VOL. 10, NO. 2, FEBRUARY 2015 ISSN 1819-6608
ARPN Journal of Engineering and Applied Sciences

www.arpnjournals.com

INFORMATION TECHNOLOGY SYSTEMS OF SERVICE PROCESS INNOVATION

Chupun Gowanit[1], Natcha Thawesaengskulthai[2], Peraphon Sophatsathit[3] and Thitivadee Chaiyawat[4]
[1]Technopreneurship and Innovation Management Program, Graduate School, Chulalongkorn University, Thailand
[2]Department of Industrial Engineering, Faculty of Engineering, Chulalongkorn University, Thailand
[3]Department of Mathematics and Computer Science, Faculty of Science, Chulalongkorn University, Thailand
[4]Department of Statistics, Faculty of Commerce and Accountancy, Chulalongkorn University, Thailand
E-Mail: Chupun@gmail.com

ABSTRACT

The existing architecture of Information technology system in service organization is designed as a modularity structure. However, in fact, there is a concern about information technology interdependency especially data and processes linkage of each system. It is sustain that information flow can be constructed of the requirements from different users background, knowledge ability, own interest, and in different timeframe. Even though company put high investment in advance information technology systems, but there is a lack of relation interdependency among them which can be costly and caused ineffective resource utilization. The objective of this research is to develop holistic IT systems for a service process innovation by following 5D model. We began by studying the existing IT systems, process flows in case service organizations, followed by semi-structured in-depth interview with ten project members from the three case studies. Action research is conducted by a better and simpler techniques solution as an innovative 5D model of service innovation development process in claim motor insurance which we selected the leading top ten insurance firms in Thailand. The 5D model approach provides a comprehensive process with clear direction and useful tools and techniques at each step. The new developed IT systems of claim motor insurance re-engineering project took one year and two months which yield the result of approximately 79 percent time-consuming reduction at each claim. The new IT systems ensure the competitive advantage in terms of high effective process and cost efficient for insurance firms in long-term.

Keywords: IT systems claim motor insurance, service process innovation, insurance in Thailand.

INTRODUCTION

As the Business Process Re-engineering (BPR) principle has been defined as a fundamental rethinking and radical redesign of the business process to achieve dramatic improvement in critical, contemporary measures of performance, such as cost, quality, service and speed (Hammer and Champy, 1993). The definition of a breakthrough process for design which the results expected will be 50-100% improvement (Davenport, 1993). BPR implementation in insurance industries will be a high investment associated with large-scale innovation, and a high risk when re-engineering their processes (Lee and Dale, 1998; Mansar and Reijers, 2005). Zellner's study (2011) found there are some proposed frameworks and methodologies by selecting the best practices of 8 papers, and all papers mention the business process in terms of reviewing and analysing redesign, methodologies, and improvement. However, there are no indications of how to support the act of improvement, and there are no patterns (Zellner, 2011).

For technological innovation perspective, it is the invention of new technology which deploy to the new marketplace, products, processes, and services (Betz, 1993). The process of technological process innovation is a complex process (Afuah, 1998). Technological innovations require paradigm change, the process of organization integration, and environment assessment, capabilities of technological development which impact size, cost, efficiency, or capability improvement of 50 percent or more (Mueser, 1985). However, the interested on technological innovation process still continue, it is the opportunities offered by new technologies which there is no model of technology innovation (Navekar and Jain, 2006).

The majority of motor insurance firms in the global insurance industry follow similar claim processes involving the complex supply chain which are process of first notification of loss (FNOL) to the call center, followed by assignment of a surveyor to investigate the loss, the customer has to present the insurance policies coverage, the surveyor records the loss estimation report to the customer for garage acceptance, surveyor has lead time 3 days for claim information additional input and transfers to the claim system (Ernst and Young. 2012; Munich-Re, 2013). When the customer goes to the garage for car repairing, the garage staff will let them fill up claim form. The garage staff will input customer's data and claim details to the middle-end claim system. The claim staff will check claim request for approval from middle-end claim system and probably requests spare parts quotation and ordering the spare part shops. However, the whole process is 59 activities, the insurance firms keep tight control to make sure that claim details are accurate and financial risk concerned (Gadrey et al., 1995). Therefore, end-to-end process duration for normal cases is averaging 20-24 days. This is considerably slower than the best practice benchmark claim service completion of the United State of America which runs at 14-14.75 days (Hinshaw and Culbertson LLP., 2007).

