

Research on Constraints in Anti-money Laundering (AML) Business Process in China Based on Theory of Constraints

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Abstract

Anti-money laundering is a pressing issue in today's economy. With the newly launched Chinese anti-money laundering regulation, this issue has drawn more and more attention from governments, financial institutions, and scholars. However, there exist many problems in the Suspicious Activity Reports (SARs), large-value reporting, delivering and analyzing processes. In order to further enhance financial supervision efficiency, this paper aims to find out the constraints for AML business in China. After semi-structured interviews with financial institutions and government agencies, we describe the business process in China in the process of dealing with SARs and large-value reports based on Theory of Constraints (TOC). We then extend our research by a comprehensive field study, and find that the main constraints for financial institutions are the incapable SARs extracting system, the immature AML internal control mechanism, the changing AML administrative rules and regulations, the problematic AML motivation, the skill incapability, and the low training efficiency. As for regulation agencies, the key point that affects the efficiency is data problem and SARs analysis tools. Those findings can guide our agencies to adjust current AML work and solve bottlenecks in AML so as to enhance AML efficiency.

Keywords: anti-money laundering, business process, theory of constraints, field study.

1. Introduction

Money Laundering (ML) has been attracting more and more attentions from government and scholars around the world since 1980 [1]. Every year, ML related money accounts for large percentages in the world's GDP. In 1996, there is 2%-5% of money laundered in the world, which amounts to \$60 billion to \$150 billion,

while in 2004 the number has grown to \$1,500 billion to \$2,800 billion according to a statistic report from International Monetary Fund (IMF) [2]. Meanwhile, money laundering is sometimes related with other crimes such as drug abuse, terrorism, and other financial crimes.

Because of the significance of Anti-money Laundering, countries all around the world have taken all kinds of activities to combat ML. Various regulations and laws are issued; the collaboration between different countries is also strengthening in the domain of AML. The United Nations Convention against Traffic in Narcotic Drugs and Psychotropic Substances (1998) first connected drug abuse with ML [23]. In International Convention for the Suppression of the Financing of Terrorism (1999), article 18 discussed how to combat terrorism by control suspicious or ML related capital flow and enhance international collaboration [24]. In 2003, Financial Action Task Force (FATF) issued the Forty Recommendations [22], which laid a foundation for anti-money laundering. On the other hand, international organizations such as European Action Group (EAG), FATF, Asian Pacific Group (APG) and so on are all indicated that anti-money laundering is a world-wide issue. Meanwhile the Financial Crime Execution Network (FinCEN) in America, the Australia transaction analysis center (AUSTRAC), the National Crime Intelligence Service in England (NCIS), and the Financial Information Units (FIU) in respective countries, play important role in AML [3].

In China, AML is attracting attentions in recent years. The "Criminal Law" first regulates the crime of anti-money laundering in 1997 [25]. In 2003, the People's Bank of China issued "Administrative rules for the reporting of large-value and suspicious activity reports" [28]. Since then, financial institutions were required to report large-value and SARs according to the administrative rules. Issuance of "Regulation of Anti-Money Laundering" on October 31, 2006, is a

milestone symbolizing a new stage of practices of anti-money laundering in China. Afterwards, People's Bank of China revised the administrative rule [28] for it to become a better guide to AML work.

As for AML regulation establishment, Chinese Anti-Money Laundering Monitoring Analysis Center (CAMLMAC) established in 2004, and Anti-money Laundering Bureau established in 2003 are AML regulation agencies.

This paper aims to find out the constraints of AML. After identifying those constraints, it is possible to eliminate or reduce the device of those constraints and improve AML efficiency.

The organization of this paper is as follows. The next section introduces the AML system in China and briefly reviews the AML organizational systems and business flow, the constraints mentioned in the literature, and Theory of Constraints. The third section introduces our research methodology and data collection details. Sections 4 and 5 present the findings of content analysis on transcripts collected from field study. Section 6 discusses the implication of this research and Section 7 concludes this paper with a summary of the research results and limitations.

2. Literature review

In this section, we review from the following aspects: the international AML organizational systems and AML business flow, the AML constraints mentioned in the literature, Theory of Constraints and finally the AML background in China.

2.1 International AML organizational systems and business flow

Nowadays, many developed countries such as America, Australia, and UK, all have their own AML organizational systems to combat ML.

In America, most of the legislation agencies and execution agencies are involved in AML work. Since "9.11" terrorist attacks, Treasury Agency, Agency of Homeland Security and Jurisdiction Agency play the most important roles in execution agencies for AML work. The Financial Crimes Enforcement Network (FinCEN) under Treasury Agency is the FIU in America. As a connecting part in AML work, it is in charge of 1) collecting information from financial institutions, law enforcement agencies, Industrial and Commercial agencies and so on, and 2) delivering financial information to financial and execution agencies [3].

As for Australia, in the whole AML operation mechanism, Judiciary and Custom Bureau is in charge of organizing and negotiating the whole AML work in the country; Australian Federal Police is responsible for pursuing evidence for AML crime; the Australian

Transaction Reports and Analysis Center (AUSTRAC) is in charge of collecting, analyzing and releasing related financial transaction information [3].

