

E-Court: Information and Communication Technologies for Civil Court Management

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Abstract--Technology adoption is a widespread phenomenon in courts of law around the world. It supports speedy process in justice administration from case registration through case decision. It allows justice to take place virtually using the advanced technologies such as video conferencing between parties in two separate places, high-tech video presenters, business process automation/workflow management through Electronic Case Management System (ECMS), electronic filing system, court recording and transcribing, immersive virtual environment for re-creation of crime scene, forensic investigation and so on. This paper reveals a result of a case study conducted in Malaysian court environment after the adoption of E-Court project, an integrated electronic court project implemented throughout the country. This qualitative case study focuses on the four main types of applications: the Electronic Filing System (EFS), the Case Management System (CMS), Court Recording and Transcribing (CRT) and Queue Management System (QMS). Data was collected through interview, survey and document analysis, in the busiest court in the country. The result shows a significant improvement in terms of court workflow management, court information and records management and integration with other agencies. At the same time, a number of technological, operational and people issues arise out of this technology adoption.

I. INTRODUCTION

Legal information management is the backbone of an efficient judiciary. Courts of law depend on the quality of information relating to the case to be able to do justice to all the parties. In the cases where information and records are not properly managed, the court of law is unable to make an impartial and all inclusive quality decision, thus, depriving the aim of judicial institutions to bestow legal rights to individuals and society. Availability, comprehensiveness and retrievable case related information ensures a speedy justice be delivered to the parties as well as the society as a whole. Records in court system have various dimensions including court proceedings, evidence, and statutory declarations (affidavits). In addition, court records also contain precedents from old cases and even references to the sources of law. This makes information management in general, and record retrieval in particular an intricate task.

There is increased pressure on the courts of law to embrace technology because with the increased level of IT literacy/awareness among the general public, there are increased demands on government to provide information to citizen around the clock. The pervasiveness of information and communication technologies (ICTs) provides new opportunities for court automation and information management in judiciary. With this opportunity, courts

around the globe are embracing information and communication technologies at various levels to provide faster, reliable and consistent service to the society. This paper presents a case study on automation of Civil Courts in Malaysia. It starts with a discussion of the legal system in Malaysia and attempts made by Malaysian judiciary to implement information and communication technologies. This is followed by an explanation of the research methodology and the findings summarized as in the case study. The next section provides a discussion on the issues and challenges as well as conclusions drawn from the case. The paper ends with a summary of the lessons learnt from records management in Civil court in Malaysia and the effectiveness of E-Court initiative undertaken by Malaysian judiciary.

Malaysian Legal System

Malaysia has two legal systems standing side by side, firstly the Civil legal system based on English Common Law and statutes, and secondly the Shariah legal system rooted from the Islamic Law [10]. The Civil law system, however, is more widely recognized and become the mainstream legal system. Its jurisdiction encompassing all matter, civil and criminal, except on the personal and family matters which fall under the jurisdiction of the Shariah Court by virtue of schedule 1 of Malaysian Federal Constitution [21]. Since English occupation since 1824, the English Common law and Equity was introduced and implemented in Malaysia. Until today, most of the Malaysian laws are based on English law statutes. The Civil court is placed under the administration of Federal government and the Shariah Court is under the administration of States government [3, 4].

Today, both Civil and Shariah Malaysian judiciary systems administration have moved forward especially for the past few years. Traditionally in Malaysian judiciary, whether Civil or Shariah, cases have taken long time to decide. The backlog of cases is being scorned by the society. It took years for a case to settle due to a number of reasons. Among various other reasons such as limited number of judges and court officials, high volume of cases, poor infrastructure in place, limited financial resources and so on. The most significant reason was the unavailability of complete information relating to the case as and when required [7].

Since early 2000, Malaysian government has been proactive with its various e-government initiatives. These e-government initiatives have been introduced to maintain the steady flow of information from government to citizen as well as from citizen to government. One such initiative was

taken in year 2003, when E-Government project was put under the Malaysian Super Corridor (MSC) flagship application. Subsequently, the Civil Courts initiated its E-Court project with a special budget passed by the government. E-Court project is now fully implemented in the Kuala Lumpur Court Complex, the busiest court complex in Malaysia. This paper sought to unveil the civil court experience in IT adoption in its case management system.

