The Study on the Information Management of Drug related Crimes in the Thai Criminal Justice System

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Abstract
The research aimed to study the information management of drug related crimes in the Thai criminal justice agencies including Narcotics Suppression Bureau, the Prosecutor Office, the Court of Justice and the Prison Service Department (also known as the Correction Department as its official name in Thailand). The interviews with 20 experts from the four organizations and other related agencies were conducted. The result revealed that the sharing of data from each agency between each other is needed but the problem is that each agency has separately developed its own database system with a lack of linkage as well as different classification and standard. The suggestion is that the drug database is not ready to adopt the Cloud Computing System. In addition, the proposal to apply a central justice database is restricted due to the concern about leaking of confidential data and the system being hacked. The most accepted solution is to provide the sharing information by web service application through the Data Exchange Center of the Ministry of Justice. However, the application of data exchange is a political one where the negotiation to bounded rationality is initially needed before the coming of information technology.
Keywords: Drug Related Crimes, Cloud Data, Web Service, Data Exchange Center

Introduction
The problem of narcotics remains an important issue in the Thai society. Even though the government has declared war on drugs since 2002, the problem is still barely unresolved. According to the court statistics from 2013-2016, the drug related crimes in the trial unprecedentedly rose up in 2016, as many as five times from 2012. (Office of Judiciary, Court of Justice, 2017)

In Thailand's justice system, when a crime or criminal offense occurs, the police is the first authority to conduct the investigation. If the police can arrest the offender, the investigation police will further the case to the interrogation police office to prepare the evidence and file the case to the public prosecutor. After the interrogation police officer complete the case file, the case and the accused will be sent to the prosecutor. If the prosecutor decides not to proceed the case as the evidence is unclear, the prosecutor also has the authority to order the interrogation police officer to conduct further investigation or bring the witnesses to present at the prosecutor to review the inquiry. Until the prosecutor can say with a high degree of certainty that the accused would be sentenced, the accused will be prosecuted to the court trial. In the court trial, the Thai court institutes trial with the adversarial system where a case is argued by two opposing sides. The prosecutor has the responsibility to present evidences to prove the defendant's guilt and the defendant’s advocates or opposing lawyer has the right to argue for the defendant's acquittal. The case will be decided by the judge who is by no mean related in the investigation or any evidence as an impartial person. When the judge hears the

case and weights both sides evidence thoroughly, two consequences are possible. If the judge has a doubt that the defendant did not commit a crime, the defendant would be acquitted to his/her freedom. Conversely, if the judge determine the truth without a doubt the defendant is guilty, he/she will be sentenced to prison, probation, community service, or fine. In case of imprisonment, the Prison Service Department (also known as the Correction Department) will carry out the imprisonment and rehabilitation treatment during imprisonment to assure that the prisoner will return to the society properly and then not to go back to the wrong again after release.

As the criminal procedure is relied on many agencies, the work of each agency needs to support each other. In the aspect of information management as well, the collection of case data during the process of an initial agency would be forwarded to the other agencies in the following process. However, the sharing and exchange the case and criminal data to other agencies have never occurred in the Thai criminal justice system. The criminal case database of each agency has been separately developed and each agency collects data for its own purpose with a lack of link or connection to the other agencies' database. There has never been systematic information management and no justice data standard for the data exchange. In the survey of justice statistics in Thailand, Uaamnoey (2008) proposed that there should be a development of a new justice system to establish a central agency to cooperate and manage the data collection and data exchange. As the narcotics databases in each justice agency is a part of the failed criminal justice information management system, they are facing the same problem as well.

Data collection on drug related crimes is separately managed by the 4 justice agencies as the Narcotics Suppression Bureau, the Prosecutor Office, the Court of Justice and the Prison Service Department. Each agency has a different methodology and criteria in collecting drug case information. Even the definition, the meaning of crime and procedure vary from agency to agency. There has never been an integrated narcotic database in the Thai criminal justice. This study aims to analyze the drug case database of the four agencies in order to identify the problems in the integration of information system and provide suggestions for the development of successful narcotic information management system.