In UK, AML responsible agencies include Ministry of Home Affairs which is in charge of legislating AML related regulations or laws, the police agencies which are responsible for investigating, spying and tracing ML crime activities, the custom agencies in England which are responsible for investigating, spying and tracing transnational ML activities, financial regulation bureau taking charge of participating AML legislation and prosecuting ML crimes, Economic Crime Branch (ECB) under National Crime Intelligence Service (NCIS) which acts as the FIU in England. Under the organizational systems in UK, the SARs are reported from financial institutions to ECB, and ECB screen those SARs and transfer the high potential ones to the police agencies and custom agencies to further investigate the suspicious ones, if necessary. The Police and Custom then deliver the crime clues to Jurisdiction Agency [3].

From the above, we can see that the AML is not limited in one single agency, but should be considered to be an integrated complex AML organizational system including financial information agencies, regulation agencies, and jurisdiction agencies and so on which is separately in charge of part of the AML work and together aiming to combat ML.

2.2 Constraints in AML

According to the literature in and abroad China, the constraints in AML mentioned are as follows:

Some scholars around the world focus on internal constraints in financial institutions. Specifically, some discussed the recent problems in detection systems when analyzing large-value and SARs, and argued that the dynamic and machine learning rather than rule-based system is of great emergency [31][32][32]. Some discussed problems existing among people who are responsible for reporting SARs and large-value reports but are lack of training and incapable of AML work [19][20][21].

Also, it was mentioned that data collection problem existed in the process of AML, from financial institutions to CAMLMAC in China [17].

Also, anti-money laundering related regulations and laws need be further completed and consummated in China [18]. Meanwhile, scholars abroad also pointed out that those differences in AML related regulations between different countries brought inconvenience for AML cooperative regulations [36].

All of the above papers focus on either one of AML related agencies or perspectives. There are few researches focusing on the whole AML system with an integrated picture. Meanwhile, the experimental

methods in AML domain research are insufficient to provide insight into the whole AML constraints.

In a broad sense, a constraint could be anything in a production system that impedes the achievement of higher performance. It is usually not practical to explore every single constraint in the system for best result due to limited resources and time available. A better strategy is to locate the most crucial constraints and resolve them with the highest priority, as advocated in Theory of Constraints (TOC).

According to the literature review, we would like to find out the working process of AML, find out the constraints of each agency, and further discuss the potential plan to solve the problem.

2.3. The Theory of Constraints (TOC)

The Theory of Constraints (TOC) is about change and how to best affect change. And the key points to be answered using TOC include: what to change? To what to change? And how to make the change? [7] Dettmer, Lepore and Cohe, and Roybal, Baxendale, and Gupta all report the TOC as an emerging philosophy that offers some distinct advantages, both in theory and in practice [4,5,6].

The TOC is a set of management principles that help identify obstacles to one's goal(s) and affect essentials to eliminate them. The TOC believes that output of a multiple-process system dependent upon the previous processes will be constrained by the least productive process. In other words, as paraphrased by Goldratt, the strength of any chain is dependent upon its weakest link. [34]

To identify obstacles and eliminate them from the multiple-process system, Goldratt develop the thinking process, which is a series of steps to locate the constraints (What to change?), determine the solution (What to change to?) and implement the solution (How to make the change?) [7]. Goldratt has applied the process to manufacturing and other areas of the business world. Goldratt's next book, "Its Not Luck" describes the thinking process in much more detail [9] [10]: first, identify the system's constraints; second, decide how to exploit the constraints; third, subordinate everything else to the constraint; fourth, elevate the system constraint; and finally, go back to Step 1, but don't let inertia cause a system constraint. That is to say, making changes using TOC is a dynamic and circular process with time goes on and situation changes.

Identifying the system's constraints is half the battle won. There are two processes for identifying constrains: 1) what to start, and 2) where the constraint is. First of all, identify the following: What are the inputs to the system? What is the transformation process? What are the outputs? How do we control the system's behavior? Secondly, a constraint is anything that significantly

limits the performance of the system with respect to its goal, and, in different systems, constraints are defined from different aspects. Glodratt mentioned mainly two constraints: physical constraints and policy constraints; human behavior constraints are also mentioned as an aspect of constraints which will largely affect the performance of the whole system [8]. As in different domains, constraints can be classified in many different ways, for example, three types of constraints in a construction project are commonly encountered: precedent constraints, resource constraints, and information constraints [35]. In this research, we use three types of constrains, specifically, physical constraints, policy constraints, and human behavior constraints.

Nowadays, TOC has been applied in supply chain management [13], project management [11, 12], public management [14], marketing, production/ operation and so on. However, few papers focus on using TOC in the AML domain.

2.4. China's AML background

AML in China is a complex process involving different agencies including legislation agencies, information agencies, jurisdiction agencies, and administration agencies, forming an organized integration [3]. See Figure 1.



Figure 1. AML Organizational Systems in China

The legislation agencies mainly include most of the bureau or institution under state council which are involved to legislate or modify the AML related laws, such as the People's Bank of China, China Customs, Bureau of Commerce of the P.R.C, Bureau of foreign affairs of the P.R.C, Ministry of finance, and Super Court of the P.R.C and so on [26].

The information agencies include the financial regulation agency and financial institutions. The financial regulation agency refers to the People's Bank of China, including its subordinate bodies: CAMLMAC and Anti-Money Laundering Bureau. The financial institutions include commercial banks, policy-related banks, security companies, insurance companies and other financial institutions [27].

The jurisdiction agencies refer to the People's Court, People's Procuratorate, Public Security and Jurisdiction Bureau and so on.

