IMPROVING PROJECT DISBURSEMENT PROCESS IN A MALAYSIAN SHIPYARD

AZMAN ISMAIL

DOCTOR OF MANAGEMENT
UNIVERSITI UTARA MALAYSIA
September 2018

IMPROVING PROJECT DISBURSEMENT PROCESS IN A MALAYSIAN SHIPYARD

By

AZMAN ISMAIL

Thesis Submitted to
Othman Yeop Abdullah Graduate School of Business,
University Utara Malaysia,
in Fulfillment of the Requirement for the Degree Of Doctor Of Management

Kolej Perniagaan
(College of Business)
Universiti Utara Malaysia

PERAKUAN KERJA TESIS / DISERTASI
(Certification of thesis / dissertation)

Kami, yang bertandatangan, memperakukan bahawa
(We, the undersigned, certify that)

AZMAN ISMAIL

calon untuk Ijazah
(candidate for the degree of) **DOCTOR OF MANAGEMENT**

telah mengemukakan tesis / disertasi yang bertajuk:
(has presented his/her thesis / dissertation of the following title):

IMPROVING PROJECT DISBURSEMENT PROCESS IN A MALAYSIAN SHIPYARD

seperti yang tercatat di muka surat tajuk dan kulit tesis / disertasi.
(as it appears on the title page and front cover of the thesis / dissertation).

Bahawa tesis/disertasi tersebut boleh diterima dari segi bentuk serta kandungan dan meliputi bidang ilmu dengan memuaskan, sebagaimana yang ditunjukkan oleh calon dalam ujian lisan yang diadakan pada: **7 Mei 2018.** *(That the said thesis/dissertation is acceptable in form and content and displays a satisfactory knowledge of the field of study as demonstrated by the candidate through an oral examination held on:* ***7 May 2018).***

Pengerusi Viva *(Chairman for Viva)*	: **Prof. Dr. K Kuperan Viswanathan**	Tandatangan *(Signature)*	
Pemeriksa Luar *(External Examiner)*	: **Prof. Madya Dr. Khairul Akmaliah Adham**	Tandatangan *(Signature)*	
Pemeriksa *Dalam (Internal Examiner)*	: **Dr. Hendrik Lamsali**	Tandatangan *(Signature)*	

Tarikh: **7 Mei 2018**
(Date)

Nama Pelajar
(Name of Student) : **Azman Ismail**

Tajuk Tesis / Disertasi
(Title of the Thesis / Dissertation) : **Improving Project Disbursement Process In A Malaysian Shipyard**

Program Pengajian
(Programme of Study) : **Doctor of Management**

Nama Penyelia/Penyelia-penyelia
(Name of Supervisor/Supervisors) : **Prof. Madya Dr. Norhasni Osman**

Tandatangan

Nama Penyelia/Penyelia-penyelia
(Name of Supervisor/Supervisors) : **Dr. Mohd Azril Ismail**

Tandatangan

PERMISSION TO USE

In presenting this dissertation in fulfillment of the requirements for a postgraduate degree from Universiti Utara Malaysia, I agree that the University Library makes it freely available for inspection. I further agree that permission for copying of this dissertation in any manner, in whole or in part, for scholarly purpose may be granted by my supervisor(s) or, in their absence by the Dean of Othman Yeop Abdullah Graduate School of Business. It is understood that any copying or publication or use of this thesis/dissertation/project paper or parts thereof for financial gain shall not be given to me and Universiti Utara Malaysia for any scholarly use which may be made of any material from my thesis/dissertation/project paper.

Request for permission to copy or make other use of materials in this thesis, in whole or in part should be addressed to:

Dean of Othman Yeop Abdullah Graduate School of Business
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman

ABSTRACT

This study is about the deployment of Business Process Reengineering (BPR) in a Shipyard to resolve the problem of the project disbursement process that has caused a significant delay in approving a statement of work progress (SOP). A revamping effort to reduce the SOP approval cycle time and gain a cost saving from the process is a target to be achieved. The research used a qualitative method with the interactive action research cycle to revamp the project disbursement process. To assess the revamping exercise, 946 SOPs from three ship repair projects were elected and analyzed. Each SOP was grouped based on how long it took to get the approval: (a) 0 - 2 days, (b) 3 - 4 days, (c) 5 - 6 days, and (d) more than 7 days. To reduce ERTC, a Force Field Analysis (FFA) by the BPR team members was conducted. Twelve interviewees were selected from the Shipyard employees and subcontractors to give their response to the BPR deployment and ERTC. The analysis focused on the influence of the BPR CSF influence on employees' perceived benefit of change (PBC), organizational commitment (OC), involvement in change (IIC), and attitude towards change (ATC). The findings showed that the Shipyard managed to reduce the SOP approval cycle time up to 86%, gained a cost saving from the improvement process between 31% and 61%, and reduced ERTC using the BPR CSFs. The results of this research will enable the Shipyard to resolve its problem of the project disbursement process by eliminating the delay in approving an SOP and gaining a cost saving from the revamping process. The results help to understand further how to use BPR CSFs during project implementation to reduce ERTC and further extend the relationship between BPR, change theory, and resistance to change (RTC).

Keywords: Business process reengineering, change theory, resistance to change.

ABSTRAK

Kajian ini adalah mengenai penggunaan Rekayasa Semula Proses Perniagaan (BPR) di sebuah limbungan kapal untuk menyelesaikan masalah tentang proses pembayaran projek yang menyebabkan kelewatan tinggi dalam meluluskan penyata kemajuan kerja (SOP). Usaha rombakan semula untuk mengurangkan kelulusan kitaran masa SOP dan memperoleh penjimatan daripada proses tersebut merupakan sasaran yang ingin dicapai. Kajian ini menggunakan kaedah kualitatif dengan kitaran kajian tindakan interaktif untuk merombak semula proses pembayaran projek. Untuk menilai projek rombakan ini, sebanyak 946 SOP daripada tiga projek pembaikpulihan kapal telah dipilih dan dianalisis. Setiap SOP dikelompokkan mengikut tempoh masa yang diperlukan untuk mendapat kelulusan: (a) antara 0 - 2 hari, (b) 3 - 4 hari, (c) 5 - 6 hari, dan (d) lebih 7 hari. Untuk mengurangkan ERTC, Analisis Medan Daya (FFA) oleh pasukan BPR telah dilaksanakan. Dua belas orang daripada kalangan pekerja limbungan kapal dan subkontraktor telah di temu soal untuk mendapatkan respons mereka mengenai pelaksanaan BPR dan ERTC. Analisis memberikan tumpuan kepada pengaruh BPR CSF terhadap tanggapan faedah perubahan (PBC) oleh pekerja, komitmen organisasi (OC), penglibatan dalam perubahan (IIC), dan sikap terhadap perubahan (ATC). Hasil kajian menunjukkan bahawa limbungan kapal tersebut mampu mengurangkan kitaran masa kelulusan SOP sehingga 86%, memperoleh penjimatan daripada proses penambahbaikan antara 31% sehingga 61%, dan mengurangkan ERTC dengan menggunakan BPR CSF. Keputusan kajian ini akan dapat membantu limbungan kapal tersebut untuk menyelesaikan masalah pembayaran projek dengan menghapuskan kelewatan kelulusan dalam SOP dan mendapatkan penjimatan yang berfaedah daripada proses rombakan semula. Hasil kajian juga membantu untuk memahami dengan lebih mendalam cara penggunaan BPR CSF semasa pelaksanaan projek bagi mengurangkan ERTC dan memperluaskan lagi hubungan antara BPR, teori perubahan, dan rintangan terhadap perubahan (RTC) pada masa hadapan.

Kata Kunci: Rekayasa semula proses perniagaan, teori perubahan, rintangan untuk perubahan.

ACKNOWLEDGMENTS

Alhamdulillah, in the name of Allah the Most Merciful and Benevolence. I thank You for giving me this opportunity to learned what I have gone through from this research journey. I wish to express my sincere appreciation to my academic supervisors, Associate Professor Dr. Nor Hasni Osman and Dr. Mohd Azril Ismail, of Universiti Utara Malaysia (UUM). The examiners for their valuable comments, Associate Professor Dr. Khairul Akmaliah Adham and Dr. Hendrik Lamsali, and to my industry supervisor Datuk Ir. Yahya Hashim, which all had contributed significantly to this research completion.

I would also like to thank the following individuals, Ahmad Nizam Makhtar, Rohimaiza Abdul Ghani, Mohd Fahizal Jaafar, Sarinah Osman and Koey Chee Leong who have helped me through this journey with their endless support and for being the backbone to my BPR project implementation. My other Industrial Ph.D. colleagues, Mazlan Yasin, Jamaluddin Abdullah, Dr. Mohamed Shamaun Yushak, and Dr. Mohamad Kamal Mohamad Dasuki, who started these endeavors and shared the pain and gain together with me at the Shipyard. This research would not be materialized without the sponsorship from the Ministry of Higher Education, MyBrain15 Industrial Ph.D. Programme and collaboration between Universiti Utara Malaysia and the Shipyard.

Finally, this acknowledgment would be incomplete without a word of thanks, appreciation, gratitude, and love for those whom I share my life with. Thank you, mother, Limah Musa, for your Doa's, my wife, Dr. Norahninzu Arifin, for your untiring support and companies, and my lovely daughter, Nurul Alya, for your smiles and laughs. May Allah reward all of you with His Kindness and Goodness.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

AR	Action Research
ATC	Attitudes Towards Change
BPR	Business Process Reengineering
CBA	Cost Benefit Analysis
DOO	Director of Operations
ERTC	Employee Resistance to Change
FFA	Force-Field Analysis
HOD	Head of Department
IAR	Insider Action Research
IIC	Involvement in Change
OC	Organizational Commitment
PBC	Perceived Benefit of Change
QIR	Quality Inspection Report
RMN	Royal Malaysian Navy
RTC	Resistance to Change
SAP	Systems, Applications, and Products
SOP	Statement of Progress
TI	Tax Invoice
UAT	User Acceptance Test
WO	Work Order

CHAPTER ONE
INTRODUCTION

1.1 An Overview

This study is about one local Shipyard operated in the Peninsular State of Malaysia which later known as "The Shipyard." The Shipyard is well equipped with shipbuilding and ship repair facility and manned by a highly skilled workforce of whom 20% are engineers and 25% of highly trained ex-servicemen (Boustead, 2013). The Shipyard's main activities are shipbuilding and ship repair for both commercial and naval ships.

In delivering shipbuilding and ship repair project, the Shipyard either doing the job in-house or subcontracts the work to the Subcontractors that can complete the work given by the Shipyard. Most of the subcontractors are locally established and works together with the Shipyard for many years before. Subcontractors play a major part in helping the Shipyard in delivering timely and the highest quality project to its customer.

The Shipyard had gone through a change of management in 2005, and the Shipyards' Group had completed their financial restructuring in 2007. To remain competitive, sustainable, and survival in the market, the Shipyards' Group, had launched its Transformation program in January 2011, with the Shipyard as a pilot project. The program had restarted on 28 April 2015 with a renewed emphasis focusing on the Shipyard operations. The needs for change requirement are important criteria to be implemented to remain competitive in a turbulent market survival for any organizations (Ming-Chu & Meng-Hsiu, 2015).

In 2013, the Shipyard had been confronted with a serious complain from their subcontractors on the late verification of Statement of Progress (SOP – a certificate issued by the Shipyard to the Subcontractors on an agreed percentage of ship repair work progress and used to support the disbursement made by the Subcontractors on specific work progress of completed or ongoing work) for their respective work (Ismail & Osman, 2016; Ramachandra, 2013). The SOP is the main supporting document used to verify the work progress and support for disbursement claim. This complaint has created external pressure for the Shipyard to make a change internally, and radical change is required to its business processes.

Delay in project disbursement process (a process of capturing Subcontractor work progress for ship Repair work, verification of supporting documents for disbursement, and submission of tax invoice of the said progress from Subcontractor to Shipyard) is a prolonged issue involving main contractor and subcontractor and consequently could compromise on the quality of work (Kikwasi, 2013; Ramachandra, 2013; Ramachandra & Rotimi, 2011). Shipyard recognizes the subcontractor as part of their extended workforce and views the inefficient disbursement process as a major issue that can jeopardize overall project performance in terms of time, cost, and quality. Insufficient disbursement process can influent badly the project performance in terms of time, cost and quality and requires further attention to improve the situation. (Azman, Dzulkalnine, Hamid, Kamar, & Nawi, 2013; Tran & Carmichael, 2012).

Revamping the problematic business process requires careful planning on the proposed planned change effort such as Business Process Reengineering (BPR – a radical redesign to achieved a dramatic improvement in current business process in

terms of cost, quality, service, and speed) to be executed (Goksoy, Ozsoy, & Vayvay, 2012; Hammer, 1990; Hammer & Champy, 1993; Jurisch, Ikas, Palka, Wolf, & Krcmar, 2012; Mohapatra, 2013; Stanton, Hammer, & Power, 1993). Should the revamping not take places, it will create a continuous chain of problems to both the Shipyard and the Subcontractors in their daily business operations.

Change will bring different approaches of doing work and disturb the status quo (Amarantou, Kazakopoulou, Charzoglou, & Chatzoudes, 2016; Appelbaum, Degbe, MacDonald, & Nguyen-Quang, 2015; D'Ortenzio, 2012; Fransen, Smit, & Verlegh, 2015; Robbins & Coulter, 2012; Sarayreh, Khudair, & Barakat, 2013). The disbursement process involves various cross-functional departments and needs involvement, commitment, and collaboration from all parties before it can be revamped. The parties include Shipyard employee as well as subcontractors who are at the receiving ends of the business process.

Project disbursement process was with the Shipyard since previous ten years old, capitalizing the practices from various Shipyard cross-functional department without any major changes, and delivering it outputs at its paces and protected processes. To revamp this process, a radical redesign that brings in a dramatic improvement in time and cost are needed to replace the status quo and brings in the more effective way of managing project disbursement process and resolving current issues in it processes. The external pressure by the Subcontractors for immediate improvement and the complexity of various cross-functional department needs and interest requires an approach of BPR to be used to revamp project disbursement process.

Executing BPR requires drastic decision, involve cost and time (Maheswar & Javalagi, 2014; Mohapatra, 2013; Panayiotou, Gayialis, Evangelopoulos, & Katimertzoglou, 2015; Pardo del Val & Martínez Fuentes, 2003; Stanton et al., 1993), more accurate and strategic decision are needed when the organization already have IT enabler system and used to go through many change efforts previously. Any decision to invest more money is considered a major obstacle by the parties involved (Alsudairi, 2013; Guimaraes & Paranjape, 2013; Mohapatra, 2013).

Deploying BPR and making a planned change will not succeed without facing resistance (Appelbaum et al., 2015; Bertezene & Martin, 2007; Johnson, 2011; Miller, Johnson, & Grau, 1994; Norman, 2012; Thomas & Hardy, 2011). Employee resistance to change (ERTC – an employee's reaction and reflection towards incoming change efforts that might be affected them) is one of the restraining forces in BPR and must be intelligently managed to reduce it (Amarantou et al., 2016; Appelbaum et al., 2015; Fuchs, 2011; Georgalis, Samaratunge, & Kimberley, 2015; Taher & Krotov, 2016; Wittig, 2012). The resistance must be measured accordingly before implementing the change program (Wittig, 2012).

Externally pressured by subcontractor complaints and requirement to move forward in challenging industry, the Shipyard needs to revamp its disbursement process to maintain a strong relationship and support with the subcontractors. Should project disbursement process not being revamped, it will create a continuous chain of problems to both the Shipyard and the Subcontractors in delivering the ship repair project in timely and cost-effective manners. BPR project required a change, and a change always comes with resistance to being managed. Managing the ERTC will

ensure the possibility of BPR project to succeed and help to achieved Shipyard's objective. The subsequent subsection of this chapter will discuss different set up exist in Shipyard business setting, directly and indirectly, influence the overall planning of BPR project setup in Shipyard as well as results of this research.

1.1.1 Shipyard and Shipbuilding/Ship Repair Industry

The Shipyard had to anchor its diversity in the industry which was propelled and guided by its Strategic Plan 2020, launched on December 2011 (Zainal, Noor, Intan, Mahfar, & Jalil, 2016). The shipbuilding/ship repair industry as identified in the Malaysian Third Industrial Master Plan, were a major element of marine transport subsector under transport equipment industry. It also provides sustenance in terms of building and supplying new vessels, repairing, and maintaining existing vessels operated and owned by ship owners (MIGHT, 2011). The industry is also being identified as the major contributor to Malaysian fortune under transportation sector (Zainal et al., 2016), and established greater synergy in terms of new employment creation and strengthening the new industry and technological capacity (Sulaiman et al., 2017).

Shipbuilding/ship repair industry had laid down seven (7) key strategies for it members to follow with five (5) main objectives to realize. The strategies are i) creating business-friendly strategies to support the development of industry, ii) firming the established framework, iii) strengthening the governing of the framework to guarantee the integrity of the shipbuilding/ship repair members and the quality of their deliverables, iv) reinforcing the market workforce, v) using local design and

adopting new shipbuilding/ship repair technologies, vi) strengthening financial and incentive packages for industry players, and vii) upgrading capability and the level of complexity of the industry (MIGHT, 2011; Zainal, Noor, Intan, & Mahfar, 2013; Zainal et al., 2016).

While the objective of this industry are i) to capture 80% of the local new build market, ii) capture 2% of the global new build market, iii) capture 3% of the market for repairing vessels plying the straits of Malacca, iv) capture 80% of the South China Sea offshore repair market, and v) focus on development initiatives on niche markets involving vessels shorter than 120m in length (MIGHT, 2011; Zainal et al., 2013, 2016). Targeting global new build and repair market share, require the shipyard to be competitive and able to deliver the project within time at the highest quality (MIGHT, 2011). Shipyard capabilities must be aligned and develop accordingly towards this objective.

Shipbuilding/ship repair industry is well clustered in Malaysia. There are thirty-one (31) shipyards operating in Peninsular of Malaysia, while sixty-eight (68) shipyards are providing the support along the coast of East Malaysia, ready to do any shipbuilding/ship repair work available in the market (Sulaiman et al., 2017; Zainal et al., 2016). Within the Shipyard surrounding area, there are two (2) other shipyards operating nearby the same district but having different "type of shipyard class."

As per *Jadual Kadar Untuk Kerja-Kerja Pembaikian dan Penyelenggaraan Bot/Kapal Kerajaan*, 2012, shipyard classes are divided to three (3) different categories, i.e., A, B, and C. Each class differs in term of facilities, capabilities, and most importantly,

the rate used to bill the client i.e., Government. Competing with non-class A shipyard within the same area making the Shipyard less competitive in term of price, only timely delivery with the highest quality can satisfy every customer demand and differentiate between each shipyard, and it all depends on the readily skillful resources, facilities, and capabilities at Shipyard disposal.

Table 1.1 and Table 1.2 below, indicate several major and small shipyards operating in the Peninsular and East Malaysia. Shipyard in the peninsular concentrated on both steel and aluminum vessel for government and oil and gas industry. It is noticeable that shipyards in the peninsular rely heavily on a government contract, thus making it less competitive and cost-effective (MIGHT, 2011). A government contract is high in value but is very limited in volume thus creating intense competition among peninsular shipyards (Sulaiman et al., 2017).

Table 1.1
List of Major and Small Shipyards in Peninsular of Malaysia

State	Shipyards
Perak	Boustead Naval Shipyard Sdn Bhd*
	Great One Marine Shipyard Sdn Bhd
	Sumber Samudra Sdn Bhd
	Muhibbah Marine Engineering Sdn Bhd
Selangor	Port Shipyard & Engineering Sdn Bhd
	Selat Melaka Shipbuilding Corporation Sdn Bhd
Johor	Malaysian Marine & Heavy Engineering Sdn Bhd*
Terengganu	Geliga Slipway Sdn Bhd
	MSET Shipbuilding Corporation Sdn Bhd
Kelantan	Tok Bali Dockyard & Engineering Sdn Bhd

Source: Malaysian Shipbuilding/Ship repair Industry Strategic Plan 2020
Note : * Class A Shipyard as per Jadual Kadar Untuk Kerja-Kerja Pembaikian Bot/Kapal Kerajaan, 2012

East Malaysian cluster shipyards as per Table 1.2 focusses on making steel vessels such as river ferries, barges, tugs, and offshore supply (MIGHT, 2011). The shipbuilding/ship repair industry in East Malaysian cluster established more than

hundred (100) years back with the establishment on Brooke Dockyard, Sarawak in 1912 (MIGHT, 2011; Sulaiman et al., 2017). Most of the shipyards are family business and managed by their second and third generation of the respective family. Throughout the years, the shipyards in East Malaysia become more cost-effective, dynamic, and viable exporter compared to the peninsular shipyard. East Malaysian Shipyards have strong bonding with oil and gas market, and most of the owner provide a worker-friendly environment to boost productivity and efficiency (MIGHT, 2011) further. At any time, Shipyard in East Malaysia could provide and attract peninsular shipbuilding/ship repair work performed in East Malaysia.

Table 1.2
List of Major and Small Shipyards in East of Malaysia

State	Shipyards
Sarawak	Berjaya Dockyard Sdn Bhd
	Far East Shipyard Company Sdn Bhd
	Gimhawk Shipbuilding Sdn Bhd
	Kian Juan Dockyard Sdn Bhd
	Nam Cheong Dockyard Sdn Bhd
	Sapor Shipyard Sdn Bhd
	Sarawak Slipways Sdn Bhd
	Shin Yang Shipyard Sdn Bhd
	Tuong Aik Shipyard Sdn Bhd
Sabah	Sandakan Jaya Teknik Sdn Bhd
	Seri Modalwan Sdn Bhd
	Weldan Marine Services Sdn Bhd
Federal Territory of Labuan	Labuan Shipyard & Engineering Sdn Bhd*

Source: Malaysian Shipbuilding/Ship repair Industry Strategic Plan 2020
Note : * Class A Shipyard as per Jadual Kadar Untuk Kerja-Kerja Pembaikian Bot/Kapal Kerajaan, 2012

Shipbuilding/ship repair industry is influenced by many internal and external factors that affect the direction and growth of the industry. Apart from the dependency on a government project with restricted annual budget spending, oil & gas market is one of the major factors that energize the local shipbuilding/ship repair market growth (Zainal

et al., 2016). During oil & gas peak period, many shipyards have converted and diversified their capabilities to support oil & gas market rather than concentrating on traditional shipbuilding and ship repair works. After 2012, the oil & gas market started to decline and forcing those shipyards to go back to their traditional business. The situation has created intense competition among shipyards in the peninsular to compete for shipbuilding and ship repair work offered by the Government (Zainal et al., 2016). Since 2015, shipbuilding/ship repair players are getting more worried over the long economic slowdown effect on the industry and starting to compete for their survival (Sulaiman et al., 2017).

Shipbuilding/ship repair industry revenue can be grouped into three (3) categories, i.e., i) shipbuilding revenue, ii) ship repair revenue, and iii) others (including marine manufacturing). The recorded revenue, which contributed by respective industry players become the yearly benchmark for the industry.

Table 1.3
Shipbuilding/Ship Repair Industry Revenue Breakdown

Categories	**2011# RM^**	**2012# RM^**	**2013# RM^**	**2014# RM^**	**2015# RM^**	**2016#* RM^**
Shipbuilding	4.00	4.40	5.60	4.40	3.80	2.28
Ship repair	1.30	1.70	1.20	1.70	1.64	2.08
Others	1.75	1.24	1.55	1.30	0.99	1.20

Source: # extracted from Malaysian Shipbuilding/Ship repair industry report 2017/2018
* estimated
^ in billion

Table 1.3 above shows the breakdown of shipbuilding/ship repair industry revenue by categories from 2011 until 2016; the Shipyard mainly involves in two categories of the above, i.e., shipbuilding and ship repair work. The Shipyard contributed around 7% to 23% of the total shipbuilding/ship repair industry revenue from 2011 to 2016.

Meanwhile, the Shipyard revenue for shipbuilding work are from 10% - 32% and ship repair work are from 5% - 10% respectively.

In the past six (6) years, shipbuilding revenue contributed bigger portion for Shipyard market share. However, in the last two (2) years i.e., 2015 and 2016, the revenue generated for shipbuilding, was in the reducing term due to its dependency on Government project while for ship repair revenue, are in the increasing term and surpassing its previous six (6) year's record due to bigger work growth in the recent ship repair Government project. Either shipbuilding or ship repair, most peninsular shipyards are heavily dependent from only one source of the project (i.e., Government contract) to sustain respective Shipyard survival and existence.

The up and down trend of both activities were highly affected by the current market condition of shipbuilding/ship repair industry. The Shipyard must be ready to maintain its competitiveness in terms of quality, cost, and timely delivery to customer expectation (MIGHT, 2011). Both activities are the pillars of highly skillful and available workforce at Shipyard's disposal.

Maintaining the skillful workforce, especially from subcontractor requires the Shipyard to be a good business partner to them. Subcontractors' complaints must be dealt with accordingly, to create a strong relationship, trust, and effective working collaboration between the parties. In the following subsection, we will discuss about subcontractors as Shipyard's extended workforce and their importance to the project delivery.

1.1.2 Subcontractor as Shipyard Extended Workforce

Ship repair projects are one of the main activities, actively contributed to Shipyard's revenue and cash flow for its operations. It recorded more than RM100 million revenue per year and catered the requirements for Royal Malaysian Navy (RMN) as well as commercial clients. One of the major contributors to implementing the success of this project was subcontractor's collaboration, involvement, and commitment during project implementation.

In delivering its project and realizing shipbuilding/ship repair industry objective, Shipyard needs to have at its disposal a readily and skillful workforce either in-house or outsource. Collaboration, involvement, and commitment from all resources especially subcontractors are required to complete any project in hands. Shipyard does subcontract its work to subcontractors either to a local subcontractor, foreign subcontractor, or Original Equipment Manufacturer. As per Malaysia Employment Act (1955), "subcontractor" means:

any person who contracts with a contractor for the execution by or under the subcontractor of the whole or any part of any work undertaken by the contractor for his principal and includes any person who contracts with a subcontractor to carry out the whole or any part of any work undertaken by the subcontractor for a contractor.

Ship repair working environment is labor concentrated. MIGHT (2011), reported that the industry had an average cost breakdown of 65% labor and 35% steelworks and spare parts needed to complete a ship repair project. Labor resources comprise in-house manpower or supply manpower or services from a subcontractor. As a shipyard,

to have fixed manpower cost is risky when there is no project or in economic downturn situation.

It is vital to ensure that the labor resources are available to do repairing work, either in-house or subcontracting. Maintaining strong relationship and establish trust with a subcontractor is a must. A subcontractor who perceived benefit from this business transaction will value this arrangement and make them committed to Shipyard.

There are five hundred thirty-two (532) vendors registered with Shipyard, 47% of it is actively working with the Shipyard. 52% of the active vendor having their registered office in the same state of Shipyard establishment/operations. 92% of the active vendors having staff strength from 1-100 staff respectively. The spillover work had attracted many subcontractors to work with Shipyard where they are committed to this engagement by establishing their local establishment to provide services within Shipyard operation activities.