The Concept of Data Management

A good data management starts from the process of how the data would be designed, collected, managed, stored, backed up, exchanged, and end with how the data to be found and utilized. According to the guideline from University of Sydney (2015) the concept of data management comprises of three main elements including Managing Data, Storing Data, and Sharing and Archiving Data.

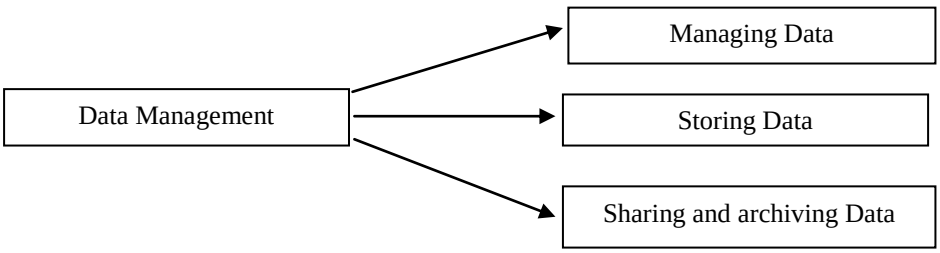


Figure 1 The main management data that applies to the creation of Cloud Data
Source: Applied from the Research Data Management Guideline, University of Sydney (2015)

Managing data: The process of 'Managing Data' is how we decide on what to be collected, how to manage available data, methods and equipment to store and back up data. Finally, if the information would be used in various agencies, the managing data might be highly concerning with the exchange of information and a number of issues should be taken into consideration such as confidentiality, standard, security etc. In Thailand, each relevant justice agency (police, prosecutors, courts, and prison service) has their own database. Each justice agency designs the form to input data via their database system under the responsibility of information and communication technology office. Each ICT office is the one who suggest the guideline of data collection, data classification, recording process, and data cleaning standard. Each justice agency has their local offices who are the responsible office to input data under the ICT guideline and monitoring.

Storing data: the process of storing data is based on how to keep data for later use. The concept of storing data is involved with where to store data, computer capacity, durable storage, information and storing technology. In addition, before collecting data it is necessary to create 'metadata' which tell us how to identify the data format and provide the operation meaning of input data. Nowadays, all four justice agencies store the narcotic case data in computerized format in their own centralized computer system. In the data operation, each local office would input data to the computer in each local office. The input data will be forwarded to the computer server of the central database at the information and communication technology office of each agency. The ICT office would be the centre to maintain the database and monitoring both information and storing systems as well as to provide the security measures to the system. The operation of police, prosecutor, court, and prison warden is not totally based on computerized format. They must also do the paper work on case filing. The paper case filing is kept in the local office and it could be used as the data backup storage.

Sharing and archiving data: In case of sharing with many agencies, the data exchange is needed because the data of one agency could support the works of the others. Normally, the sharing information between agencies could help the other not to perform duplicated work by two means. Firstly, if the information which is generated by the first source could be available for other agencies, the others do not have to waste the time in finding the same information. Second, if one or more agencies have to deal with the same information, they should not re-entry the same information in the input process. In the exchange of narcotic case data in Thailand, the justice agency should provide the sharing information by the two following methods.

Non-computerized information Sharing: In Thai context, when an officer or organization require information from other organizations. The responsible officer would submit the request of information through the official paper to the informant authority. Sometimes, if they have a good relationship, the officer might make a request by phone call. The approximate time to obtain data usually takes many days or weeks waiting for the informant organization's response. The non-computerized contact is the basic information sharing when the responsible officer is unable to get access the data by his/her own.

Computerized information Sharing: Generally, when the data are kept in the computerized database, it will be much easier for the information sharing. The process of computerized information sharing is how to communicate between different databases and how to manage competent officers to get access to the required information. The most favorite information sharing technology nowadays are the two main methods as the follows;

1. Cloud Data is a model of data storage in which data is stored on remote servers which could be connected through the internet. The data would be kept remotely in the cloud storage operated by cloud provider. The sharing of information through cloud system is how to give accessibility to the information on cloud. The input of data and access to the data on

cloud might be operated by several devices e.g. laptops, mobile, PC etc. Under the cloud system, the relevant agency does not need to manage local server or central storage. The concept of cloud data is shown in Figure 2.