The administration agencies include Industrial and

Commercial Bureau, Bureau of Customs, Tax Bureau, China Securities Regulatory Commission (CSRC), China Insurance Regulatory Commission (CIRC), and China Banking Regulatory Commission (CBRC) and so on.

In the next section, we collect information from the information agencies (focusing on financial institutions, regulation agencies) and administration agencies (focusing on Industrial and Commercial Bureau, and Tax Bureau).

3. Research methodology

In order to identify the AML constraints in China, based on the Theory of Constraints, there are two processes, 1) first to identify the inputs, outputs, transformation of the process, and the control of the systems; 2) second to find out the constraints that significantly limits the performance of AML efficiency. Based on the intention of this research, we conducted a two-phased research approach.

In both phases we conducted semi-structured interviews, and recorded the transcripts of interview results, and then use qualitative content analysis method to analyze and find out the whole business process and the constraints existed.

The purpose of **Phase one** was to identify the AML reality and business process. From 2004, we did pilot studies including researching on all kinds of regulations and administrative files, contacting commercial banks and regulation agencies to understand their main AML responsibilities, and revising our questionnaires based on feedbacks. Our formal investigation was conducted from March in 2006, a series of semi-structured interviews were conducted with different AML responsible agencies located with Beijing, Shanghai, Shanxi, Shangdong and Hubei provinces. Those agencies include financial institutions, regulation agencies, and administrative agencies which have different AML responsibilities (see detail in Appendix 1, Table 1). Our interviewees were distributed in different locations, various levels of the agencies, different departments, and from different AML positions, in order to realize AML working practice in different locations, different levels, know about responsibilities in different departments, and identify principal concern and job significance in different AML positions. Our investigation contents mainly include the input, output, transformation and control mechanism when realizing their AML responsibilities. During the investigation, we also visited their AML detection system, and read their working profile and AML related administrative rules. Specifically, the commercial banks interviewed include Industry and Commercial Bank, Bank of Communications, China Construction Bank, PuDong

Development Bank, Standard Chartered, HuaXia Bank, and so on. The regulation agencies includes Anti-money Laundering Bureau in Beijing under People's Bank of China, CAMLMAC under People's Bank of China, Data Center of People's Bank of China, branch offices of People's Bank of China. Administration agencies include Industrial and Commercial Bureau, and Tax Bureau in Shanghai.

The purpose of **Phase two** was to find out the constraints in financial institutions and regulation agencies when realizing their responsibilities. This phase began from July in 2006 to present, and experienced several rounds. Whenever we found some constraints in certain financial institutions or regulation agencies, we would mention the same patterns to other places. Step by step, we tried to investigate comprehensively and find out the repeated constraints or situations. In this phase, our investigation were focused on financial institutions and regulation agencies mentioned in **Phase one** (see detail in Appendix 1, Table 1). The investigation contents mainly about the constraints that limit the performance of AML work, from physical, policy, and human behavior aspects as mentioned in TOC. Meanwhile, in the field study, we also hear voices from regulation agencies when aiming to find out constraints in financial institutions, vice versa.

4. Phase one: analysis and findings

The main method used was qualitative content analysis on the transcripts collected by field study, the pointed administrative rules or related regulations. We organize and categorize the results according to their AML responsibilities.

From the investigation, we found the overall working flow was as follows: the financial institution hands on large value report and SARs to the CAMLMAC [3]. CAMLMAC analyzes large value report and use other information shared by other administrative agencies to make further decision [3]. When high potential suspicious reports are found, they are transferred from CAMLMAC to Anti-Money Laundering Bureau for a further check on the suspicious accounts or transactions from financial institutions [15]. If the Anti-Money Laundering Bureau can not purify the possibility of crime for the reports, they will be sent to Jurisdiction Bureau [15]. The entire AML business process is depicted in Figure 2.

4.1 Financial institutions

Financial institutions have responsibilities to keep customer records, report large-value and SARs, coordinate with other regulation agencies to combat AML according to "Regulation of Anti-Money Laundering for financial institutions" [27], "Administrative rules for the reporting of large-value

and suspicious activity reports” [28], and “Regulation of Anti-Money Laundering” [15]. See Column 1 in Figure 2.

4.1.1 Keeping customer records

Under the “know your customer” principle, financial institutions are required to keep customer records for at least 5 years [15]; On the other hand, they can check and confirm the customer information with administration agencies such as the Industrial and Commercial Bureau.

Information kept includes “customer profile and transaction records”, and “for individual customers, customer profile information includes identification, habitation, occupation, income situation and so on; for corporation customers, customer profile includes organization code, location, registration income, business scope, business scale and the like” said a staff in commercial bank.

Sharing Information “mainly refers to the customer identification exchanged with Industrial and Commercial Bureau”, but “usually the administrative agencies can not supply to commercial banks freely”, as said by staffs in commercial bank and confirmed by a local Industrial and Commercial Bureau.

4.1.2 Reporting large-value and SARs

The **authority regulation** agencies have been changed and **delivery method** has been improved since 2003. The investigation shows that today’s large-value and SARs reporting mechanism is correspondingly more mature as compared with before 2003.

From investigation result, we found that, on one hand, “before 2003, large-value and SARs were collected and delivered **using hard copies**”, while since 2003, commercial banks realized “**electronic delivering**”; on the other hand, since 2003, the delivery of RMB and foreign exchange large-value and SARs are unified to report to **CAMLMAC** other than foreign exchange reporting to **Administration of Foreign Exchange** before 2003.