Shipyard subcontracted around 70% of ship repair work to the subcontractor (extracted from previous profit & loss for Shipyard, ship repair project). In last five (5) ship repair projects, the work subcontracted to the subcontractor are worth more than RM189 million. In 2013-2016, five (5) vessels had undergone repair work in Shipyard which two were successfully delivered to RMN. The projects are KDSR1 (delivered in 2014), KDSR2 (delivered in 2015), KDSR3 (in progress, entered shipyard on 10 November 2014), KDSR4 (in progress, entered shipyard on 8 June 2015) and KDSR5 (in progress, entered shipyard on 7 September 2015).

Table 1.4
Summary of Subcontractors Involvement in Ship Repair Project

Project Name	Status	No of Subcontractor	% overall contract cost
KDSR1	Delivered	62	80 %
KDSR2	Delivered	62	70 %
KDSR3	In Progress	57	89 %
KDSR4	In Progress	47	90 %
KDSR5	In Progress	37	91 %

Source: Contract awarded to subcontractors from February 2013 to April 2016 from Shipyard Supply Chain Department

Table 1.4 above shows the summary of involvement of every subcontractor in respective project. Sixty-two (62) subcontractors are involved in KDSR1 and KDSR2 (completed project) and contributed more than 70% of the overall cost of the project (subcontracting and purchase of material). While for KDSR3, KDSR4, and KDSR5, the percentage is bigger compared to the previously completed project due to an increase of work scope and packages from the client which requires strong support from subcontractor to complete the project.

The entire subcontractors above are considered as part of Shipyard extended workforce and their problem become important matters for Shipyard to consider and resolve. These subcontracting works have complemented the successful delivery of ship repair project to the Shipyard to date. In the following subsection, we will discuss about project disbursement process and its significance to the subcontractor.

1.1.3 Effects of Delay in Project Disbursement

Delay in disbursement to subcontractor will generate a domino effect to the entire supply chain below them. When Shipyard is late to disburse its subcontractors, it is resulting in subcontractor being unable to pay their suppliers, workers, and other

obligations. This will result in negative cash flow in the local business environment and inability to generate new business opportunity (Bakar, 2015; Gibbs, Emmitt, Ruikar, & Lord, 2013; Mohamad, Nekooie, & Kamaruddin, 2012; Ramachandra & Rotimi, 2012; Ye & Rahman, 2010).

Cash flow problem will put the serious question on subcontractor's cash position. Weak cash position will open the possibility of bankruptcy, liquidation or insolvency due to inability to clear their dues to the creditors and suppliers. The work might be left abandoned and become a statistic to abandoned project list (Azman, Dzulkalnine, Hamid, & Bing, 2014; Hasmori, Ismail, & Said, 2012; Judi & Rosli, 2010; Ramachandra & Rotimi, 2012; Ye & Rahman, 2010).

Subcontractors that are affected by the late disbursement are entitled to claim for compensation as per respective contract, but going through the hassle of legal processes and verification, they might have incurred other unnecessary cost as the burden of proof lies with them (Gibbs et al., 2013). Completion of project within contractual date is a top priority to the Shipyard. Execution of project completion by way of subcontracting the work will be affected if late disbursement happens and causes cash flow problem to the subcontractor, which later results in no progress recorded for the project achievement. The overall project performance will be affected (Tran & Carmichael, 2012) and result in a delay (Haseeb, Xinhai-Lu, Bibi, Maloof-ud-Dyian, & Rabbani, 2011; Judi & Rosli, 2010) in the delivery of the project to the customer.

Frequent late disbursement will tarnish Shipyard reputation from subcontractor and customer view. A good paymaster is always a priority for a subcontractor to work with and a pleasure for customers to deal with (Gibbs et al., 2013). Good quality of services requires prompt disbursement as delays in disbursement affects time, cost and quality of services as well as the project progress. Late disbursement will make the subcontractor tend to markup their quoted price differently to the Shipyard (Ye & Rahman, 2010).

The catastrophic effect on late disbursement looks subjective but carry heavy burden and responsibilities to amend. Reputation, project performance, cash flow problem, insolvency, liquidity damage by customer and others are some to be mentioned as Shipyard does not want to be trapped in this issue in future. The subcontractor can be involved and engaged in whichever shipyard that gives them more works and a good paymaster. It is critical for the Shipyard to keep the extended factory strong, intact and loyal at their disposal. In the following subsection, we will discuss about BPR and its influence in project disbursement process and its significance to the subcontractors and the Shipyard.

1.1.4 Business Process Reengineering in the Shipyard

Realizing from subsequent effects of late disbursement in claims, and complaints made by the Subcontractors, the Shipyard must make a change to its current project disbursement process. An effective change that includes various functions from many cross-functional departments, a radical change that can dramatically resolve the problem and is sustainable to prolong substantial results to its stakeholders. A clean

slate approach that can change and resolve the Shipyards' problem, and make it more effective and efficient in terms of cost, quality, service, and speed; A BPR approach (Hammer & Champy, 1993).

Through BPR, Shipyard could revitalized the old processes and bring in added values to the end users internally and externally and most importantly empowerment to the subcontractors in managing their submission of disbursement process (Ismail & Osman, 2016). Deploying BPR required a carefully crafted planning program in terms of cost of investment especially IT-based system as BPR enabler, acceptance from the user of the system (involvement, commitment, and perceived benefit of change (PBC – employees perceiving the benefits of change towards them and become more committed to the change effort), and most importantly resolve the problem in project disbursement process.

The shipyard had been exposed to numerous IT-based system since 2000. Any proposal to propose a change to a new IT-based system will be heavily scrutinized by the top management. Millions of Ringgit had been spent to develop and maintain the existing IT-based system in the Shipyard. Due to change in ownership of the Shipyard, many changes are being implemented and introduced to the Shipyard's employees recently. Transformation agenda had started in 2007 and was revamped in 2011 to focus on Shipyards' capabilities. Employees were exposed to many change initiative and looked unconvinced with the change agenda.

In the following subsection, we will discuss the history of the IT-based system and the currently running transformation program in the Shipyard. These two elements may

directly have influenced the planning and outcome of the proposed BPR project at the Shipyard. BPR bring change to the working environment, and change is always coupled with resistance from employees affected by the proposed change (Pardo del Val & Martínez Fuentes, 2003). ERTC needs to be taken care of and reduced diligently.

1.1.4.1 IT Enabler System in Shipyard's

Since 2000, Shipyard being assisted by IT system as an enabler in performing its business functions and needs. There are two (2) IT enabler systems running; SAP as Enterprise Resource Planning (ERP) system and MARS as Material Requirement Planning (MRP) system.

The SAP is an ERP system by SAP AG, company based in Walldorf, Germany. The SAP is the fourth largest software company in the world and provides end to end solutions for financials, manufacturing, logistics, distribution, and others. SAP R/3 4.6C was implemented in 2000 and commissioned in August 2001. The version was later upgraded to the latest version of ECC 6.0 in November 2008 and is being used till now.

There are three (3) SAP main modules used in Shipyard; Finance Accounting (for Account Payable, Account Receivable, General Ledger, Controlling, Asset Accounting, Treasury & Risk Management, and Project System), Human Resource (for Personnel Management, Time Management, Payroll, Organizational Management, and Training & Event Management), and Logistic (for Material

Management and Plant Maintenance). The main users of this system are DeptA and DeptB (limited functions only).

MARS 5.0 is an MRP system and was commissioned in the year 2001 to replace the HP Progress System in Shipyard. This system was primarily acquired for the material requirement planning and management for the previous shipbuilding project. The present system consists of two (2) main modules; i) MARS*Material and ii) MARS*Production control system. It caters to all the material requisition for ship repair, shipbuilding, and overhead project. The main users of this MARS system are DeptB and DeptC.

In 2009, MARS was updated to MARS7.2 with more technology and function upgrade. Subsequently, in the same year, MARS*Planning has been implemented in Shipyard. Ship Live Extension Program (SLEP) for KDSLEP1 and KDSLEP2 are being chosen as a pilot project for MARS*Planning implementation project. In September 2009, I-MARS, an internet web-based application (a portal) was successfully launched and used to provide online quotation system integrated with MARS7.2 Material & Production Control System. I-MARS allows the vendors to be involved with online open tendering organized by DeptB. This internet web-based application is the first step taken by the Shipyard in reaching to its vendors through the same online platform. Graphical view of I-MARS portal can be seen in Appendix A.

Since 2000, Shipyard operates it business process based on these two IT enabler systems. These systems interact with each other through interface networking monitored by DeptF. Particularly, usage of this system is very limited for its initial implementation. Starting from the respective system initial implementation until today, millions of Ringgits has been spent by the Shipyard to keep the system intact and running effectively.

BPR's successful implementation is heavily linked with an IT-based system that is attached to its implementation (Alsudairi, 2013; Hanif, Khan, & Zaheer, 2014). Since the Shipyard is already running with two (2) different systems, any proposal to introduce new IT-based system will be scrutinized heavily by the Top Management, and any customization to the existing IT-based system require crucial planning to be decided by the Shipyard. The utilization of IT-based system as BPR main enabler does not mean the success of BPR project is guaranteed, but indirectly show more requirement on detail BPR project implementation, commitment, and planning must be in place and become critical project priorities (Garg & Agarwal, 2014; N. Iqbal, Nadeem, & Zaheer, 2015; Maleki & Beikkhakhian, 2011; Mturi, 2014). The proposed system also need to be affordable to all users especially subcontractors, as their involvement in revamping project disbursement process is equally crucial to the Shipyard.

1.1.4.2 Shipyard's Transformation Agenda

The shipyard had gone through a long journey in their exploration of marine industries in Malaysia. To remain competitive and sustainable in challenging marine industries,

the Shipyard is forced to rethink their existing, competitive and sustainable. Subsequent completion of Shipyards' Group financial restructuring in 2007, Shipyard had been selected as a pilot project to proceed with Shipyards' Group transformation agenda in 2011.

The transformation restarted in April 2015 with a renewed initiative on the Shipyard's survival and working environment. Previously, the Shipyard had appointed several consultants to study on the possibilities of continuing this effort. Many transformation initiatives were planned, and one (1) of it was a 14-month training program held locally to acquire the Korean shipyard best practices especially in ship repair work. The focus of the program was to obtain direct exposure through comprehensive in-house coaching from the Korean experts.

Significant results were achieved with the on-time delivery of KDSLEP2 on 30 October 2014 after undergoing a Service Life Extension Programme (SLEP) and refit program at the Shipyard (Boustead, 2014). This collaboration was done with MIGHT-METEOR Advanced Manufacturing Sdn. Bhd., a subsidiary of MIGHT, and a Korea-based company Daewoo Shipbuilding & Marine Engineering Co. Ltd.

During transformation agenda, many processes were revamped, reviewed and new organization structure approved to suit the new requirement and needs. There are five (5) main areas for transformation identified which are; i) Production Planning & Control, ii) Design for Production, iii) Procurement and Vendor Development, iv) Productivity Innovation, and v) Health, Safety & Environment. The Shipyard transformation mission can be seen in Appendix B.

Four major committees were set up to oversee the progress of this transformation agenda which are; i) All Together Campaign, ii) BPR and Organizational Change for Ship Repair Business, iii) Technology Development, and iv) Information System Development (Appendix C). This transformation was significantly the first long effort plan change in Shipyard compared to the clustered change effort done earlier on various occasions and objectives. Though sometimes all the change efforts look similar to each other from Shipyard employees' perspective.

Deployment of BPR initiative needed to be in line with Shipyard long-term objective and within transformation agenda to get continuous top management support. BPR project objectives which are in line with organizations long-term commitment will have high chances of success to be implemented (Goksoy et al., 2012). Measurement of user acceptance (internal; Shipyard employees and external; the subcontractors) had to be gauged, and resistance which exists from change effort needs to reduced diligently. The general acceptance of transformation agenda may significantly and directly influence deployment and successful implementation of this BPR in revamping the Shipyard's project disbursement process.

1.2 Project Disbursement Process

Project disbursement processes started with a requisition to subcontract the work made by DeptC to DeptB using Technical Material Requisition. DeptD will approve technical Material Requisition. Once approved, DeptB will start the requisition process and award the work to the successful Subcontractor. A Work Order (WO-an

order made by Shipyard to the subcontractors to perform certain ship repair works as agreed upon) will be issued to the subcontractor for them to proceed with the work.

Figure 1.1 indicates the process flow of subcontracting work request, issuing WO, performing Quality Inspection Report (QIR- a report to indicate quality of a works performed by the subcontractors either at satisfactory or unsatisfactory level by the Shipyard) (if any), approval of SOP, verification on Tax Invoices (TI-a commercial document submitted by Subcontractors to claim for disbursement of works perform from Shipyard), and submitting the entire document to DeptA for disbursement process. Five (5) department/units are directly involved in this process and SOP requires three (3) levels of approver to be completed. A subcontractor will manually carry a hard copy of SOP to each approver for their signature (normally subcontractor hire a runner to do this). After that, the entire document is submitted to DeptA for the next process.

DeptA will compile this document accordingly (WO, QIR, SOP, and TI) and submit to Head of Department (HOD – a Head, of a department with the responsibility to manage daily departmental issues and processes) of DeptC3 to be verified and approved the document. Currently, the work progress was not captured in any system

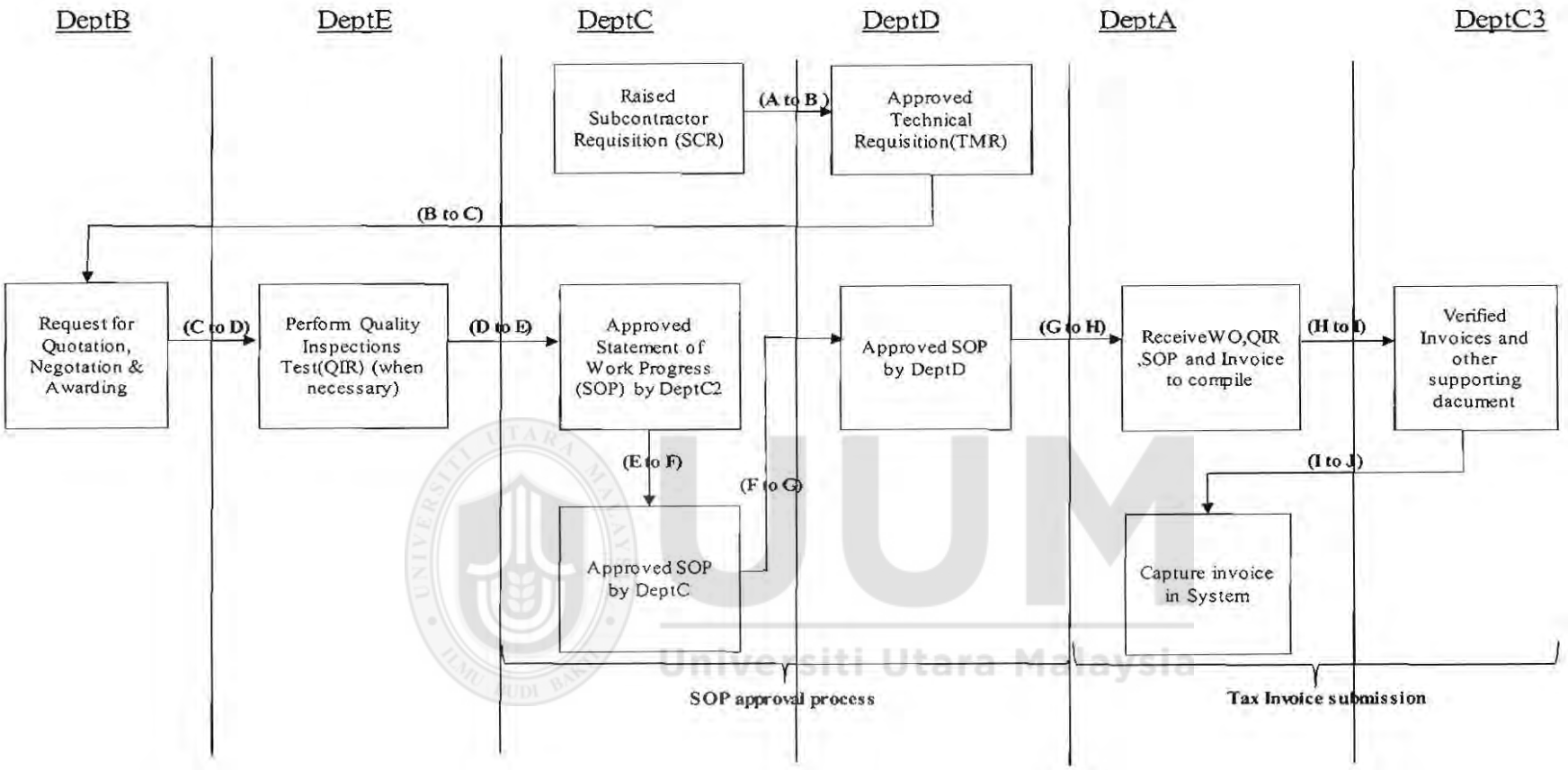


Figure 1.1
Project Disbursement Process - *"Current State"*

and are managed manually, no reference for DeptA to refer to for the approved work progress to tie up with disbursement request. Once approved, the HOD of DeptC3 will send this document back to DeptA to be captured in the accounting system and then proceed with disbursement process.

As per complaint by the subcontractor through a letter sent to Shipyard management, the verification to approve the SOP took a month to be completed. Taking into consideration the time spent to complete the SOP approval, subcontractors are facing huge difficulties to get the supporting documents ready and submit for disbursement. In the next following subsection, we will discuss the effects of delay for disbursement to the subcontractor and Shipyard.

1.3 Problem Statement

The shipbuilding/ship repair industry is very challenging and required a high level of performance and commitment from all the industrial players to commit and adhered. Shipyard heavily involved and contributed effectively for shipbuilding/ship repair industrial growth and achievement. To be able to continuously support shipbuilding/ship repair key strategies and objective set by the Government, Shipyard must deliver all its project on time, with the highest quality and greater customer satisfaction. Ship repair project is one of the activity which continuously generate high revenue and steady cash flow for Shipyard operations requirement.

Ship repair project working condition are labor concentrated. It is contributed up to 65% of the total project cost (MIGHT, 2011). It is not possible for Shipyard to commits

to maintaining high fixed manpower cost, especially in an economic downturn and intense competition from other shipbuilding/ship repair industry players. Thus, having manpower supply and services from subcontractor at Shipyard disposal will be of vital advantages for Shipyard to succeed.

Engagement between Shipyard and its subcontractors are crucial, and the bonding between each other will establish subcontractor as Shipyard extended workforce. Subcontractor supplies the skillful workforce with the highest quality and standard, while the Shipyard delivers the project on time with customer satisfaction and received payment from the customer. Prompt disbursement to Subcontractor would benefit both parties in this dual relationship ship repair business arrangement (Thomas Ng, Skitmore, & Chung, 2003).

In October 2013, Shipyard received a complaint from the subcontractors about project disbursement process. The complaints were stressing out on tedious manual verification for SOP as a major supporting document to approved work progress and submitted for disbursement (Ismail & Osman, 2016; Ramachandra, 2013). Verification and approval of SOP include many parties which took a long time to complete and requires somebody to be monitored and do follow up closely. Even worse when the approvers are not around to verify and approved the document.

Besides the SOP, three (3) another supporting document (WO, QIR, and TI) needed to be compiled together as a stack of supporting documents to be "good to pay." Compilation of these documents become more of an annoyance when subcontractor just appointed a runner to do this compilation and get the document ready for

disbursement. The flow involved cross-functional departments functions and all pre-requisite must adhere accordingly.

Project disbursement process issues have been with the Shipyard for quite some time, until recently when the subcontractor stress out this problem vocally and seek for urgent change. Inability to submit disbursement on time will stretch up to maximum subcontractor cash flows to run the business. In this condition, it is most unlikely for a subcontractor to support Shipyard requirement to deliver its timely and highest quality project to its customer.

Delaying approving document for disbursement (i.e., SOP) will lead to delay in disbursement process (Kikwasi, 2013; Ramachandra & Rotimi, 2011). Timely disbursement for a subcontractor is crucial as this will allow the subcontractor to pay their workers and maintained a strong relationship with main contractors (Thomas Ng et al., 2003). Shipyard as the main contractor must meet subcontractor cash commitment by doing prompt disbursement to them (Thomas Ng et al., 2003).

Subsequent received the complaints from the Subcontractors, the Shipyards' management had deliberated the complaints at Shipyards' management meeting and acknowledged the urgencies to resolve the problem in project disbursement process. Assessing the complaints and recommending the solution to resolve the problem, a dedicated team lead by a leader needs to be appointed to review the *"current state"* of project disbursement process and propose ways to resolve the issue. The team leader (the researcher for this research) and the team members need to be empowered by the Shipyard to act as the change agent and collaborate with all the relevant parties to find

the best solutions to revamp project disbursement process. In view to shorten and make it effective in terms of cost, quality, and "clean slate" the processes (Hammer & Champy, 1993), DeptA (the team leader) together with other affected departments namely DeptB, DeptC, DeptD, DeptE, and helps from DeptF, and DeptG (the team members) were empowered to study the processes involved and the severity of the issues raised.

Changing from existing process to propose new business flow need to be carefully crafted and planned which is a planned change program that radically revamps the problematic process flow and can be accepted and followed by all parties and stakeholders. BPR approach is traditionally expensive (Alsudairi, 2013; Guimaraes & Paranjape, 2013) due to its dependency on the IT-based system for its successful implementation (Dave & Appleby, 2015; Md Sin & Razalli, 2015). The new system requires extensive training (Guimaraes & Paranjape, 2013), high maintenance cost (Kim, Do, & Choe, 2015; Maheswar & Javalagi, 2014), strong help-desk support (Maheswar & Javalagi, 2014; Mehrjerdi, 2010) and need time to adapt.

Before proceeding with such commitment, the Shipyard needs to ensure the benefits of this change to be extremely beneficial to both parties and can be sustainable in the long run. A proposed planned change program always comes with resistance to change (RTC) (Pardo del Val & Martínez Fuentes, 2003). There are many parties involved in project disbursement process in the Shipyard, and subcontractors were one of the beneficial parties to this change process. All stakeholders need to adapt to the new job environment, feeling afraid of the unknown and job insecurity, threatening the status quo and others (Franklin, 2014; Mlay, Zlotnikova, & Watundu, 2013). When there is

too many change initiative implemented, sometimes employee resist it naturally (D'Ortenzio, 2012).

ERTC need to be measured and reduced diligently. An approach to reduce ERTC and overturned it to support the change initiative must be engaged. PBC, involvement in change (IIC-employees participation in change activities), and organizational commitment (OC- employees affective commitment related to the desire to remain with the organization) towards change initiative had to be in Shipyard working environment to ensure that ERTC can be reduced accordingly to support the proposed change in project disbursement process.

To reduce the time taken to approve SOP, the existing process flow need to be revamped. Revamping the process flow requires a holistic approach such as BPR to take place. BPR introduces a change, and employees might have assumed it is the same changes with another change initiative in the Shipyard before. Deployment of BPR will be tested with the proposed new IT-based system requirement versus existing IT-based system functionality. The new system will bring in different way of doing work and triggered ERTC. Can BPR CSFs accommodate to reduce ERTC and help Shipyard to resolve these burning issues?

In conclusion, how the project disbursement process can be revamped to reduce the time of approving SOP and save any cost associated to the process and what may be the possible BPR CSFs use to reduce ERTC that might come from all stakeholders concerned. The next subsection of this thesis will discuss about research questions and research objectives applied to this overall research project.

1.4 Research Questions

Based on the discussion of the problem statement above, the following questions are going to be addressed and highlighted throughout the research journey:

1. What is the *"current state"* of Shipyard's project disbursement process in terms of:
   a. the time is taken to approved one SOP?
   b. the cost incurred associated with *"current state"* of project disbursement process flow?
2. How to revamp the *"current state"* of Shipyard's project disbursement process through BPR in terms of:
   a. reducing the cycle time to approved one SOP
   b. cost saving associated with project disbursement process flow
3. What is the BPR CSF used to reduce (possible) resistance to change from users of project disbursement process?

1.5 Research Objective

The purpose of this study is to improve overall project disbursement process in Shipyard by way of radical change to the existing business process. The outcome of this radical change is expected to reduce the cycle time to approve SOP and created cost saving to Shipyard for more effective process flow. The proposed change will have triggered ERTC and need to be reduced diligently. Accordingly, this research will explore how to manage possible resistance that exists from this proposed planned

change program. Thus, the objectives of this research are derived from the research questions above as below:

1. To understand the *"current state"* of Shipyard's project disbursement process in terms of:
   a. the time is taken to approved one SOP
   b. the cost incurred associated with *"current state"* of project disbursement process flow
2. To revamp Shipyard's project disbursement process through BPR with the intention to:
   a. reduced time is taken to approved one SOP
   b. create cost saving associated with project disbursement process flow
3. To reduce possible resistance to change from users of project disbursement process using BPR CSF.

The next subsection of this thesis will discuss about the significance of the research based on the objective set to be achieved by the Shipyard earlier.

1.6 Significance of the Research

Significant results from this research would help the Shipyard contribution to achieve shipbuilding/ship repair industrial objectives especially on creating business-friendly strategies and reinforce the market workforce within the industry. Prompt

disbursement to subcontractors would eliminate associated cash flow problems to all parties within Shipyard business transaction.

Prompt disbursement will create a good image to Shipyard as "good paymaster" and make it as the preferred choice for subcontractors to work with and a pleasure to all future customer dealing with the Shipyard. The inability of the subcontractors to sustain its cash flow requirement will push them away from the Shipyard, and they will find a job in another rival shipyard's nearby. Skillful manpower cost is very expensive to be maintained and trained, thus creating strong bonding between Shipyards' and subcontractor will sustain the availability of labor supplies.

This research progress with the intention to deploy BPR which will increase possible opportunity to optimize the usage of the current IT-based system in Shipyard for all its users. The IT-based system requires an expensive continuous upgrade, maintenance, and training; thus, any possible returns on investment to Shipyard are highly appreciated. The research gives the opportunity to learn about BPR project implementation within the specific business setting environment such as Shipyards' current condition.

The proposed new change of doing everyday work will be carried out together with ERTC with its implementation. Deploying BPR with varieties of its key elements and CSF will give opportunities to learn new insight on how BPR can "frame" the possibilities to reduce ERTC. ERTC is still considered as living subject to research as it does not have a specific holistic approach to manage due to the specific setting of change program and its surrounding environment.

The following subsection of this thesis will discuss about the scope and limitation of this research progress.

1.7 Scope and Limitation of the Research

This research is limited to the research area of Shipyard operation and its current business setting. The study is mainly done for services works (for ship repair project), which require SOP for verification of work progress done by a subcontractor and supporting document for disbursement process. Data collections and response from interviewed session mainly come from Shipyards' employees and subcontractors which may not be the same with another shipyard.