Figure 2 How Cloud Data links with electronic devices
Source: www.flickr.com/photos/111692634@N04/16388920371

2. Web Service Data sharing through web service is operated in the manner in which each unit stores data in its own database. The web service would communicate between different databases by a standardized computer language. The sharing of information occurs when an information query is made from a database to other databases. The web service would be the communication centre to link the query from the request organization and then forward the answer from the informant organization back to the request. Web service can be used to link and retrieve information from different servers, in a variety of different systems, and different computer languages. The web service can be connected through both internet and private lead line. In the web service implementation, the data are kept in own database of each organization. The process of web service is shown in Figure 3

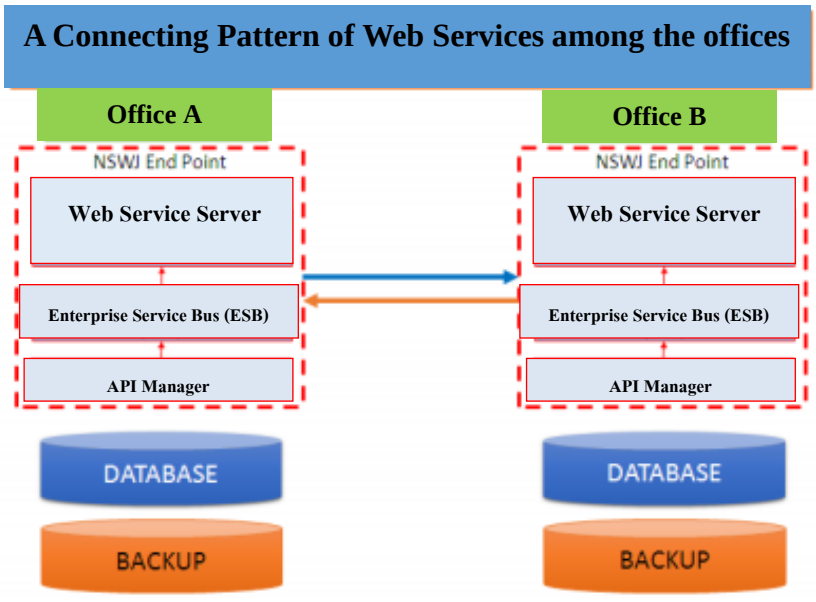


Figure 3 Web Service Interfaces
Source: Master Plan for Information Technology Justice Process No. 2, 2016-2019, Office of Justice Affairs

Rational Choice Theory and Data Game

The concept of Rational Choice theory is to understand the decision of each justice agency in the process of database creation, exchange, and sharing the information among other justice agency. Rational Choice Theory suggests why an individual takes decision to choose an option among other available choice alternatives as their most preference one. People's decision would be based upon a set of individual preferences in a rational manner where they seek to maximize gain while minimizing loss. Thus, each justice agency will calculate their gains to outweigh the expected costs arising from the outcome of decision. In the considering process, the rational decision might take account on many factors such as available information, predicted outcomes, potential costs and benefits or the individual preference by their self-determination (Cornish and Clark, 1986).

Cost-benefit analysis is crucial to perform before making a decision. The person will consider whether to do something or not by analyzing the results and the damage he/she will get from the action. (McCarthy, 2002; Piliavin, Thornton, Gartner, & Matsueda, 1986). In case that the expected gains outweigh the expected costs, people will decide to do that. The costs and benefits in this content is not only the monetary outcome. They include non-monetary outcomes such as convenience, time consuming, satisfaction etc.

In theory, people want their maximum benefit (also called the optimum goal). In reality, they might face some limitations or restrictions such as inadequate information for an optimum decision. Information is not enough or a discussion about the cost is not likely to be certainly predicted. There will be a point that people would accept with a certain degree of agreement. They might make a decision based on acceptable information rather than the complete information. The information that is available at a lower degree of certainty is called Sub-Optimum, meaning that the point people consider they would receive more benefit than loss with the existing information. The situation with those limitations is called "Bounded-Rationality" where people are unable to reach where they want to be. The idea of optimum, sub-optimum and bounded rationality can be explained in the figure 4.