Reporting flow: the large-value and SARs reporting processes are not exactly the same since large-value reports are extracting directly from branch offices while SARs are mainly originally detected from counter staffs in financial institutions.

As for large-value reports, “as most of commercial banks in China has realized data centralization, transaction data are stored in city or above levels, large-value reports are automatically extracted **directly from data center from branch offices, delivered to headquarters and reported to CAMLMAC** though Office Automation (OA) system”, while SARs are “mostly reported **from local operation sites** by counter staff when suspicious activity occurred” (as staff in operation

site said), and then “summarized and reported after excluding the non-suspicious ones by manager in operation site **to branch offices**” (said a staff in branch office), “and then summarized and **delivered to head offices**”.

Detection method and content: Mostly the large-value and SARs are extracted “according to the criterion issued in ‘Administrative rules for the reporting of large-value and suspicious activity reports’”, in most commercial banks, “extracting tools are used to support reporting work”, (words from commercial banks).

4.1.3 Coordinating with supervision center to combat AML

Financial institutions coordination mainly with Anti-Money Laundering Division in branch offices of People’s bank of China and Jurisdiction Bureau, as for the latter, “sometimes the accounts under investigation are required to be frozen” (words from commercial banks).

As for the former, financial institutions are required to: Firstly coordinate with Anti-Money Laundering Division to **further investigate** high-potential transactions which are determined by CAMLMAC and delivered to Anti-Money Laundering Bureau;

“Those useful information usually includes original voucher for certain business of a specific account or customer, and related accounts or transaction information” said a staff in commercial bank.

Secondly, receive AML **non-spot investigation** conducted by Anti-Money Laundering Bureau;

Those non-spot investigation contents “include AML internal control mechanism, AML organization establishment situation, large-value and SARs extracting efficiency and so on” said a staff in commercial bank.

Thirdly, take part in training organized by Anti-Money Laundering Bureau, and “mostly related with AML consciousness” (words from commercial banks).

4.2 Regulation agencies- CAMLMAC

AML Regulation agencies in China are People’s Bank of China, and its subordinate body: CAMLMAC and Anti-Money Laundering Bureau. CAMLMAC was established in 2004, as the financial information unit (FIU) in China, its responsibility includes collecting, analyzing and reporting large-value and SARs [3]. See Column 2 in Figure 2.

4.2.1 Collecting reports

Since 2003, large-value and SARs are delivered electronically, from much more reporting bodies. Meanwhile, data collection realized the unification of RMB reports and foreign exchange reports.

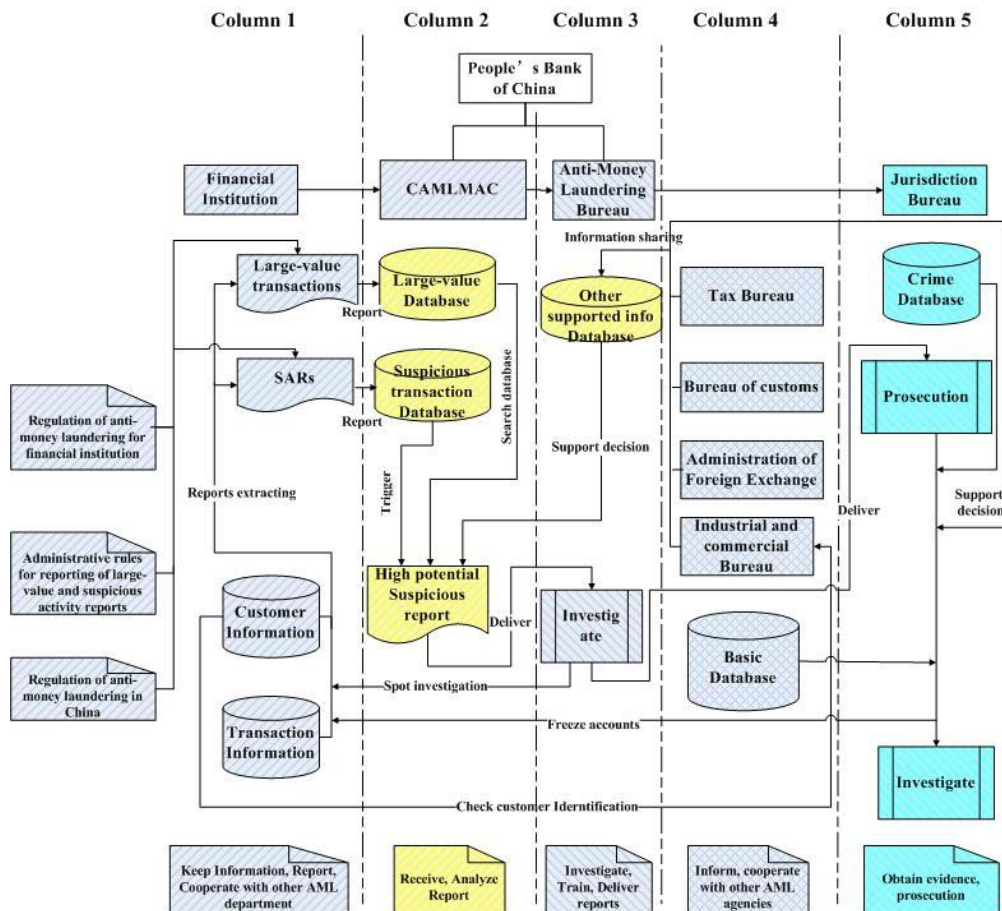


Figure 2. AML Business Process

Reporting sources are extended, today “not only commercial banks, policy-related banks, Security Companies, insurance companies are required to report, but also all kinds of post offices, pawnbrokers, and so on.” said a manager in CAMLMAC.