Specific conditions in the Shipyard may directly influence the deployment of BPR project. Existing IT-based systems will give different views and approach in dealing with IT-based options as BPR enabler and critical success factors. Currently, the running transformation agenda in the Shipyard might change the severity of any possible resistance in this proposed planned change program.

1.8 Definitions of Key Terms

This section briefly explained the terms used in this research. These definitions provide standardized meaning for the respective key terms used throughout the research progress:

Project disbursement process: Process of capturing Subcontractor work progress for ship repair work, verification of supporting documents for disbursement, and submission of tax invoice of the said progress from Subcontractor to Shipyard.

Proposed planned change: An incoming change program design to revamp current project disbursement process in Shipyard by deploying BPR approach to resolve Subcontractor complaints on late verification of supporting documents for disbursement.

Team members: Members of BPRs' team that consist of a representative from the cross-functional department and interested stakeholders towards revamping project disbursement process. The team members also act as Shipyard internal change agent and a focus group to this research.

Team leader: A leader of BPRs' team and a researcher for this research project.

1.9 Organization of The Thesis

The Shipyard is confronted by pressures to change from it Subcontractor and planned for a change program using BPR to revamp its project disbursement process. The deployment of BPR is facing challenges from an internal and external user of the process accompanied by ERTC and need to be reduced diligently. This study is about achieving a drastic improvement in the current problematic area faced by the Shipyard; i.e., project disbursement process, and understanding the underlying factors that relate

to the BPR CSF in overcoming RTC especially from employees concerned with the change program.

In this study, the organization of the thesis is planned through five (5) chapters. The following are description and content of the respective chapter. Chapter One is the Introduction which discusses the orientation of this research which included an overview of the Shipyard, problem statement, research questions, research objective, significance of the research, scope, and limitation of the research, definition of key terms and organization of the thesis.

Chapter Two is a literature review of this research. Section one (1) of this chapter discusses about management tools being used in the research which is BPR, section two (2) discusses about Action Research (AR), in particular Insider Action Research (IAR – is a process that pulls together bundles of competencies, skills, knowledge, and technologies within an organization for creating new organizational capabilities) which is a methodology for this research, section three (3) discusses about the underlying theory related to this research which is Kurt Lewin 3-Steps model of change, and the last section of this chapter discusses about the effect of the change from this research which is RTC particularly from employees affected from the change process (ERTC).

Chapter Three specially discusses the methodology used for this research which covers the design of the research, justification of the methodology, AR cycles in this research, data population, data collection, and data analysis for this research.

Chapter Four discusses the detail of data analysis and findings of this research. It is started with personal demographic on interviewees which covered i) Shipyard employees and ii) Subcontractors personnel, second, BPR process output which included i) time is taken to approve SOP, ii) cost saving associated with project disbursement process, and iii) improvement of the process flow. Lastly, assessment on ERTC which consists of i) driving forces at *"current state"* and *"desired state,"* and ii) restraining forces at *"current state"* and *"desired state."*

Chapter Five, the last chapter of this thesis relates to discussion and conclusion of this research. It is covered recapitulation of this research, discussion of analysis results in terms of i) reducing SOP approval days, ii) saving on the cost associated with project disbursement process, iii) improvement of project disbursement process flow. It also discusses reducing ERTC using BPR CSF's (effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment), other findings from this research, practical and theoretical contributions of this research, suggestion for future research, and lastly conclusions for this research.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter consists of four (4) sections which are i) BPR - as a tool to revamp existing business process flow ii) AR - as a methodology for this research, iii) Kurt Lewin 3–steps model - as underlying theories of proposed planned change adopted throughout this research, and iv) resistance to change – as a reference to managing possible ERTC from this planned change program.

The first section of this chapter is the discussion about BPR which requires a clean slate approach to radically change the existing business process, and make it more effective and efficient in terms of cost, quality, service, and speed to the Shipyard (Hammer & Champy, 1993). BPR being used as management tools to revamp the problematic project disbursement process and accommodate the existing IT-based systems (MARS and SAP) which are already running in Shipyard to support the proposed changes.

BPR project use IT as enabler, though the after effect of project implementation will be focused on human/behavioral (resistance to change) interaction to the new system rather than other factors (such as technicality and high technology of software), as it will bring up to the system acceptance levels by the user and sustainability of the proposed planned change program.

In the second section, we will discuss AR as a methodology (in particularly IAR). AR involves cyclical process and requires emancipatory involvement, collaboration, and cross-functional changes. For this research, it involves team members from DeptA, DeptB, DeptC, DeptD, DeptE, and assisted by DeptF, and DeptG. Planned change program needs careful planning and intervention. AR being selected as guidance to implement this change program and dealt with human/behavioral interaction to the proposed planned change program.

AR may also soften the hard part (the needs to accept and adjust to radically change approach, clean slate process, and implement top-down instruction when deploying BPR) of BPR implementation during this research. Before implementing the proposed change, Force Field Analysis (FFA – a tool to analyze the driving and restraining forces within the change environment and help to reduce any possible resistance that might come from the employees) is used as a tool to measure the driving forces and restraining forces at each stage of change process especially on possible ERTC.

The third part of this chapter is the discussion about the change process as per Lewin 3-Step Model (Burnes, 2004; Cummings, Bridgman, & Brown, 2016; Hossan, 2015; Sarayreh et al., 2013; Schein, 1996). Understanding this unique change process will increase chances to prolong the change effort in terms of sustainability and acceptance to the proposed planned change.

The last part of this chapter discussed about RTC especially ERTC. Deploying BPR without studying the possibilities of ERTC in the Shipyard and how to manage it will jeopardize the whole effort of BPR implementation (Miller et al., 1994).

In summary, this research use BPR as management tools to radically change the existing business process. AR methodology is being used to assist the planned change program particularly on the interaction between human/behavior and drive changes from inside. Lewin 3-Step Model as a theory to understand about planned change program, and RTC to reduce possible ERTC from the proposed change planned.

2.2 Business Process Reengineering

Process improvement tools are diversified. Total Quality Management, Business Process Improvement, Six Sigma, and BPR are among the most well-known. Shin & Jemella (2002) has categorically classified improvement methods into three (3) categories: quick hits, incremental improvement, and reengineering:

1. Quick hits. Typically, low risk, easily achievable efforts that provide immediate payback opportunities (typically within a few months) – Do it Now projects.

2. Incremental improvement. Focuses on closing small performance gaps, delivers small degrees of change that achieve small but meaningful business results – Business Process Improvement, Six Sigma projects.

3. Reengineering. Demonstrates a breakthrough in thinking and aims for dramatic business results. Unlike quick hits and incremental improvement, reengineering is a form of organizational change characterized – BPR projects

Project disbursement process in Shipyard has already existed for the last ten (10) years, even though incremental improvement did take place before, the improvement was

unable to solve the current issues, and a radical approached is needed to revamp the process. Shipyard must plan the proposed change diligently before deploying it as its stakeholder (the subcontractors) suffered from this problematic flow and demand for immediate change.

They are many ways academician defined what is, BPR. The all-inclusive and renowned definition is as introduced by Hammer & Champy (1993), which is:

The fundamental rethinking and radical redesign of business processes to bring about dramatic improvement in critical, contemporary measures of performance, such as cost, quality, service, and speed.

It is a transformational activity that involves a cultural change at across all level in an organization based on overall work processes. BPR, persuade work processes to be redesigned to add value for the sake of customer satisfaction, internally or externally.

The keyword that attracts the usage of BPR concept and implementation in this research is *"radical."* As Shipyard is facing high demand of change business process from stakeholders, as well as changing the work practice (which is already embedded in working culture and habits for so long), radical change will help to break the ice and carefully crafted back (using planned change) to sustain the propose planned change in the pipeline. The next subsection of this chapter discussed about the critical concept of BPR.

2.2.1 The Concept of Business Process Reengineering

The underlying principles of the definition above are that reengineering involves a focus on business processes, it should question the fundamentals, the change should be radical, and the benefits proposed is substantial (Larsen & Myers, 1997). Despite differences in definitions and terminology of BPR in literature, all emphasized that IT-enabler being used in radical redesigning of the business process (Davenport & Short, 1990; Hammer, 1990).

Reengineering projects achieved their results through a radical redesign of targeted work processes. These changes to project disbursement process is complete revisions, and not just adjustments. The overall objective is to implement a redesigned work process that generates breakthrough results in terms of cost, quality, service and time to Shipyard. Reengineering focuses on the processes of delivering services and goods to the customer, and it is not based on the functional specialties associated with the way work is now organized (Anjard, 1996).

BPR requires a commitment not only from the project owner and the associated stakeholders, but it is also highly recommended that the top management from the entire cross-functional department to give their blessing for the project to go through smoothly. BPR must be seen, as a strategic, cross-functional activity that needs to be integrated with other aspects of management if it is to deliver benefits for the organization. It must be coupled with another aspect of good change management practices especially when dealing with resistance issues from the Shipyard employees later. The key requirement is top management, and middle managers have to

understand in detail the current business processes before embarking on a BPR project (O'Neill & Sohal, 1999). The following subsection of this chapter discusses about BPR principles and key elements towards its implementation.

2.2.2 Business Process Reengineering Principle and Key Elements

Hammer (1990) had established seven (7) principles of reengineering as a guideline to streamline the work processes and subsequently achieved significant improvement in cost, quality, service and time. The seven (7) principles are as follows:

1. Organize around outcomes, not tasks.
2. Have those who use the output of the process, perform the process.
3. Subsume information-processing work into the real work that produces the information.
4. Treat geographically dispersed resources as though they were centralized.
5. Link parallel activities instead of just integrating their results.
6. Put the decision point where the work is performed and build control into the process.
7. Capture information once and at the source.

These principles become great references for all organization/practitioner before embarking on their own BPR projects. Although it might be readjusting or restated accordingly to the needs and setting of every respective project accordingly to organization backgrounds, objective and context (Habib, 2013).

Historically, BPR should consist of at least three (3) key elements; i) radical change, ii) the clean slate process, and iii) top-down approach (Amanquah & Adjei, 2013; Bekeli, 2012; Davenport, 1993; Dubey & Bansal, 2013; Edward & Charles, 2013; Ghatari, Shamsi, & Vedadi, 2014; Hengst & Vreede, 2004; Kuhil, 2013; Mohapatra, 2013; Weerakkody, Janssen, & Dwivedi, 2011). The radical change means the goal was large, dramatic improvements, not incremental or marginal improvement. Clean slate process means the changes were radical, where the current processes were ignored or thrown away. The top-down approach means, BPR project typically was driven from the top of the organization using small teams of top managers.

Recent scholars had highlighted on high BPR failure rate (Eftekhari & Akhavan, 2013; Mturi, 2014; Nicholds & Mo, 2015) and some of it rooted inside BPR key elements which traditionally attached to BPR perception from employees. Table 2.1 recently discussed the impact of radical change, clean slate process, and top-down approach to BPR implementation which could end up creating ERTC and risking BPR implementation in the Shipyard. This three (3) key elements can be considered as the hard part of BPR and must be treated diligently.

The radical change required continuous, thorough, detailed plan and understanding towards BPR requirement from appreciating the condition of the problem exist in its *"current state,"* the requirement to change, why the change is needed and continuous support from the beginning to sustaining the change effort. These types of effort require involvement from the most loyal and trusted employees (Habib, 2013) or

Table 2.1
Studies on BPR Key Elements Impacts towards BPR Implementation

Authors/Year	Journal	Title of Study	BPR Key Elements		
			Radical change	Clean slate process	Top-down approach
Ghatari, Shamsi, & Vedadi (2014)	International Journal of Process Management and Benchmarking	*Business Process Reengineering in Public Sector: Ranking the Implementation Barriers*			✓
Amanquah & Adjei (2013)	European Journal of Business and Management	*Business Process Reengineering (BPR) In the Financial Services Sector: A Case Study of Ghana Commercial Bank (GCB) Limited*	✓		✓
Habib (2013)	International Review of Management and Business Research	*Understanding Critical Success and Failure Factors of Business Process Reengineering*	✓		
Mohapatra (2013)	NA	*Business Process Reengineering Automation Decision Points in Process Reengineering*	✓		
Dubey & Bansal (2013)	International Journal of Business & Management	*Critical Success Factors in Implementing BPR in a Government Manufacturing Unit - An Empirical Study*	✓		
Edward & Charles (2013)	Information and Knowledge Management	*The Role of Leadership in Business Process Reengineering "Leaders, Do You Want to Change ?"*	✓		
Kuhil (2013)	NA	*Business Process Reengineering and Organizational Performance: A Case of Ethiopian Public Banking Sector*		✓	✓
Bekeli (2012)	NA	*An Assessment on the Challenges and Achievements of BPR Implementation in the Oromia Civil Service and Good Governance*			✓
Kassahun (2012)	NA	*The Effect of Business Process Reengineering on Public Sector Organization Performance (a Developing Economy Context)*	✓	✓	
Weerakkody, Janssen, & Dwivedi (2011)	Government Information Quarterly	*Transformational Change and Business Process Reengineering (BPR): Lessons from the British and Dutch Public Sector*	✓		

leader from Shipyard or any organization to lead the change internally which are very difficult to get due to high employees turnover rate within the industries (Weerakkody et al., 2011). Failing to identify an appropriate leader to lead the initiative may result in many human-related factors to be neglected and caused negative perception among employees concerned.

Senior and old employees might have the perception that radical change will change their work practices and protected their interest of fear to BPR, by blocking new views or ideas to change from other employees (Amanquah & Adjei, 2013). Employees fears of BPR impact is common during change program and must be overcome positively by relaying continuous positive impact of the incoming proposed planned change program.

Radical change is embedded with high-risk, high return strategy and cannot be adopted in piecemeal or small steps. It requires attachment to a vision of Shipyard's bigger plan such as transformation agenda to be implemented together, and in line with its objective, i.e., survival of the Shipyard (Mohapatra, 2013). Employees perceived radical change as a waste of money spending on new infrastructure, hiring a consultant to assist the change program and find it difficult to accept.

Sometimes, the radical approach is neutralized with incremental or continues change to protect the stability within the organization which gives a different meaning of "radical" itself (Kassahun, 2012) and makes it difficult to change it radically. Employee perceived this as normal effort done in their organization and treated it lightly.

Employees, especially in public organization view radical change as difficult to adopt. It requires the high risk of investment in IT-based system, fully integrated approach be required and need to be learned, multi-faced and complex, and influenced by high failure rate of BPR itself (Dubey & Bansal, 2013; Weerakkody et al., 2011).

The clean slate approach is another key element inside BPR concept. Adaptation to clean slate approach which required radical change ignored the human element principles in business needs. Kassahun (2012) and Kuhil (2013) stressed the argument made by Feller and Bentley that clean slate approach was unrealistic to be applied as it disregarded the human element of a business. Due to its relationship with radical change requirement, the clean slate approach is being questioned on its application in BPR implementation (Kassahun, 2012). Employees perception on the clean slate is negative due to neglection of human aspects inside it.

Employees view clean slate as purposely seen to put aside or disregard existing business process or structure without looking at why it being established and practiced in the first place (Kuhil, 2013). This approach is denying contributions made by employees to the organization. A clean slate is wedded with obliterate (to thrown away or totally removed the existing process or the old way of doing the work and start the new processes from the scratch) concept, and obliterate difficult to implement as most of the organization have invested heavily in their present infrastructure either hard or soft (Kuhil, 2013). Obliterate gives clean slate a more negative perception among employees.

BPR requires clear vision, intensive work, and vision driven which normally brought by a top-down approach. The change is driven from the top and is expected to be amended and followed by those at the bottom. The top-down approach needs intensive and constant top management involvement and support (Bekeli, 2012), it cannot be treated as seasonal activities and do it to fulfill organizational, political needs. It is driven by Top Management and commonly seek a fast solution and high expectation to succeed (Edward & Charles, 2013) but neglect the human factors. Thus, employees are normally forced to follow what has been decided earlier rather than involved in discussions on what needs to be changed (Kuhil, 2013).

Top management is committed to changes, but communications relay to the bottom are always one way and does not react or responds to the needs of change accordingly (Amanquah & Adjei, 2013). It will be more difficult when top management is working at a different location compared to the actual place to implement the change, i.e., Headquarters and operational places. Employees perceived top-down approach as an imposition by the management and may react differently by creating unnecessary ERTC (Amanquah & Adjei, 2013).

Radical change, clean slate process, and top-down approach indeed are BPR key elements since the 1990s. These criteria might help BPR implementation during its first introduction to industries before, but nowadays, the organization is continuously evolving and changing. Employees play a vital role in Shipyard organization. Employees perception of BPR hard part must be overcome and treated accordingly to avoid unnecessary ERTC. These "hard part" of BPR can be neutralized by using effective BPR CSFs' in the Shipyard working environment.

The next subsection discussed about BPR critical success factors for the possible guidance of project implementation.

2.2.3 Business Process Reengineering Critical Success Factor

Successfulness of BPR project varies accordingly to its objective and project setting (Dell'Aquila, 2017; Kuhil, 2013; Lee, 1995). BPR critical success factors become crucial guidelines in deploying BPR project. Every critical success factors looked commons to each other but carried different value in the different business setting. Understanding critical success factors will help to pre-plan the BPR and increased potential success of the projects. Deploying BPR project without detailed planning, cross-functional integration of needs and knowledge, skill, and processes will expose BPR to danger of failure (Huq & Martin, 2006).

Table 2.2 indicated several critical success factors available in the literature as a reference and guidelines for BPR deployment. In Shipyard, top management support, communications, training, empowerment, and involvement in change management become crucial factors to have before deployment of BPR, especially in getting support for the budget on IT-system requirement and assessment on any possible resistance from the affected employees.

Shipyard needed recourse to its corporate culture, constant communication from top management to all level of employees, and drive from inside organization rather than forces from outside consultants or some section of the organization to drive this BPR project. The above-mentioned requirement also supported by recent findings from

BPR implementation in the Banking sectors (Richard & Agwor, 2015). The needs for change must come in externally and most importantly; internally. It has become more crucial when the Shipyard staff become immune with the piecemeal of change programs executed before.

Table 2.2
BPR Critical Success Factors from Various Scholars

Authors/Year	Critical Success Factors
N. Iqbal, Nadeem, & Zaheer (2015)	supportive and egalitarian leadership, implementation of IT, and a collaborative work environment
Rouhani & Nateghi (2015)	engaging manpower, strong and committed leadership, review of reward and thinking system, and effective communications
Nisar, Ahmad, & Ahmad (2014)	change management & culture, management competency & support, organizational structure, BPR process, IT capabilities
Kuhil (2013)	employee involvement and empowerment, role and use of IT, management commitment and competence, the introduction of new working culture (values and attitudes), working environment, government support and management style
Goksoy, Ozsoy, & Vayvay (2012)	top management commitment and support, communication with employees, team working, and reengineering team composition
Jurisch, Ikas, & Palka (2012)	project scope, top level management commitment, resources, project management, and change management
Jamali, Abbaszadeh, Ebrahimi, & Maleki (2011)	top management commitment, IT infrastructure, training and adequate financial resources
Salimifard, Abbaszadeh, & Ghorbanpur (2010)	egalitarian culture, customer involvement, less bureaucratic structure, quality management system, use of information technology, change management, project management, top management commitment and adequate financial resources
Abdolvand, Albadvi, & Ferdowsi (2008)	egalitarian leadership, collaborative working environment, top management commitment, change in management systems, and use of management system
Herzog, Polajnar, & Tonchia (2007)	top management commitment, education and training, a project of BPR, teamwork, information technology support, and employee cooperation
Ahmad, Francis, & Zairi (2007)	teamwork and quality culture, quality management system and satisfactory rewards, change management, less bureaucratic and participative, IT/ IS, project management, and adequate financial resources
Huq & Martin (2006)	top management driving down BPR, participative BPR, enterprise resource planning (ERP) systems driving BPR
He (2005)	management support, improving cross-functional communications, cross-unit project team composition, measurable BPR objectives
Crowe, Fong, Bauman, Zayas-Castro (2002) & Lee (1995)	egalitarian leadership, collaborative working environment, top management commitment, and change in management systems
Huang & Palvia (2001)	change management, and corporate culture
Al-Mashari & Zairi (1999)	change management, management competency and support, organizational structure, project planning and management, and IT infrastructure
McAdam & O'Hare (1998)	top management, employee's commitment, effective communications, teamwork, and empowerment

Even though BPR CSFs were firmly established within practitioners, the criteria are continuously being the subject of studies by scholars as it may not be applied directly at any organization without a detailed understanding of its current organizational problem. Every organization has its legacy, tradition, and corporate culture. Applying BPR at private sector compared to public sector creates different obstacles and need a different approach to adapt (Bekeli, 2012; Habib & Wazir, 2012; Kassahun, 2012; Mlay et al., 2013).

The Shipyard, for example, has been transformed from a local government public entity into becoming a private entity and had gone through many changes of ownership. Though it still carries same workers from public services and absorbing many retired members of the armed forces in the current organization, the working environment is difficult to change with this situation but still can be influenced to be better by using appropriate BPR CSFs.

Table 2.3 presents recent studies of five (5) BPR CSF's that may be used in Shipyards to increase its success rate of implementation and reducing ERTC such as top management support, communication, training, employee empowerment, and employee involvement in change program. Recent studies on the above mention BPR CSF's indicate that these five (5) criteria are still relevant for any BPR implementation project. Despite evolving BPRs' method and business requirement, top management support, communications, training, employee empowerment, and employee involvement are still becoming critical success factors at respective place of research.

Table 2.3
Summary Recent Studies of BPR Critical Success Factors

Authors/year	Journal	Title of Study	BPR CSF				
			Top Management Support	Communications	Training	Employee Involvement	Employee Empowerment
Taher & Krotov (2016)	Journal of Competitiveness Studies	*Business Process Reengineering: Addressing Sources of Resistance and Sabotage Tactics*	✓	✓			
Ismail & Osman (2016)	Sains Humanika	*Empowering to Improve Submission of Claim Process in Local Shipyard, in Malaysia*					✓
N. Iqbal, Nadeem, & Zaheer (2015)	The Business & Management Review	*Impact of BPR Critical Success Factors on Inter-Organizational Functions: An Empirical Study*	✓	✓			
Nisar, Ahmad, & Ahmad (2014)	Asian Journal of Multidisciplinary Studies	*Exploring Factors that Contribute to Success of Business Process Reengineering and Impact of Business Process Reengineering on Organizational Performance: A Qualitative Descriptive Study on Banking Sector at Pakistan*	✓	✓	✓	✓	✓
Hanif, Khan, & Zaheer (2014)	European Journal of Business and Management	*Impact of Organizational Resistance to Change on BPR Implementation: A Case of State Bank of Pakistan*			✓		
Mturi (2014)	NA	*The Effect of Business Process Reengineering on Staff Turnover: A Case Study of KK Security Group of Companies*				✓	✓
Mlay, Zlotnikova, & Watundu (2013)	The African Journal of Information Systems	*A Quantitative Analysis of Business Process Reengineering and Impacting Factors: The Case of Uganda*		✓		✓	
Goksoy, Ozsoy, & Vayvay (2012)	International Journal of Business and Management	*Business Process Reengineering: Strategic Tool for Managing Organizational Change an Application in a Multinational Company*	✓	✓			
Edward & Charles (2013)	Information and Knowledge Management	*The Role of Leadership in Business Process Reengineering "Leaders, Do You Want to Change ?"*	✓				

Table 2.3 (Continued)

Authors/year	Journal	Title of Study	BPR CSF				
			Top Management Support	Communications	Training	Employee Involvement	Employee Empowerment
Masumi (2013)	International Journal of Business and Management	*The CSFs, Quality Governance, BPR Performance and Gaining Competitive Advantage*	✓	✓			
Habib (2013)	International Review of Management and Business Research	*Understanding Critical Success and Failure Factors of Business Process Reengineering*	✓	✓	✓		
Habib & Wazir (2012)	World Journal of Social Sciences	*Role of Education and Training in the Successful Implementation of Business Process Reengineering: A Case of Public Sector of Khyber PakhtunKhwa (KPK)*	✓		✓		
Bekeli (2012)	NA	*An Assessment on the Challenges and Achievements of BPR Implementation in the Oromia Civil Service and Good Governance*	✓		✓	✓	
Kassahun (2012)	NA	*The Effect of Business Process Reengineering on Public Sector Organization Performance (a Developing Economy Context)*				✓	✓
Jamali, Abbaszadeh, Ebrahimi, & Maleki (2011)	International Journal of E-Education, E-Business, E-Management, and E-Learning	*Business Process Reengineering Implementation: Developing a Causal Model of Critical Success Factors*	✓	✓	✓		

Table 2.4 below shows top management support as a BPR CSF. Most organization have many levels of top management and Shipyard is no different. Effective top management support instills positive driving forces towards BPR initiative, enable empowering to employees, creating collaborative working condition among cross-functional department, encourage involvement from employees (Abdolvand et al., 2008; Al-Mashari & Zairi, 2000; Ismail & Osman, 2016; Lee, 1995), increase accountability to employees, reduce the hard part of BPR on top-down approach by changing management styles and most critically increase chances of BPR successful rate.

Table 2.4
Recent Studies of BPR CSF's-Top Management Support

Authors/Year	Type of Organization	Industry	Remarks
Taher & Krotov (2016)	Private	Manufacturing	crucial to enable empowering during BPR implementation, instill positive driving forces among employees towards BPR initiative
N. Iqbal, Nadeem, & Zaheer (2015)	Private	Banking	critical to increasing BPR success and organization efficiency
Nisar, Ahmad, & Ahmad (2014)	NA	Banking	having a significant impact on BPR successful rate
Edward & Charles, (2013)	NA	NA	top management commitment to change their leadership style and empower the employee to implement BPR
Masumi (2013)	NA	Oil and Gas	to create a close relationship with employees during BPR implementation and to enhance performance and increase firm's competitive advantage
Habib (2013)	NA	NA	top management to act as BPR champion and initiator
Goksoy, Ozsoy, & Vayvay (2012)	Private	Manufacturing	weaken chances of BPR process if not gathered or provided
Bekeli (2012)	Public	Governmental	critical to demonstrate commitments by management from all aspects of BPR implementation
Habib & Wazir (2012)	Public	Governmental	critical to increasing BPR successful rate
Jamali, Abbaszadeh, Ebrahimi, & Maleki (2011)	NA	SMEs	play a critical role for success of BPR implementation

In summary, the recent study above on top management support enables the empowerment to take places within BPR implementation and allowed a smooth transition of BPR progress with clear direction on the objectives set to achieve. Top management support instills positive working conditions among employees, fostering trust among management and workers, show high commitment from top management and most importantly increase high success for BPR implementation.

Table 2.5 below shows the impact of communication as a BPR CSF. Communications become vital tools to relay the BPR change requirement throughout all level of employees, and Shipyard can gather effective feedback for the proposed planned change process. Effective communications will create positive working condition and manage possible human-related factors effectively. The positive working condition will foster positive driving forces for BPR implementation and eventually increase potential success of BPR implementation.

