One Stop Service System development at the Institute for Scientific and Technological Research and Services

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ABSTRACT: This paper introduces a study on the information systems of industry, academic services, and research at the Institute for Scientific and Technological Research and Services (ISTRS). The study found that information technology can be used to develop a One Stop Service System. The development process followed the System Development Life Cycle (SDLC) and installed One Stop Service System in parallel with the existing systems. The systems were of high quality. User satisfaction was very high. Results of evaluation of clients' satisfaction found it remained very good as well. Comparison of the time taken for the Reform B work against developed systems that were facilitated was also undertaken. One Stop Service System can also reduce the working time by 40 percent from that planned.

INTRODUCTION

Technology is considered critical to future enterprise development. Dave Ulrich, expert in human resource management, indicated that technology is an important key to business in the future [1]. According to Cumming and Worley, information technology can make changes in an organisation [2]. Technology today allows users to store, change, review and share information with other people. People can easily analyse the data, at lower cost, adding more value to data and extracting quality information. At the same time, technologies can also help improve the production process to reduce costs and time for a better quality result. Technology is important for developing a better organisation.

There are different kinds of technology that support human resource development, which allows users to learn and develop knowledge on their own. Learning from CD-Rom is a system that has been widely used and is increasing. By developing technologies and communications networks, data transfers with faster speed, and much more data can be delivered, which enables more online learning systems (e-Learning). The software suites that support the improvement of working ability (Competency Development System) has been sold to market and proves the concept of human resource development.

Organisations that use technology to assist work continue to produce a learning organisation. Personnel in the organisation will be continuously learning and self-developing, such as creating a forum, so that employees can share their knowledge to work together or writing articles that relate to their everyday work. If the organisation has a well-constructed knowledge management system, employees can share their knowledge.

In Thailand, performance development in organisations is still carried out using paper documents, which causes difficulty when analysing the data and leads to difficulty within the development process. Curricula of personnel training are often limited by the needs of training surveys, and this is not adequate for employees in competition with others. Performance management systems are currently used in many large organisations. This system helps to indicate job success (Key Performance Indicator), from the highest executive level to the lowest. When employees are evaluated, supervisors can develop individual development plans, which will lead to a development plan [3].

Therefore, technology should be used to assist organisational development in an uncertain competitive environment. However, the technology used to develop a successful organisation is based on the availability of various internal factors, including hardware, software, information database, data network communication, the complexity of the processes, personnel working on information systems and, importantly, the users who require change management skills which allow them to accept and use the technology's full potential. In addition, quality assurance and quality management systems help ensure the specified quality. Quality assurance refers to activities that lead to ensuring a process of manufacturing with effective performance [4].

OBJECTIVE

The Institute for Scientific and Technological Research and Services (ISTRS) is a unit in King Mongkut's University of Technology Thonburi. The primary mission of the ISTRS is to provide academic and research services to meet the vision of a University department, and which is consistent with the vision of King Mongkut's University of Technology: it is determined to be at the forefront of technology and research. However, any administration needs the right tool for management. In terms of tools, they are commonly known as a computer system, database system, etc. There are also many intellectual tools, such as a Balanced Score Card, planning tools, work tracking tools, etc. These are technology tools for educational administration [5]. Therefore, ISTRS should be recognised for its quality and quality assurance, as well as compliance with quality assurance standards of the university in the use of information technology.

DATA GATHERING METHODOLOGY

Research and development of the information systems of the One Stop Service followed the process of the System Development Life Cycle theory (SDLC) [6][7] as follows:

1. Collecting and studying problems arising from working in industry services, academic services and research studies to analyse the problems and find solutions.
2. Analysing and studying the possibilities for information system improvement.
3. Designing of information systems related to the field of industry service, academic services and research studies.
4. Developing operational information systems.
5. Designing technical systems, taking account of existing equipment and technology.
6. Installing the system, equipment and providing handbook and user training.
7. Incorporating user experience to improve the system and make it more efficient.

After installing the One Stop Service, experimental methods were followed by:

1. Experimental use of the system by parallel running with the existing system, to ensure correct operation and, hence, to decommission the current system.
2. A comparison of the service time of the One Stop Service System and the current system. According to the One Stop Service System, it should reduce the service time by not less than 40%.

DATA ANALYSIS METHODOLOGY

Data are collected about three aspects: system quality; user's satisfaction of information systems; and the service time, using the following methods:

1. Evaluation of the quality of the system by seven experts.
2. Assessing users' satisfaction with the system by those who work in industry services, academic services and research studies at ISTRS.
3. Assessing satisfaction with the system by those in industry services, academic services and research studies of ISTRS' clients.
4. Evaluation of service time using the existing system compared to the One Stop Service System.

The data analysis process was done through the following steps:

1. Data on the quality of the system collected from seven experts in the field of system quality. The experts commented on a questionnaire and all the data were analysed by statistical processes. The statistics used for data analysis are averages.
2. Data on users' satisfaction with the system data collected from users related to the field of work. Users commented on a questionnaire and all the data were analysed by statistical processes. The statistics used for data analysis are averages.
3. Data on clients' satisfaction with the system were collected from 30 clients who received industry services, academic services or research studies at ISTRS. Clients' comments were on questionnaire and all the data were analysed by statistical processes. The statistics used for data analysis are averages.
4. Comparison of the existing system service time and the One Stop Service time operation was done by data analysed into percentages.

DATA ANALYSIS RESULTS

Results from development of the One Stop Service system show they met the criteria for system quality, which remained very good. User satisfaction was very good. Clients were satisfied with the service, which is very good as well. By comparing the same type of work, the One Stop Service System was shown to reduce the time of operation down by 40% as compared to the existing system.

Table 1: System quality evaluation data analysis.

Aspect Evaluation	Average	Criteria
1. Input	4.65	Very Good
2. Process	5.00	Very Good
3. Output	4.86	Very Good
4. Storage	5.00	Very Good
Average	4.87	Very Good

Table 2: Users' satisfaction evaluation data analysis.

Aspect Evaluation	Average	Criteria
1. Input	5.00	Very Good
2. Process	5.00	Very Good
3. Output	4.72	Very Good
4. Storage	4.96	Very Good
Average	4.92	Very Good

Table 3: Clients' satisfaction evaluation data analysis.

Aspect Evaluation	Average	Criteria
1. Operation time	4.50	Very Good
2. Tracking status	4.86	Very Good
3. Real time information	4.76	Very Good
4. Fast and convenient	4.56	Very Good
Average	4.67	Very Good

Table 4: Existing system operation time compared to One Stop Service system operation time.

Aspect Evaluation	Operation time with existing system (each time)	Operation time with One Stop Service (each time)	Time difference (each time)
1. Industry Service	45.0 min.	20.0 min.	25.0 min.
2. Academic Service	50.0 min.	30.0 min.	20.0 min.
3. Research Study	40.0 min.	22.0 min.	18.0 min.

The One Stop Service System can also reduce the working time by not less than 40%, as prescribed.

SUMMARY

The experimental One Stop Service System brought information technology into the industry services, academic services and research studies of ISTRS, a department under the directorship of King Mongkut's University of Technology. The mission is consistent with the vision and mission of the University. It also applied technology to educational administration, according to Kanchit Malaiwong [5]. In addition, the quality assurance of the ISTRS is a form of modern quality assurance, as Prasit Kheowsri says [4]. Therefore, considering the whole system, the quality of the overall information system remains very good. Not only the process of development followed the System Development Life Cycle theory (SDLC) [6-9] but also the system interface is easy to use and efficient, after the theory of multimedia design [10]. As a result, the quality of the One Stop Service System is very good and well meets user needs.

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