Data channels and standards: headquarter of every financial institutions can “deliver reports though OA systems of CAMLMAC”, and “CAMLMAC supplies the reporting standards and the financial institutions are required to deliver large-value and SARs applied with formats.” At the same time, “if CAMLMAC finds out anything need to be supplemented, they have authority to order financial institutions add information within certain time limit under regulation.” said a staff in CAMLMAC.

4.2.2 Analyzing reports

Large-value and SARs are analyzed in CAMLMAC to find out high potential transactions, accounts or customers. All kinds of information help to support decision.

Information used in decision making can be mainly divided into four parts: “1) large-value and SARs database, 2) suspicious database shared with People’s Bank of China, 3) sharing information exchanged with other administration agencies, and 4) suspicious information reported from citizens though internet or telephone”, to be more specific, the first “collected from financial institutions”, the second one “shared within People’ Bank of China includes the previous suspicious transaction, cash transaction report, across country transaction”, while the third “shared with Taxation Bureau, Bureau of Customs, Administration of Foreign Exchange, Industry and Commercial Bureau”, as information from CAMLMAC indicates.

Detection process: “As the number of large-value reports from all over the country is so large that in reality SARs is used as a trigger, along with the shared information, and the clues sent up by citizens, to make final decision as to further find out high potential suspicious transactions.” (Words from CAMLMAC)

Knowledge management: another job for CAMLMAC is to find new ML patterns, “(CAMLMAC) uses statistical method to summarize ML pattern, mainly from angle of region, business scale, industries domain and so on” said a manager in CAMLMAC.

4.2.3 Delivering reports

Those high potential suspicious records are transferred to Anti-Money Laundering Bureau though internal system smoothly.

“Because Anti-Money Laundering Bureau and CAMLMAC are both enterprise cooperation under People’s Bank of China, the transformation between the two are through internal OA system and of course easy to operate.” said a staff in CAMLMAC.

4.3 Regulation agencies - Anti-Money Laundering Bureau and Anti-Money Laundering Division

Another regulation agency under People’s Bank of China is Anti-Money Laundering Bureau and Anti-Money Laundering Division in branch offices. Its responsibility includes 1) investigating high potential suspicious information, 2) spot investigation, 3) training staffs in financial institutions, 4) delivering high-potential suspicious customers to Jurisdiction Bureau, See Column 3 in Figure 2.

Investigating suspicious information “that comes from CAMLMAC”, and the information “was delivered to Anti-Money Laundering Bureau under People’s Bank of China, transferred to Anti-Money Laundering Division usually in branch office in People’s Bank of China to further investigate the suspicious ones”, as said by officers in Anti-Money Laundering Bureau.

Spot investigation is an investigation to “all levels of financial institutions including headquarters, branch offices, and operation sites in the lowest level”, conducted by “Anti-Money Laundering Bureau (under People’s Bank of China) or Anti-Money Laundering Division (in branch offices of People’s Bank of China)”, focusing on “not only the large-value and SARs execution efficiency, but also all kinds of other AML work, such as internal AML mechanism establishment, customer record-keeping, training frequency and efficiency, and the like.” said a manager in Anti-Money Laundering Bureau.

Training conducted by Anti-Money Laundering Bureau or Anti-Money Laundering Division, and trainees “not always covers all of the AML related staff”, but selectively includes “those AML managers and staffs in AML governing departments (in commercial banks)”, as for the content mainly includes “significance of AML in China, the process and reality for AML regulations and organizations in

China, existing problems in AML jobs and so on”, said officers in Anti-Money Laundering Division.

Deliver suspicious to jurisdiction agency. Finally, if the Anti-Money Laundering Bureau can not purify its possibility of crime, the suspicious report will be sent to jurisdiction bureau. Also the Anti-Money Laundering Bureau has the responsibility to “ask (commercial banks) for freezing the account (under investigation), especially when money (in this account) happens to be transferred to foreign countries” as said by officers in Anti-Money Laundering Bureau. See Column 5 in Figure 2.

4.4 Administration agencies

In AML process, the most important responsibility of administrative agencies is to cooperate with AML governing agencies and supply useful information when needed. See Column 4 in Figure 2.

In this phase, we focus on the inputs; outputs and connectors between and within AML related agencies, and draw a picture for the whole AML business process in China. In the next section, we will try to elaborate the constraints existing in all the processes and separately in each important agency.

5. Phase two: analysis and findings

5.1 Constraints in the whole business process

From the analysis in the first phase, the responsibilities of different agencies are all around extracting, analyzing and delivering large-value and SARs, which means if we would like to calculate the productivity and efficiency of the whole AML business process, these two are supposed to play important roles without doubt.

In this paper, we enumerate large-value and SARs transferred between different agencies and AML related persons in each agency to analyze the constraints in the whole business process. See details in Table 2.

