosperity and potential growth of Taiwan’s fund trading business represented a growing challenge to European mutual funds, since most Taiwanese banks used a manual, fax-based system to process fund transactions. In 2004, Global Fund News estimated that Taiwan would be the biggest fund market in Asia by 2008, with assets peaking at US$213 billion and accounting for 31% of the regional fund industry. Because of the rapid growth in the volume of investment trading, the back office operation was in need of radical transformation, as many trading records were still in paper format and used different data arrangements.

To illustrate the magnitude of the problem, we look at the process of completing a typical fund transaction. At the end of bank trading hours (i.e., 3:30pm) on each business day (known as T day), the trust department at a DB started integrating all fund transactions received from different branches, the online banking system and the phone banking system. After consolidating the orders from
different sales channels, the trust department’s staff had to fax all the fund transactions (buy, sell, exchange) to the designated FH. The number of FHs can vary (maybe 10 or more) depending on the funds that bank customers decided to deal with on that day. After sending the faxes, the staff sometimes needed to follow up with phone confirmation. The FH then faxed back a confirmation as either T+1 or T+2 depending on the types of transactions and the processing speed. On receipt of confirmation from the FH, the staff of the distributing bank had to input the information to their own internal fund system manually. One manager told us that the processing time for this task was about 3 – 4 hours per day, but could be more if the fund business was booming. The manual process was prone to errors as there were many stages at which data had to be re-entered into disparate information systems by the DB or the FH. Some practitioners estimated that orders and confirmations of fund trading in Taiwan were handled by fax and the error rate was close to 20%. An industry report by an IT solution provider stated that “our estimate is that it costs Asian-based fund managers 1 ~ 1.5 billion euros per year to process orders and rectify errors.” Furthermore, a delay in processing means the bank’s clients had to wait to learn the status of their fund transactions. Thus, the concept of STP was introduced to re-engineer the entire fund transaction process.

4.2 The Road to STP Adoption

To implement STP in Taiwan’s fund management industry, the Taiwan Fund Operation Group (TFOG) held its first meeting in March 2003 to establish best practices for automating cross-border mutual fund orders and confirmations using a standardized message protocol. The 16 representatives that attended the meeting agreed that STP would provide a nonstop flow of information from trade execution to settlement. The TFOG group was comprised of 6 local distributing banks and 8 global fund houses who came together to discuss common formats, standards, and routes for automation. The purpose of TFOG was to “discuss operational issues, business cases, and market practices for the Taiwan market”. In other words, although ISO 20022 was established in 2004 as the open standard for global fund messaging, the data field and rules had to be modified and customized to fit local legal and business requirements. Furthermore, because most local banks had limited knowledge of STP, the first fund automation forum was held in Taipei in 2004. Events at the conference were reported by local business newspapers to update the distributing banks about the nature and advantages of STP. Since then, conferences and seminars on fund automation have been arranged by different stakeholders in fund management industry, mostly global IT solution providers and local financial authority agencies. Because of the increasing level of awareness and the diffusion rate, the Asia Fund Automation Consortium (AFAC) was established in 2006 to drive the STP initiative in the Asia-Pacific region by defining a common STP strategy for each country, and by taking advantage of the different technology platforms available in the marketplace. The consortium comprised 8 global fund houses with large fund trading volumes in Taiwan. One fund manager explained his reason for joining the AFAC as follows:

“We all know each other loosely and we know that, individually, we cannot achieve much. Each year we are all under pressure to cut costs and achieve STP rates. The distributors are telling us that they will only participate if other banks do the same. We realize that we have to act together to convince the distributors.”