VOL. 10, NO. 2, FEBRUARY 2015 ISSN 1819-6608
ARPN Journal of Engineering and Applied Sciences

www.arpnjournals.com

As Thai insurance market consequence of the tremendous growth of the motor insurance business in the past three years (OIC, 2012; SwissRe, 2013), excess claim demands affect service supply in the insurance industry include related supply chains. The premiums landscape continues to be dominated by the performance of motor insurance, valued at approximately US$ 3.43 billion which is the largest market in ASEAN (GSMA, 2014; IGI, 2014). All insurance firms emphasized to allocate their significant budgets for the advance information technology systems investment, but this seems cannot improve their service turnaround time, service quality to gain their customers' satisfaction. As the systems were designed and developed in different purposes and timeframe, they are modular systems. Moreover, the system developing methods depended on different principles of their IT knowledge, own interests and focus, and vendors, as the result, they were built without overall system architecture design (in-depth interview with ten insurance experts). Therefore, they are not end-to-end or straight-through-process systems which the data cannot flow straight-through all systems. Even though, most of them tried to develop data flow to each system, but it is only data transferring which still missing necessary fields that need additional manually works. Therefore, this is major cause of waiting period at least 4 spots which consume 3 days each in total of 12 days. However, new paradigm of system developing is emerging with integration of internal such as core processes, with the external applications, devices and networks of business partners and customers to utilize the whole system create process and service innovation (Hammer and Champy, 2993; Davenport, 1993).

This study offers an approach for developing information technology system design for process and service innovation of complex supply chain. Using innovative 5D model and Action Research to create information flow align with business strategy for process and service innovation strategy.

RESEARCH BACKGROUND

A. Claim motor insurance system components in Thai insurance context

At present, most service companies develop new processes by following document flow which has already been designed using an IT application package. In the past decade, there were still low claim transactions; the insurance firms had simple call center application and core system to manage their claim service. In 2005, the first system outsources launched e-Claim system which is middle-end system for garages submitted claim and requested approval from insurance firms. In 2007, the GPS nationwide network was provided driven the second system outsource provider for GPS Tablet claim investigation record. Therefore, there are four systems support for claim motor process in Thailand (regardless dealers' system and manual operations such as using facsimile and e-mail), namely, e-Claim system (GPS surveyor dispatch -front-end system), e-Survey system (claim damage report), electronic claim management system (middle-end system), and Insurance Core System to be jointly operated by dealers, body shops, and spare parts shops as shown in Figure-1.

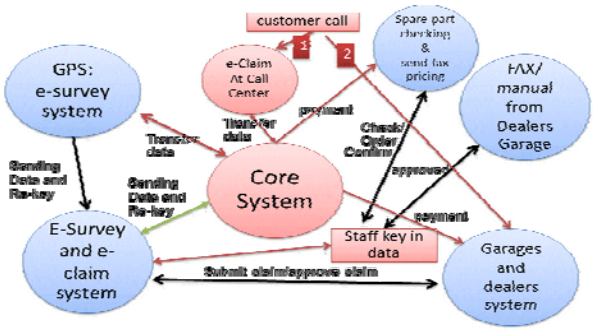

Figure-1. Thai insurance claim motor service system components.

The features and functions of each system are:

a) GPS e-Survey System for Call Center, customer details enquiry, surveyor location, and dispatch to surveyor to site investigation.
b) E-Surveyor (module in e-Claim) for claim consideration and claim approval for claim register
c) Core System is the internal core process of underwriting process, claim process, financial information and reinsurer module.
d) e-Claim is the middle-end system for insurance firms and the garages, spare parts and equipment.
e) Manual process via facsimile machine and e-mail

B. Existing claim motor insurance processes

As claim motor insurance process was managed among complex supply chain, there are at least 59 main activities from started until ended. It is not simple to understand the whole process in details. The authors would like to simplify by using function diagram symbolic.

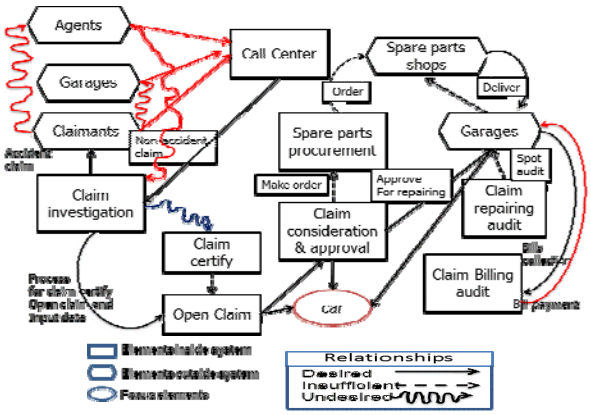

Figure-2. Claim motor insurance process in Thailand adapted from Silverstein (2012).