II. RESEARCH METHODOLOGY

This research aims to explore the implementation of electronic case management in Malaysian Civil Courts. Information management has technical, organizational, social, cultural dimensions. Therefore our knowledge of reality can only be gained through social constructions such as consciousness, shared meanings, documents, tools and other artifacts. This research follows a qualitative interpretive approach with exploratory case study [20]. Interpretive research does not predefine dependent and independent variables but focuses on the complexity of human sense making as the situation emerges. It attempts to realize the phenomena under investigation through the meanings that people attach to them. In this case, it is the way people manage the life cycle of records management in Civil Courts. Therefore to address the issue at hand an interpretive task provide a rich understanding of the contextually oriented court records management issues than the more conformist positivist approaches [5].

Qualitative data was collected through interviews, observation and document reviews. The interview questions consist of 21 semi structured questions. Documents were reviewed and workflow was observed to gain an understanding of how records are managed, inspected, stored, retrieved and retired in Civil Courts. The case study was carried out in Civil Courts in Kuala Lumpur and Putrajaya. It also involved personal observations on how records are managed, inspection of storage facilities and observations on records retrieval procedures. The data collected was analysed using data analysis software that is Nvivo. This software is useful in organising data according to the different themes emerging from the data collected, which supports testing theories or pointing to emergence of new theories. It also helps in forming relationship between different themes emerging from the interviews to bring about cause and effect analysis.

III. ELECTRONIC COURTS MANAGEMENT PARADIGM IN MALAYSIA

In Malaysia, the judiciary is facing pressing challenges to provide efficient service delivery. The increase demands of the public need to be catered. Any shortcomings resulted from the poor management in the courts may lead to the question of integrity of the judiciary and government. The large quantity of records and lack of human resource gives

the utmost challenge to the court officials to handle case management effectively [11]. Given such a situation, the need for effective records management system is mounting. There is also a pressing need for a clear definition of legal framework [15]. Experience by countries in international Records Management Trust (IRMT) research (IRMT 2001) proved that for a system to work with authority, trustworthy and reliability, it needs a strong legal framework of its own.

Effective records management system guarantees the accountability and integrity of a court that provides services to the public at large and serves as strategic resource for government administration [12, 19]. A reliable and accurate case file system is fundamental to the effectiveness of day-to-day court operations and fairness of judicial decisions. The maintenance of case records directly affects the timeliness and integrity of case processing. Gouanou & Marsh [8] posit that in order to minimize the risks and costs of regulatory and legal non-compliance, litigation, discovery, business inefficiency and failure, courts need to remove the human element by automating records management via the technology. This transformation means removing freedom of choice, enforcing electronic record creation; indexation; classification; naming conventions (thesaurus and taxonomies); creation and preservation of meta-data; minimizing duplicate records by creating a central information repository which will also facilitate knowledge and content management; systematically archiving and tracking records and amendments; applying retention schedules to purge redundant ones; but preserving their access logs, audit trails and meta-data [16]. The major issues in implementing electronic records in courts are regarding access, security and interoperability [17, 18]. Interoperability refers to is the ability of different IT systems and software applications to communicate with each other to exchange data between them accurately and effectively [2].

Courts today not only have to comply with regulations, but also have to maintain a balance between operational record keeping requirements, minimizing liability of storing private information, and customer privacy preferences [2]. International Records Management Trust (IRMT, 2002) revealed several key issues identified by legal and judicial record case studies are (1) the need to raise the status and priority of recordkeeping, (2) the need to allocate greater resources to supporting recordkeeping infrastructure, for example, storage facilities and equipment (for paper and electronic records), (3) the need to develop records management policies and standards, for example in relation to access to and long-term preservation of paper and electronic records, (4) the recognition that computerized case management systems have the capacity to improve case workflow management and access to information, but the danger of regarding computerization as a means of solving all management, resource and information problems, (5) the need for an information strategy and business case, based on the requirements of all key stakeholders, before embarking on the computerization of case administration, (6) the value of

pilot computerization projects to build confidence and capacity and (7) the importance of standardized formats and templates for common documents.

IV. E- COURT – A CASE STUDY

E-Court was put in place to replace the manual system of all civil courts operation. Before E-Court come into operation, all business processes from case registration to case disposal were performed manually. It is not surprising that the system was replete in inefficiency and ineptitude. With the increased number of cases being registered, the delay in case management became more critical. A single case takes years to be settled, resulting in hardship for the parties involved. The major reason for this delay has been the unavailability of complete information as and when required. In certain cases not only the information is incomplete but had been tempered with as well. With the introduction of e-Court, the government aim to reduce the time taken to settle a case and to manage each case and related information more efficiently and systematically [1].