Table 2.5
Recent Studies of BPR CSF's-Communications

Authors/Year	Type of Organization	Industry	Remarks
Taher & Krotov (2016)	Private	Manufacturing	essential for BPR success, and organization competitiveness
Nisar, Ahmad, & Ahmad (2014)	NA	Banking	significantly increase impact on BPR successful rate
Mlay, Zlotnikova, & Watundu (2013)	Public	Governmental	a paramount aspect of increasing chances of BPR success
Masumi (2013)	NA	Oil and Gas	communication to create effective ways of business conduct during BPR
Habib (2013)	NA	NA	crucial to accommodate human-related factors in BPR implementation
Goksoy, Ozsoy, & Vayvay (2012)	Private	Manufacturing	provide essential and satisfactory information to all employees before BPR and resulting in reducing ERTC from employees
Jamali, Abbaszadeh, Ebrahimi, & Maleki (2011)	NA	SMEs	play a critical role for success of BPR implementation

In summary, the recent study above on communications enables the BPR objectives to be cascaded down to all level of employees and interested parties to the change effort. Communications dealt with human-related factors problem in BPR implementation by given priorities to the issue which always neglected due to a technicality and financial cost factors in BPR implementation which become more critical during project implementation. Communications help to asses initial assessment on the possibility of ERTC and most importantly increase high success for BPR implementation.

Table 2.6 highlighted the training impact as BPR CSF. BPR brought in change and change carried together ERTC together with BPR implementations. Employees have a fear of BPR impact on them. Therefore training will upgrade employee's skill and knowledge and get them ready for new change requirement. Although training might be expensive depending on skill gap created between system requirement and available employees in Shipyard, effective continuous training to employees may help to reduce negative perception on BPR and increase the success rate of BPR.

In summary, the recent study below on training enables the skill and knowledge gaps created by new way of doing the work to be closed down. Training help to upgrade employee's skill and knowledge in dealing with the new IT-based system and prepared them with the new job scope. Training eliminates the fear of the unknown and breaks the status quo among the senior employees. Training help for smooth acceptance of BPR change process and most importantly increase high success for BPR implementation.

Table 2.6
Recent Studies of BPR CSF's-Training

Authors/Year	Type of Organization	Industry	Remarks
Nisar, Ahmad, & Ahmad (2014)	NA	Banking	having a significant impact on BPR successful rate
Bekeli (2012)	Public	Governmental	crucial to adopt changing work scope, adapting to IT requirements and understanding of BPR requirements
Habib & Wazir (2012)	Public	Governmental	critical to increasing BPR successful rate
Jamali, Abbaszadeh, Ebrahimi, & Maleki (2011)	NA	SMEs	play a critical role for success of BPR implementation
Habib (2013)	NA	NA	crucial to improving skill and knowledge of employees during and after BPR implementation

Table 2.7 shows employee involvement as a BPR CSF. Effective and continuous involvement from employees concerned will help in reducing rejection towards BPR implementation, fostering collaborative working condition among the cross-functional department, increase accountability among employees, given critical information during design stage related to IT implementation and most importantly increase chances to sustain the planned change program. Employee involvement is essential to overcome negative perception towards BPR among the employees and critically increase the success rate of BPR.

In summary, the recent study below on employee involvement fostering the collaborative working environment among employees within the cross-functional department and the interested parties. Employee involvement accelerated change requirement and needs and helped to reduce rejections during BPR implementation. Employee involvement accommodates adapting to new IT system by contributing to the system design and task related to IT skills and knowledge. Most importantly, employee involvement increases high success for BPR implementation.

Table 2.7
Recent Studies of BPR CSF's-Employee Involvement

Authors/Year	Type of Organization	Industry	Remarks
N. Iqbal, Nadeem, & Zaheer (2015)	Private	Banking	critical to foster a collaborative working environment and accommodate changes requirement from BPR process
Nisar, Ahmad, & Ahmad (2014)	NA	Banking	having a significant impact on BPR successful rate
Mturi (2014)	Private	Services	crucial to reduce rejections during BPR implementation process
Mlay, Zlotnikova, & Watundu (2013)	Public	Governmental	paramount aspects of increasing chances of BPR success and used of the system
Bekeli (2012)	Public	Governmental	crucial to increase potential success of BPR objectives
Kassahun (2012)	Public	NA	crucial in BPR designing stages especially tasks related to IT skills and knowledge

Table 2.8 shows employee empowerment as a BPR CSF. Employee empowerment will create a collaborative working environment between cross-functional department and subcontractor. The collaborative working environment will foster and accommodate involvement from all parties to highlight the issues and propose all possible solutions to resolve the problem (Abdolvand et al., 2008; Al-Mashari & Zairi, 2000; Ismail & Osman, 2016; Lee, 1995). When all parties concerned are involved and contributed effectively; constructing the action, planning the action, taking action, and evaluating the action will be successful beyond any doubt (Coghlan & Brannick, 2014; Dworski-Riggs & Langhout, 2010). Employee empowerment is critical to change the negative perception of employees towards BPR implementation and increase the success rate of BPR implementation.

In summary, the recent study below on employee empowerment increase involvement from the employee is on BPR related activities, responsibilities and accountabilities from the employee on empowered tasked given by the management. Empowerment

help employee to adapt to new roles, new job functions, and help to sustain the change requirement within surrounding working environment. Most importantly, employee empowerment increases high success for BPR implementation.

Table 2.8
Recent Studies of BPR CSF's-Employee Empowerment

Authors/Year	Type of Organization	Industry	Remarks
Ismail & Osman (2016)	Private	Shipbuilding/Ship repair	critical to achieving BPR objective, instill self-belonging and accountabilities among employees
Nisar, Ahmad, & Ahmad (2014)	NA	Banking	having a significant impact on BPR successful rate
Kassahun (2012)	Public	NA	crucial to employees to adopt for new roles and responsibilities and sustaining change from BPR process
Mturi (2014)	Private	Services	critical to increase employee's involvement, accountabilities, and increase BPR success

Besides these critical success factors, BPR must be conducted and aligned with the overall Shipyards' strategic plan (Goksoy et al., 2012). These will ensure long-term performance improvement and change rather than short-term results achieved. Implementing BPR projects might be accomplished, however, to sustain the change is a different task and challenge ahead. BPR will introduce a change to Shipyard working environment, and a change always comes with any possible resistance from employees concerned. The affected users and stakeholders of the project disbursement process need to be empowered for them to find a breakthrough solution to solve the problem (Ismail & Osman, 2016).

The next subsection discussed possible BPR implementation steps to be followed in the Shipyard.

2.2.4 Business Process Reengineering Implementation Step

BPR implementation step has been detailed out in great manner by previous scholars such as Davenport & Short (1990), Harrington (1991), Davenport (1993), Fitzgerald & Murphy (1996), Davenport & Short (1998), (Lilian, Uzochukwu, & Francisca, 2015; Natarajan, 2009; Nissen, 1996; Subramoniam, Tounsi, & Krishnankutty, 2009). All these implementation steps gave great emphasis on objective, goals, and processes of respective BPR project which is being set up in earlier project implementation.

Table 2.9 indicates available known BPR implementation steps in Literature as a reference to be followed. Implementation steps are very crucial to be analyzed and adapted to every business has their unique setting, requirements, processes, and problem which need to be changed and overcome. As for Shipyard requirement, the proposed implementation step as per Davenport & Short (1998) are more appropriate especially to cater for the existing IT-based system in Shipyard.

Table 2.9
BPR Implementation Steps by Various Scholars

Authors	Implementation steps
Davenport & Short (1990)	develop the business vision and process objectives, identify the processes to be redesigned, understand and measure the existing process, identify information technology (IT) levels, and design and build a prototype of the new process
Harrington (1991)	organize for improvement, understand the process, streamline, measure and control, and continuous improvement
Davenport (1993)	identifying process for innovation, identifying change levers, developing process visions, understanding and improving existing processes, and designing and prototyping the new process
Fitzgerald & Murphy (1996)	select process to be reengineered, establish process team, understand the current process, develop visions of improved process, identify the actions needed to move the new process, and execute a plan to accomplish these actions
Davenport & Short (1998)	prioritize process objectives, identify the processes to be redesigned, understand & measure/benchmark the process, identify the right IT method, design & build a prototype, test the reengineered process, and implement the changed process

Davenport & Short (1998) as per Table 2.9, introduce seven (7) BPR implementation steps which focusing on prioritizing the process objectives and selecting the right IT methods. The steps are:

1. Prioritize process objectives: there will be various objectives to be achieved by implementing BPR project. Shipyard needs to prioritize the objective set, and it must be in accordance to radically help resolve the current problem. Based on complaints received from the customer, the main objective for Shipyard BPR project was to radically reduce SOP approval days by way of making a change in existing process flow (project disbursement process). To deploy BPR, an IT-based system need to take place, though the cost must be minimized, affordable to all and can be sustained (reduce or control or manage the implementation and post-implementation cost).

2. Identify the processes to be redesigned: i) exhaustive; all Shipyard associate different workflows related to project disbursement process need to be reviewed, for example; a) how Shipyard currently monitor the work progress related to respective SOP, b) how SOP approval verified the document, c) how the supporting document for disbursement being compiled and submitted for payment, and d) which work process can be removed or totally revised, and ii) high-impact; Shipyard need to identify only the most important processes which radically help to achieve BPR project objective and implement it diligently.

3. Understand & measure/benchmark the process: before revamping the process flow, a set of data for the existing process must be recorded (i.e., days took to approve

the SOP), and radical change from that measurement must be achieved in proposing new BPR process. In other terms, Shipyard needs to measure the process before redesigning to avoid repetition and to set a baseline for future targets. Data of SOP approval days from the previous ship repair project (*"current state"*) will be taken and compared to data of SOP approval days using BPR process (*"desired state"*).

4. Identify the right IT method: knowledge about the latest IT technologies or using existing IT system. Shipyard must conduct a Cost Benefit Analysis (CBA- an economic analysis model to select and justify the options for IT-based system selection) either to introduce a new IT-based system or customize from existing IT-based system. As the stakeholders of this project disbursement process also involved subcontractors, their abilities to invest in the IT-based system need to be considered diligently. Should the proposed BPR process requires a new IT-based system, the inability of any parties to invest will reduce their involvement in this change process and exposed it to the potential of failure.

5. Design & build prototype: use IT as a design tool in creating a more generic design of the intended process under study and come out with a system prototype. The blueprint needs to be approved by top management and reviewed diligently by all stakeholders concerned (Aladwani, 2001).

6. Test the reengineered process: the stakeholders involved with the proposed BPR process will perform User Acceptance Test (UAT) to conform with the intended reengineered process. All of the department concerned need to agree and conform to the output of the new process flow. Collaboration and agreements between cross-

functional department during UAT will establish positive Shipyard employees' attitudes towards accepting the new system requirement (Aladwani, 2001).

7. Implement the changed process: After UAT, Shipyard needs to do dry run/pilot test of the new process using actual data from new ship repair projects. Data from dry run/pilot test become a benchmark for the new BPR process to be implemented. If the output meets the objective, the proposed process flow will be launched throughout the organization and implement the change process.

As for BPR implementation in Shipyard, the BPR will be based on IT as an enabler and drive by demand from subcontractor (externally) and Shipyard survival (internally). Proposed step by step recommended by Davenport & Short (1998) for IT implementations and the selection of appropriate software will be deliberately discussed using CBA between team members of the project. IT infrastructure needs heavy capital investment, CBA will clear up this fear by carefully detailing out the benefit for both Shipyard and subcontractor. Shipyard must carefully consider the existing IT-based system which is already running, while heavy investment might hinder collaboration and involvement from subcontractor to be involved in this BPR change project.

Apart from relying on the IT-based system, empowerment concept to the affected stakeholders and subcontractors (user to the system) will be adopted to make the system more effective. For example; subcontractor must play a more effective role in compiling and managing the supporting document for disbursement before submitting

to DeptA for payment (Ismail & Osman, 2016). The next subsection of this chapter discussed the causes of possible failure to BPR project in Shipyard.

2.2.5 Causes of Possible Failure for Business Process Reengineering Project

When first introduced to BPR, the first questions to answer was, what is BPR project success and failure rate ?. Hammer & Champy (1993) stated the success rate of BPR project was 30% while it carried the heavy burden of failure rate by 70%. Discussion on its high failure rate (Eftekhari & Akhavan, 2013; Mturi, 2014; Nicholds & Mo, 2015) shows that no consensus has been reached on why it happened. It is noted that 50% -70% efforts have failed and not that they will fail (Kuhil, 2013). The success rate for BPR implementation in US organization stood at 61.44% while in Europe it is 49.48% (Al-Mashari, Irani, & Zairi, 2001). Thus, Shipyard needs to diligently assess all aspect of planning before and during post project implementation.

Based on the BPR key elements as per laid down by Hammer (1990) and various BPR critical success factors as per Table 2.2, there is no guarantee of BPR success, should assessment on ERTC for BPR implementation being neglected in planning of the project implementation (Bamford & Forrester, 2003; Buckingham & Seng, 2009; Hanif et al., 2014; Lee, 1995; Mehrjerdi, 2010; Miller et al., 1994; Self & Schraeder, 2009; Stanton et al., 1993). The success of BPR does not rest principally on the IT-based system (Buckingham & Seng, 2009). Instead, individual employees perceptions, interactions towards new system and acceptance towards proposed planned change are crucial and vital (Alsudairi, 2013; Bamford & Forrester, 2003; Buckingham & Seng, 2009).

ERTC is being identified as critical failure factors for BPR projects implementation especially from employees directly affected to the proposed planned change process (Lee, 1995; Self & Schraeder, 2009; Stanton et al., 1993). Table 2.10 highlighted recent studies on the impact of RTC towards BPR implementation. All scholars agreed that RTC brings negative impact to BPR implementation and requires greater attention before deploying. Deployment of BPR without considering ERTC will increase the failure rate of BPR and become useless effort towards change program.

The redesigned process through BPR is radical, rather than incremental. Thus the acceptance is hardly predictable and creating resistance (Chen, 2001; Stanton et al., 1993). ERTC is more difficult to measure when there is no sign of obvious resistance noted because for an employee to oppose openly is an act of courage to do it (Self & Schraeder, 2009). Mitra & Mishra (2016) highlighted that employee's attitude towards the new system also needs to be analyzed to ensure successfulness of the project implementation.

Attitude towards learning new technology, openness to change, and innovation must be managed accordingly. Shipyard needs to diligently review its change management, project management, the advanced definition of system requirement (customization system), and user training requirement for this BPR project (Alsudairi, 2013). Change management is vital as it interacts with employee's interaction with the systems such as political issues, the old style of people, low education of employees, and technology-averse people. ERTC towards an IT-based system in BPR will be more difficult to handle when there is lack of motivation & management support from top

Table 2.10
Recent Study of BPR with Resistance to Change Problem

Authors/Year	Journal	Title of Study	Organization	Impact RTC on BPR
Serban & Iorga (2016)	NA	*Employee Resistance to Organizational Change Through Managerial Reengineering*	Private	Negative impact on BPR implementation
Amarantou, Kazakopoulou, Charzoglou, & Chatzoudes (2016)	International Journal of Strategic Innovative Marketing	*Factors Affecting "Resistance to Change": An Explanatory Study Conducted in the Healthcare Sector*	Public	Negative impact on BPR implementation
Hanif, Khan, & Zaheer (2014)	European Journal of Business and Management	*Impact of Organizational Resistance to Change on BPR Implementation: A Case of State Bank of Pakistan*	Public	Negative impact on BPR implementation
Ghatari, Shamsi, & Vedadi (2014)	International Journal of Process Management and Benchmarking	*Business Process Reengineering in Public Sector: Ranking the Implementation Barriers*	Public	Negative impact on BPR implementation
Mturi (2014)	NA	*The Effect of Business Process Reengineering on Staff Turnover: A Case Study of KK Security Group of Companies*	Private	Negative impact on BPR implementation
Habib (2013)	International Review of Management and Business Research	*Understanding Critical Success and Failure Factors of Business Process Reengineering*	NA	Negative impact on BPR implementation
Mlay, Zlotnikova, & Watundu (2013)	The African Journal of Information Systems	*A Quantitative Analysis of Business Process Reengineering and Impacting Factors: The Case of Uganda*	Public	Negative impact on BPR implementation
Eftekhari & Akhavan (2013)	Business Process Management Journal	*Developing a Comprehensive Methodology for BPR projects by Employing IT Tools*	NA	Negative impact on BPR implementation
Kuhil (2013)	NA	*Business Process Reengineering and Organizational Performance: A Case of Ethiopian Public Banking Sector*	Public	Negative impact on BPR implementation
Bekeli (2012)	NA	*An Assessment on the Challenges and Achievements of BPR Implementation in the Oromia Civil Service and Good Governance*	Public	Negative impact on BPR implementation
Sungaua & Msanjila (2012)	Advanced Materials Research	*On IT Enabling of Business Process Reengineering in Organizations*	NA	Negative impact on BPR implementation
Kassahun (2012)	NA	*The Effect of Business Process Reengineering on Public Sector Organization Performance (a Developing Economy Context)*	Public	Negative impact on BPR implementation
Weerakkody, Janssen, & Dwivedi (2011)	Government Information Quarterly	*Transformational Change and Business Process Reengineering (BPR): Lessons from the British and Dutch Public Sector*	Public	Negative impact on BPR implementation

management, lack of capacity in building human-related aspects inside planning of BPR project (Shaheen, 2016).

Several BPR critical success factors such as employee involvement, top management support, employee empowerment, training, and communication are expected to influence Shipyard employee's attitudes positively towards the proposed planned change of project disbursement process if can be managed effectively. The second section of this chapter discussed AR and how it accommodates to implement this change program and dealt with employee's interaction with the proposed planned change program.

2.3 Action Research

AR can be understood as a family of research approaches, strengthen by values and principles associated with research practices. Its origin can be traced back from the work of Kurt Lewin in the mid-1940s (Adelman, 1993; Burnes & Cooke, 2012; Dickens & Watkins, 1999; French, 2009; Holter & Schwartz-Barcott, 1993; Masters, 1995; Zuber-Skerritt, 1993). Lewin's contribution to AR become vital and important (even though he is not the first who use and write about AR), as it is a masterpiece work in AR has to make it respectable inquiry for social scientists (Greenwood & Levin, 2007; McKernan, 1988). Lewin is regularly looking at the link between improvement of practice and production of knowledge in his work. His works have influenced the initiative and understanding of an approach to learning about groups, involvement in groups, interpersonal relations and change through AR. For Lewin, it was not enough to try to explain things; one also had to try to change them, and one

had to involve others in that process of understanding and change (Coghlan & Jacobs, 2005; McKernan, 1988).

AR links between experimentation and application, skill, and resources of people of science and people of action. AR involves a collaborative, cyclical process of constructing a change situation or problem, planning, gathering data, taking action and then fact-finding about the results of that action in order to plan and take further action (Adelman, 1993; Bargal, 2006; Burnes, 2007; Burnes & Cooke, 2012; Lewin, 1946).

Lewin also believed that changing human system involved variables that could not be controlled by traditional research methods developed in the physical sciences. The human system could only be understood and changed if one is involved as a member of the system during the inquiry process itself (White, 2004).

Dickens & Watkins (1999) concluded that AR remains as a floodgate for activities intended to foster change in the group, organizational, and even societal levels. In doing AR, practitioners facing institutional or personal constraints, which vary in their emphasis on different elements of the AR process to address those constraints. Participatory action researchers stress on involvement and empowerment. Teacher action researchers rely on data to transform individual behavior. Organizational action researchers emphasized research and data-driven decision-making. The next subsection highlighted on the varieties of AR definition in literature.

2.3.1 Definition of Action Research

AR has many traditions and knowledge interest such as AR and organizational development/learning, action science, participatory research, participatory evaluation, AR and community psychology, and AR in education (Coghlan & Brannick, 2014; Dick, 2006, 2011; Herr & Anderson, 2014).

According to Herr & Anderson (2014), Mckernan described AR as:

a form of self-reflective problem solving, which enables practitioners to understand better and solve pressing problems in social settings.

Herr & Anderson (2014) also stated that McCutcheon and Jung add up the emphasis on collaboration for the above definition:

Action Research is a systematic inquiry that is collective, collaborative, self-reflective, critical, and undertaken by the participants of the inquiry. The goals of such research are the understanding of practice and the articulation of a rationale or philosophy of practice to improve practice.

Herr & Anderson (2014) also emphasized that Kemmis and McTaggart have added the goal of social justice to the definition of AR in education:

a form of collective, self-reflective inquiry undertaken by participants in social situations to improve the rationality and justice of their own social or educational practices, as well as their understanding of these practices and the situations in which these practices are carried out. Groups of participants can be teachers, students, principals, parents, and other community members-any group with a shared concern. The approach is only Action Research when it is collaborative, though it is important to realize that the Action Research of the group is achieved through the critically examined action of the individual's group members.

While in organizational and professional development, Herr & Anderson (2014) also indicated that Argyris and Schon described the goals and method of AR as:

Action Research takes its cues-its questions, puzzles, and problems-from the perceptions of practitioners within particular, local practice contexts. It bounds episodes of research according to the boundaries of the local context. It builds descriptions and theories within the practice context itself and tests them there through intervention experiments-that is, through experiments that bear the double burden of testing hypotheses and affecting some (putatively) desired change in the situation.

Coghlan & Brannick (2014) stated Reason and Bradbury mentioned AR is a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in participatory worldview.

Coghlan & Brannick (2014), explained a more restricted definition of AR as given by Shani and Pasmore:

an emergent inquiry process in which applied behavioral science knowledge is integrated with existing organizational knowledge and applied to solve real organizational problems. It is simultaneously concerned with bringing about change in organizations, in developing self-help competencies in organizational members and adding to scientific knowledge. Finally, it is an evolving process that is undertaken in a spirit of collaboration and co-inquiry.

Shani and Pasmore, as per Figure 2.1, detailed out four (4) major factors in the AR process:

1. Context: External and internal factors affecting the Shipyard resulting from project implementation. External factors such as the development of Shipyard local vendor, i.e., all the subcontractors concerned in the proposed change of project disbursement process. The impact of this change process to subcontractors and Shipyard, and condition if the problem is not resolved or unchanged. The

contribution of Subcontractors to Shipyard and indirect effect on the contribution of Shipyard to shipbuilding/ship repair industry progress which requires high standard and timely delivery of projects. While internal factors are such as Shipyard organization behavior, history, culture, resistance from employees and overall Shipyard reputation.

2. Quality of relationship: the quality of the relationship between team members (members of the affected department) and team leader is vital. Cross-functional departments requirements and needs may be different at earlier stages; thus, it needs to be managed in harmony, accomplished through trust, concern for others, equality of influence, and common language. If this is not achieved, the proposed change of project disbursement process might meet its stumble block together with ERTC from Shipyard employees.

3. Quality of AR process: The quality of the AR process is grounded in the dual focus on both the inquiry process and the implementation process. The inquiry process between all members to discuss the problem arise in project disbursement process and propose possible solutions. All members must be given empowerment to self-manage the situation and introduce collaborative working condition with the affected department or employees. The collaborative working condition will foster and encourage the involvement of all parties (Abdolvand et al., 2008; Al-Mashari & Zairi, 2000; Ismail & Osman, 2016; Lee, 1995). The implementation of BPR must be agreed and discussed by all members and the affected department and being back up by support from respective HOD.

4. Outcomes of AR effort: The outcome of AR is some level of improvement and the development of self-help and competencies out of the action. The shipyard will have benefited effective involvement from all the employees concerned toward accepting the proposed planned change process.

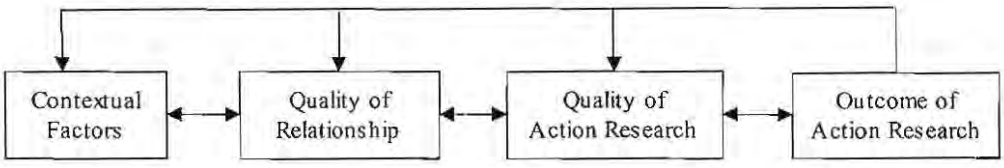


Figure 2.1
Complete Theory of Action Research
Source: Coghlan & Brannick (2014)

In overall, to get the best outcome of AR processes, contextual factors, quality of the relationship, and quality of action research must be managed and aligned between each other at every stage of the research. These three elements are cycled together (as per dual faces arrow between the boxes) to get the desired outcome from this AR processes.

Herr & Anderson (2014) stated that AR is an inquiry that is done by or with insiders to organizations or community, but never to or on them. Historically action researchers were academics or professional researchers who involved research participants in their studies than was typical with traditional research.

Coghlan & Brannick (2014) described AR as a family of related approaches that integrate theory and action with a goal of addressing important organizational, community and social issues together with those who experience them. It is an approach to research with an aim to both taking action or theory about that action as

the action unfolds. Actions of AR are generated through a cyclical process with: i) assessing a situation which is calling for change, ii) planning to take action, iii) taking action and iv) evaluating the action (Coghlan & Brannick, 2014).

Peters & Robinson (1984) mentioned that there is, in fact, no definitive approach to AR, which is not only part of its strength but also part of its problem. AR has not evolved into a unified theory but has resulted, instead, in disparate definitions and characterizations. AR definitions being evolved and redefined accordingly by scholars in respective fields, in this research, the work of Kurt Lewin and his associates in AR and definition of AR by Shani and Pasmore will be used as main references in this thesis writing. The following subsection discussed AR based on Kurt Lewin's works in literature.

2.3.2 Action Research Foundations based on Kurt Lewin's Works

After his death, his former students and associates such as Argyris, Bennis, Benne, Cory, Jacques, Lippitt, Marrow and White continuously contribute to the testing and development of AR based on initial works of Lewin. AR involves a collaborative cyclical process of diagnosing a change situation or a problem, planning, gathering data, taking action, and then fact-finding about the results of that action to plan and take further action (Dickens & Watkins, 1999; Lewin, 1946).

Marrow (1969) indicated that:

theory was always an intrinsic part of Lewin's search for understanding, but theory often evolved and became refined as the data unfolded, rather than being

systematically detailed in advance. Lewin was led by both data and theory, each feeding the other, each guiding the research process.

Argyris, Putnam, & Smith (1985) summarized Lewin's concept of AR as below:

1. It involves experimentations on actual problems in social systems, with the aims to resolve it and help the client system.

2. Consist of the cycle of identifying a problem, planning, acting and evaluating.

3. Required reeducation (altering style of thinking and action that are currently embedded in individuals and groups). Effective reeducation relies heavily on involvements by members in diagnostics, fact-finding, and choices to engage in all types of action.

4. It challenges the status quo from a participative perspective, which is congruent with the requirements of effective re-education.

5. It is intended to contribute simultaneously to basic knowledge in social sciences and social action in everyday life. High standards for developing theory and empirically testing propositions organized by the theory are not to be sacrificed nor is the relation to practice being lost.