Figure-2 shows that the claim motor insurance activities are very complex with 59 major activities and 100 sub-activities. When the accident occurs, customer will contact call center to assign surveyor at site investigation from the e-Surveyor system (System I), but undesired activities, if they call agents co-ordinate with call center. For non-accident claims, they will go the garages for investigation which the garages have to call the call center for checking the policy coverage and customer details. The call center will search for the closet surveyors and assignment and customer information dispatch to surveyor. The standard service level agreement (SLA) within 30 minute in city area, surveyor has to arrive to at the accident location. Surveyor investigate the insurance policy, driver license ID card, car damage evident, input the evident, take the photographs, and print out the detail slip to the customer. The surveyor will input the additional data into the tablet and submit to the system. Afterward, surveyor has to use the computer at the office to input some redundant and additional data to e-Survey system (System II). At middle office, administration staff will check claim transaction in details and register claim with loss cost estimation in the core system (System III), the surveyor officers will consider and screen the claim details such as the accident cause, any unusual evident, and the potential fraud. If it is normal case, the officer will approve that claim in e-Survey system. The customer will drive the car to the garage for repairing. The garage will give the garage document form and input customer data, claim damage details, spare parts details, and cost of repairing into the e-Claim system (System IV). At the back-office, Claim staff will check the details in e-Claim system and negotiate repair or change the spare parts, price conclusion and claim approval. Claim staff has to check the spare parts and approve orders with the spare part shops in e-Claim system. Some spare parts shops do not use e-Claim, they have to use facsimile machine for this activities. The spare part shops will send the spare parts to the garage. The garage will complete repairing, and call the customer for car picking up.

In each different system, they have to transfer data from one system to another and manually input additional information. This is redundancy work of each transaction which create error occurs. Operational Risk of process is very high. It is the challenge for the industry to revise information technology as a whole process and radical redesign align with this technology age.

RESEARCH METHOD

To document the existed claim motor insurance process, a multiple case study approach was chosen. The three cycles of action research (Villiers, 2005), case study research design and proposed innovative 5D model as a guideline will be “replication logic” rather “sampling logic”. Moreover, this is not a population, but it is made generalization to the theory (Lincoln and Denzin, 2003). Three claim motor insurance processes were selected across the top ten insurance firms which are 68% of market share [14]. The details of three case studies are summarized in Table-1. Case study data collection was triangulated of three district components:

a) Semi-structured in-depth interview with ten insurance experts
b) On site observation as the project sponsor, and
c) Data collection and project document analysis

This method approach will be achieved the deeper insight information with multiple methods, empirical materials, and observes in three case studies while the sequent convergence of the finding will helps to strengthen the research conclusion (Lincoln and Denzin, (2003; Edwards and Holt, 2010). The technique structure analysis and design methodologies of three cycle action research will use innovative 5D model of service innovation development process for claim motor insurance in Thailand, which comprises the stages of Discover, Define, Design, Develop, and Deploy. The information technology systems flow diagrams will be observed the process models and presented in graphical diagram are as follows:

1. System flow diagram
2. Action research process flow
3. Data stores and data fields
4. Internal and external environments

From in-depth interviews with 10 project members of operations, procedures and IT group heads; data were collected from the top ten motor insurance companies in Thailand to gather qualitative data (DiCicco-Bloom and Crabtree, 2006). They are the leading services innovation insurance firms which are a good example of employing tools and technology (Jin *et al*., 2012).

VOL. 10, NO. 2, FEBRUARY 2015 ISSN 1819-6608
ARPN Journal of Engineering and Applied Sciences

www.arpnjournals.com

Table-1. Case study description for action research.

Case	Project type/ descriptions	Company description	Job title/ experience of interviewees
A	Service Innovation Process selection: Front-end service, focus on claim first notify of loss (FNOL); Duration: August 16th , 2013-February 13th, 2014	One of the 1st -5th rankig in general insurance in Thailand. Multi-distribution channels, motor significant growth 53% in 2013 and premium of motor and non-motor is 50:50	Head of motor business operation with the experience of more than 40 years in under writing and claim operation
B	Process Innovation; process selected from payment approval and payment remittance Duration: February 20th - April 25th, 2014	Insurance firm B is one of the 4th ranking insurance in Thailand. Its premium income from Motor and non-motor are 91:9 proportion.	Head of Business Strategy, head of IT and business project owner
C	Process Innovation; selected from claim register and claim validation approval Duration: May 2nd -September 24th , 2014	Insurance firm A (details as stated in Case A)	Project Manager (PM), Project Management Officer (PMO), Project Owners, IT Developers

The logical generic guidance of the existing system environment as system flows are shown in Figure-3. This approach to understand the logical of existing system, process and data flow design. This is a sound basis for the process of system design and redesign to support business strategy (Yeates and Wakefield, 2004) which will be interpreted the guidance information technology system design.