A. Phase 1- Before E-Court Implementation:

The issues faced before E-Court initiative could be divided into 3 categories i.e. workflow related issues, people issues and administrative issues.

1) Workflow related issues

This category describes the issues related to actual workflow of the courts. These issues posed the major hindrances or obstacles in way of completing the process efficiently. There are a number of different dimensions of the problem in this category which are described below:

- a. One particular case is possible to be registered in different jurisdictions, because there is no mechanism to check the redundancies in case registration. This situation results in overlapping of case proceedings as well as court orders for the same case. Thus, complicates the enforcement of court orders. In many instances, none of the orders could be enforced.
- b. Case backlog and postponement. No control mechanism for measuring the progress of a case. Due to this problem, case management has been inefficient, which is results a case backlog. At the same time, if the case was postponed, its rescheduling was not done properly, added up to the case backlog. As a result of this, court registrar had enormous problem in allocating caseloads to different jurists and it all resulted in delaying the overall process.
- c. Time taken for case registration is very long because court staff needs to type all information manually. It involve repetitions of work when the same information need to be recorded in different documents
- d. Movement and circulation of physical files could not be controlled systematically. The whereabouts of a particular file could not be traced easily since lack of mechanism to do it. This sometimes leads to missing files, done either

by purpose or not. This situation also facilitates corruption.

- e. Certain type of cases took a very long time for disposal due to different reasons- inadequate documentations, lawyers purposely delay cases, inability to acquire certain information from other government departments etc. Such cases will be put aside until the problem resolved. Sometimes, the case is abandoned permanently due to the lack of any kind of reminders or when the judge in charge is moved to other court.
- f. There are a number of instances where cases are postponed without proper traceable records. Cases that fall under this category will probably be abandoned permanently, or parties to the case will need to reinvent the wheel, register the case as a new case.
- g. Unnecessary delay in case decision resulted due to limited usage of technology. There is no reminder system that can alert the judges of case postponements. This situation leads to the increase number of case backlog from time to time.

2) People Issues

- a. Lack of training for certain expert areas such as records management and ICTs provided for courts staff. This due a number of reasons like lack of deficiency in training needs analysis and heavy existing workloads.
- b. Lack of professional and support staff, lack of appropriately trained staff and record room, typing.
- c. Low level of ICT skills among lawyers and court staff hinders court to embrace ICTs in their administration. It will be a waste when a court spends a lot on ICT that is not used by its staff and clients.
- d. Inadequate number of judges and overall court staff as compared to the number of cases.

3) Administrative Issues

- a. Duration for case mention, scheduling, distribution and adjudication process is normally too long due to the abovementioned issues and weaknesses, especially when the courts take traditional approach in managing cases, without the adoption of any technology based operation and administration process.
- b. Recording and printing of case decision and court order are not properly administered. Lack of proper facilities force the court to take recording in hand writing and the documents to be distributed to clients need to be typed and printed. This involves redundancy of work.

B. Phase 2- E-Court Implementation

The first attempt of E-Court project was taken in 2002 but it was a failure, reasons being the problem of change management (reluctance of judges to use the technology), leadership (no enforcement order from the top management), network facility problem, budget limitation etc.). At the second attempt in 2009, a strong leadership and exertion become the main factor of it successful implementation. The

government allocated a special budget for this project. Under the E-Court project, various applications such as Electronic Filing System (EFS), Queue Management System (QMS), Case Management System (CMS), Court Recording and Transcribing (CRT) and video conferencing.

E-Court is regarded as one of Malaysian Electronic Government project under the responsibility of Legal Affairs Division (BHEUU) of Prime Minister’s Department, with the Federal Court Chief Registrar’s office as the implementing agency. BHEUU plays the monitoring role over the implementation E-Court project, as well as managing the financial and physical provision for its development. The overall project is divided into four phases as outlined in Court’s ICT Strategic Plan (ISP) dated July 4, 2003, with respect to all courts throughout Malaysia. E-Court began to be developed on September 27, 2004 by a third party supplier, Solsis (Malaysia) Pte. Ltd., while KPMG was appointed as the consultant. E-Court has been implemented on a pilot basis in 11 courts and was transferred to the Judiciary for full implementation on Jan 11, 2009. For implementation in Peninsular Malaysia, the project had been awarded to Formis Network Pte. Ltd. The scope of the project involved are installation of Court Recording & Transcription System (CRT), development of Case Management System, development of E-Filing System (EFS), enhancement of network infrastructure, implementation of Data Center and Data Recovery Center (DRC) and provision of Office Automation and ICT Training to Courts’ staff. This project was approved by the Ministry of Finance to be extended for 3 months until March 31, 2011. The

development and implementation of E-Court project in East Malaysia (Sabah and Sarawak) was awarded to Sarawak Information System Pte. Ltd. The scope of this project is the same as in West Malaysia and was completed December 28, 2010 [6]. This study only covers the development and implementation of E-Court in West Malaysia only.