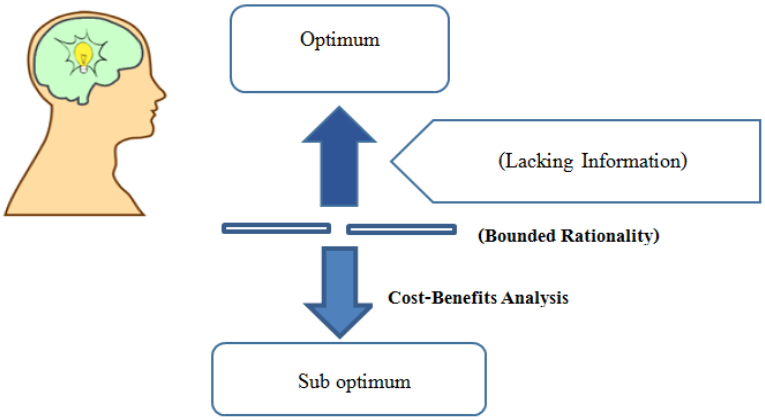


Figure 4 Conceptual Framework for Rational Choice Theory.

Data and Methodology

This study was conducted from a review of literature related to the law, statute, theory, theories, research contributions and documents. The researcher also carry out interview with the key informant. After that in-depth interview of 20 people was conducted from policy makers and staff members involved in data storage: 7 people were executives or policy makers, four police officers, three prosecutors, two court officers, three correction officers,

and one expert in office of Narcotics Control Board. Then the content analysis was made to foresee the guidelines for methods, collecting process and problem solving approach leading to the suggestion of data storage for each unit for data consistency and to retrieve data in convenient.

Research Results

1. Considering to recent information technology development, the Cloud Computing System has been widely discussed. The Cloud system is designed to give access to information sharing by allow all competent people to fill in, save, and get use to other relevant database on cloud. The first benefit is that everybody can do their normal work without duplicating work from data re-entry. Meanwhile, each agency can quickly access the information on the cloud computing. Second, it might be a much cheaper way for the IT investment because the government can use the same storage, backup system, and network to connect different databases from many agencies. However, the research shows that the cloud computing system may have some concerns. Almost key informants both policy makers and operational staff raised that in the use of cloud computing, they are worried about unauthorized access to the database and inadequate protection from the hacker. Due to the connection of system on the internet, it cannot be totally guaranteed that no one can hack the system. The justice data as the narcotic case information is highly confidential. If the hacker can get access to the narcotic information system, they can disclose the information of offender or case file. In the worst scenario that when connected the central database, they could delete or make changes the crime data in the system, or even to damage the database. The cloud computing might be cheaper or quicker, but the damage of such scenarios might be too costly to be accepted. Considering to this concern, the possibility of cloud computing is low for the narcotic data management at this moment.
2. Another concern is the ability of data protection policy implementation. If the central database can be accessed by many people or organizations, the leaking of data might not be properly controlled. Many key informants may not want to keep sharing some certain data. For example, if the confidential information of the accused or secret information of the case is leaked, it might be too hard to track who has access and disclose the information because too many people are involved in the database. The research found that there is mistrust and inadequate confidence among officers in other agencies or even different office in the same agency. In addition, there might be unintentional leak of information. Sometimes, the officer might grade their target with some secret data or cover assessment for example the police grade their target of arrest as an important criminal or the prison service officer might give priority to some inmates in care as the watch-list or untrustworthy person based on the information in the database. If the grading information is leaked to the public, it is very concerning in the view of officer that the information might be the act of person defamation. It is undeniable to be the officers' responsibility and liability. By the reasons, many officers prefer to keep such information in only their own organization rather than sharing.
3. In comparison to the cloud technology, the Web Service is more acceptable. Some justice agencies have even installed the web service to prepare the information sharing. In 2008, the Thai Ministry of Justice established the Data Exchange Center (DXC) to be the central authority in implementing the justice data sharing. From the literature review, a key proposal to develop the Thai justice information management is to implement the single database. Initially, the DXC was set up to implement the single justice database. However, each justice agency has far developed its own database with different data collection process, data classification, data standard and most importantly different computer code and language in developing the database. The work of each department and data operation is completely separate. Therefore, the installation of new single database is impractical. Web service is the

technology which is widely recommended to the information sharing practice rather than the implementation of single database. Due to the security concerns mentioned above in the use of cloud computing, the web service might be a more practical approach. In the web service application, each agency manages and stores data in their own normal database. When other agencies need information, the web service will be a tool to connect different database from different agencies. In the interviews with policy makers and IT staff, the same recommendation is made that each justice agency database would be linked through the web service technology and the Data Exchange Center (DXC) would provide the central web service linkage rather than the implementation of single database.