For action research process, we applied innovation 5D Model which consists of five stages as shown in Figure-4 included:

1. Discover: Issues assessment of the existing system and business processes

2. Define: Identify the critical issues of information technology system, devices, business processes.

3. Design: Design new system and process innovation align with business strategy, technology and trends

4. Develop: System and Business processes development, project management

5. Deploy: Pilot Site testing, Roll out plan, Change Management align diffusion strategy

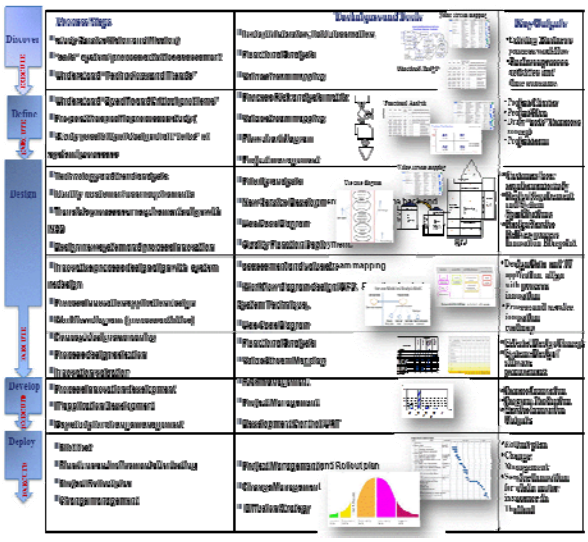

Figure-3. Innovative 5D Model of service innovation development process for claim motor insurance in Thailand.

Implement 5D model for action research

We used the approached 5D model to start each stage:

Stage D1- Discover. We assessed the process and IT systems to understand the existing flow and system components including organization structure functions. We implemented field observation and in-depth interview, function analysis, and value stream mapping as strategic tools and techniques. This stage D1, we found at least 8 steps of claim service included 59 major activities of the claim motor insurance process in additional of 99-101 sub-activities. We focus on the controlled activities which do not collaborate with partners in supply chain such as

garages, spare parts shops. The total time consume of controllable acts is 9,140 minutes as shown in Table-2.

Table-2. Claim motor insurance process; sub-processes and activities.

Steps	Main activities	Sub-activities	**Time** (mins.)
1	Call center	1.1. Customer call notify claim to call center 1.2. Call center enquiry data Input data 1.3. Call center mark location 1.4. Call center selects / dispatch surveryor 1.5. Surveyor down load customer data 1.6. Call center send sms to customer	1.00 1.00 0.40 3.00 2.00 1.00 0.30
2	Surveyor	2.1. Accept assignment and download data 2.2. Press arrival icon at target spot 2.3. Investigate the case and documents 2.4. Input the accident details 2.5. Customer sign accept on slip 2.6. Submit the transaction to E-claim system 2.7. Additional data input in E-claim system	34.00
3	Claim officer	SLA of data transfer from surveyor system to E-claim system 3.1. Check and validate data in Core-system and e-Survey system 3.2. Consider deatials and confirm 3.3. Input additional data/ return incompletion tranx. 3.4. Input data in Core system and issue claim no. 3.5. Claim reverse estimation 3.6. Record the details (from previous) in e-Survey	4,320 2.51 7.32 9.47
4	Surveyor officer Back-office	SLA for claim waiting period for claim investigation 4.1. Consider cause of loss 4.2. Record the opinion and completion 4.3. Imcompleted case request more data 4.4. Case approval and surveyor fee 4.5. Claim cash call from other parties	
5	Customer repairing	External factors: go to the garage	
6	Claim registration	External factors from garage	
7	Claim staff work on approval	Internal and external factors which are uncontrollable	
8	Billing-payment	8.1. invoice sending to claim department 8.2. Validate the documentation in Core system 8.3. Check original document 8.4. Confirm payment and input in e-Claim 8.5. Input additional data and scan documents 8.6. Create payment in e-Claim and wait for authorization 8.7. Print out for approval process 8.8. Process for payment in Core System 8.9. Generate EFT file to the bank	5.00 20.00 280 75.00 2,880 25 10 15
	Total		9,140

There are very completed IT system components which cover all functions such as call center, surveyor, claim administration, claim staff, garages, spare parts, and billing invoice. However, we have to assess each in details that will drill down to filed elements which interface each other, process sequence and system alignment, and etc. the details of system components and staff involved in each stage as shown in Figure-4. There are 4 major systems created spots of waiting period total 12 days for data transfer instead of systems interface, and input the additional data required.

VOL. 10, NO. 2, FEBRUARY 2015 ISSN 1819-6608
ARPN Journal of Engineering and Applied Sciences

www.arpnjournals.com

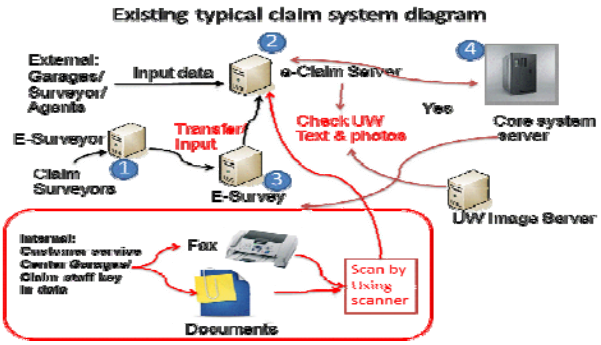

Figure-4. The existing IT system components and the data input in each stage.