E-Court project was established with the aims to: (1) allow on-line case filing to achieve paperless office, (2) save storage space and human resource, (3) allow immediate access to documents during trial, and (4) avoid document counterfeit. The four applications in the civil court electronic systems are: (1) Electronic Filing System (EFS), (2) Case Management System (CMS), (3) Queue Management System (QMS), and (4) Court Recording and Transcribing (CRT).

The figure 1 explains the overall view of how the systems interact with each other within the case management process.

With the implementation of E-Court, an electronic network and communication between courts are established. The technologies in place in courts under the E-Court project consist of four modules as follows:

1) E-Filing system (EFS)

Electronic Filing System (EFS) generally allows for case filing via the internet, where legal firms file their case online through submission of applications or summons. Court will then issue the case number online, and all further document submissions to be made online. EFS is in fact the most complex system to be fully implemented. It is the creation of an automated case management information system with its various modules. The first module installed but still handled

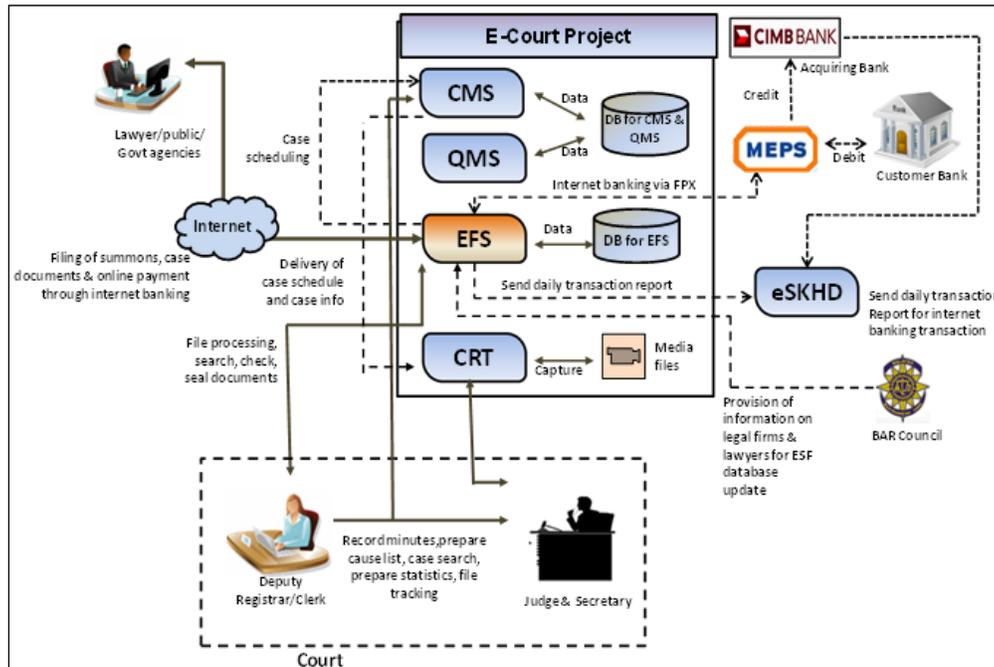


Figure 1: E-Court system

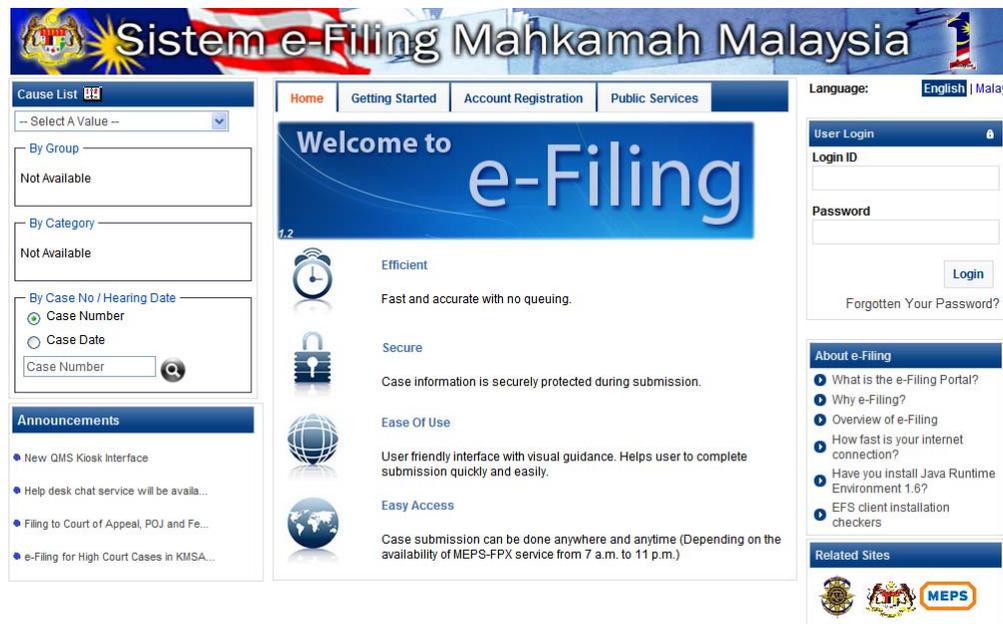


Figure 1: E-Filing portal interface

partly manually, registers the initial civil filing, enters the pertinent information into an electronic database, assigns a case number, and adds scanned copies of the accompanying documents. It also calculates fees and once these are paid (in the same building), issues a writ of summons for delivery by the attorney (or if s/he wishes by the court for an additional fee). The initial version, which required manual transfer of the relevant data to the court database, is already being replaced with “internet filing” which provides forms to the filer from which data can be extracted automatically. It was reported that 40 different forms were already in the system and requires several additional steps to be taken by any potential user (e.g. registration of digital signature).

One of the few problems observed is that the EFS will continue to use the older method for assigning case numbers, meaning that cases do not receive a unique number, i.e. one that is not shared by any other case ever registered anywhere in the court system. Currently, numbers are unique to each intake center but not system wide. The current system involves three numbers – one for the year, one for the issue or category of case as provided in the court manual (e.g. violent crime, uncontested divorce, civil interlocutory appeal), and a sequential number apparently corresponding only to the year (not the second issue-specific figure). A better, but no more complicated system would feature the year, the court or intake office, and the sequential number, based on both. A fourth figure, corresponding to the general matter (Civil, Family, Commercial, Criminal, etc.) could be added, but unless incorporated in the numerical sequence, is really not necessary. It might, however, help in organizing the e-archive.