As for financial institutions, on one hand, the number of reports transferred is extremely huge while the reporting quality need to be further improved. Until December 31st, 2004, there were totally 3,217,227 large-value reports, and 10,740 SARs reported to CAMLMAC from the very beginning of its establishment [30]. However, investigation data from regulation agencies shows that the AML efficiency in financial institutions needs to be further enhanced. For one thing, spot investigation result shows that as for accounts opening due diligence investigation, 634 branches including 3351 banks are investigated, and in all of the 3,928,655 accounts, problem accounts account for 2.21%. For the other thing, spot investigation for large-value and SARs reporting, among a total of 127,454,061 transactions, financial

institutions failed to report 0.12% of large-value, and 1.08% SARs.

On the other hand, the staff for AML in financial institutions is extremely small, data from Anti-Money Laundering Bureau shows that there are only 8858 full time AML employees in banks. Investigation from a commercial bank indicate that “there are totally 300 or so persons in our branch office, while only a dozen of persons mainly be responsible for AML responsibilities...in a single day we report ten thousands of large-value reports and more than half hundred SARs...”

Table 2 inputs and outputs in AML business process

	Financial institutions	CAMLM AC	Anti-Money Laundering Bureau
Working data	-	3,217,227 large-value reports, 10,740 SARs	150
Transferred data	3,217,227 large-value reports, 10,740 SARs	150 high potential records	find out 50 suspicious clues
Full time employees	8858	794	
Part time employees	128,867	3588	

While under the same time, CAMLMAC reports 150 high potential records to Anti-Money Laundering Bureau, with the total of 56,515,51 thousand RMB and 305 accounts, foreign suspicious \$203 million and 207 accounts. Until December 31st, 2004, only 50 clues are reported from Anti-Money Laundering Bureau to Jurisdiction Bureau with the value of 57 billion RMB [30], while there are totally 794 full time employees working on AML in the whole People’s Bank of China and its subordinate bodies.

The above data further shows that in the whole AML business process, financial institutions and regulation agencies are the bottleneck. The following section will help us find out constraints existing in these two agencies separately.

After the first phase, we found that financial institutions and regulation agencies take most important responsibilities in AML work, and the former are original sources of large-value and SARs while the latter hold important position in analyzing and future deciding the high-potential reports. In the

following, we will focus on analyzing the constraints of these two agencies.

5.2 Constraints in financial institutions

For financial institutions, the constraints are categorized as the following ones: physical constraints mainly focused on the problematic infrastructure and the incapable SARs extracting system; policy constraints include the immature internal control AML mechanism, the changing AML administrative rules and regulations that impacted the AML efficiency; and human behavior constraints that can be specified by problematic AML motivation, the personnel incapability, and low training efficiency. See Table3 and Figure 3.

Table 3 Constraints in financial institutions

	Constraints
Physical constraints	AML infrastructure; detection system;
Policy constraints	AML Internal control mechanism; Changing Regulation
Human behavior constraints	AML motivation; Expertise, capability and training efficiency

5.2.1 AML infrastructure

For AML infrastructure, investigation results show that fake or invalid accounts or customers exist, while sometimes data reported to CAMLMAC are difficult to supplement when data missing reason is requested.

On one hand, “Not until 2000, were customers required to supply their valid identification when opening accounts”, which indicates “the phenomenon of fake IDs”; on the other hand, when banks supply financial services, “some information is not mandatory, take transaction usage source for example”, which results in the “difficulty when we (commercial banks) are required to supplement the missing data or items of certain large-value and SARs”, informed by commercial banks.

5.2.2 Detection system

Financial institutions do have detection systems, but the performance of those systems are with limitations. These rule-based systems are low-tech and can hardly satisfy the requirements of SARs reports.

The function of existing extracting system is “quite simple especially for SARs extracting”, because it is “implemented based on **hard-coded rules** guided by relative administrative rules or regulations”, which means “the systems are **limited in flexibility**, anything changed in extracting rules will result in recoding for detection systems” said staffs in commercial banks.

5.2.3 AML Internal control mechanism

The implementation situation of internal control mechanism is not so promising. On one hand, the internal administrative rules in most commercial banks are blank, which impeded to process AML job orderly and successfully; on the other hand, in some commercial banks, the loose AML organization pattern and incapability in AML working importance affects the AML efficiency.

AML internal management administrative rules in financial institutions are still being established. Nowadays, “most AML jobs are guided by regulations and administrative rules issued by Chinese government and People’s Bank of China... internal administrative rules and working guidelines (in commercial banks) are still blank”, said officers from commercial banks.

A leader in Anti-Money Laundering Bureau confirmed that “in the future 2-3 years, the top urgency is to drill down and establish a set of management ordinances to guide AML jobs...”

As for AML organizations, a staff in Anti-Money Laundering Bureau points out that “recently there is **no especial department** established for AML in most commercial banks yet”, words from Anti-Money Laundering Bureau indicates that “...AML organization structure is loose due to unclear AML responsibilities, no AML departments with authority to take in charge, few cooperation or negotiation between different departments. The authority of AML agency is not so strong because of low negotiation position and weak positional power.”

In different commercial banks, AML responsible or related departments are different from one to another. Sometimes “Accounting Department...takes in charge, while counter staff are responsible for SARs first-hand detection, and IT Department coordinates requests from us (Accounting Department)” said a manager in a commercial bank, sometimes “Risk Management Department takes in charge of AML affairs” according to a different commercial bank, sometimes “Legal & Compliance Department and IT Department coordinate in AML responsibility” said a third commercial bank.