Argyris (1993) listed down four (4) core themes of Lewin's work.

1. Lewin integrated theory with practice by framing social sciences as the study of problems of real life, and he connected all problems to theory.

2. Lewin designed research by framing the whole and then differentiating the parts.

3. Lewin produced constructs which could be used to generalize and understand the individual case, particularly through the researcher as intervenor and his notion that one could only understand something when one tried to change it.

4. Lewin was concerned with placing social sciences at the service of democracy, thereby changing the role of those being studied from subjects to clients so that help, if effective, could improve the quality of life and lead to more valid knowledge.

Abraham, Arnold & Oxenberry (1996) discussed five (5) fundamental features of Lewin's AR method as below:

1. AR must be focused on the real problems in organizations and communities.

2. It involves taking action to solve problems or improve the situation.

3. The action is often repeated through a spiral of steps comprised of planning, action, and evaluation.

4. Researchers should collaborate with members of the community or organizations that are the subject of the research.

5. AR is a scientific process that, in addition to solving the identified problems, can provide insights into new knowledge in the related disciplines.

After Lewin's death in 1947, AR became integral to the growth of the theory and practice of organization development and significant methods for organizational research, such as commercial organizations, education, community work and health and social care, nursing and occupational therapy (Coghlan & Brannick, 2014).

2.3.3 Action Research Characteristic

Several broad characteristics can define AR (Coghlan & Brannick, 2014) which differ from the more traditional forms of research:

1. Research in action, rather than research about action: AR uses the systematic method for resolving important social problem together with those who are involved in the issue directly. Those affected departments in the proposed planned change program must send a representative to become AR team members. The aims are to make the action more effective in the buildup to managing any possible ERTC in future. It started with consciously and deliberately i) constructing the action; ii) planning the action; iii) taking the action; iv) evaluating the action for further planning, and so on.

2. A collaborative democratic partnership: In traditional research, members of the system are subjects or objects of the study. In AR, member of the system plays an active role in the cyclical process mentioned above. Besides that, AR also stresses on how people are involved in the inquiry process and collaborated with each other. The team leader plays an important role to ensure all team members and employees involved in the change process to be involved freely and speak their minds without

feeling afraid to anybody. The team leader needs to ensure the objective of the research are upheld and all members are moving forward to achieve the objective agreed upon earlier.

3. A sequence of events and approach to problem-solving: AR involves interactive cycles of gathering and analyzing data, giving feedback to those concerned, planning, taking, and evaluating action and so on. It is a cyclical process towards resolving the problem and applying the scientific method of fact-finding, experimentation to a practical problem, collaboration, and cooperation between researcher and members to the organization system with the objective to resolve the immediate problem.

French (2009), stated that Zuber-Skerritt and Holter & Schwartz-Barcott (1993) described six (6) other characteristics of AR that can be identified in literature; i) collaboration, ii) problem-solving, iii) change in practice, iv) theory development, v) publication of results, and vi) power. The following subsection discusses the type of AR available as a guideline for this research.

2.3.4 Type of Action Research

There are several types of AR methodologies in the literature that might apply to different research setting and problems, especially in Shipyard. Each type differs from each other in terms of the view of the researcher and practitioner in the application of the methodology (Grundy, 1982). Understanding and knowing this specific type of

AR will help Shipyard to further understand and plan for the specific research requirement.

French (2009), explained that Grundy, Carr and Kemmis, and Perry and Zubber-Skerritt define three (3) models of AR; i) technical, ii) practical, and iii) emancipatory. French (2009) and Masters (1995) mentioned that McCutcheon and Jurg discussed three (3) perspective of AR; i) positivist perspective, ii) an interpretivist perspective, and iii) critical science perspective.

They also indicated that McKernan list three (3) types of AR; i) the scientific-technical view of problem-solving, ii) practical-deliberative AR, and iii) critical-emancipatory AR. Furthermore, Holter and Schwartz-Barcott laid down three (3) types of AR; i) a technical collaborative approach, ii) a mutual collaborative approach and iii) an enhancement approach.

Hart and Bond describes four (4) types of AR; i) experimental, ii) organizational, iii) professionalizing and iv) empowering, while Chein, Cook, and Harding suggested that there are four (4) varieties of AR; i) diagnostic, ii) participant, iii) empirical, iv) experimental (French, 2009). As for this thesis, a model introduced by Grundy (1982) and further discussed by Carr and Kemmis (1986) and Perry and Zuber-Skerritt (1991) will be used as a reference as per Table 2.11.

Table 2.11
Type of Action Research and their Main Characteristics

Type of Action Research	Aims	Facilitator's Role	Relationship Between Facilitator's and Participant
Technical	- effectiveness/efficiency of professional practice - professional development	- outside 'expert'	- co-option (of practitioners who depend on facilitator)
Practical	- as (1) above - practitioner's understanding - transformation of their consciousness	- socratic role, encouraging - involvement and self-reflection	- co-operation (process consultancy)
Emancipatory	- as (2) above - participants' emancipation from the dictates of tradition, self-deception, coercion - their critique of bureaucratic systematization - transformation of the organization and of its system	- process moderator (responsibility shared equally by participants)	- collaboration (symmetrical communication)

Source: adapted from Carr and Kemmis (1986)

Further explanation of technical, practical and emancipatory AR are as below:

1. Technical AR: requires the testing of an intervention based on a pre-developed and specified theoretical framework. The research intends to question whether the selected intervention can be applied in a practical setting (Holter & Schwartz-Barcott, 1993). The researcher acts as an outside expert who will assist in the implementation of the intervention. French (2009) indicated that Perry and Zuber-Skerritt suggested that the aims of technical AR should be the effectiveness/efficiency of educational practice and professional development.

2. Practical AR: requires the researcher and practitioner to join together to determine the potential problems, underlying causes, and possible solutions or interventions (Holter & Schwartz-Barcott, 1993). French (2009) indicate that Perry and Zuber-Skerritt mentioned that aims of practical AR include not only those for technical

AR but require more understanding and a transformation of consciousness of the practitioner.

3. Emancipatory AR: requires the involvement of all participants equally with no hierarchy existing between the researcher and the practitioners (free from someone else control and power). The researcher aims to reduce the distance between the actual problems identified by the practitioner and the theory used to explain and resolve the problems. The researcher facilitates the discussion with the practitioners, to identify potential underlying problems and assumptions and so allow the researcher to become a collaborative member of the group (Holter & Schwartz-Barcott, 1993). Perry and Zuber-Skerritt in 1991 suggested that in addition to the requirements for technical and practical AR, emancipatory AR requires that the aims must include the participant's emancipation from the dictates of tradition, self-deception, and coercion, these are also congruent with the philosophy of critical theory (French, 2009).

Zuber-Skerritt & Perry (2002) mentioned, Carr and Kemmis comment that only emancipatory AR is the real AR:

Indeed, only emancipatory Action Research can unequivocally fulfill the minimum requirements for Action Research... ...having strategic action as its subject matter, proceeding through the spiral of planning, acting, observing, reflecting; involving the participant and collaboration in all phases of the research activity.

They stressed that only emancipatory AR exercises all the professionals and organizational competencies identified above, thus a Doctoral Thesis must be emancipatory AR. For this research, emancipatory AR is being followed as a guide

due to both technically and practicality of the research as well as heavy reliance on collaborative work among the cross-functional department, an effort to transform current Shipyard business operation towards more effective cost and time-saving. The next subsection of this chapter discusses the varieties of AR cycle and guideline used for this research.

2.3.5 Action Research Cycles

There are various AR cycles, which had been discussed by various authors to explain AR processes. French & Bell (1999) introduced an interactive cycle of AR organization framework in terms of i) joint action planning, ii) feedback, iii) further data gathering, iv) diagnosis, v) action. Stringer (2013) taught about i) look, ii) think and iii) act, while Lewin (1946) stated that AR cycles comprise of; i) a pre-step and three (3) core activities which are: i) planning, ii) action and iii) fact-finding.

For this thesis, we applied cycle as per Coghlan & Brannick (2014) of doing AR in your own organization. This is in line with working definition of AR used in this thesis adopted from Shani and Pasmore, as well as insider involvement. The cycle comprises of a pre-step: context and purpose and four (4) basic steps; i) constructing, ii) planning action, iii) taking action, and iv) evaluating the action as per Figure 2.2.

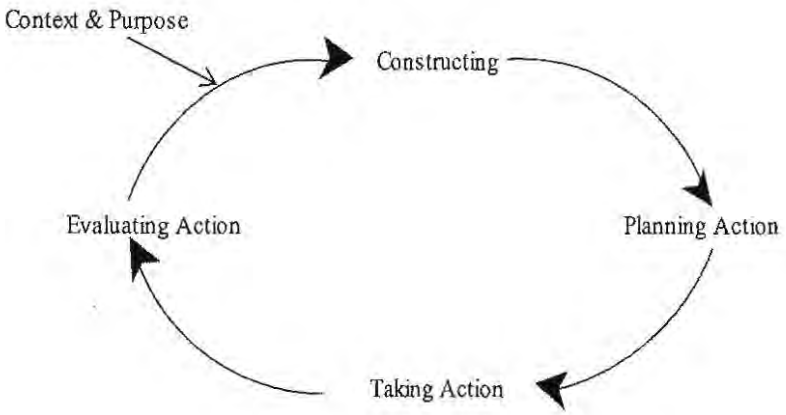


Figure 2.2
The Action Research Cycle
Source: Coghlan & Brannick (2014)

1. Pre-Step: context and purpose: Shipyard needs to assess the needs and urgency to change the project disbursement process and its effect on overall Shipyard operation. The establishment of *"current state"* identified the problem occur in the project disbursement process flow and objectives set at *"desired state"* will set the purpose of proposed planned change and provide focus and synergy for later stages (in respective AR cycles). How this planned change program will help subcontractors, and subsequently helping Shipyard to achieve its overall objective especially in realizing shipbuilding/ship repair industry target as well as serve its main customer in delivering the timely and quality ship repair project. Another critical thought to be taking care of during pre-step stages is the establishment of working collaboration with those who have interest/stakeholders in the process. The smooth working collaboration will give first input on possible ERTC from all Shipyard employees.

2. Constructing: based on the issues in project disbursement process, researcher and members (representative from the affected department in the proposed planned change process) will be discussing on what action to be planned and taken, articulate the practical and theoretical foundations of AR carefully and thoroughly, throughout the process. It must be in a collaborative manner and avoid co-optation. Any changes in the constructing process need to be recorded and articulated clearly to all members with justification and evidence for changes that lead to new shared meaning and purposes to work on.

3. Planning action: understanding of context and purpose of projects, constructing the issues to be resolved and plan the action to implement. The planning stage requires a high level of collaboration between team members to take precedent. Shipyard needs to ensure the planning is diligently done and covered all surface issues in project disbursement process. All other process flow related to project disbursement process, and any possible issues may arise especially ERTC from the employees (Trader-Leigh, 2002). The needs to change came from unhappy subcontractors and must be acknowledged by the Shipyard and all departments concerned (create an internal change requirement). Internal change forces may soften the hard part of BPR and push for better acceptance of proposed change. To deploy BPR requires heavy investment and triggers ERTC. All actions and possible reflections from action must be discussed and registered diligently with team members.

4. Taking action: taking the action base on plan detailed out earlier. Review any intervention needed and did it collaboratively. Step by step action, reflections from

the action, prioritize action to support the BPR objective, and most importantly register all the feedbacks and discuss with team members for specific and effective intervention.

5. Evaluating action: results of the action, either intended or unintended being reviewed either in line as per original construct or not. Either action being taken must match the inappropriate construct manner. The outcome will be forwarded or feed for the next cycle and so on. Ultimately, the cycle will continue as per Figure 2.3.

The detail and progress of this AR cycle will track and feed effective progress for the proposed planned change process to be monitored. Every cycle is feeding the next subsequent cycle either to review unsuccessful cycle or proceed with the next cycle. The most important part of this reflection of the cycle is, it gave team members and Shipyard to do a specific and effective intervention at respective change process especially at critical path of managing ERTC. The next subsequent section discusses IAR that helps create a more effective internal change forces within the Shipyard's proposed planned change process.

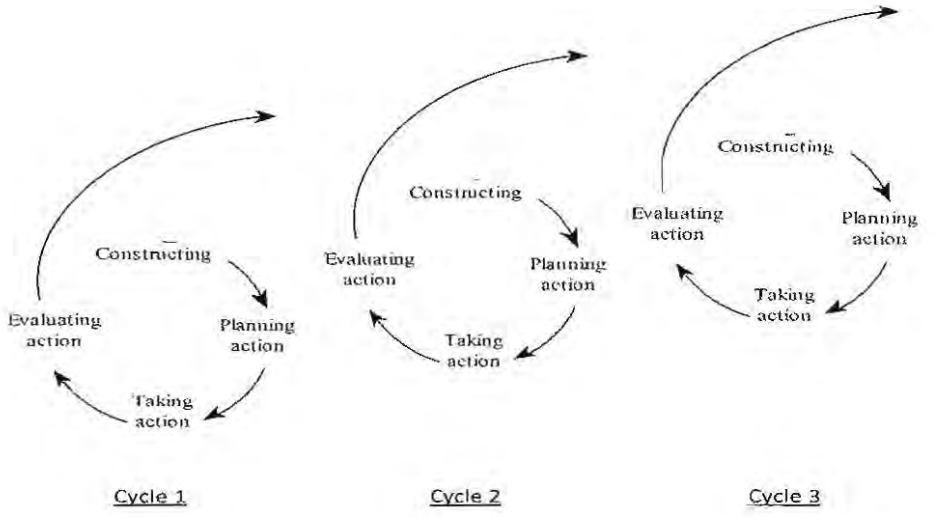


Figure 2.3
Spiral of Action Research Cycles
Source: Coghlan & Brannick (2014)

2.3.6 Insider Action Research

The key element of this part is to learn and understand how IAR differs from the normal AR. Researcher positionality influences it pre-understanding of organization context, access to the data, and role duality. Most importantly, IAR may create effective internal change forces (internal pressure to change from Shipyard employees) propel by the Shipyard's proposed planned change and has high possibility to prolong the change effort.

2.3.6.1 Insider Action Research Definition

AR is a universal term that covers many forms of action-oriented research. One of it is IAR. IAR is a process that pulls together bundles of competencies, skills, knowledge, and technologies within an organization for creating new

organizational capabilities. These elements and conditions push for the effective internal requirement on why a change is needed and its impact if nothing is done. IAR takes place when actions are taken, and then studied as they take place, by members of the organization, i.e., the team members (Coghlan & Brannick, 2001).

When complete members of an organization pursue to query into the working of their organizational system especially at the problematic business process, with an objective to make a change, they can be considered as undertaking IAR (Coghlan & Brannick, 2005). Complete membership differs from those who enter the system organization purposely to do research (consultant/outsider); it is a member who wants to remain in the organization within the desired career path when the research is completed and enjoyed the benefits of the change process. IAR offers dynamic insights into the organizational operating system since internal actors usually have a profound understanding of the organizational context and progression.

Adler & Adler (1987) define IAR as:

executives who undertake an action research project in and on their own organization do so while a complete permanent member, by which is meant, that they want to remain a member within their desired career path when the research is completed.

Coghlan & Brannick (2014) in their latest edition of books "Doing Action Research in Your Own Organization" define IAR as:

conducting Action Research in the organization or community in which one is employed or a member.

Insider Action Researcher (the team members and team leader) need to be aware of how their roles influence how they view their world as well as how others perceive them (perceptions from team members either as their colleagues, researcher, management, or others), and to be able to make choices as to when to step into and out in each of their multiple roles that they hold (Coghlan & Brannick, 2014).

The fundamental meaning of the above definition is, IAR conducted by an internal actor (the team members) which is a complete member to the organization (permanent on-going employee) who have deep/dynamic understanding about the organization. The knowledge of the organization together with rigor in conducting IAR will foster continuous organizational development by examining the existence and create the new one. Acknowledging the responsibility of the above meaning creates more responsibility for strong internal change needs where they need to be optimistic to be involved in the proposed planned change process. External and internal pressure for the requirement to change help to create more understanding why change is needed and increase the acceptance level of change from all parties and accommodate to manage the change obstacle especially from ERTC. The next subsection of this chapter discusses the Insider and Outsider Continuum of AR.

2.3.6.2 Insider and Outsider Continuum

Team members should deal with and manage evolving processes not as interferences, but as fundamental to the research process. The desired to be involved in or lead to radical change involves a high level of hassles and vulnerability, which require a combination of self-reflection with vulnerability, realistic expectation, tolerance,

humility, self-giving, self-containment, and ability to learn (Coghlan & Brannick, 2014).

The positionality of a researcher at every stage of research is very critical as it represents roles and responsibilities that they carry, it means defining the answers of *"who am I"* in relation to researcher and research setting (Herr & Anderson, 2014). The team leader may be insider or outsider to the setting and must build an emancipatory relationship with other participant/team members.

Herr & Anderson (2014) list down six (6) positionality that researcher might be with, during his/her research progress. There are: i) insider (researcher studies own self/ practice), ii) insider in collaboration with other insiders, iii) insider(s) in collaboration with outsider(s), iv) reciprocal collaboration (insider- outsider teams), v) outsider(s) in collaboration with insider(s), and vi) outsider(s) studies insider(s). Table 2.12 further explain the validity criteria, contribution, and tradition of each positionality of researcher.

The positionality of insider and outsider are multilayered, fluid, and can shift from time to time according to the research stage (Thomson & Gunter, 2011). The borders between insider-outsider researchers may not be necessarily clear. Researcher identity such as gender and race remain unchanged, while age, experience, and others are evolving. Time, place, power relationship, and personalities further influence the relationship between researcher and also subject to researched especially involving various cross-functional needs and requirements (Mercer, 2007). The subject of research might be people, organization, processes, and others.

Table 2.12
Continuum and Implications of Positionality

Positionality of Researcher	Validity criteria	Contributes to	Traditions
Insider (researcher studies own self/ practice)	Anderson & Herr (1999), Bullough & Pinnegar (2001), Connelly & Clandinin (1990), Heikkinen, Huttunen, & Syrjala (2007)	Knowledgebase, Improved/critiqued practice, Self/ professional transformation	Practitioner research, Autobiography, Narrative research, Self-study
Insider in collaboration with other insiders	Heron (1996), Saavedra (1996), Gordon (2008)	Knowledgebase, Improved/critiqued practice, Professional/ organizational transformation	Feminist consciousness raising groups, Inquiry/Study groups, Teams
Insider(s) in collaboration with outsider(s)	Anderson & Herr (1999), Heron (1996), Saavedra (1996)	Knowledge base, Improved/critiqued practice, Professional/ organizational transformation	Inquiry/Study groups
Reciprocal collaboration (insider- outsider teams)	Anderson & Herr (1999), Bartunek & Louis (1996)	Knowledgebase, Improved/critiqued practice, Professional/ organizational transformation	Collaborative forms of participatory AR that achieve equitable power relations
Outsider(s) in collaboration with insider(s)	Anderson & Herr (1999), Bradbury & Reason (2001), Heron (1996)	Knowledge base, Improved/critiqued practice, Organizational development/ transformation	Mainstream change agency: consultancies, industrial democracy, organizational learning; Radical change: community empowerment (Paulo Freire)
Outsider(s) studies insider(s)	Campbell & Stanley (1963), Lincoln & Guba (1985)	Knowledge base	University-based, academic research on AR methods or AR projects

Source: adapted from Herr & Anderson (2014)

As for this research, it started with researching at the source or place of issues being raised (project disbursement process), next it moved on to collaborate with other team members (cross-functional departments), later collaborated with outsider (consultant to the IT system) and backed with working up with another insider until the project and its intended objective are achieved. What important here is not where the position of the researcher is, more importantly, is the awareness of researcher and how he reacts

accordingly to that position to manage pre-understanding, access, role duality and organizational politics in doing this research.

Several criteria are distinguishing IAR and Outsider Action Research. These criteria become more important when the research is done in our own organization. Coghlan & Brannick (2014) discuss three (3) dimensions of those differences:

1. Pre-understanding: referred to team members' knowledge, insight, and experience on insider researcher towards Shipyard organizational dynamics (culture and lived experience of the organization). Having implicit knowledge of Shipyard organization culture can differentiate between what the researcher thinks they know and what they do not know that they do not know. The major challenge is, to be honest with what data and information team members have at that time. It pushes individual to make a choice of honesty and integrity.

2. Role duality: it is very difficult to be in two places at one time, that the role dilemma is facing team members (role as a person, and a researcher). Being insider researcher to the Shipyard organization which has various membership role, clash with loyalty tugs, behavioral claims, identification dilemmas, honesty, and others.

3. Managing organizational politics: team members need to wisely engage with organizational working politics especially when dealing with top management which may oppose to the idea of the proposed planned change process, a respective cross-functional department which may think about different solution or resistance, and ERTC from all level of Shipyard's employees.

The dynamic synergies between the BPR proposed planned change process and the emancipatory concept of AR, will complement each other in setting up step by step action, priorities of action, reflection from the action and gave better view and insight towards acceptance of change program in revamping project disbursement process in Shipyard. The following section of this chapter is part three (3), which discuss the underlying theories of the change process for this research.

2.4 Underlying Theories

Change is unavoidable, Shipyard must fight for survival to ensure its still relevant and can contribute to achieving shipbuilding/ship repair industry objective. Recent economic situations have tested most of shipyards sustainability and competitiveness. Shipyard cannot be living based on past successes where the Shipyard must dare to challenge its status quo. Furthermore with pressure to change from internal and external stakeholders of the Shipyard, a more drastic approach to change is needed (Appelbaum et al., 2015).

Before any change can take place, Shipyard needs to have a sense of urgency for the proposed change. A problematic project disbursement process pressured by an external stakeholder who is Subcontractors, and intensity from the internal side of Shipyard to make amend, have led to the introduction of the proposed planned change process through reengineering in Shipyard working environment (Kotter, 2011).

Deploying BPR approach to revamp project disbursement process required proper proposed planned change process to take place. To understand how the change

happened, Kurt Lewin's 3-Steps Model of change is used as a reference and guideline for this research.

The BPR proposed planned change program require a detailed understanding of the existing problematic process to be revamped. Careful implementation and effective intervention are required to see either proposed planned change process can succeed, sustained, and eliminate the issue arise. Understanding the theory of the change process, how it happened, how to manage it, how to plan it, will give great insight on what Shipyard should expect and wait to happen. The next subsection of this chapter discusses unfreezing, change, and refreezing concept introduced by Kurt Lewin.

2.4.1 Kurt Lewin 3-Steps Model of Change

Kurt Lewin (1947) emphasized that "motivation for change must be generated/created before change can occur" (Burgess, 2014; Goksoy et al., 2012; Guimaraes & Paranjape, 2013; Lilian et al., 2015; Mitchell, 2013; Mturi, 2014; Robbins & Coulter, 2012), and once the need for change has been identified, unfreezing the change stems can begin. Lewin argued that a successful change project involve three (3) steps; unfreezing, change, and refreezing.

Within a change process, there is a dynamic balance of forces, i.e., i) driving forces – forces that accommodate change by way of pushing Shipyard employees into the desired direction, and ii) restraining forces – forces that hamper change by way of pushing Shipyard employees into undesired direction. These forces need to be

analyzed and managed to shift towards the direction of Shipyard's proposed planned change process in project disbursement process (Kritsonis, 2005).

Figure 2.4 served as a cornerstone in Shipyard to understand about unfreezing, change, refreezing, and managing the change forces (driving forces and restraining forces) towards BPR proposed planned change process (Burnes, 2004; Hendry, 1996; Hossan, 2015).

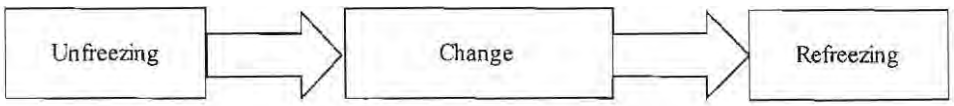


Figure 2.4
Kurt Lewin 3-Steps Model of Change
Source: Kurt Lewin (1947)

2.4.1.1 Unfreezing

Human behavior was based on a quasi-stationary equilibrium sustained by a complex field of driving and restraining forces. To put new behavior in place and successfully adopted it, the equilibrium needs to be destabilized (unfrozen) before old behavior can be discarded (unlearnt). Expanding on Lewin's ideas, Schein (1996) stated that the key to unfreezing '*... was to recognize that change, whether at the individual or group level, was a profound psychological dynamic process*'.

Schein (1996) further clarified three (3) processes which are needed to achieve unfreezing; i) disconfirmation of the validity of the status quo, ii) the induction of guilt or survival anxiety, and iii) creating psychological safety. Until sufficient psychological safety is created, disconfirming information will be denied, and no

change will take place. Those parties involved must feel safe from loss and humiliation before they can accept the new information and reject old behaviors.

At this stage, the tensions of employee's resistance and inherited working habits need to be unfrozen from the existing equilibrium. To unfreezing from the existing equilibrium, positive driving forces need to be increased, and negative restraining forces need to be neutralized from existing status quo. A balanced combination of this forces must be push towards acceptance of proposed planned change process (Kritsonis, 2005).

Unfreezing the status quo at Shipyard can be achieved through these practical steps as below:

1. Determine what needs to change: as per pressured by subcontractor requirement and to protect Shipyard capabilities towards shipbuilding/ship repair industry objective, project disbursement process being identified as business process need to be revamped which requires impact from change plan and commitment from all parties involved. Before committing to any change process, a detailed analysis of change requirement guided by the change objective set earlier have to be established and agreed upon (Burgess, 2014; Goksoy et al., 2012; Guimaraes & Paranjape, 2013; Lilian et al., 2015; Mitchell, 2013; Mturi, 2014; Robbins & Coulter, 2012).

2. Ensure there is strong support from top management: proposed planned change process must get the Shipyard top management support or buy-in to protect its

implementation and plan for effective intervention. Getting approval for project budget, managing conflicts between HOD from the respective cross-functional department, feedbacks from all level of employees and people involved in the change process and information which did not go through the team members, as well as continuous assessment on change forces (FFA) and guideline when possible to reduce ERTC. The objective of the proposed planned change process must also be in line with overall Shipyard's transformation objective, vision, and mission. Change objectives must in line with overall organization mission to get the effective and continuous support from top management (Garg & Agarwal, 2014; N. Iqbal et al., 2015; Maleki & Beikkhakhian, 2011; Mturi, 2014).

3. Create the need for change: Shipyard needs to articulate and communicate to all people involved in the change (employees and the subcontractors) why the proposed planned change process needs to be implemented. How project disbursement process can influence the productivity of Shipyard in its overall performance, and requirement of shipbuilding/ship repair industry objective to meet. Nevertheless, internally induced awareness from all employees concerned to shake the inherited status quo in working condition will surface new working habits to suit with criteria within transformation requirement. To breaks the status quo, new working habits which are in line with the change objective must take place in the new working environment (D'Ortenzio, 2012; Goksoy et al., 2012; Habib, 2013; Harvey, 2014; Mohapatra, 2013; Mturi, 2014).