(FundHouse, B)

Following the formation of the AFAC, one local bank implemented STP. Since that first case, only 5 banks adopted STP between 2003 and 2009. There are 15 financial holdings companies and 37 domestic banks in Taiwan (See Figure 1 for details of STP diffusion), so this sends a strong message that the diffusion of STP is a slow process. As of January 2010, 80% of the funds were being distributed by local banks and there were 72 offshore fund houses authorized to sell 985 offshore funds in Taiwan. In addition, local Taiwanese investors trade mutual funds like they trade securities. This generates a very high trading volume compared to that of the European markets where people regard mutual funds as long-term investments. In Taiwan, funds are perceived as tradable instruments which results in a high turnover rate and adds layers of risk to the trading process in the eyes of European fund houses. Interestingly the need to reduce the risks associated with the high volume of
transactions does not seem to worry many local distributing banks. One senior manager from a distributing bank summed up the situation as follows:

“Because of the historical burden, banks are not enthusiastic about STP. Banks are familiar with doing the work manually on a daily basis and do not see any reason to change the current practice. In the bank, so many departments are relying on AutoP’s financial messages in their daily functioning. Thus, we must look at IT from a business perspective. Overall, the objective is for STP to be “integrated” across all business functions. This is because it costs too much to get connect to AutoP via individual department function and system maintenances become too complex and tough.” (Wood Bank)

After the first two banks adopted STP, it was not until late 2008 that the third bank implemented the STP solution. Another manager reasoned that external economic conditions helped a number of banks to start implementation in 2008:

“We were lucky to initiate the project when business was still good. The year 2008 was critical because fund business was booming and the trust department started to realize the need for automation.” (Earth Bank)

Since then, the financial crisis of 2009 influenced the intention of banks to adopt the STP solution. However, our findings show that more banks are now in talks with global STP providers with a view to implementing the process. This is because more technical solutions are available and investors are returning to the fund market.

5 ANALYSIS & DISCUSSION

In this section, we analyze our findings and consider the implementation of STP by relevant social groups in Taiwan’s fund management industry.

5.1 Significant of Context

Recall our observation that the most studies of IOS overlook the importance of context (Avgerou 2001; Barrett 1999; Boh et al. 2007; Hsiao 2007). Applying our theoretical framework to our empirical findings reveals, at the surface level, some links between context, perceptions of STP and technology, and the consequent slow rate of adoption. In our case study, we found that, although the managers of the distributing banks agreed about the benefits of STP conceptually, they could not see any advantages in adopting STP in the local context, since the use of low-cost and experienced staff was sufficient to run the existing operation. Our empirical findings show that the intention and interest
was expressed by many banks but the real implementation was not fully achieved as expected at the beginning of the case study. One operations officer in a European fund house commented that high labour costs and office space rental fee have made STP a very attractive solution to the European banks. Apparently, this is not the case in Taiwan. The situation only changed because external economic conditions changed in 2008. Because of the boom in fund business, the distributing banks could not process transactions in a timely manner. Trust departments began to reconsider the possibility of automation. Processing fund transactions on time to satisfy customers became more important than saving money by using experienced staff to do the work manually.

Our contextual findings also provide empirical support for the concept of ‘organizing vision’ proposed by Swanson and Ramiller (1997) to describe the adoption of IT innovations. They argue that decisions about the development of technically innovative information systems are influenced by general views of the value and the risk entailed in new technologies or business processes created by a heterogeneous network of actors in the inter-organizational community in which an organization participates. In our case study, Swanson and Ramiller’s view could be applied to STP adoption in the sense that distributing banks model themselves on other adopting banks, rather than design new structures and operating processes based on efficiency. As one later adopter reflected:

“We first heard about the concept of STP at an Industry Association meeting. Once we saw the successful implementations by both Metal Bank and Wood Bank, we knew that we didn’t have to be the “guinea pig”, so we decided to go ahead with the adoption” (Water Bank).

Thus, we argue that it is only by recognizing the significance of context that potential adopters can better understand the nature of the “chain reaction” produced by different relevant social groups during the diffusion process. As Clausen and Koch (1999) observed: “potential choices vary as technology moves across social settings and barriers of colliding institutions of suppliers and user companies. Likewise, potential choice varies as technology is moved through history, unfolding more or less along a path of dependent trajectories of technological templates, systems and their use” (p. 103).