These situations result in two consequents: 1) loose structure brought inconvenience to AML work: “no leading department... leaves us (Legal & Compliance Department) no authority to request technical support in time... and no power to adjust work importance or manpower when urgent” (words from headquarter of a commercial bank). 2) Narrow and limited detection range. “There are no special experts and organizations. ...Counter staffs

(are)... responsible for SARs detection. ...Most of the financial institutions have to focus on real time detection rather than post supervision, which results in that the detection is limited in deposit and withdraws though the counter”.(Words from Anti-Money Laundering Bureau)

5.2.4 Changing Administrative rules and delivery mechanism

AML internal control mechanism is the **internal** factor affecting AML efficiency, while the changing administrative rules and regulations issued by People’s Bank of China are **external** factor which may bring inconvenience in understanding and implementing those criteria.

Confusing administrative rules and criteria:

“‘Regulation of Anti-Money Laundering’ is not detail enough to guide ordinary AML work, while in ‘Administrative rules for the reporting of large-value and suspicious activity reports’, suspicious activities are defined so unclear that it is difficult to be used and quantified to detect SARs (For example, words such as ‘high frequency’, ‘abnormal’, ‘abrupt transaction’, ‘not matching customer profile or financial status’).” said a staff in commercial bank.

Changing administrative rules: “‘Administrative rules for the reporting of large-value and suspicious activity reports’ were issued in late 2006, which improved from that issued in 2003 by adding new ML patterns and suspicious patterns”, (from CAMLMAC), but results in “endless learning and training” (from commercial banks) While points from regulation departments argues that, “‘Regulation of Anti-Money Laundering’ is the fundamentally principle for AML in China, which means any change to it will be cautious and selective. With regard to those administration rules, it is with no doubt to become more and more operable and measurable.”

5.2.5 AML Motivation

Voices from different commercial banks revealed problematic AML motivation; most commercial banks consistently consider AML as a means of risk management unable to bring direct profit. Some of them even regard AML as negative effect to profit enhancement.

Commercial banks sometimes regard AML as “sometimes a kind of **time-wasting and money-consuming job**” (Words from commercial banks). “(AML related departments) have other business functions as well as AML responsibilities, tasks required by branch offices (in People’s Bank of China) add tremendous burden to us” (words from branch offices of commercial banks)

Some claims from commercial banks point out that “AML can not bring direct profit, but brings high cost: data from America shows that nowadays AML auditor earns 25% higher than before, which means if we commercial banks employ AML auditors, we have to pay for the bill.”

Some commercial banks regard “AML in financial institutions” as “a kind of risk management”, “failure to report SARs will enhance our compliance risk, sometimes will influence our reputation, and finally transferred to be a commercial risk.” said a manger in commercial bank.

Some even regard accomplishment of AML responsibility as “driving customers away from us (banks)”, because “customers always search for financial service with simple procedure, high quality guarantee of business secret...complex investigation required by AML governing agencies scares customers away...” (Words from commercial banks)

5.2.6 Expertise capability and Training efficiency

Employee incapability and training inefficiency are also of most concerns to financial institutions. On one hand, the instability of counter staff caused commercial banks to have few experts; on the other hand, training quality is not so promising and does not fit to reality requirements.

“In most commercial banks, senior AML expertise is of huge shortage.” said a staff in Anti-Money Laundering Bureau.

“...in some commercial banks, AML staffs even didn’t know the responsibilities and punishment rules, let alone of viewing AML as a method to guard the finance order in China.” said a Anti-Money Laundering Bureau.

“AML related staff, especially counter staff are quite instable...they (counter staff) receive training and, after a very short time, sometimes a year or even shorter, they quit or are transferred to other departments”, which means commercial banks “have to train the counter staff from time to time...” (Words from commercial banks)

“Training (conducted by Anti-Money Laundering Division) always has the same contents... not detail enough to guide AML work in reality. No AML cases, no application or detection examples is shown on how to extract SARs using suspicious criteria” (words from commercial banks)

5.3 Constraints in CAMLMAC

Content analysis for investigation transcripts shows that the main constraints existing in CAMLMAC are data incomplete and data missing problems, as well as decision support systems for high-potential reports. See Table 4.

Data incomplete refers to the large-value and SARs reported from financial institutions having some items missing, “especially those non-mandatory information when financial services are supplied” (words from commercial banks), while these data incomplete “influences the high-potential analysis” (words from CAMLMAC)

Table 4 Constraints in CAMLMAC

	Constraints
Physical constraints	Data incomplete problems and data missing problems Decision support systems
Policy constraints	-
Human behavior constraints	-

Data missing means that today most commercial banks “fail to detect and report large-value and SARs”, “some (commercial banks) even report not a single case within a year” (words from CAMLMAC). Since “SARs are used as triggers, along with the shared information and the clues sent up by citizens, to make final decision for further finding out high potential suspicious transactions”, these data missing “will directly result in important clue missing in detection” (words from CAMLMAC)

Decision support system especially with knowledge discovery ability are needed to help detect new AML patterns and analyze high potential suspicious records: “Nowadays we (CAMLMAC) realized data electronic store, delivery, and management”, “it is urgent to develop analysis tools to realize intelligent detection and recognition for high potential suspicious records.” (Words from CAMLMAC)

“The performance of the (existing) system is limited, because it is not established based on a flexible rule or dynamically discovery knowledge.” a staff in CAMLMAC said, “recently the priority focuses on the knowledge discovery and pattern recognition for AML”

6. Implications and discussions

The research results in this paper can guide the practice of China’s AML: 1) for regulation agencies, in order to enhance the supervision efficiency, it is urgent to develop a new business activity monitoring system based on AML knowledge with dynamic learning ability. 2) For financial institutions, the most important is to enhance the motivation for AML, which may accelerate the establishment for internal control mechanism. At the same time, equally important is to

implement the SARs analysis and detection tools in financial institutions. If detection software is implemented, then it can largely reduce labor cost and enhance efficiency, which will free the AML experts and motivate them to engage in more complex and comprehensive AML detection work. In this sense, the implementation of AML decision support system can enhance the alertness of AML and, to some degree, enhance the AML motivation. With the motivation improved, the problem of internal mechanism deficiency will be changed.