4. Manage and understand the doubts and concerns: shaking the status quo will create major doubts and concern to all employees involved in the proposed planned

change process. In managing this situation, Shipyard must be opened and transparent to all employees. The importance of increasing overall productivity, achieving shipbuilding/ship repair industry objective, transformation agenda, and sustainability to remain relevant in the industry is a bigger target to achieve rather than individual or departmental agenda (Mohapatra, 2013; Pieterse, Caniëls, & Homan, 2012).

2.4.1.2 Change

Step 2: change: unfreezing is not an end in itself; it '*...creates motivation to learn but does not necessarily control or predict the direction*' (Schein, 1996). Deploying planned change is very difficult due to forces concerned, one should identify and evaluate all the available options, on a trial basis (Lewin, 1947). Constantly trying and evaluating all the options will promote learning through AR, which is interactive and enables group and individuals to move forward to a more acceptable set of behavior.

At this stage, the revamp process flow needs to be moved or stayed at new equilibrium (*"desired state"*). Shipyard needs to persuade and convince all employees concerned to project disbursement process that the existing business flow is no longer effective for Shipyard operation and may jeopardize delivery of ship repair project in the future. Shipyard needs to introduce the new and interesting job scope post-event after change process and relay all relevant information regarding training, new job function, reallocation of the job, and others openly. The changing idea at this stage must be connected to all level of management and group of people that can influence all level of employees affected by the change process (Kritsonis, 2005).

Change at Shipyard can be achieved through these practical steps as below:

1. Communicate often: discuss the need for change formally and informally, throughout the planning and project implementation. Set up a small group or team members which represent all department concerned to discuss and talk about this change openly, and frequently. The change beyond any doubts must be communicated not only by people concerned to proposed planned change process but also by the Shipyard management. Detail out the benefits of changes to all Shipyard's employees and be prepared for any setback that might come especially ERTC (D'Ortenzio, 2012; Harvey, 2014; Heathfield, 2016).

2. Dispel rumors: Shipyard must be open for queries and discussions from all employees concerned, answer all the burning questions, make follow up and responds to the problems immediately. The need for change must be clear and explained at all level of employees , and the survival of the organization depends on the success of this change effort (Goksoy et al., 2012; Harvey, 2014; Mutihac, 2010).

3. Empower action: Shipyard must first give empowerment to those directly involved in project disbursement process either external or internal. Empowerment will foster and give the opportunity to create a collaborative working environment between all parties or respective cross-functional department. After that, all members can manage and discuss issues highlighted and propose possible available solutions. Eventually, all these steps will encourage a more effective involvement from all parties concerned. The next subsequent effect will be how their buy-in on

this proposed planned change process can influence indirectly related employees to this project disbursement process as a driving forces to the change plan (Abdolvand et al., 2008; Al-Mashari & Zairi, 2000; Ismail & Osman, 2016; Lee, 1995).

4. Involve people in the process: Shipyard must get all the employees concerned involved in this proposed planned change process. Team members headed by middle managers can lead and head the team, empower the team thus fostering collaborative working environment between the cross-functional department, and naturally will encourage involvement from all employees. Get all the employees concerned motivated with change progress by way of celebrating step by step project disbursement process revamping progress and frequent status project updates as well as motivation to all involved (Abdolvand et al., 2008; Al-Mashari & Zairi, 2000; Altamony, Tarhini, Al-Salti, Gharaibeh, & Elyas, 2016; Georgalis et al., 2015; Ismail & Osman, 2016; Lee, 1995; Mosadeghrad & Ansarian, 2014; Peccei, Giangreco, & Sebastiano, 2011).

2.4.1.3 Refreezing

Step 3: refreezing: Shipyard must stabilize the change working condition at a new quasi-stationary equilibrium so that the new behaviors are safe from deterioration especially ERTC. New behavior must be, as some stage, congruent with the rest of the behavior, personality and environment of the learner or it will simply lead to a new round of disconfirmation or back to original status quo (Schein, 1996).

At this stage, policies and procedures must be in place for new change to be sustained within Shipyard working environment. Should refreezing be ignored, ERTC slowly will bring back the status quo and kill the revamping process laid earlier (Kritsonis, 2005).

Refreezing at Shipyard can be achieved through these practical steps:

1. Anchor the changes into the culture: Shipyard needs to analyze driving forces and restraining forces in this proposed planned change process for project disbursement process. The restraining forces need to be reduced by way of shifting to support driving forces through daily work culture. Cultivate these changes in culture through another related program such as career development, transformation agenda, brainstorming session, and effective communications (Palmer, 2004).

2. Develop ways to sustain the change: Shipyard needs to continue giving training to employees and subcontractor concerned about the new IT-based system (which relate to project disbursement process) and create a feedback system to manage any issue or queries regarding the new system, such as effective Help Desk. Continuous training and effective help desk will accommodate in sustaining the change and adopting new ways of work inside Shipyard organizational structure (Maheswar & Javalagi, 2014; Mehrjerdi, 2010).

3. Provide support and training: Shipyard must ensure all employees concerned and stakeholders to project disbursement process must be given full support not only during the pre-change process but also a post-change process. Ensure all employees

are informed and be supported when necessary from time to time. New IT-based system does require intensive training, training will come in with expensive cost when involving an external consultant, and training are difficult to accept and follow due to age factors among employees (Guimaraes & Paranjape, 2013; Hanif et al., 2014; Maheswar & Javalagi, 2014).

4. Celebrate the breakthrough: to create a positive attitude towards change process and a feel of success; Shipyard needs to acknowledge and celebrate the breakthrough of respective step by step process, and not just waiting at the final stage of the change process. Celebrating the breakthrough will have kept all the Shipyard employees informed, creating positive excitement, and knowing the upcoming change outcome to them (Mohapatra, 2013).

Burnes (2004), indicated that the 3-Step Model must be integrated with other three (3) elements of Lewin's Planned to change (i.e., Field Theory, Group Dynamics and Action Research) to form an integrated approach of effective change. However, since the proposed planned change process are isolated to a specific business process which is project disbursement process, exploring on Lewin 3-Steps Model alone is still relevant to achieve the intended objective (Hossan, 2015).

The next subsection of this chapter discussed planned change approaches, which become the guideline for overall effort to revamp project disbursement process in Shipyard as well as managing the potential ERTC later.

2.4.2 Planned Change Approaches

There are three (3) principal change management model which can be followed by Shipyard which is i) planned change, ii) emergent change, and iii) contingency change (Macredie, Sandom, & Paul, 1998).

Schein (1996), mentioned that the notion of a "planned change workshop" come to a picture when he and Richard Beckhard designed a program on "planned change" for the National Training Lab. They further stressed on the outcome of this planned change program as; i) to study about managing change, one must be involved in real project and ii) enthusiasm to hinder the difficulties in managing change is, the progress must be reported continuously at every stage.

The roots of planned change can be seen in the original work of Kurt Lewin via AR and Kurt Lewin 3-Steps Model of change (Bamford & Forrester, 2003; Burnes, 1996). AR view the change as a process that moves from fixed state to another series of pre-planned step as per shown in AR cycle in Figure 2.3, while 3-steps model in Figure 2.4 described the pre-planned movement from unfreezing, change, and refreezing by utilizing values, attitudes, and skills previously held towards the currently *"desired state"* (Bamford & Forrester, 2003).

Sghari (2016) highlighted planned change as per mentioned by Levy as a process whereby internal and external expert is helping the organization to cope with their problem (project disbursement process issues), plan, and implement changes. Burnes (2009) stressing on French and Bell definition of planned change as a process involving practicality, hard work, organized, with an objective and valid knowledge

about Shipyard dynamics and how to change it. Valid knowledge comes from the behavioral sciences such as psychology, social psychology, sociology, anthropology, systems theory, and the practice of management. Mitchell (2013) stated that Roussel defined planned change as a focused, intended, and cooperative effort to bring about Shipyard improvement with the help of a change agent (team members). Coghlan & Brannick, (2014) discussed The Process of Change (proposed planned change process) as per Beckhard's framework in Figure 2.5.

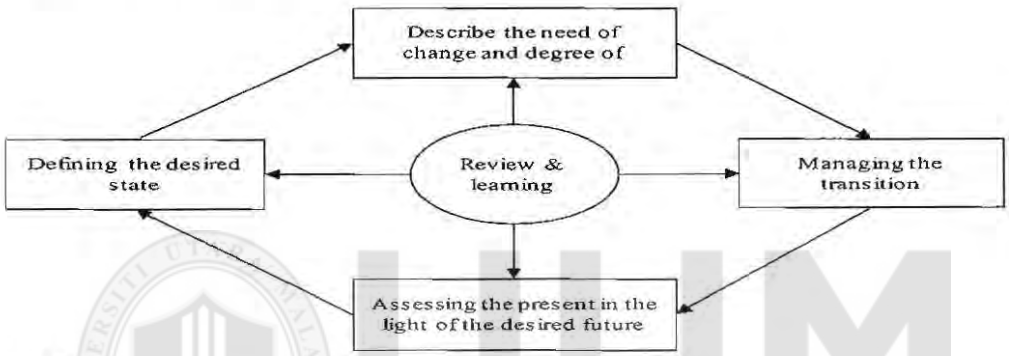


Figure 2.5
The Process of Change
Source: Coghlan & Brannick (2014)

1. Determining the need of change: Shipyard being pressured by external factors to make a change on its problem on project disbursement process. Doing nothing on this requirement will jeopardize Shipyard's commitments towards shipbuilding/ship repair industry objective when its productivity could be reduced because of delayed disbursement to its subcontractors. The needs for change must be beneficial for all parties related to project disbursement process (Burgess, 2014; Goksoy et al., 2012; Guimaraes & Paranjape, 2013; Lilian et al., 2015; Mitchell, 2013; Mturi, 2014; Robbins & Coulter, 2012). Making a change in Shipyard requires heavy investment in time and cost, and it will become more difficult if no budget is provided and approved for this plan (Alsudairi, 2013; Guimaraes &

Paranjape, 2013). Shipyard must review all of the possible alternative available to resolve the issues. The objective of the proposed planned change might be the same, but ways to achieve it can vary differently from each other due to time, cost, and commitment to invest. Thus, a properly planned change needed to be crafted to avoid future disappointment.

2. Defining the desired state: based on the current problem in project disbursement process, a smooth, direct process, systematic, reliable, and control condition are required within project disbursement process flow. Reasons for delays in approval of SOP must be analyzed and proposed for revamping. To revamp the process flow, these questions of how Shipyard can practically do it considering budget constraints and require involvement from all employee concerned as well as the subcontractors involved and also how to make tedious compilation, verification, and approval of supporting document for project disbursement become easier, more effective, reduce cost and time for all parties concerned need to be addressed (Jurisch et al., 2012; Pei & Cha, 2015).

3. Assessing the present in the light of desired future: Shipyard needs to pre-plan what needs to be done to reach the *"desired state"* while in the present state. Does current IT-based system can support the change requirement and whether Shipyard top management will buy-in with the change idea and approved the required IT budget (Garg & Agarwal, 2014; N. Iqbal et al., 2015; Maleki & Beikkhakhian, 2011; Mturi, 2014). What is the new job scope will be for the affected employee involved in this proposed planned change process, are the employees still relevant to the

process? What may be the potential ERTC which came from all employees concerned?

4. Managing the transition: Shipyard needs to manage the transition towards the change by setting up its strategic and operational plan, and commitment from all parties involved (Mohapatra, 2013; Taher, Krotov, & Silva, 2015). Proposed planned change process takes time to implement and adopt, requires effective intervention on specific issues, prompt response, and feedback, and most importantly, accepted as new habits in employees working culture.

In practicality, Beckhard's model in Figure 2.5 interacted continuously with the spiral of AR cycle as per Figure 2.3 and been illustrated as per Figure 2.6.

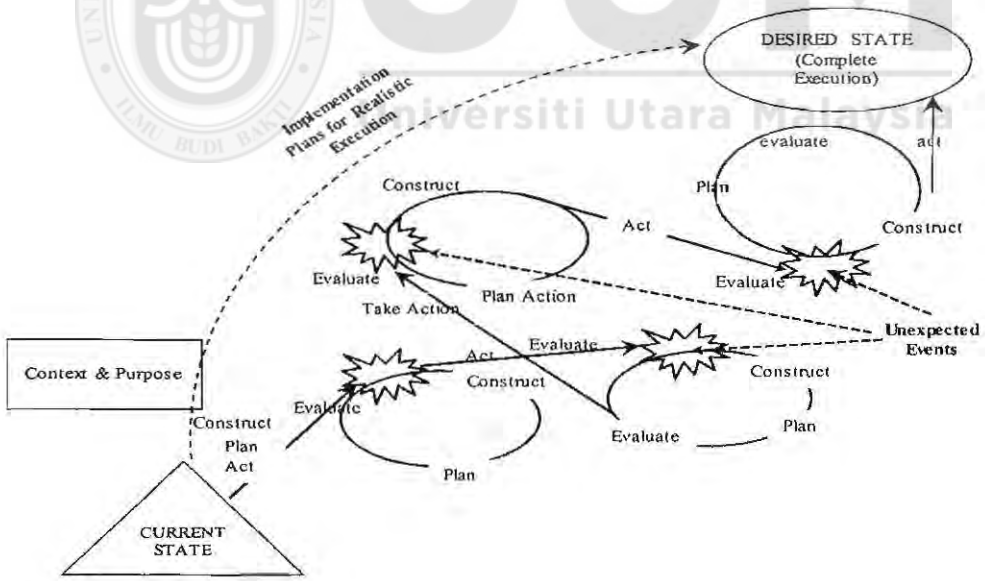


Figure 2.6
Planned Change Through Action Research
Source: Coghlan & Brannick (2014), from the work of Arthur Freedman with gratitude

1. Context and purpose: based on the context and purpose surrounding the Shipyard working environment, the needs for change such as influence of prompt disbursement to subcontractors, Shipyard image as good paymaster, timely and quality delivery for all Shipyard projects, and shipbuilding/ship repair industry objective to be achieved arise and created its own urgencies. The urgencies will help Shipyard to establish its *"current state"* and identified any issues in project disbursement process to be resolved. The objectives set at *"desired state"* are propelled through the proposed planned change process. Before deploying BPR, the condition in *"current state"* for project disbursement process need to be analyzed and ways to move to the *"desired state"* need to be list down. The most important element here is whether the desire to change is good enough to change the status quo to the *"desired state"* (Burgess, 2014; Goksoy et al., 2012; Guimaraes & Paranjape, 2013; Lilian et al., 2015; Mitchell, 2013; Mturi, 2014; Robbins & Coulter, 2012).

2. Current state: Complaints from Shipyard subcontractors arose when the current project disbursement process is no longer effective and created a problem for them. Shipyard may not be aware of this condition as the current practices represent the status quo within Shipyard working environment. These conditions gave an opportunity for the organization to review its current practices, remove redundancies in the process flow, and make it more effective in time and cost (Jurisch et al., 2012; Pei & Cha, 2015). The difficulties towards the *"desired state"* are what steps need to be taken and deployed and reached its objective.

3. AR interactive cycles: Constructing the action, planning the action, taking the action, and evaluate the action taken will be performed at every stage of the change process and every step of the proposed planned change process involving all the team members in Shipyard. These interactive cycles will continuously be spinning and feeding the next cycle until all the team members found the solution for respective stumbling block of every steps and occasion in project disbursement process. The cycles require collaborative working condition between each team members from cross-functional department to fostering effective involvement, communication, and positive perceived benefit of change to all employees concerned (Abdolvand et al., 2008; Al-Mashari & Zairi, 2000; Ismail & Osman, 2016; Lee, 1995; Peccei & Giangreco, 2005; Peccei et al., 2011). The interactive cycle will bring and push the action taken to the *"desired state."*

4. Desired state: A state where Shipyard is aiming to be and resolve all the issues of project disbursement process. Apart from reaching this state, the next action plan will be to sustain the change and move forward. Sustaining the change inside project disbursement process will be more effective when all the stakeholders are given empowerment to resolve the issues and propose the solution (Abdolvand et al., 2008; Al-Mashari & Zairi, 2000; Ismail & Osman, 2016; Lee, 1995; Mohapatra, 2013; Taher et al., 2015). Empowerment will encourage acceptance of change towards cultivating it inside the Shipyard working culture.

Moving from *"current state"* to *"desired state,"* a planned change approach of BPR will be deployed to revamp the project disbursement process. Before making amendments to the existing process flow, an assessment of restraining and driving

forces need to be engaged. Assessing these conditions, FFA will be used to determine factors driving and restraining the proposed planned change in project disbursement process for Shipyard. A five (5) step guidelines to use FFA as per listed below:

1. Define the change issue and preferred direction of change: bringing the change in Shipyard especially using BPR as approach will face tough issues on costing especially IT-based system requirements (Alsudairi, 2013; Guimaraes & Paranjape, 2013; Kim et al., 2015) as well as facing many possible ERTC from the employees concerned (Amarantou et al., 2016; Georgalis et al., 2015; Maheswar & Javalagi, 2014; Taher & Krotov, 2016; Wittig, 2012). Apart from these two main factors, the output of change must be beneficial to all parties concerned in Shipyard and can be sustained and adopted throughout the working culture.

2. Detail out political forces driving for change and restraining for change in opposition to one and another: change process in Shipyard requires top management support with effective intervention when facing stumbling block during collaboration with cross-functional department, requirement for IT-based system budget, and buy in support from other upper management level (Garg & Agarwal, 2014; N. Iqbal et al., 2015; Maleki & Beikkhakhian, 2011; Mturi, 2014). The hard part or BPR approach (radical change, clean slate process, top-down approach) need to be softened using AR and BPR key elements to influence ERTC from restraining to becoming driving forces. Employees concerned need to be approached, involved, communicated, and explained the change planned. Shipyard must make the employees ready for change, updated, and not wander around

seeking for an explanation. All issues raised for clarification need to be attended to in timely and effective manners (effort from team members/change agent).

3. Give the weighting point for all the forces: team members need to list down all restraining and driving forces that might occur during and after the proposed planned change. All criteria will be assigned with weighting point, elaborated and discussed between each other, and approved by top management to set a priority to be tackled first during the proposed planned change progress.

4. Zoom on restraining forces and identified forces that can be worked on and the one that needs extra help to be settled: Shipyard needs to put extra effort into restraining forces items. List all the restraining forces that may happen, and identify items that can be influenced, and control towards driving forces. Team members need to elaborate and brainstorm all possible criteria. Top management support, budget constraints, job insecurity, new IT skill training, adaptation to the new job description and work scope, commitment, and involvement from all parties are essential to be influenced and managed in the Shipyard proposed planned change process.

5. Established plan to reduce this restraining force. Once the restraining forces are reduced, driving forces become stronger: Plan step by step needed to be deployed to shift the restraining to driving forces especially items related to ERTC. ERTC cannot be eliminated but can be reduced towards positive impact. When restraining forces become neutral or reduced, eventually it helps driving forces to become stronger and influence the output of the proposed planned change process. Effective

top management intervention, continuous training to all parties concerned, effective communications, effective help desk support, empowerment to all stakeholders concerned, and effective involvement from all parties become vital in Shipyard's proposed planned change process.

The next section of this chapter discussed the last part of literature for this research, i.e., RTC. ERTC is embedded in any proposed planned change, and it cannot be eliminated or removed, thus knowing how change is evolved, and used of BPR key elements and AR emancipatory approach will help to reframe the ERTC from restraining forces to become driving forces in this research.

2.5 Resistance to change

Manuela & Clara (2003) stressed on the previous scholar such as Lawrence, Maurer, Strebel, Wadell, and Sohal who pointed out the reason of failure for many change initiatives rooted at RTC. RTC is difficult to anticipate but must be reduced as it created cost and possible delays in planned change. Resistance can be presented as an individual or collective negative attitudes and behaviors. Superior care needs to be laid down on the complication of employee responds to change process (Georgalis et al., 2015).

The most difficult part of planned change program is not to do the change, but to overcome the ERTC from the affected employee and its surrounding. Shipyard needs to learn the general idea or reason on what factors influence RTC and how to overturn it to help and achieved the proposed planned change objective. In this situation,

Shipyard using FFA as a tool to analyze the factors that drive and resist the changes in Shipyard working conditions (Burnes, 2004; Burnes & Cooke, 2013). Example of this worksheet application as per Appendix D.

The next following subsection will explore the varieties of definition and means of RTC. Understanding in depth varieties of RTC definition will help Shipyard to increase any chances to manage possible ERTC exist from the proposed planned change of project disbursement process.

2.5.1 Defining Resistance

Quoted on previous scholar, resistance may be shown by decreasing of output, disagreeing or anger, works stoppages, doubtful on proposed change, forces of individual apathy, political alliances, departmental and individual venture on status quo, prevailing cultures and norms, and absence of drive for behavioral change (Miller et al., 1994).

Resistance also can be understood as an effort by an employee to protect the status quo and evading any changes to its normal working task or processes (Amarantou et al., 2016). Piderit (2000) mentioned that Lewin's definitions of resistance as:

a restraining force is moving in the direction of maintaining the status quo, giving rise to the force field theory.

Manuela & Clara (2003) forwarded Ansoff definition of resistance as condition or efforts that affect the change process, deferring or decelerating its launching, hampering its deployment, and accumulating its cost. Atkinson (2005) described resistance as an expression of various moods such as anxiety and strain, though can be experienced inactively, the feeling can become so sudden and difficult to manage. Yue (2006) defined resistance as denial expression from employee to collaborate and adjust to new way of thinking or acting. It can be deliberated, unintentional, hidden or direct.

Self & Schraeder (2009) discussed the definition of resistance as per Maurer which is a force that decelerates or halts a movement. He also mentioned that Bridges underline resistance as an incomplete transition towards a change. Mentioned also by Kotter that resistance is a hindrance in an organization's structure that avoids a change. As per Hultman, resistance is shown as the behavior of active and passive. Active resistance such as being critical, choosy on facts, and creating gossips. Passive resistance showed behavioral failure to implement change, keeping information and facts or support, and delaying habits.

Robbins & Coulter (2012) categorized resistance into three (3) categories; i) technical resistance – exist from the habits of following common procedure or practices, ii) political resistance – when change threatens controlling stakeholders, iii) cultural resistance – a form of illegitimate systems and processes that reinforce status quo.

Before proceeding with BPR project implementation, ERTC needs to be properly measured, detected and reduced. Radical change approach in BPR implementation will always invite ERTC to occur, and more precise attention is required to look after

it, ERTC will disturb and weaken BPR potential success in Shipyard (Chen, 2001), thus understanding the possible reasoning why employees' resist the proposed planned change process will be beneficial to the project implementation. The next subsection discusses why employee resists to a change.

2.5.2 Why Employee Resist to change

There are many reasons why employee resists to change. The reasoning might be different based on the specific effect of the change to the respective employees in the existing business process flow in Shipyard. Deployment of BPR to revamp project disbursement process requires a "clean slate" approach to take place (Hammer & Champy, 1993). In Shipyard, the possible ERTC may come from adapting to new process flow as proposed through BPR's proposed planned change program.

Change from BPR process will replace the known with uncertainty, and eventually, employees felt they cannot contribute to the change and develop a negative attitude towards it. A new way of work will force employee out of their daily habits and change the status quo, and lost something that they already possess or invest for so long (Alas, 2009; Hanif et al., 2014; Robbins & Coulter, 2012). It can be further noticed with most of Shipyard employees have been working with Shipyard for quite sometimes and inherited culture and habits from existing working practices.

As per Table 2.13, more than 60% of employees affected by proposed planned change process have been working with Shipyard for more than 5 years, while for 2014 and

2015, 42% and 43% respectively of Shipyard employees have been working for more than 10 years.

Table 2.13
Shipyard Employee Statistical Data from 2014-2015

Categories	2014			2015		
	< than 5 years	6 – 10 years	> than 10 years	< than 5 years	6 – 10 years	> than 10 years
Top Managers	1	1	1	1	-	2
Middle Managers	1	2	7	1	1	7
Executive	65	33	39	47	44	39
Non-Executive	101	37	130	85	52	128

Note: Total employees involved in departments that are affected by the proposed planned change.
Source: Human Capital Department.

When the status quo and prearranged or chosen task cannot be defended anymore, the employee will show their resistance as well (Amarantou et al., 2016; Hanif et al., 2014). After that, the employee felt job insecurity, uncertainties about their future, anxiety, oddness, elimination, weaken, and felt rejected from Shipyard operation requirement, the employee will think that they are no longer relevant to the new proposed change (Doherty & King, 1998; Palmer, 2004).

BPR created a concern to the Shipyard's employees on new works environment. Employees are constantly exposed to rapid change requirement, and always thought what is done, is not good enough. It is normal for any employee to resist because resistance itself is an automatic mechanism to protect the status quo (D'Ortenzio, 2012). Pressured with this, employee complies with the change unwillingly, because they are afraid of becoming unemployed and express their resistance through their subsequent behavioral reflections (Grey & Mitev, 1995). Shipyard in its transformation agenda did a review on the downsizing of the workforce and proposed a separation scheme to its employees.

Proposed change through BPR can also be perceived as a threat by an employee in the Shipyard. When the wind of change came, employees feel uncertain, unable to follow and contribute to the change and become redundant, feel lack of promotions, afraid over a personal loss, and trust that the change is not in the organization best interest (Chen, 2001; Robbins & Coulter, 2012). Resistance becomes worsened when employees felt the change becomes personal, suffer discomfort, decreased competence, lost control for their future, and increased anxiety and stress level (Huq & Martin, 2006).

Roles and responsibilities, organizational structure, IT requirement, shared values, and skill will change drastically and need to be adopted. Shipyard top management and middle managers need to have buy-in in the proposed planned change and give their full support, ideas, and involvement in this process, in non-existence this will create resistance among employees and weaken the possibilities of successful BPR implementation (Garg & Agarwal, 2014; Hall, Rosenthal, & Wade, 1993; N. Iqbal et al., 2015; Maleki & Beikkhakhian, 2011; Mturi, 2014). It is normal for any management including Shipyard management to bear a grudge for any proposed change initiated at their workplace (Mlay et al., 2013; Mosadeghrad & Ansarian, 2014).

The employee will resist when Shipyard failed to plan and recognized the hard work needed to implement BPR project, cultural acceptance not being fully assessed, and impact on human systems not being communicated and anticipated effectively (Mosadeghrad & Ansarian, 2014; Trader-Leigh, 2002). When the change is being discussed and proposed, some of the employees are afraid to express themselves and

discuss their thought and feeling about the proposed changes. Failure to expressing themselves creates a silent protest among employees and spreading the resistance in the organization working environment (Crowe et al., 2002). The situation is more likely to happen in Shipyard when all employees are identical in terms of age, seniority, level of authority and job functions.

Project disbursement process involved cross-functional department and need involvement, commitment, support from all top management from respective department. Implementing and planning the BPR with "silo" based mentality will lead to lack of cooperation, collaboration, and increased resistance from respective stakeholders (Franklin, 2014). Shipyard efforts to revamp the work processes must cope with the new dynamic business environment. It is a heavy burden for the Shipyard to manage possible ERTC to make way for the new processes to take place (Fedor & Herold, 2004).