Stage D2 -Define: As claim motor insurance process is very complex and long process, author and project team have to understand in details. We stepped back to the stage D1 to assess the reasons of each activities with "Why" questions. Therefore, we analyzed and synthesized that there are risk and fraud concerned in every activities which the systems do not design to prevent risk and fraud except human. As the result, they must work in details, check and recheck the same points. This stage, we used function analysis, value stream mapping, and risk management to define the critical issues. We defined risk factors and risk impact and risk appetites of delay, poor quality, high cost, low customers' satisfaction. The number quantify is crucial to divide the whole processes in to 4 sub-processes in line with IT systems as shown in Figure-5. This will be clearly defined that front-end, middle, and back-end sub-processes are the critical because these effect to customers and partners. Moreover, if we analyzed on the system support, we found that there are manual works, additional data input, and human error occurred.

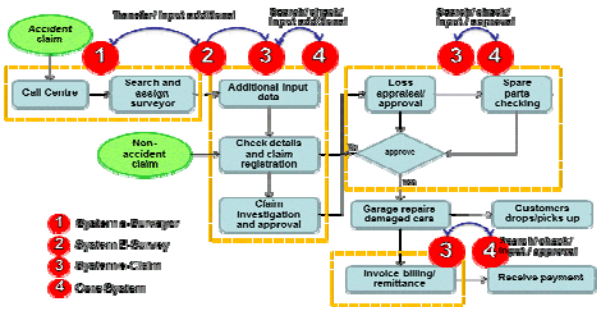

Figure-5. The 4 major sub-processes and the system components in process.

Stage D3- Design: from extensive literature review and in-depth interview, the design stage is very important. We used Use case diagram and Quality Functional Deployment (QFD) in additional to user requirements study. Business analyst (BA) and System analyst (SA) have to design business process requirements, system requirement, technology support, organization structure, and other environment such as network infrastructure, machines and equipments. At this stage, project manager has to understand gap of the existing and "to be" blueprint and implement Change management to protect risk of project. There are 3 cases align with sub-processes such as Case A: First Notify Of Loss (FNOL) "ilertu", Case B: Billing payment "Quick payment", and Case C:e-Survey "e-Smart Survey".

Case-A "ilertu", we used Use case diagram to understand the existing and Function analysis for design the activities as shown in Figure-6. Case A, we provided icon "ilertu" for notify accident claim, customers information will pop-up on the screen with latitude and longitude of accident location. Call center will send dispatch to surveyor on site for investigation.

Case-B "Quick payment", Billing payment over due 45 days and billing transactions are increasing each month. The factors constrain of manpower limitation, process restriction and multi-systems impact partners' satisfaction. Project team cannot put the priority of system development for quick win. If we analyzed from Figure-9 at the existing process, there is business as usual. However, we repeated D1 and D2 stage for 5 rounds assessment and they found the major problem from Use case diagram as shown in Figure-7.

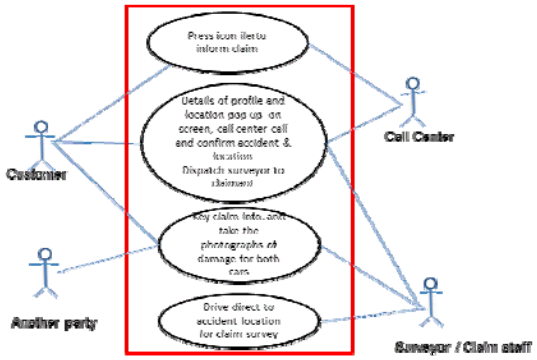

Figure-6. Use case diagram of first notify of loss for "ilertu" project.

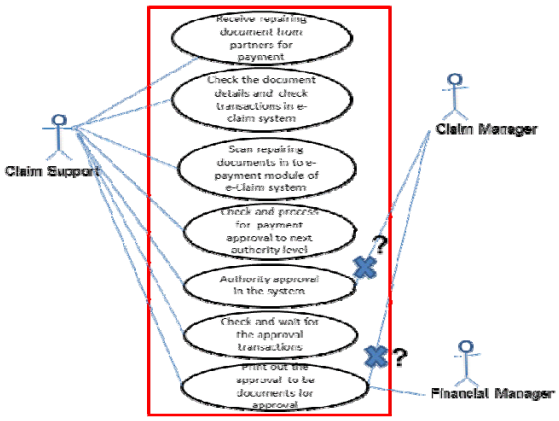

Figure-7. Use case diagram for billing payment processes.