With this new computerised system in place, summonses are filed by a lawyer or individual through the online e-Filing System. All the necessary documents are prepared in

softcopy and submitted online. Figure 2 shows the interface of the E-Filing portal. A payment of fees is done via internet banking.

The e-Filing Portal is a one-stop portal for the legal community to gain access to all its needs ranging from registration of cases, filing of case documents, retrieval of service document right down to searching of case files and information including case schedules. Previously lawyers have to call the registrar for the status of their case filing. Now the e-Filing portal will send notification of any case filing status to the lawyers' email immediately upon successful registration in the e-Filing System. E-Filing was developed following from the need to improve efficiency both for the legal community and the judiciary. E-Filing allows concurrent access to case documents, 24 Hours, 7 days a week from anywhere without queuing. It consists of interactive alerts, notifications and e-mails. Figure 3 shows the interface of E-Filing portal. Once filed, the case will be managed under the Case Management System application. Queue management system is in operation when case is being heard or mentioned by the judicial officers. If the case needs to be heard by the judge, a trial date will be scheduled in case management system.

2) Queue Management System

Queue Management System (QMS) is a system that allow the queuing process of daily court transaction, be made automated a when lawyers/counsels register their case number in a kiosk system for daily case management. It is intended to facilitate holding of hearings by registering the arrival of attorneys, on the day the event is scheduled and letting them know where they stand in the queue. Once registered at the court, they can also leave and call in using SMS or texting from their mobile phones to verify the time

they must return for the hearing. Attorneys arriving for a case management or chambers matter register at the court building, and when both parties have checked in, the hearing is placed in the next slot in the queue. If one lawyer arrives and the other does not, the former can seek out the registrar to determine how to proceed. Hearings are scheduled for the morning, but previously there was no way of knowing when or whether a hearing would be held owing to the absence of one or both attorneys. This problem has now been resolved. Attorneys interviewed in Kuala Lumpur were not sure how much time this saved them, but did appreciate the transition from the former chaos and the opportunity to do other work while waiting. Although less necessary in smaller courts, the system will be gradually expanded to them, because of the benefits for both staff and lawyers. It eventually can be used for trials as well (where the presence not only of the lawyers, but also of other parties is required). Similar mechanisms are used in other judicial systems and are often part of a reform program. However, the Malaysian version is especially sophisticated because of the combination of electronic scheduling with the attorney's registry of their presence. This avoids the problem of "definitive" scheduling of a hearing which will be postponed because one of the lawyers has not appeared.