Problematic project disbursement process flow requires a revamp through BPR, BPR creates a change to business process, and a change always carried together resistance with the change effort (Pardo del Val & Martínez Fuentes, 2003). BPR is heavily dependent on an IT-based system which requires new skill, training and eliminates the old way of doing work (Maheswar & Javalagi, 2014; Mosadeghrad & Ansarian, 2014). Sometimes, too much revamping make the process more difficult to be managed compared to before, the workload increased compared to normal, cost increased, and employees were left downhearted (Franklin, 2014). The next following subsection discussed possibility or ways to reduce ERTC especially the effect of implementing BPR proposed planned change process in Shipyard.

2.5.3 Reduce Resistance to Change

Deploying BPR requires detailed planning and effective intervention from all parties involved. BPR approached are radical, thus always embedded with ERTC from all stakeholders concerned. Planning for a change without considering how to reduce ERTC will short-lived the proposed planned change process (Miller et al., 1994; Trader-Leigh, 2002).

Change is influenced by driving or restraining forces towards the change efforts. Shipyard needs to strengthen the driving forces for the proposed planned change process by way of reducing the restraining forces relates to ERTC (Mitchell, 2013). ERTC need to be reduced accordingly to preserve the proposed planned change outcome (Amarantou et al., 2016; Georgalis et al., 2015; Maheswar & Javalagi, 2014; Taher & Krotov, 2016; Wittig, 2012).

Relying on BPR critical success factors during the proposed planned change of project disbursement process in Shipyard, there are several BPR CSF that helps to reduce ERTC among employees and subcontractor who are affected from this change process. The framing of BPR CSF to reduce ERTC in Shipyard will be explained accordingly using Peccei model of three-factor partial mediation of resistance to change as per Figure 2.7.

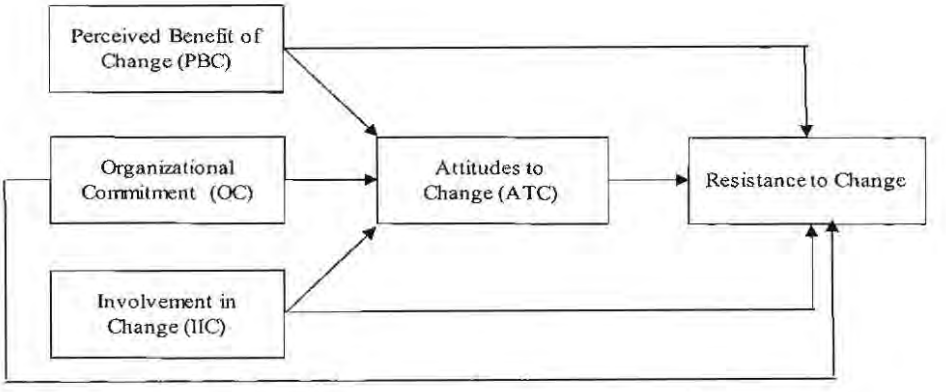


Figure 2.7
Three-Factor Partial Mediation Model of Resistance to Change
Source: Peccei, Giangreco, and Sebastiano (2011)

In summary, Peccei through this model had explained that PBC, OC, and IIC had a positive relationship with Attitudes towards Change (ATC – employees behavioral reflection towards change initiative influence by PBC, OC, and IIC), whereby when PBC, OC, and IIC increased, ATC increased. However, there is a negative relationship between PBC, OC, IIC, and ATC toward RTC, whereby when PBC, OC, IIC, and ATC increased, RTC decreased. The next subsection of this chapter discussed how Shipyard BPR CSF reduced the RTC by way of increasing the PBC, OC, IIC, and ATC.

2.5.3.1 Perceived Benefit of Change

The incoming proposed planned change must be seen or perceived by employees, bringing benefit to them. A side effect of revamping project disbursement process must be beneficial not only in terms of faster processes of subcontractor disbursement but beyond normal working condition to Shipyard employees to move out from the status quo state. Employees who perceived the benefit of change effort to them, their

ATC will be positively influenced towards change process and able to reduce ERTC (Peccei & Giangreco, 2005; Peccei et al., 2011). Several BPR CSF that influenced perceived benefit of the change in Shipyard are mentioned below:

1. Effective communications: Shipyard needs to communicate the benefits of the proposed planned change process effectively to all employees continuously and diligently. Any queries respond and feedback towards the change effort must be responded quickly to show its urgency and being resolved. PBC must benefit all parties affected by the change and required for the Shipyard's survival (Alas, 2009). The needs of change must be effectively communicated by top management and team members to create a better understanding of the change requirement for employees to move out from existing status quo (D'Ortenzio, 2012).

   Team members need to be communicated of the Shipyard's commitment to all employees towards the proposed planned change efforts. Support from top management in resolving conflicting issues such as IT budget approval, cross-functional crisis, and way ahead of the change process is perceived by employees that the change is worth to do, supported, and get involved. Commitment from all affected party to change and resolve project disbursement process showcased to the rest of employees the urgency and need of change to Shipyard, and need to take place immediately (Michel, By, & Burnes, 2013).

   Effective communications on the proposed planned change process will portray urgency for change, a high commitment by all parties, and need for the change to take place. Sufficient information about change will influence employees PBC

(Alas, 2009) and increase ATC to reduce ERTC (Peccei & Giangreco, 2005; Peccei et al., 2011).

2. Effective training: Impact on effective training will make employees prepared and equip themselves with right skills and requirement for the proposed planned change process. Training will enable employees to be hands-on with the new system, up to date with new job requirement and technology, and market them for greater future employment. Effective training will increase employees' PBC and help the Shipyard to reduce ERTC.

3. Creating new job description: BPR requires new job description is created to suit a new requirement for the revamping process. During collaboration with MIGHT-METEOR Advanced Manufacturing Sdn. Bhd. to recover the delivery of KDSLEP2, the Korean shipyard best practices in ship repair work is introduced and practiced by way of creating a new unit and job description based on a project basis. When the project is delivered, the new units and their job description will be closed. However, BPR approach to revamping project disbursement process requires their existence. Employees for that particular units perceived benefits from continuous proposed planned change process deployed in the Shipyard (Alas, 2009).

The units consist of employees with higher education, pursuing their professional career in Shipyard and averaging at young ages. Alas (2009) stressed that these group of employees with specific criteria are easier to adapt to new job environment and proposed planned change process. Creating a new job description that matches

with their existing knowledge and skill eliminated job insecurity, creating safe feeling to them and influence employees' ATC towards reducing ERTC.

4. Effective top management support: top management carried the responsibilities to effectively communicate, review and endorse the strategic direction of the proposed planned change for project disbursement process. These will foster responsive feedback from the lower level of employees and get them involved in the change progress (Appelbaum et al., 2015).

Top management must ensure all of the employees involved in the proposed planned change are kept motivated and gave them assurance that their job is safe, and full support is given throughout the change process. Communication barrier, negative environment, and the perception that can influence behavior must be managed and controlled within Shipyard working environment (Shaheen, 2016).

Realistic expectation towards the outcome of the proposed planned change process eased employees stressful feeling during project implementation. Employees must perceive all the stressful feelings and hard work during change process will be assisted effectively by Shipyard and not their burden to adopt (Shaheen, 2016). Effective top management support handling issues during proposed planned change process implementation will increase employees' PBC and positively influence ATC to reduce ERTC in Shipyard.

2.5.3.2 Organizational Commitment

Shipyard must ensure all employees involved in this proposed planned change process of project disbursement process are committed towards this change. Commitments are one of the critical factors that influence employees to support towards change initiative by any organization (Meyer & Herscovitch, 2001). Commitment, as stated by Meyer & Herscovitch (2001), are:

a force that binds an individual to a course of action of relevance to a target and can be accompanied by different mindsets that play a role in shaping behavior.

Meyer & Allen (1991) further grouped OC into three (3) categories, i.e., i) continuance commitment – related to the perceived cost incurred by employee when leaving Shipyard, ii) normative commitment – related to perceived obligation by employee should the employee want to remain with Shipyard, and iii) affective commitment – related to desire by employee to remain with Shipyard. For usage of this model as per Figure 2.7. OC referred to affective commitment which has a positive correlation with cooperation and championing, which are crucial during change process (Meyer & Herscovitch, 2001; Peccei et al., 2011).

As mentioned by Alas (2009), employees with higher education, permanent job employment, and having certain professional interest to achieved are more committed towards proposed planned change process in Shipyard. These will further strengthen the desire to remain working in Shipyard and easily to be opened about change requirement. Several BPR CSF that influenced OC towards proposed planned change process of project disbursement process in Shipyard are mentioned below:

1. Effective employee involvement: when affected Shipyard employees get involved in change process especially planning and decision making (Fugate, 2012; Hussain et al., 2016; Robbins & Coulter, 2012), they will feel more committed to facing any proposed planned change process involving their daily job functions. Employees felt appreciated, respected, eliminate job insecurity and feeling afraid of the unknown (Franklin, 2014; Mlay et al., 2013). Effective employee involvement also strengthens employee desire to remain with Shipyard and ready to equip themselves with whatever skill and training requirement needed for new job function. Strong desire to remain will ease and accommodate the hard part of BPR resistance and give positive output towards attitude to change.

2. Effective employee empowerment: Shipyard needs to empower all affected employee involved in the proposed planned change process to get involved and feel committed to the change process. Empowerment allows the team members to manage and plan for a solution, creating a collaborative working condition, fostering involvement (Abdolvand et al., 2008; Al-Mashari & Zairi, 2000; Ismail & Osman, 2016; Lee, 1995) and lastly strengthen their desire to remain with Shipyard. Employees desire can be faded when they felt useless, unwanted, nothing to contribute, and feeling of job insecurity. Empowerment eliminates these feeling and strengthen employees desire towards proposed planned change process and gave positive attitude to change and reduce ERTC accordingly.

3. Creating new job description: proposed changes in BPR will create new job description to Shipyard employee, either the job description requires new skill to learn, or new IT technology to adapt, employees with higher education, permanent

job employment, and having certain professional interest to achieve will be more committed to adapting to this change Alas (2009). When practicing Korean shipyard best practices, DeptC1 (a unit within DeptC) being established and employees get the opportunity to learn a new method of managing ship repair project.

After project completion, the functions are in jeopardy as there is no continuity in that practices in Shipyard's operation. The proposed planned change process through BPR fully adopted the improved Korean shipyard best practices and strengthened the requirement for the new job function. Employees within this unit felt more committed towards the proposed planned change process and their desire to remain with Shipyard becoming stronger when most of them are with a higher education background, permanent job employment, and having certain professional interest to be achieved in their engineering career. When employee felt more committed towards change, it sent a positive signal towards attitude to change to reduce ERTC in project disbursement process of the proposed planned change program.

2.5.3.3 Involvement in Change

IIC are crucial factors that positively influence employee's attitudes towards accepting the change and reduce RTC. ERTC in Shipyard can be reduced by increasing IIC throughout BPR CSF as mention below:

1. Effective employee involvement: involvement means bringing those employees affected by project disbursement process into the decision-making process of the proposed planned change (Robbins & Coulter, 2012). The team members (representative from the affected cross-functional departments) and subcontractors can portray their feelings, improve the quality of project disbursement process outcome, increase chances to achieve change objective, respecting their roles, and shown full commitment throughout project progress (J. Iqbal, 2012; Packard, Patti, Daly, & Tucker-Tatlow, 2012; Robbins & Coulter, 2012; Wittig, 2012).

When Shipyard employees effectively involved in the change process especially decision making of the proposed planned change process, employees felt a sense of ownership, their sense for internal change increased and enhanced employees' commitment towards the implementation of change plan (Packard et al., 2012). Uncommitted Shipyard employees during change implementation eventually lead the proposed planned change for project disbursement process to fail (Soumyaja, Kamlanabhan, & Bhattacharyya, 2011).

Effective involvement makes employees more prepared to adopt new changes. Employees can sense the needs of new skill or requirement to be learned and adapt, up to date with the overall Shipyard's vision and mission eliminates the sense on the unknown, fear of losing their job, misunderstanding, and quick responses towards change when required. All of these criteria eventually influence employees' positive ATC for the proposed planned change of project disbursement process and reduce ERTC (Altamony et al., 2016).

2. Effective top management support: even though BPR are top-down approached and sometimes look a bit hard, effective top management support help to reduce the perception and can soften the radical impact of BPR. Employees are afraid to voice out their opinion during a discussion on the proposed planned change process due to seniority, being scared and afraid of the unknown. When these issues come, top management must treat all employees equally, provide quick response and support during the transition period, and encourage them to be involved in decision making towards the proposed planned change process (Crowe et al., 2002).

Shipyard top management is required to possess a deep understanding of employee's sensitivity and psychological issues during change process (Hanif et al., 2014). These will help top management to make effective corrective action and intervention when some of the sensitive issues are not resolved (Appelbaum et al., 2015). Effective intervention is needed especially to support the kickstart of the project and break the ice of status quo, to get IT-based system budget approval when necessary, get buy-in from another upper management level, and resolve issues with Shipyard department egos' and power.

Most of Shipyard top management are from ex-serviceman whereby the autocratic style is more familiar compared to the democratic style of management. Ability to shift to democratic style of management will show great support and intervention by top management to employees, which involve more employees in decision making, delegated authorities and effective coaching and support from top management (Fugate, 2012; Hussain et al., 2016; Robbins & Coulter, 2012; Yukl & Lepsinger, 2005).

The democratic style will reduce the effect of disciplinary and punishment because of failure, and encourage new behavior towards acceptance of change effort (Appelbaum et al., 2015; Hussain et al., 2016). Effective top management support, especially on specific and timely intervention, will showcase great commitment and support from top management to employees, towards the proposed planned change process and positively influence ATC and reduce ERTC.

3. Effective employee empowerment: employee and other stakeholders concerned (the subcontractors) need to be empowered by top management to assess the problem, propose the possible solution, and involve in the implementation process (Ismail & Osman, 2016; Lee, 1995). When empowered, employees become more involved in decision making to propose and decide how revamping should be implemented, what system should be used, does the solution resolved the main issues, and most importantly can it be sustained (Al-Mashari & Zairi, 2000).

BPR involved cross-functional department issues, and some issues sometimes were not being voiced up by those affected (Crowe et al., 2002). Through empowerment, it creates a collaborative working condition whereby all parties involved can contribute and voice out their opinions. Nobody can dictate or influence other people to agree with them, all members will willingly express and discuss what they think on how the project disbursement process should be revamped and decorate the *"desired state"* later. Empowerment ensured all issue being analyzed and all possible solution being discussed diligently, and encourage involvement from all team members (Abdolvand et al., 2008; Al-Mashari & Zairi, 2000; Ismail & Osman, 2016; Lee, 1995).

Effective employee empowerment eliminates the fear of losing authority in work, fear of losing something that long being invested, concerned on becoming unemployed, uncomfortable with the new working condition and increased ownership from the employee's concerned. These factors will give positive inputs for ATC and reduce ERTC accordingly (Burgess, 2014; Habib, 2013; Kassahun, 2012; Kuhil, 2013; Mturi, 2014).

4. Effective training: New systems required new training, and some employees do not like to go for training due to not enough time, unable to cope with new skills and age factors. Shipyard needs to stress the importance of training across Shipyard organization focusing on system operations/IT system, rather than just because of a new way or process to do work (Yu, 2005). Should the employee skill no longer relevant to be at current job function, Shipyard will train them to do another job in a different department.

   Effective training will make employees hands-on with new IT-system, cleared the uncertainties on job requirement that the new system will overtake their job, and make it easier to adopt new job scope (Maheswar & Javalagi, 2014). Proper IT training towards the implementation of BPR will help all employees to be equipped with change, ready to face new skill and requirement, involved in the change process and momentum and finally triggered positive inputs for ATC and reduce ERTC (Hanif et al., 2014).

5. Effective Communications: Effective communications that reached all levels of employees with quick response and feedback reduce uncertainty and stress towards

the proposed planned change process. It represents Shipyard top management commitment to implement the project disbursement process and stop bad news or miscommunication regarding change among employees (Robbins & Coulter, 2012; Stanton et al., 1993). The medium of communication used in Shipyard is through brainstorming session between team members, morning talk at the respective department, emails, internal memo, management meeting, and IT help desk.

Employees felt more involved and well informed by the Shipyard on the proposed planned change progress thus committed towards change requirement and output (Miller et al., 1994). The needs for change to keep the Shipyard relevant and competitive can be disseminated to all level of employees in an effective, timely, and purposive manner (Robbins & Coulter, 2012). Employees will be prepared to equip themselves with new training and skills required to perform the work. Employees can see the logic of why change is needed and eliminated miscommunication and bad rumors (Robbins & Coulter, 2012).

Effective communications can clear up rumors, false perception, job insecurity, feeling of the unknown, and feeling of no longer needed by Shipyard operations. It convinced the employees about the perception of the incoming new system and how management will help the employee to adopt and live with it (Maheswar & Javalagi, 2014; Wittig, 2012). Effective communications eventually influence employee's positive ATC for the proposed planned change of project disbursement process and reduce ERTC.

PBC, OC, and IIC managed to reframe BPR CSF such as training, new job description, top management support, employee involvement, employee empowerment, and communication to better understand on how it reduces ERTC. These key CSF directly influence and strengthen PBC, OC, and IIC which subsequently send a positive signal to ATC and help Shipyard to reduce ERTC in project disbursement process.

2.6 Summary

This chapter summarized how to implement BPR with correct guidance especially in handling ERTC in the proposed planned change process of project disbursement in Shipyard. The hard part of BPR is being reduced by emancipatory criteria of AR, internal change requirement within the Shipyard's working condition and effective usage of BPR CSF's. The study on change process gave a better understanding of how change happened and most importantly how to manage and sustain it. Change is embedded with resistance, assessment on driving and restraining forces will help to reduce ERTC. Combination of BPR CSF (top management support, communication, training, employee empowerment, employee involvement, and new job description) and three-factor partial mediation model of resistance to change helps to understand better how BPR CSF strengthen PBC, OC, IC, and ATC to reduce ERTC in Shipyard.

CHAPTER THREE
METHODOLOGY

3.1 Introduction

This study is about revamping project disbursement process in the Shipyard after being criticized by its subcontractor's due to longer time is taken to verify the supporting documents required for disbursement process. In response to the need for change, BPR is used as a tool to revamp the project disbursement process, and it affected five (5) departments in the Shipyard. BPR brings change, and change embedded with resistance to be managed. *"current state"* of project disbursement process being established, and *"desired state"* being proposed in terms of saving time and cost for both the Shipyard and the stakeholders concerned (Shipyard employees and subcontractors).

FFA is being used as a tool to assess driving and restraining forces towards the proposed planned change together with effective impacts of BPR CSF to reduce restraining forces during BPR implementation. The hard part of BPR is being softened by the emancipatory IAR between team members by fostering internal change requirement throughout the change process. Three-Factor Partial Mediation Model of Resistance to Change, reframed the BPR CSF (such as employee commitment, employee involvement, top management support, training, and communications, in Shipyard environment) in terms of PBC, OC, IIC, and ATC to better understands how it help to reduce ERTC in the Shipyard proposed planned change process.

Results from BPR process being analyzed on whether it resolved the problematic issues in the project disbursement process and improved in terms of time and cost for all stakeholders concerned. An interview being conducted among Shipyard's employees and subcontractors involved in the change process (based on sampling), to understand the impact of BPR output further, and ERTC state to be reduced. The next subsection of this chapter discusses research design applied for this research process.

3.2 Research Design

The research design is an important framework guiding the researcher in choosing methodology, collecting data, analysis of data, and interpreting data for the research. The design of this research is being developed alongside project disbursement process flow, whereby specific tools and approaches are being used at the certain stage of the project to get accurate assessment and understanding on issues to be resolved at every level of project implementation.

This research is design based on Figure 3.1 which comprises of two (2) major parts, i.e., i) deployment of BPR, ii) assessment on ERTC, and which are broken into four (4) major AR cycles which are interrelated and feeding each other. Details of activities for respective AR cycles are discussed in paragraph 3.6 later. The research started from October 2013 and ended in December 2016 which took about three (3) years and two (2) months to be completed.

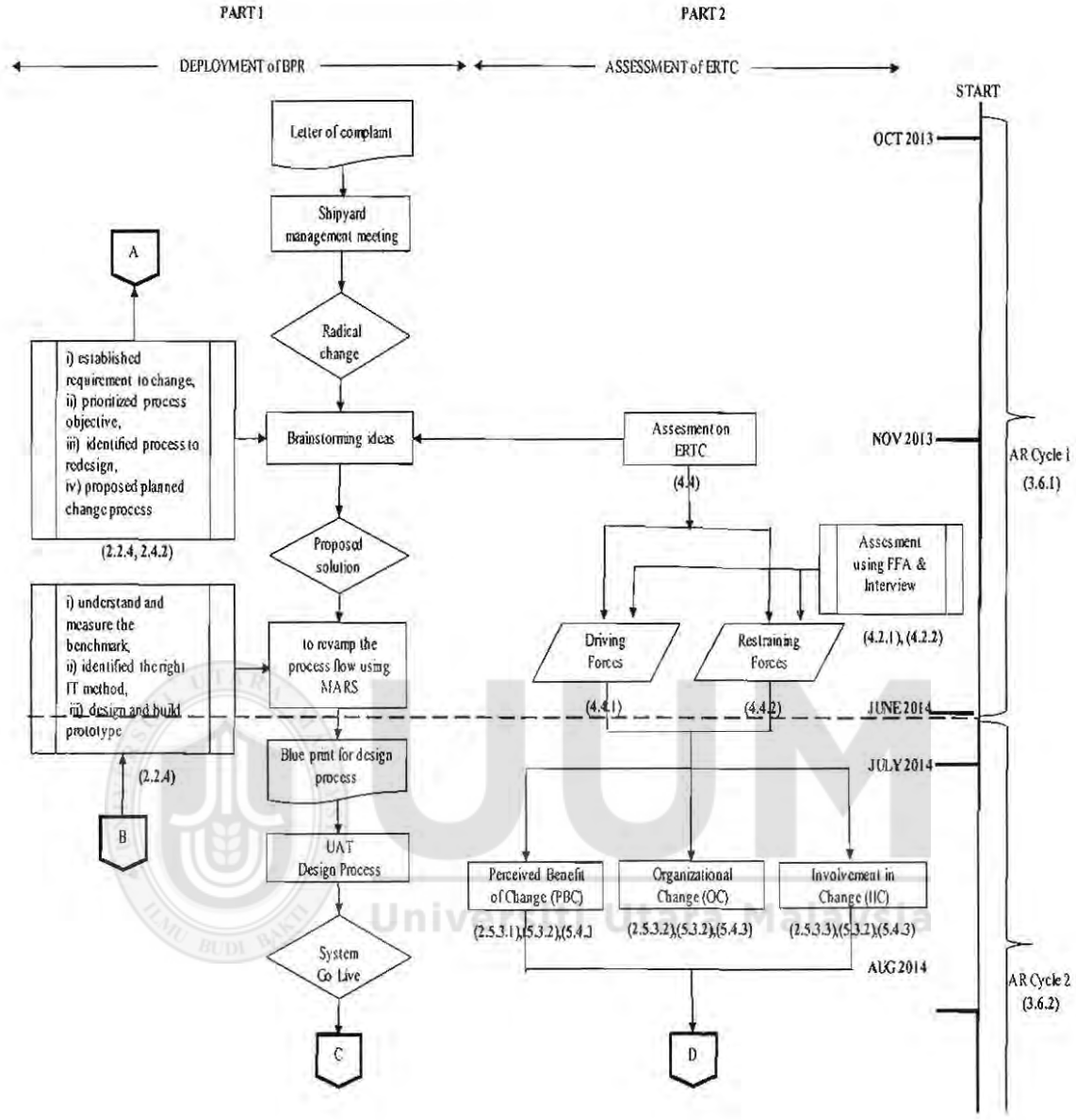


Figure 3.1
Research Design on Deployment of BPR and Assessment of ERTC in Shipyard

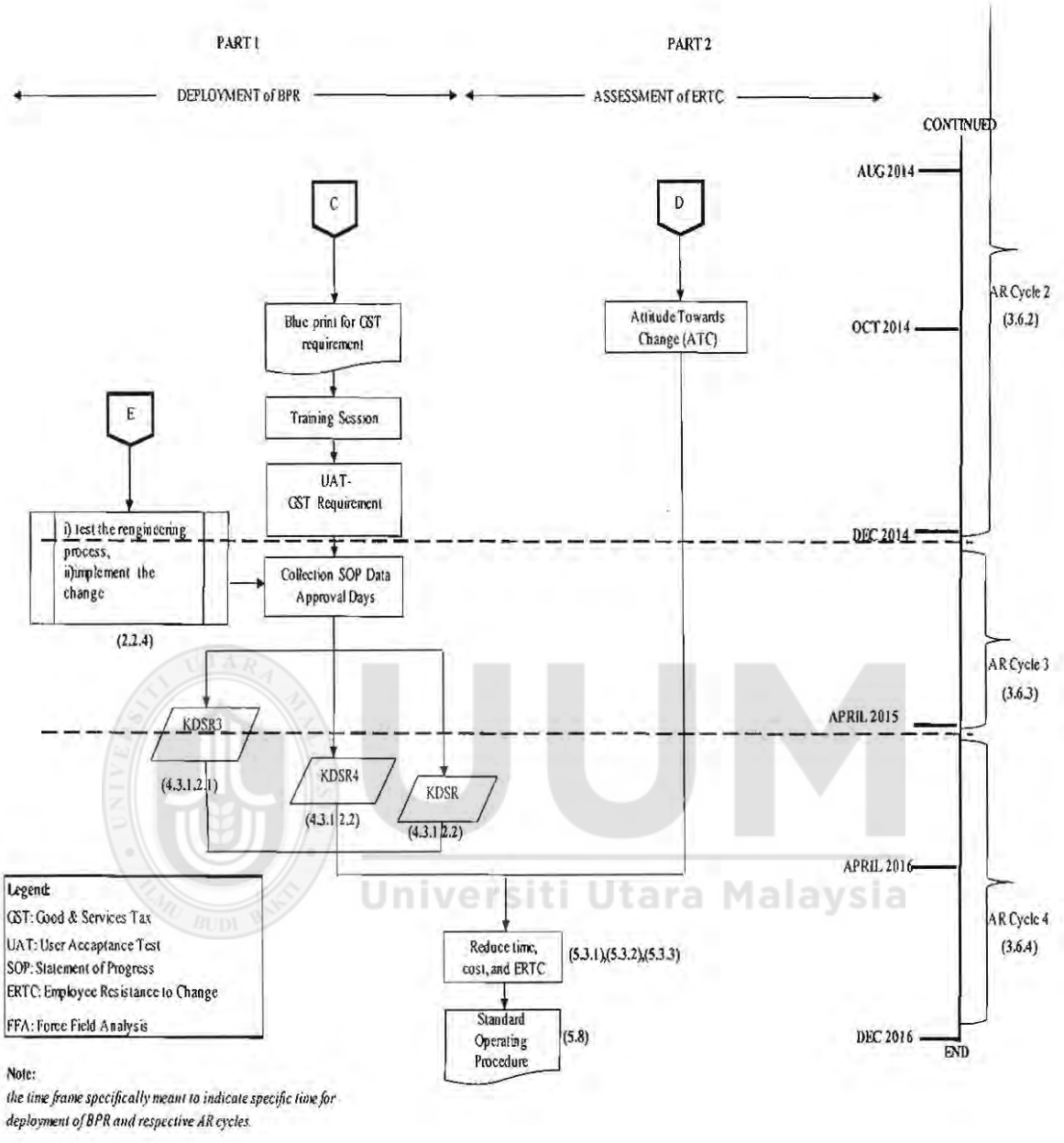


Figure 3.1 (Continued)

1. Deployment of BPR: the foundation of this research started when Shipyard received official complaints from subcontractors in October 2013. It has created external change requirement and subsequently pushed for internal change forces and spearheaded the change program (internal change agent) in Shipyard environment.