VOL. 10, NO. 2, FEBRUARY 2015 ISSN 1819-6608
ARPN Journal of Engineering and Applied Sciences

www.arpnjournals.com

Case-C: e-Survey "e-Smart-Survey", there are redundant fields in both e-Surveyor and E-Survey systems. Project manager interviewed surveyors 4 cycles because it seems they have technology support them. He went out surveyor by using ethnography technique. We saw e-surveyor on tablet screen and compared with E-Survey on computer screen. It was similar fields and additional information fields. Hence, we have to map fields from both systems. We decided to follow the first entry which is surveyor to take responsible for complete fields required. The combine systems programming design will be replace both systems. We defined the rekey and redundant fields issues from Table-3 which compared through core system. From Case C, we will have new system named "e-Smart Survey" as a single claim data entry for all connecting system.

Table-3. Fields comparison of major 3 systems study.

Field items	Information from e-Surveyor	Acts for e-Survey	Acts for core system
1	Policy type		
2	Vehicle brand		
3	Date-time of assignment		
4	Date- time of caes completion		
5	Against to third party liability		Copy
6	Fault admission (Court process)		Rekey
7	Driver license of policy holder	Rekey	Copy
8	Contact of policy hodler	Rekey	Rekey
9	Citizen ID	Rekey	Rekey
10	Address of third party (Intigant)	Rekey	Copy
11	Contact of third party (Intigant)	Rekey	Rekey
12	Citizen ID of third party	Rekey	Copy
13	Claim no. of third party	Rekey	Rekey
14	Evident of accident	Reeky	Rekey
15	Campaign Code		Copy
16	Driver license issue - expiry date	Rekey	Rekey
17	Car damages	Rekey	Rekey
18	Car third party damages	Rekey	Rekey
19	Provice of accident		Copy
20	Function auto update		
21	Plate number on print out Slip		Rekey
22	Third party payment/pending on Slip		Rekey
23	Signature of policy holder		

Stage D4- Develop: project manager tried to use CMMI technique to control development stage, but can use some parts of CMMI level I. such as project management, documents, change requested. The designs for each sub-processes as shown in Figure-8 and Figure-9.

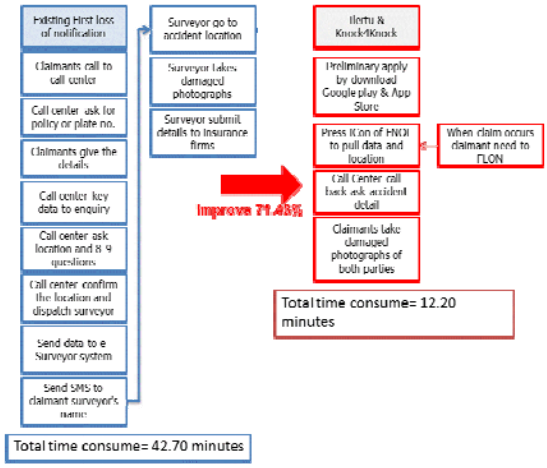

Figure-8. Functions flow design for program development "ilertu".

VOL. 10, NO. 2, FEBRUARY 2015 ISSN 1819-6608
ARPN Journal of Engineering and Applied Sciences

www.arpnjournals.com

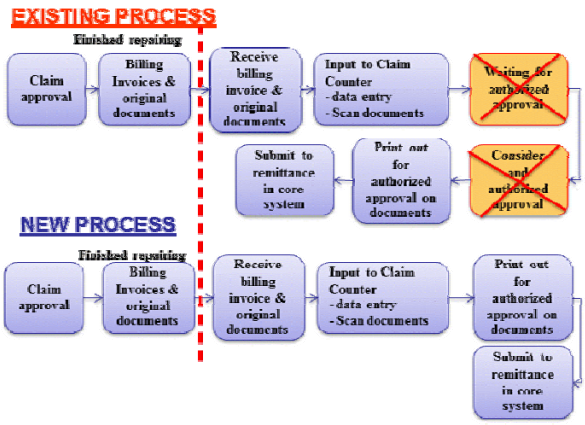

Figure-9. Process flow design for activities reverse and adjust sequence approval functions in program.

Table-4. Fields merger, features and functions development for "e-Smart-Survey".

Field items	Information from e-surveyor	e-Surveyor enhance	E-Survey enhance
1	Policy type	√	√
2	Vehicle brand	√	√
3	Date-time of assignment	√	√
4	Date- time of caes completion	√	√
5	Against to third party liability	√	√
6	Fault admission (Court process)	√	√
7	Driver license of policy holder	√	√
8	Contact of policy hodler	√	√
9	Citizen ID		√
10	Address of third party (Intigant)	√	√
11	Contact of third party (Intigant)		
12	Citizen ID of third party	√	√
13	Claim no. of third party		
14	Evident of accident	√	√
15	Campaign Code		
16	Driver license issue - expiry date	√	√
17	Car damages	√	√
18	Car third party damages	√	√
19	Provice of accident		
20	Function auto update		
21	Plate number on print out Slip		
22	Third party payment/pending on Slip		
23	Signature of policy holder		

Stage D5- Deploy: we planned for technology launching different application with different strategy. As we were aware of diffusion strategy, Case A: the target users are mass users which we target the lead users who are smartphone mobile users. Case B deployment, claim administration and Finance staff are the major users. We prepared training and on-site implementing with users is our deploy strategy. Case C implementation, the target users are surveyors cross nationwide. We have to train and provide user manuals via documents and on website. Project manager and PMO team focused on change management avoid the risk of failure.