3) Case Management System (CMS)

Case Management System (CMS) is a system that allows cases be managed electronically, without physical files. For cases that need for a full trial, the preparation for the trial date, including the submission of relevant documents needs to be made through this application. Some other cases that need not to be heard before judges are managed by the Deputy Director using this system and decisions made are

recorded immediately in the presence of lawyer of both parties (plaintiff and defendant). Some of the most important measures of CMS have been the tightening up, through the issuance of court directives of timeframes for lawyers' provision of documents essential to decisions on both affidavit and full trial cases. This has been the crux of the case management process and the effort to prepare cases for their hearing by judges. Additionally, courts, through their managing judge units have taken a more systematic approach to 1) assigning cases to judges; 2) scheduling hearings and other events (which lawyers ignore at the risk of a case being struck out or suffering a default judgment); and 3) setting and tracking performance targets.

4) Court Recording and Transcribing (CRT)

Court Recording and Transcribing (CRT) is a smart system to record the whole process of hearing before judges in the open court, so that the whole court proceeding can be stored in audio video format for reference and long term preservation. This application also allows for automated transcription be made easily. One special feature of CRT in Malaysian Court is the use of audio video recording of its full trial proceeding, which is not been practiced in most other countries, including Singapore. This type of recording offers more advantages, such as it allows experts to review the facial expression of the witnesses or the accused while they are giving their testimony. Since the recording is regarded as public document, lawyers can have a copy of the recording to bring back to their office. If there is any complaint or dissatisfaction on part of the lawyers, they cannot make such complaint anymore alleging misunderstanding occurred during the trial.

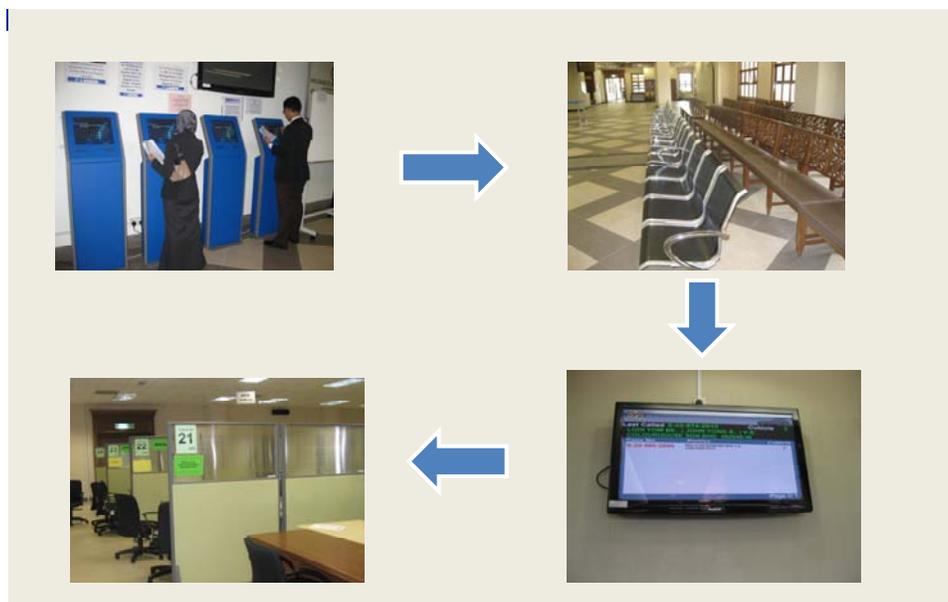


Figure 2: Queue Management System



Figure 3: Court Recording and Transcribing System

In the courtroom, when trial proceeds, the court recording & transcribing system is in operation. This audio video recording system allows the proceeding to be recorded fully in audio video format, saved and can retrieved when needed, such as to make a report or case summary. For the purpose of CRT recording, every courtroom is equipped with 4 units of voice auto detect camera, each one facing to the judge, the witness, the plaintiff counsel and defendant counsel

C. Phase 3- After E-Court Implementation

E-Court has opened up new avenue for court workflow as well as records management in Malaysian Civil Courts. Although there are a number of benefits which hinge upon a few administrative issues, yet there are significant benefits that the use of technology has brought to civil courts.