The use of Web services through DXC is widely recommended. The Office of Justice Affairs who runs the Data Exchange Center (DXC) has been successful in inviting many justice agencies and other relevant organizations to sign the MOU to exchange and link justice information as well as other information from the government registration i.e. plate license, driver license, civil registration, social security, and passport. In fact, many competent agencies still has concerns in the information sharing. Only some limited information from some certain database is allowed to share through the DXC linkage. Some agencies reserve the rights to access the information rather than provide the information to others. More importantly, the completion of information is a main obstacle in the information sharing. In researching the data management of the Thai criminal justice, all justice agencies have still carried out the paper work together with the computerized database. The electronic justice is expected. In fact, the operational staff needs to do the paper work and then bring the information from the paper work to fill in the database. In the interviews with the informants, the paper work is needed following the requirements of regulation and code of conduct. No justice agency has ever replaced the electronic justice to the paper work because the database system is inadequately confident. The policy maker has never allowed the computerized operation to replace the traditional operation process. In the view of operational staff, they have to focus more on the paper work than filling in the database that causes many records not complete. It was revealed that the incomplete data is another factor that the competent agency does not allow to share the information to others.

Discussion

1. In theory, the information sharing is needed. In reality, not all people want to share information. Some are reluctant to this development based on their bad experiences of sharing information with other agencies. The refutation to the Cloud computing and sharing of information can be viewed in the concept of 'Optimum' according to rational choice theory. By speaking with people about the information sharing, there is a consensual agreement on the table. In practice, many people have a lot of concerns including the negative effects because of misuse of data by the others, incomplete information to share, the confidence in the security standard. In the literature review, it has long been argued to implement a single database or at least to implement a real information sharing. However, the implementation of information sharing might be restricted by the bounded rationality of relevant persons rather than the actual benefits of the existence of information sharing.

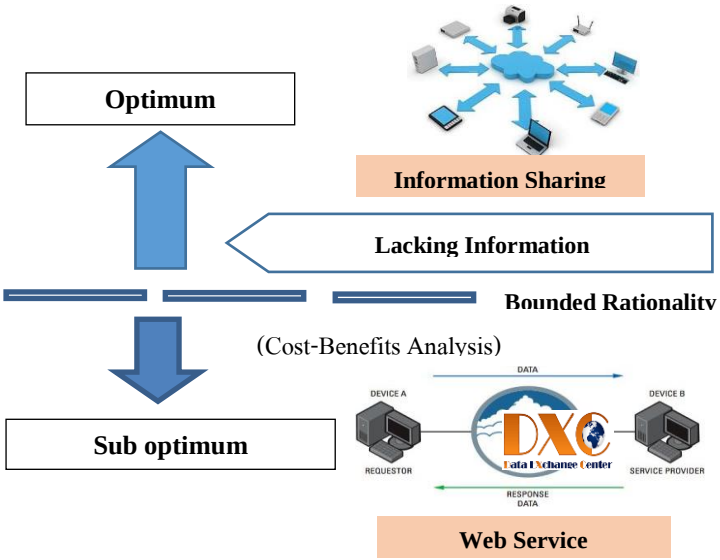


Figure 5 Format of data collected from the study results. Applied to the conceptual framework of the Rational Choice Theory.

From Figure 5 when considering the Rational Choice concept, the optimum for all justice agencies is how their work is able to connect to other with a cheaper Cloud Data Computing and all office can operate their work by fast and accurate electronic process. However, the reality of information sharing is far from being optimum. The current narcotic database has just been the exchange of data through the Data Exchange Centre (DXC) with a very limited information sharing, incomplete data input and duplicated work to the paper work. Not enough confidence because of information misuse has become bounded rationality which restricts all to reach the optimum. In fact, they might opt sub-optimum to more expensive technology, higher burden in work operation, and slower work if they do still not open to the true cost-benefit decision from too much protective.