Compared with the literature review, we found that there are some inconsistencies, 1) data collection is no longer a problem as mentioned in [17], since from 2003 the delivering system is established and electronic transformation of large-value and SARs are accomplished. 2) Changing regulations do bring challenge for AML practice as mentioned in [19, 20, 21], but with the new "Regulation of Anti-Money Laundering" issued in late 2006, China's AML related regulations clarified the roles for AML practice, and further consummated administration rules will make AML work more operational.

Meanwhile, analysis and detection tools mentioned in [31] [32] [32] and motivation and capability problem mentioned in [19, 20, 21] are really the most important constraints for financial institutions.

7. Conclusions

This paper researches the constraints in AML business process under the framework of Theory of Constraints. We specify the working flow of anti-money laundering and analyze the responsibilities for each related agencies. From the investigation result, we found that the information transformation mechanism in the whole AML business process has been established and is delivering effective performance. While in the whole AML business process, the two most important parties are financial institutions and regulation agencies.

Based on Theory of Constraints, we focus on financial institutions and regulation agencies. Through content analysis on the transcripts collected during investigation, we find out the most important bottlenecks influencing the supervision efficiency nowadays.

After the investigation we conclude that for regulation agencies, their constraints lie in the analysis tools to help decide high potential reports analysis.

And for financial institutions, we conclude that the detection systems, internal mechanism, regulation understanding, motivation of AML, training efficiency are all, to some degrees, the constraints.

To summarize, this paper introduces Theory of Constraints into the research of AML. By doing this, we can analyze AML work in a systematical way.

Meanwhile, this method can be used as references to analyze AML in other countries, since the AML organizational systems world wide have many things in common.

One limitation of this paper is that, due to certain investigation inconvenience, the constraints in Jurisdiction Bureau and administration are not studied.

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Appendix 1

Table 1. Characteristics of the investigation

Samples	Investigation round	Agencies	Level of agencies	Location (Province)	Position of interviewers	Department
1	1	Commercial bank	Operation site	Hubei	staff	Operation department
2	1 &2	Commercial bank	Branch office	Shanxi	staff	IT department
3	1 &2	Commercial bank	Operation site	Shanxi	Manager	Operation department
4	1 &2	Commercial bank	Branch office	Shanghai	Manager	Accounting department
5	1 &2	Commercial bank	Branch office	Shanghai	staff	Financial Crime Risk management department
6	1 &2	Commercial bank	Operation site	Shanghai	staff	Accounting department
7	1 &2	Commercial bank	Operation site	Shanghai	staff	Operation department
8	1 &2	Commercial bank	Headquarter	Shanghai	Head	IT department
9	1&2	Commercial bank	Headquarter	Shanghai	Head	Financial Crime Risk Legal & Compliance
10	1	Commercial bank	Headquarter	Beijing	staff	IT department
11	1 &2	Commercial bank	Branch office	Shandong	Manager	IT department
12	1 &2	Commercial bank	Branch office	Shandong	Staff	Accounting

						department
13	1 &2	Commercial bank	Branch office	Shandong	Manager	Accounting department
14	1 &2	CAMLMAC under People's Bank of China	Headquarter	Beijing	staff	Detection department II
15	1 &2	CAMLMAC under People's Bank of China	Headquarter	Beijing	manager	CAMLMAC
16	1 &2	CAMLMAC under People's Bank of China	Headquarter	Beijing	manager	Detection department I
17	1 &2	Anti-Money Laundering Bureau under People's Bank of China	Headquarter	Beijing	manager	Anti-Money Laundering Bureau
18	1 &2	Anti-Money Laundering Bureau under People's Bank of China	Headquarter	Beijing	manager	Anti-Money Laundering Bureau
19	1 &2	Anti-Money Laundering Bureau under People's Bank of China	Headquarter	Beijing	staff	Anti-Money Laundering Bureau
20	1 &2	Anti-Money Laundering Bureau under People's Bank of China	Head office	Shanghai	staff	Anti-Money Laundering Division
21	1 &2	Anti-Money Laundering Bureau under People's Bank of China	Head office	Shanghai	manager	Anti-Money Laundering Division
22	1 &2	People's Bank of China	Branch office	Shanxi	staff	Anti-Money Laundering Division
23	1	People's Bank of China	Branch office	Hubei	staff	Anti-Money Laundering Division
24	1 &2	People's Bank of China	Branch office	Shanxi	manager	Anti-Money Laundering Division
25	1 &2	People's Bank of China	Branch office	Shanghai	staff	Anti-Money Laundering Division
26	1	Industry and Commerce Administration Bureau of Shanghai	Local	Shanghai	Manager, staff	Local
27	1	Tax Bureau	Local	Shanxi	Staff, Manager	Local