RESEARCH RESULTS

The results analysis from this study, we used sample tools and techniques as action research to revise the complex processes among complex supply chain and complex IT systems. The developed process and service innovation is measured in terms of speed, cost reduction and as the result customers' satisfaction. Therefore, to measure the performance of three case studies from the whole claim motor insurance process is shown in Table-5 as we already followed up and measured for a month. The measurement of time consume, it is compared between previous which is 9,140 minutes compared to current situation is 1, 897.28 minutes. The speed performance is better 79.24 percent, this affects to cost reduction and efficiency of performance while sales and claim transactions is growing up, insurance firms do not have to add manpower or IT systems.

While we assessed on process and IT systems, we found an element of novelty that adds value to this research. The process chain linkage of motor business is not only claim processes, but also the underwriting process. Some rigid works at the back-end of claim process may cause from the front of underwriting. We cannot resolve at the back-end unless we understand the linkage problem. Therefore, while start the stage Discover we will not only focus on the issue, but we have to expand the assessment to understand the whole loop of underwriting and claim processes.

VOL. 10, NO. 2, FEBRUARY 2015 ISSN 1819-6608
ARPN Journal of Engineering and Applied Sciences

www.arpnjournals.com

Table-5. Claim motor insurance process measures after deploy new development of three case studies.

Steps	**Main activities**	**Sub-activities**	**Time** (mins)	**New** (mins)
1	Call center	1.7. Customer call notify claim to call center 1.8. Call center enquiry data Input data 1.9. Call center mark location 1.10. Call center selects / dispatch surveryor 1.11. Surveyor down load customer data 1.12. Call center send sms to customer	1.00 1.00 0.40 3.00 2.00 1.00 0.30	0.20 0.30 1.00 0.30 0.10 0.10
2	Surveyor	2.1. Accept assignment and download data 2.2. Press arrival icon at target spot 2.3. Investigate the case and documents 2.4. Input the accident details 2.5. Customer sign accept on slip 2.6. Submit the transaction to E-claim system 2.7. Additional data input in E-claim system	34.00	34.00
3	Claim officer	SLA of data transfer from surveyor system to E-claim system 3.1. Check and validate data in Core-system and e-Survey system 3.2. Consider deatials and confirm 3.3. Input additional data/ return incompletion tranx. 3.4. Input data in Core system and issue claim no. 3.5. Claim reverse estimation 3.6. Record the details (from previous) in e-Survey	4,320 2.51 7.32 9.47	1,440 2.51 2.00 9.47
4	Surveyor officer Back-office	SLA for claim waiting period for claim investigation 4.1. Consider cause of loss 4.2. Record the opinion and completion 4.3. Imcompleted case request more data 4.4. Case approval and surveyor fee 4.5. Claim cash call from other parties		
5	Customer go to garage	External factors		
6	Claim registration	External factors from garage		
7	Claim staff work on approval	Internal and external factors which are uncontrollable		
8	Billing-payment	8.1. invoice sending to claim department 8.2. Validate the documentation in Core system 8.3. Check original document 8.4. Confirm payment and input in e-Claim 8.5. Input additional data and scan documents 8.6. Create payment in e-Claim and wait for authorization 8.7. Print out for approval process 8.8. Process for payment in Core System 8.9. Generate EFT file to the bank	5.00 20.00 280 75.00 2,880 25 10 15	5.00 20.00 280 75.00 0 0 10 15
	Total		**9,140**	**1,897.28**

DISCUSSIONS

CONCLUSIONS

This study concluded that most of service organizations have the powerful IT systems support. However, it seems very difficult to work on the business process re-engineering of complex processes, complex supply chain and complex IT system components. This research shows the developed IT systems which concern about information technology interdependency especially data and processes linkage of each system by following 5D model as a simple step-by-step framework. Moreover, the stage of discover and define will assist the project team confident to design the radical process. Furthermore, based on the project success, the key success factors of three case studies are:

a) Project has to emphasize to project strategy alignment with corporate strategy.
b) Project members, especially project sponsor, project manager and project officer management. Their education and experience are matter to manage the project from start until end.
c) IT resources and skills must be fully allocated as full time on the project
d) Project follow up and monitoring regularly.
e) Project communication to every level such as top management, middle management, cross-functional, and staff.
f) Reward to the project team besides their job responsible and they devote to the project successfully.
g) Not only process design, people, and IT systems concerned, but also data interdependency design and equipment capacity are the key factors as well.