2. Web Services through the Data Exchange Center (DXC) of the Office of Justice Affairs was recommended by most people. The practice of storing information in each agency database is a more sensible choice when each agency is more confident to manage data and perform security within their own hands. From this, the thinking about information management is not solely concerned with information technology theory but political one. Even the practice of web service through DXC has long been unsuccessful while the web service is quite well prepared by many organizations. The finding from this research reveals that the implementation of IT technology has to deal with the confidence in paperwork replacement and negotiation to which to be exchanged or not to be exchanged first and the IT thinking has to come later. The narcotic data exchange in Thailand is a good example of a bounded rationality decision making where the benefit of information technology is consensually accepted but the real implementation has never been successful.

Conclusion and Recommendation

In summary, the study on the information management of drug related crime in the Thai criminal justice shows that the data exchange is needed but it has long been unsuccessful. Each justice agency has developed its own separate database that has different system of classification, coding and standard. There are many suggestions to the development of information exchange management including the implementation of single database on justice, cloud computing system, and web service. In discussion with persons in all relevant agencies including the Narcotics Suppression Bureau, the Prosecutor Office, the Court of

Justice and the Prison Service Department, almost all people both policy makers and operational officers prefer the web service technology due to higher confidence in security, no need to invest new database, and better confidentiality protection. Web service through the Data Exchange Centre (DXC) of the office of justice affairs, Ministry of Justice seems to be the most sensible option in narcotic information management and data exchange. Although there is a very little opposition to the web service and data exchange, the practice of narcotic data exchange has long been unsuccessful due to limited data exchange, incomplete information to share with the focus on paper work, and a lack of confidence in data misuse protection and security standard.

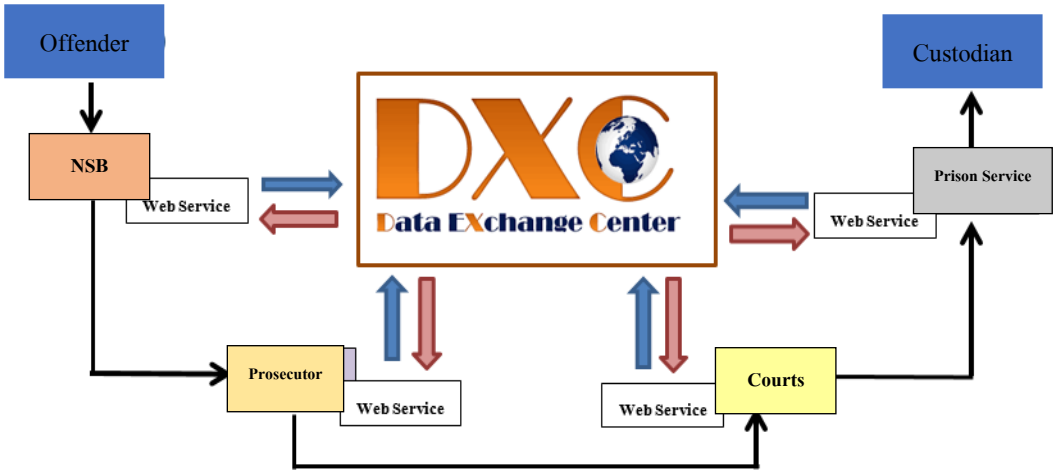


Figure 6 The form of drug information sharing in the judicial process from the results of the research.

However, the thinking of data management in this case reveals that the talking about data exchange cannot be successful by making a consensus on the benefit of data exchange alone. The bounded rationality of competent authority and person might make them not reach such benefits. The implementation of data management is a political one where the paperwork requirement must be negotiated and other concerns with the data misuse need to be address before the implementation of IT technology.

The recommendation of this article is to perform a working group consisting of representatives from all relevant agencies. Working among responsible persons who are inadequately confident to others, a close meeting together is highly needed to initiate the negotiation of their concerns and to share bad experiences and problems during the process of data exchange in order to suggest an appropriate solution to address each problem properly. The practice of performing discussion among organizations is more sensible rather than the talking about the need of IT technology alone.

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