The implementation of E-Court was pioneered by the Kuala Lumpur New Commercial Court (NCC). It was established on 1st September 2009 resulted from the court

management review meeting headed by the Chief Justice of Malaysia. The objective is to ensure the increased number of commercial case disposals. A specific aim was put forward, i.e. new registered cases to be disposed within 9 months. Upon establishment, only two courtrooms were opened for trial, to test whether the aim can be achieved with the help of full running electronic systems in place. The two new courtrooms were named NCC1 and NCC2. The results are shown in table 1.

It is evidenced that the aim to dispose new cases within 9 months from the date of registration, was achieved almost 100%. With this achievement, more courtrooms were opened subsequently. After one year of its establishment, by September 2010, the courtrooms were increased to 6 rooms with 6 high court judges, with 13 officers and 18 support staff. The registration of cases is now using 'pairing system'. Case registration is rotated for every 4 months between the three pairs, NCC1 & 2, NCC3 & 4 and NCC5 & 6.

TABLE 1: NCC CASE REGISTRATION AND DISPOSAL RATE

Month	Cases Registration	Case Disposal after 9 Months	Balance of Case after 9 Months	Percentage of Disposal
Sept 2009	289	285 (June 2010)	4	98.6
Oct 2009	389	384 (July 2010)	5	98.7
Nov 2009	328	324 (Aug 2010)	4	98.7

The E-Court approach towards standardization is that the courts are going to standardize all the manual processes first because that will provide them with the grounds to integrate those processes with the system. In the first step, all manuals and work procedures, and policies have been standardized for the entire country. The next step was to make the entire different jurisdiction conform to these manuals, procedures and policies through the directions from the Federal government. Other post implementation observation brings to these findings:

- a. **Case settlement rate.** The overall case settlement rate is significantly higher than the settlement rate before E-Court implementation. One of the judge interviewed by the researcher said "It gave a new image to the judicial institution in Malaysia, which was previously labelled as slow and inefficient. Yes we were slow before, because we were left behind in terms of technology adoption, where there is no specific system that can improve our operational process. Every judge or courtroom was doing its own way. With the introduction of E-Court, the awareness and interest of staff, officials and judges in using ICT is improved. Provision of emails and internet to staff allow them to become more productive and efficient for example judges could refer to legal resources such as legal text in Arabic language via internet. It also allows them to access latest information online."
- b. **Coordination time/ time saving.** E-Court has become a coordination mechanism that can save a lot of courts time which was previously wasted on rework involved at the time of registration and management of cases. Today, finding the status of the case and retrieving of case records is made easily through the system.
- c. **Case delay/postponement.** To avoid any delay in case disposal, the system is capable of sending reminder email to the registrars and judges who handle cases when a particular cases is still deferred after certain stipulated time. This automatic reminder of delayed cases leaves less room for any dropout of cases heard in courts which was always previously overlooked.
- d. **Work process (Automatic case distribution among judges).** Work processes are becoming significantly efficient with the use of case management system. A respondent said "When cases are registered, they will be automatically scheduled and distributed between judges." This allow for fair workload of judges in terms of number of cases they handle.
- e. **Case backlog.** Referring to the above fact, there is no more problem in managing and verifying the case status manually. As a result, there are no more backlogs of cases because cases are assigned accordingly between jurists, to ensure fair workload.
- f. **Information security.** The use of ICTs guarantees the security of information more than before. This is because only the authorised persons to a particular case will be able to have access to it, while the case is still in hearing process. The use of E-Government smart card and digital

signature leaves a very slim chance for those who do not involve in the case processing to interfere in anyway. Previously, the physical files could not guarantee it is always in the safe hand since they need to be carried around physically.

- g. **Trust in the system.** The use of information and communication technologies has brought transparency to the judiciary system in Malaysia. This transparency brings back the trust of people to the judiciary.

V. CONCLUSION

The management of court records through electronic means bestow great impact to the government and citizen as a whole. It preserves the memory of a nation's civilization in judicial matters. The increase of case disposal rate after the electronic system implementation in Civil Courts provides improvement in judicial service delivery in Malaysia. Malaysian experience has been referred to and is being modeled by many countries around the world. Since E-Court initiative is not mature as yet, there are a number of issues that need to be resolved. The paramount issue is the disconnect between what technology offers and the state of legislation regulating technologies in the court.