Managerial implications

In the service industry, a service delivery process is the core engine of service, whereby activities in the processes and IT systems have to synchronize being interactive end-to-end process (Hammer and Champy, 1993; Gronroos, 2000; Van der Aa and Elfring, 2002; Kuczmarski and Johnston, 2008). We acknowledged that service organizations invest in IT systems to support their service delivery and target to be service excellent, but most of IT systems are ready packages and adopted from abroad. Moreover, some of process design and IT systems have been implemented more than 6 or 7 years. It is about time to review and enhance the existing before moving forward to new era of technology. Furthermore, this research shows the fuzzy existing IT systems can redeploy to process and service innovation

Limitations and future research

The limitation of this study is focusing on process innovation of motor insurance claim service in Thailand for action research case studies which are very specific domains. The innovative 5D model was approached for action research methodology. This research will be an example of the principle and practical for other processes in motor insurance business such as underwriting process, and selling process. Moreover, this will be deployed to other service industries, such as: financial services, automobile service garages, life and health insurance, government services, logistics, and etc. Future research work will be conducted with other insurance firms in Thailand and in Southeast Asia.

REFERENCES

Afuah A. 1998. Innovation Management: Strategies, Implementation, and Profits. Oxford University Press, Oxford.

Betz F. 1993. Strategic Technology Management. McGraw-Hill, New York, NY, USA.

Davenport T.H. 1993. Process Innovation: Reengineering Work through information Technology. Harvard Business School Press.

DiCicco-Bloom B. and Crabtree B.F. 2006. The qualitative research interview. Medical Education. 40(4): 314-321.

Edwards D.J. and Holt G.D. 2010. The case for '3D triangulation' when applied to construction management research. Construction Innovation: Information, Process, Management. 10(1): 25-41.

Ernst ans Young. 2012. Asia Pacific: Voice of the customer time for insurer to rethink their relationship. Global consumer insurance survey.

Gadrey J., Gallouj F. and Weinstein O. 1995. New modes of innovation: how services benefit industry. International Journal of Services Industry Management. 6(3): 4-16.

Gronroos C. 2000. On define marketing: finding a new roadmap for marketing. 6(4): 395-417, Copyright 2006 SAGE.

GSMA. 2014. The Mobile Economy Asia Pacific 2014, 9 June, 2014, Shanghai, accessed on 28.06.2014 available: http://www.gsma.com/aboutus/.

Hammer M. and Champy J. 1993. Re-engineering the corporation, A manifest for business revolution. Harper Collins, New York, USA.

Hinshaw and Culbertson LLP. 2007. Claim Handling Requirements A 50 States survey, Available: http://www.hinshawlaw.com/files/Publication/ /ClaimHandlingWEB.

Indonesia General Insurance (IGI). 2014. Report of General Insurance 2013. Accessed on 6.08.2014 available:

http://www.gbgindonesia.com/en/finance/article/2013/opportunities_in_indonesia_s_general_insurance_sector.php.

Jin D, Chai K.H. and Tan K.C. 2012. Organizational adoption of new service development tools. Marketing Service Quality. 22(3): 233-259.

Kuczmarski T.D. and Johnston Z.T. 2008. The PDMA Handbook of New Product Development. 2nd edition: Chapter seven, Service Development, George Castellion-Abble Griffin Associate Editors.

Lee D. and Dale B. 1998. Business Process Management: A Review and Evaluation. Business Process Management Journal. 4(3): 214-225.

Lincoln Y. and Denzin N. 2003. The Landscape of Qualitative Research: Theories and Issues. 2nd ed., Sage, London, UK.

Mansar S.L. and Reijers H.A. 2005. Best practices in business process redesign: validation of a redesign framework. Computers in Industry, available: www.sciencedirect.com/science/journal/07475632 (accessed January 11, 2005).

Mueser R. 1985. Identifying technical innovations. IEEE Transactions in Engineering Management. 32(4): 158-76.

Munich-Re Report. 2013. The motor insurance business for profitability. Munich Re Report of October.

Navekar R.S. and Jain K. 2006. A new framework to understand the technological innovation process. Journal of intellectual property. 7(2): 174-186.

Organization of Insurance Commission: OIC. 2012, March Report, Thailand.

Swiss Re. 2013. World insurance in 2013 steering towards recovery. Swissre Sigma, No.4/2013.

Van der Aa, W. and Elfring T. 2002. Realizing innovation in services. Scandinavian Journal of Management. 18(2): .155-171.

Villiers M. R. d. 2005. Three approaches as pillars for interpretive information systems research: development research, action research and grounded theory. In: Proceedings of the 2005 annual research conference of the South African institute of computer scientists and information technologists on IT research in developing countries (White River, South Africa, 2005). South African Institute for Computer Scientists and Information Technologists, [insert City of Publication], [insert 2005 of Publication]. Lincoln, Y. and Denzin, N. (Eds) (2003), the Landscape of Qualitative Research: Theories.

Zellner G. 2011. A structured evaluation of Business Process Improvement Approach. Business Process Management. 17(2): 203-23.