5.2 Technology Affordance

Another interesting finding of our case study is that STP accommodates adopting firms’ intentions and enables them to realize their vision. Gibson (1977) described affordance as action possibilities in the environment in relation to the action capabilities of an actor. Norman (1988) viewed technological affordance as suggestions or clues about how to use the properties; for example, it means technology can make an action difficult or easy depending on the experience, knowledge, or culture of the actor. Therefore, it is said that the notion of technology affordance can create opportunities and constraint actions which are inherent in the composition of its user. In our case study, through the interpretation of different relevant social groups on the nature and value of STP, we found several examples of technology affordance. For instance, the original intention was to create a unified process, based on the ISO 20022 messaging standard, for all data formats and processing protocols in different countries (cross-border trading). Hence, the relevant social groups involved needed to standardize organizational procedures, such as product coding (ISIN number), fund house accounts, and product dividends (foreign exchange rate calculations). Nevertheless, the legacy system used by many local distributing banks could not accommodate the open and standardized organizational procedures that were designed to link the IOS system with the fund houses. That is, the historical context of technology development in the local distribution banks places a limitation on the current development of STP system. One trust department manager made the following comments about the computer infrastructure in his organization:

Just imagine ! The Core banking system in Taiwán is similar to an illegal building. You have additional levels built on a foundation that were not meant for the structure; and adding items or amending parts of the system becomes inefficient and time-consuming. Recently, our department moved from 2F to B1
in the same building. We had to hire 30 people to help with the transition. The complexity of concealed wiring and networking was crazy. (Wood Bank)

Such constraints forced banks and fund houses to discuss partial solutions, i.e., FTP or the ISO 150022 message standard, in order to achieve some level of STP or completely withdraw from the original implementation plan. In other words, the historical burden of the legacy system made the implementation of STP difficult. However, with the creation of middleware and partial solutions, the technology affordance in this case had a positive effect because it enabled the distributing banks to implement STP.

In a similar fashion, Gibson (1977) perceived the value of the environment through affordance. By affordance, Gibson meant the opportunities or possibilities of nature, which require the act of information pickup. Our case study showed that the implementation of STP can afford a series of business opportunities depending on how managers perceive the value of STP (Nandhakumar et al. 2005). For instance, Earth Bank’s manager commented that “the incentive for STP is to be “integrated” among all business functions”. That is, the integration of STP across different business functions allows the banks to create a more convincing and affordable business case, compared to the implementation of STP for fund transactions alone. Our empirical results demonstrate how the knowledge and experience of actors can change the possibilities and scope of technological applications in the business environment, and how the environment can constrain or enable the possibilities of technological application.

6 CONCLUSION

In this paper, we have examined that the adoption and assimilation process of an IOS innovation called STP in Taiwan’s fund management industry. We adopted the conceptual elements of SST and contextualism to help explain the rich and complex interpretations and actions of different relevant social groups during the diffusion process. We believe our work makes several theoretical and practical contributions. Robey et al. (2008) observed that the economic and social context of IOS implementation is likely to be more challenging and significant when IOS diffusion becomes more globally dispersed. Our data shows that the early understanding and assumptions associated with the STP are shaped by the economic and social environment in which the relevant social groups reside. In this sense, our work supports the scholarly studies that focus on the local adaption and context of an innovation (Hsiao 2007), and provide empirical evidence to support Robey et al.’s (2008) observation about the value of the socio-cultural perspective in post-EDI adoption research. Furthermore, we believe that understanding and managing the interpretive process can facilitate effective deployment of a globally dispersed IOS. In our case study, we were able to observe how the organizing vision of STP was discussed, refined and negotiated through conferences, consortiums and reports. We believe this approach could help researchers understand how an IT-based innovation can be developed, interpreted, and exploited in different practical settings (Heracleous and Barrett 2001). This empirical investigation calls for increased organizational-level awareness of how different interpretations and expectations can have a strong impact on IOS implementation, especially when the diffusion involves organizations from different institutional contexts. By adopting an interpretive process, different stakeholder groups can discover areas of agreement and conflict that may affect IOS adoption and assimilation. It then becomes possible to formulate appropriate social and institutional strategies to resolve disagreements and problems.

Finally, by concentrating on the diverse interpretations of relevant social groups in a particular context, this research furthers our understanding of the dynamic processes involved in IOS diffusion. We hope our work will motivate further research on the adoption of IOS in different institutional settings.

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