In terms of technology adoption, the biggest challenge for courts to move forward is in human resource issues. For a court registry, the lack of expertise who knows both registry office and information management standards becomes the first hurdle in implementing change. In summary, E-Court initiative has significantly improved court workflow as well as records management in Malaysia. However it needs to be acknowledged that the major challenges of E-Court are to introduce standardization, practice, technology and strategy.

REFERENCES

- [1] Amran, M.; "IT implementation: the experience of Malaysian judiciary department", paper presented at Records Management Convention, National Archives of Malaysia, 4-5 November, 2007.
- [2] Atallah, A.; "A framework for records management in relational database systems", thesis, University of Waterloo, Ontario, Canada, 2008, viewed 8 June 2010, <doi.acm.org/10.1145/1458082.1458197>
- [3] Aun, WM.; "*The Malaysian Legal System*", third, Pearson Malaysia, Kuala Lumpur, 2007.
- [4] Bari, AA, 'British Westminster System in Asia - The Malaysian Variation', *US- China Law Review*, vol. 4, p. 1, 2007.
- [5] Creswell, J.W.; "Qualitative inquiry and research design: choosing among five traditions", Sage Publications, UK, 1998.
- [6] Electronic Government Committee (EGCOM) "Annual Report 2009", Malaysian Administrative and Modernisation Planning Unit (MAMPU), Kuala Lumpur, 2009.
- [7] Federal Court, "Malaysia Superior and Subordinate Courts Annual Report", Kuala Lumpur, 2008.
- [8] Gouanou, M. and Marsh, M.; "Imploding technologies – driven by the records management requirements?", *Records Management Journal*, vol. 14, no. 2, pp. 62 – 64, 2004.
- [9] Government of Malaysia.; "Federal Constitution, International Law Books Services", Kuala Lumpur, Malaysia, 2006.
- [10] Hamzah, A. and Bulan, R.; "An introduction to the Malaysian legal system", Oxford Fajar, Kuala Lumpur, Malaysia, 2003.

2013 Proceedings of PICMET '13: Technology Management for Emerging Technologies.

- [11] Hamzah, H.; "Personal interview, Chief Registrar's office, Federal Court of Malaysia", 9 November 2010.
- [12] Hassan, S., "Keynote speech at Records Management Convention, National Archives of Malaysia", Kuala Lumpur, 5 November, 2007.
- [13] International Records Management Trust (IRMT).; "Case study legal and judicial records and information systems in the Gambia", International Records Management Trust, UK, 2001, viewed 6 May 2010, <http://www.irmt.org/documents/research_reports/case_studies/legal_judicial_rec_case_studies/gambia/IRMT_Legal_CS_Gambia.pdf>
- [14] International Records Management Trust (IRMT).; "Case study legal and judicial records and information systems in Singapore: Management Trust Partnership Project", International Records Management Trust, UK, 2002, Viewed 6 May 2010, <http://www.irmt.org/documents/research_reports/case_studies/legal_judicial_rec_case_studies/singapore/IRMT_Legal>
- [15] Johare, R.; "A global search for universal models of education and training in electronic records management", Malaysian Journal of Library & Information Science, vol. 12, no. 1, pp. 1-22, 2007.
- [16] Manaf, Z. and Ismail, A.; "Malaysian cultural heritage at risk?: a case study of digitisation projects", Library Review, vol. 59, pp. 107-116, 2010.
- [17] Ojo, A., Janowski, T. and Estevez, E.; "Semantic interoperability architecture for electronic government", Proceedings of the 10th Annual International Conference on Digital Government Research: Social Networks: Making Connections between Citizens, Data and Government, Digital Government Society of North America, pp. 63-72, 2009.
- [18] Spratt, C.; "Electronic access to court records", News Media and the Law, Reporters Committee for Freedom of the Press, 2007, retrieved October 5, 2010, <http://www.Highbeam.com/doc/IP3-13043971.html>
- [19] Thurston, A. and Cain, P.; "The management of public sector records project: managing the records lifecycle", Information Development, 11(4), 198-205, 1995.
- [20] Yin, RK.; "*Case study research: design and methods*" /, 4th ed., Thousand Oaks, Calif. : 2009
- [21] _____ "Federal Constitution" International Law Book Services, Kuala Lumpur, 2006.