The complaints are being presented and discussed during Shipyard management meeting, then concluded with instructions for a radical change in the project disbursement process. Shipyard management had empowered the HOD of DeptA to set up a team (the team members as per Table 3.10) to brainstorm the idea and propose the solution to the Management to resolve the complaints holistically.

In November 2013, the team members, after having several brainstorming sessions had made a critical assessment of the requirements to change of project disbursement process by acknowledging the needs to change and setting up revamping objectives. Reducing time and saving the cost on processing document for disbursement process, with the intention to allow subcontractors to submit their disbursement faster, getting their disbursement faster, and help to manage their operational cash flows, thus being able to work effectively and giving good quality of services to Shipyard in delivering ship repair project and achieving shipbuilding/ship repair industry objectives.

Figure 3.2 indicates a detailed assessment of the requirement to change being framed up for this research. The team had established the *"current state"* of project

disbursement process and forecasting *"desired state"* on what and how it should be in future. The change process from *"current state"* to *"desired state"* propelled by the proposed planned change process as per paragraph 2.4.2 and Figure 2.6 earlier.

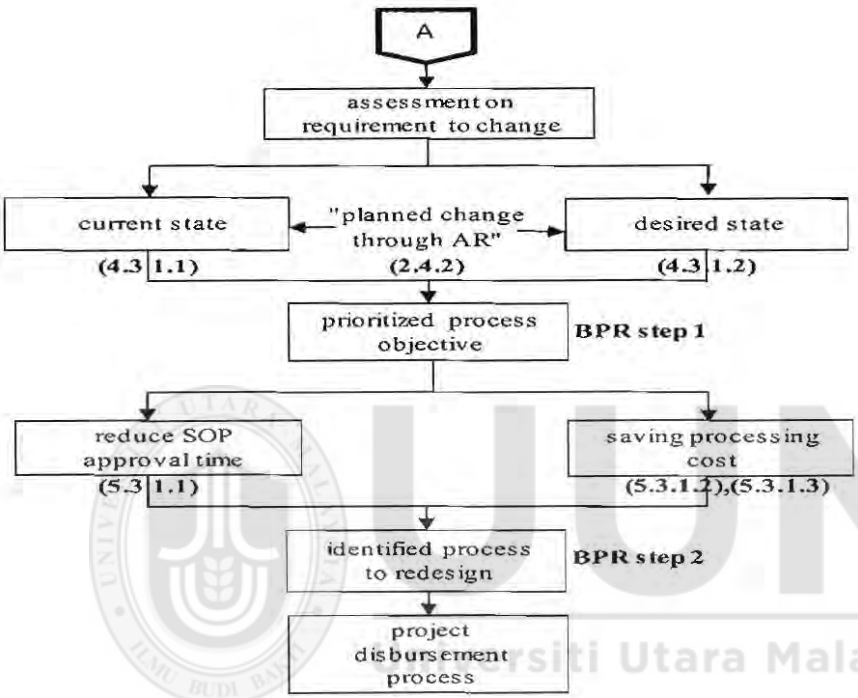


Figure 3.2
Research Design on Brainstorming the Ideas

BPR concepts, principles and key elements in paragraph 2.2.1 and 2.2.2 respectively being adopted during the proposed planned change process and its implementation steps as per proposed by Davenport & Short (1998) are as shown in Table 2.9.

Revamping the project disbursement process flow, two (2) objectives being set up to be achieved which are i) reducing SOP approval time, and ii) saving processing

cost of project disbursement process for both Shipyard or subcontractor (BPR step 1). After the objective being set, details of project disbursement process to be a redesign (BPR step 2) is discussed, agreed and incorporated into the blueprint of system design. These details are further elaborated in AR cycle 1, AR cycle 2, AR cycle 3 and AR cycle 4 in the next subsection of this chapter at paragraph 3.6 respectively.

After defining the redesign process, the team continued to explore other major requirements further to deploy the BPR project such as selecting the IT-based system and approval for project implementation budget. Figure 3.3 explained another three (3) steps of BPR implementation undertaken which are; i) understand and measure the benchmark, ii) identify the right IT method, and iii) design and build the prototype. In BPR step 3, the team had reviewed eighty (80) sample of supporting document for disbursement (*"current state"* SOP certificate) from ten (10) subcontractors (inclusive of subcontractors who made complaints) that had work for KDSR1 and KDSR2 (SOP generated based on the *"current state"* process).

Time is taken to approve SOP and operating cost to manage disbursement process being recorded and set an indicator for project disbursement process before BPR is being implemented. Details for the time taken to approve SOP and submit for disbursement are discussed and analyzed in the next chapter, paragraph 4.3.1 while for cost incurred is discussed in paragraph 4.3.2 respectively.

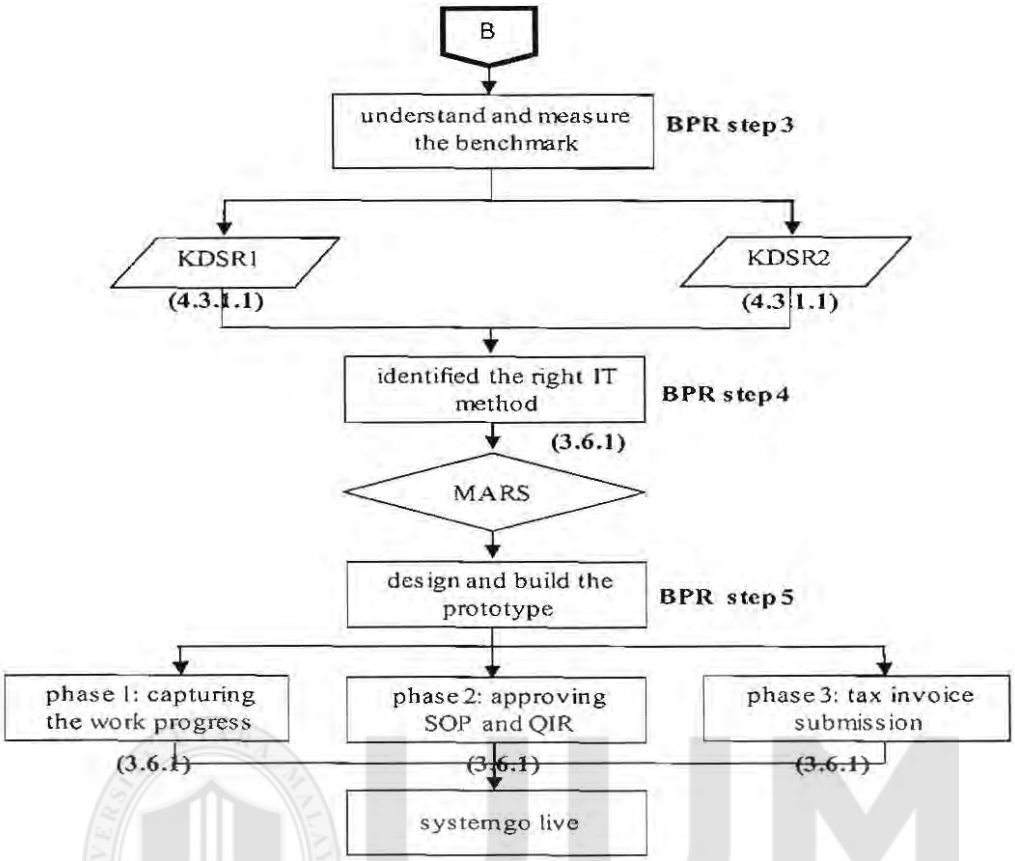


Figure 3.3
Research Design on Revamping the Process Flow

In BPR step 4, the team once again face a mountain to climb as the deployment of BPR needed the right IT-based method to be deployed as an enabler and incurred a heavy cost to invest (Alsudairi, 2013; Hanif et al., 2014). It becomes more complicated with the history of the IT-based system in Shipyard as per discussion in paragraph 1.1.4.1 earlier, and Shipyard needs to consider the possibility for subcontractors also to invest, as they are the final user of this system. Any unrealistic cost of investment required may hinder subcontractors to be involved in this proposed planned change of project disbursement process.

To get the support from the Shipyard's top management to invest in any potential IT-based system, a detailed CBA being presented with various options to be compared with. The options are i) to invest in new IT system, ii) to further develop the existing SAP system, and iii) to further develop the existing MARS system. Detailed analysis of the CBA on the selection of the IT-based system is discussed and analyzed in paragraph 3.6.1 and Table 3.16 respectively.

After BPR step 3 and 4 are completed, the proposal is being compiled and presented to the Shipyard's top management. CBA option to further develop from the existing MARS system were selected, and budget for the IT-based system was approved in December 2013. MARS system and existing I-MARS based platform are being further developed and customized to incorporate the blueprint of the proposed planned change of project disbursement process. The graphical view of I-MARS interaction between Shipyard and subcontractors can be seen in Appendix A.

The team now proceed with BPR step 5 to design and build the prototype. Project disbursement process being design for changes in three (3) phases. Phase 1: capturing the work progress, phase 2: approving SOP and QIR, and phase 3: tax invoice submission. The details of activity of the phases are discussed in the next subsection of this chapter at paragraph 3.6.1, Table 3.15. On 28 July 2014, the final blueprint of design process being finalized and two days session of UAT ended on 1 August 2014 is conducted.

The online system for SOP and QIR accessible by subcontractors through I-Mars platform are presented to all Shipyard HOD and "Go Live" officially on 4 August

2014 and ready to be tested with real data for next incoming ship repair project. The new process must be tested with a new project as it required initial project planning and set up to be put in place for monitoring and capturing work progress in phase 1 of project disbursement process.

On 10 November 2014, KDSR3 entered the Shipyard for its routine repair maintenance and got ready to be tested with the new system. The phase 1: capturing work progress started immediately with intense involvement from DeptC, DeptC1, DeptC2, and DeptC3. BPR step 6, test the reengineered process started as per Figure 3.4.

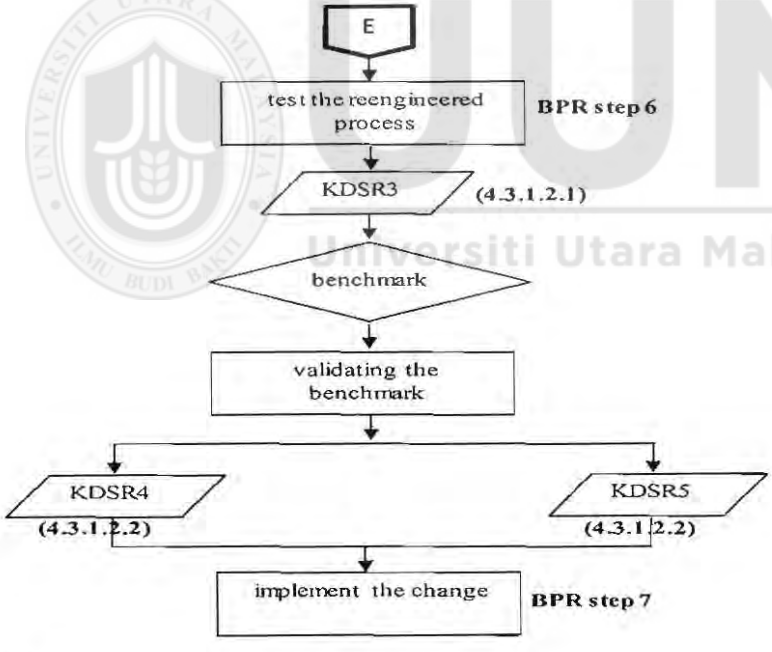


Figure 3.4
Research Design on Collection of SOP Data Approval Days

At this stage, the intention was to set the benchmark for i) reducing SOP approval time, and ii) saving processing cost of project disbursement process for both

Shipyard or subcontractor of the new design process from data generated by KDSR3. Benchmark established from KDSR3 will be further validated from data on the next coming ship repair project if any. Unfortunately, on 18 November 2014, a tragedy incurred on KDSR3 and all plan to collect data were put on hold until the Shipyard manage to counter the crisis.

The project has no progress to proceed and the team plan to concentrate on other related matters, so the proposed planned change process will not just stall or dying softly. While waiting for KDSR3 crisis to be resolved, the team concentrated towards updating the system for Good and Service Tax (GST) requirement. During the earlier design stage, the requirement was still not clear for shipbuilding/ship repair industry players and being on hold for a while. The final blueprint for GST requirement was accepted on 25 November 2014 and UAT test was completed on 12 December 2014. The team also scheduled training session involving Shipyard employees and subcontractors, and the first intensive training on new system started on 15 December 2014.

In April 2015, six (6) months after KDSR3 entered Shipyard, the crisis was resolved, and the collection of processing SOP data can be started. After that, KDSR4 and KDSR5 entered yard for their routine maintenance on 8 June 2015 and 7 September 2015 respectively. The availability of KDSR4 and KDSR5 gives a good opportunity for the teams to validate the benchmark of redesigning process from data KDSR3 and compared with KDSR4 and KDSR5. Details of data population and sampling for SOP data KDSR3, KDSR4, and KDSR5 are discussed

in the next subsection of this chapter at paragraph 3.4, and its finding and analysis are presented in the next chapter at paragraph 4.3.1.2.1 and 4.3.1.2.2 respectively.

Validating the benchmark results completed the BPR step 6 for this project. The next final step of BPR step 7, is to implement the change which started immediately after all of the steps mentioned above are completed and being combined with results from the assessment of ERTC for the proposed planned change of project disbursement process.

2. Assessment on ERTC: the second part of this research design and being deployed together during the deployment of BPR to revamp project disbursement process. Assessment of ERTC become critical to ensure BPR implementation is on a smooth ride and manage any possible resistance that may come from Shipyard employees as well as subcontractors which are the users for this project disbursement process.

As per discussed earlier in paragraph 2.2.5 and 2.5.2, ERTC can cause failure to BPR implementation and need to be managed diligently. The team members have assessed ERTC using FFA as per what being proposed by Coghlan & Brannick (2014) in paragraph 2.4.2 earlier. The assessment was done in three (3) phases; i) before implementation of BPR, ii) during the implementation of BPR, iii) after implementation of BPR. The team identified the project disbursement process issues and its *"current state"* and *"desired state,"* group it accordingly to driving and restraining forces, giving points weightage for the respective issue to a maximum of five (5) points, zooming in the restraining forces and making an effort to reduce the restraining forces.

Team members gave the weightage point based on their observation during research progress and brainstorming session between team members, towards what the *"desired state"* should be. The team leader will accommodate and give extra input based on an indirect or semi-structured interview with employees involved directly in the proposed planned change process and subcontractors concerned. Not all team members were involved in the interview session, as it will become official and may hinder interviewees to speak their mind and views towards the proposed planned change process. The sampling and interview steps are discussed in detail in the next subsequent section of this chapter at paragraph 3.4 and 3.5.1 respectively, while FFA results are elaborated in the next chapter at paragraph 4.4.1 and 4.4.2 respectively. The team leader is responsible for ensuring emancipatory criteria are preserved and protected, and all team members can highlight their issues and findings truthfully.

The findings from FFA are grouped into respective BPR CSF as discussed earlier in paragraph 2.5.3.1, 2.5.3.2, and 2.5.3.3. These elements later being reframed accordingly to Peccei model of three-factor partial mediation of resistance to change as per Figure 2.7. The respective BPR CSF gave positive direct impact towards the increased influence of PBC, OC, IIC, and ATC in reducing ERTC.

The results from BPR revamping of project disbursement process in terms of time and cost, and BPR CSF influencing PBC, OC, IIC and ATC in reducing ERTC will guide Shipyard to embed this criteria in Standard Operating Procedures of project disbursement process and help to maintain the proposed planned change process to be

accepted and sustained in the Shipyard working environment. The next subsection of this chapter discusses the justification of AR methodology for this research.

3.3 Justification for the Methodology

Based on the requirement to change with the intention to resolve the issues in project disbursement process, BPR is being used as a tool to revamp the problematic area of concerned in the Shipyard business process, while AR (particularly IAR) as a methodology deployed during the research progress. The combination of BPR and AR, being used in previous research by other researcher due to complexity of research setting and ways to support implementation of BPR project (Dennis, Carte, & Kelly, 2003; Hengst & Vreede, 2004; Maull, Weaver, Childe, Smart, & Bennett, 1995; Weerakkody & Currie, 2003), especially to accommodate the hard part of BPR criteria such as top-down approach and lack of internal change support in BPR implementation (Larsen & Myers, 1997, 1999).

IAR carries its dynamics when the researcher has the depth knowledge about the Shipyard and pre-understanding of the project disbursement process issues to be revamped (Coghlan, 2001; Coghlan & Brannick, 2014). The context of IAR is strategic and operational setting by a researcher in their day to day working environment (Rynes, Mcnatt, & Bretz, 1999).

Coghlan (2003) stated that insider research is valuable because it draws on the experience of practitioners as complete members of the Shipyard to make a distinctive contribution to the change within the Shipyard, especially knowing and understands

the needs to change. Coghlan (2004) and Auer & Follack (2002), further noted that due to the nature of AR, both the researcher and the local stakeholders collaborate in the manner that they can work closely and they will share question, data collection, data analysis and testing in action with each other during the research progress. Data collected is in real time and can provide instantaneous opinion over the solution of the problem.

Through AR, the researcher will take an active role in the project and can contribute to the action taken and eventually become the effective internal change agent for this research in achieving its objective. Another research methodology such as case study is too broad, and comparisons to another shipyard will be pointless as another shipyard might have different process flow related to disbursement process and having a different set of objectives.

3.4 Data Population and Sampling

This research is designed to deploy BPR to revamp project disbursement process and to make an assessment towards ERTC for the proposed planned change. Data collected came from two main sources; i) SOP data (from *"current state"* process and *"desired state"* process (BPR output), ii) from interview session (from affected employees in respective departments and subcontractors involved in this project disbursement process). The SOP data and subcontractor involvement came from previous and current ship repair project as per Table 1.4.

3.4.1 SOP Data Population and Sampling

Table 1.4 indicates five (5) previous and current ship repair project undergoing their routine maintenance during this research progress. KDSR1 and KDSR2 generated SOP using *"current state"* process and being produced manually, while KDSR3, KDSR4, and KDSR5 generated SOP using BPR system and process through online.

As per Figure 3.3, SOP data collected from KDSR1 and KDSR2 represent the status before BPR being deployed and established as *"current state"* of project disbursement process. Data collected are from SOP issued three (3) months backward from October 2013 (the date of complaints), and the data collected merely to established and verified the complaint made by the subcontractors and being used to forecast the *"desired state"* for the proposed planned change of the project disbursement process. All of the subcontractors selected are active subcontractors with the Shipyard and having a running contract in hand during project progress.

Table 3.1 shows eighty (80) samples of *"current state"* process of SOP selected from KDSR1 and KDSR2 and represent ten (10) subcontractors involved for these two (2) ship repair projects. From the total ten (10) subcontractors, only four (4) of the subcontractors had made complaints to the Shipyard regarding issues in project disbursement process. Analysis of data from Table 3.1 is discussed in detail in the next chapter paragraph 4.3.1. To further validated the findings on SOP data and interview with subcontractors later, those subcontractors selected for further testing must have an experience (SOP data) with Shipyard for the project disbursement process in

"current state" process (KDSR1 & KDSR2) and *"desired state"* process (KDSR3, KDSR4, and KDSR5).

Table 3.1
SOP Data Sampling from KDSR1 and KDSR2

Subcontractors	KDSR1	KDSR2
SC01	3	2
SC02	2	3
SC03*	6	5
SC04	3	2
SC05*	5	8
SC06*	6	7
SC07*	6	4
SC08	4	3
SC09	2	2
SC10	3	4
Total	**40**	**40**

Notes: *subcontractors who made complaints

Based on the selection of the ten (10) subcontractors as per Table 3.1, the list being extended to SOP list of KDSR3, KDSR4, and KDSR5. The SOP data were collected from April 2015 (immediately after the availability of KDSR3) to April 2016, approximately twelve (12) months duration starting from the availability of respective ship. The details of the duration for respective SOP data being collected for each ship are shown in Table 3.2 below.

Table 3.2
SOP Data Duration for KDSR3, KDSR4, and KDSR5

Project Name	Start date	End Date	Duration
KDSR3	April 2015	April 2016	12 months
KDSR4	June 2015	April 2016	10 months
KDSR5	September 2015	April 2016	8 months

Based on the extraction of SOP data within the duration stipulated as per Table 3.2 above, the total populations of subcontractors involved and SOP generated by *"desired state"* process for KDSR3, KDSR4, and KDSR5 are shown in Table 3.3 below.

Table 3.3
SOP Data Population for KDSR3, KDSR4, and KDSR5

Project Name	No. of Subcontractor	No. of SOP
KDSR3	50	867
KDSR4	38	579
KDSR5	24	327

As per Table 3.3 above, only subcontractors who had involved in all ship repair projects as per Table 1.4 will be selected, and their SOP data are to be further analyzed. These will ensure that the subcontractors can give feedback on the status of project disbursement process for the *"current state"* process (before BPR) and the *"desired state"* process (after BPR implementation). Accordingly, from these criteria, only seven (7) subcontractors from Table 3.1, continuously have a work/SOP data in KDSR3, KDSR4, and KDSR5.

The sampling for SOP data as per above criteria is shown in Table 3.4 below.

Table 3.4
SOP Data Sampling from KDSR3, KDSR4, and KDSR5

Subcontractors	KDSR3	KDSR4	KDSR5
SC01	41	26	12
SC03*	99	109	8
SC05*	242	96	8
SC06*	74	15	14
SC07*	11	23	7
SC08	1	81	15
SC10	4	33	27
Total	**472**	**383**	**91**

*Notes: *subcontractors who made complaints*

53% of the total population is covered through sampling, with KDSR3 coverage which are 54% (results were analyzed and set as benchmark as pilot test for output of *"desired state"* process), while for KDSR4 and KDSR5, the percentages are 66% and 28% respectively (results being used to confirm pilot test output from KDSR3).

KDSR5 is having the lowest coverage of 28% due to the shortest duration of the collection of SOP data compared to other ship. Analysis of SOP data in Table 3.4 will be further discussed in the next chapter in paragraph 4.3.1.2.1 and 4.3.1.2.2.

3.4.2 Data Population and Sampling of Interviewee

The interview data were collected from two (2) groups of interviewees who are directly involved and become the user for project disbursement process. The groups are; i) Shipyard employees from DeptA, DeptB, DeptC, DeptD, and DeptE as per Table 3.5 and ii) Subcontractors' management representative from five (5) company selected based on a sampling of SOP data per Table 3.6.

The Shipyard employees are a senior executive to management level who are involved, dealing, and decide on project disbursement process. All the interviewees are selected based on their involvement in day to day of project disbursement process, have a wide knowledge on project disbursement process *"current state"* issues, having authorities on cross-functional departmental interest, and current approver for ship repair project SOP's and QIR's (the approver).

The Subcontractors' representative is from management level of the subcontractors Company who is dealing with day to day project disbursement process, have experience on project disbursement process *"current state"* issues, and having authorities on the interest of the subcontractors' in dealing with project disbursement issues.

The interviews are conducted to make an assessment on ERTC during the proposed planned change process as per Figure 3.1 and to follow up on the results from SOP online approval days from the *"desired state"* process (after BPR, SOP data from KDSR3, KDSR4, and KDSR5).

Table 3.5 below indicated the population of employees from respective department and numbers of interviewees selected as the samples to be interviewed.

Table 3.5
Interviewee Data Population and Sampling-Shipyard Employees

Department	Total Employees	Interviewees
DeptA	25	1
DeptB	26	1
DeptC	255	2
DeptD	72	2
DeptE	40	1
Total	**418**	7

As per Table 3.1, only subcontractors who are involved in all five (5) ship repair projects as per Table 1.4 were interviewed to get the feedback on revamping project disbursement process.

Table 3.6
Interviewee Data Population and Sampling-Subcontractors Management

Subcontractors	Population	Sampling
SC01	1	-
SC02	1	-
SC03*	1	1
SC04	1	-
SC05*	1	1
SC06*	1	1
SC07*	1	1
SC08	1	-
SC09	1	-
SC10	1	1
Total	**10**	**5**

Notes: *subcontractors who made complaints

Table 3.6 above shows 50% of the subcontractors are selected for an interview, while another 50% are not represented by their management and having less experience in the *"current state"* of project disbursement process issues. Meanwhile 100% of subcontractors who made complaints are included in the interviewee sampling. All the Subcontractors who made complaints are selected to ensure their complaints are rectified and answered. The Subcontractors knowledge in *"current state"* issues are valuable to ensure the problem are resolved at *"desired state"* status.

A total of 12 interviewees were interviewed during this research to get feedback on project disbursement process especially at the *"desired state"* of these processes. Their feedbacks are essential to confirm the outcome of SOP online at *"desired state"* process and to assess current ERTC during project implementation within the Shipyard working environment. The selected interviewees from both groups are illustrated as in Table 3.7 below.

Table 3.7
Total Interviewees from Shipyard Employees and Subcontractors

From	Interviewees
Shipyard employees	7
Subcontractors	5
Total	**12**

3.5 Data Collection Strategies

The strategies deployed to collect the data in this research can be grouped into three (3) main categories; interview, observation, and data review. These three (3) categories as per Table 3.8, will focus on answering research question set earlier as

per paragraph 1.4. The interview was conducted on the user of project disbursement process as per Table 3.7 using a semi-structured method. Observation data (from team members as per Table 3.10) are collected during revamping project disbursement process especially on the assessment of ERTC, during training for the new system, user acceptance test, discussions, meetings, and brainstorming session. Document reviews were performed on SOP printed out from I-MARS after the proposed planned change process, and other user activity reports from MARS system, minutes of the meeting, emails, and fields notes from team members are also reviewed.

Table 3.8
Research Question and Data Collection Strategies

Research Question	**Data Collection Strategies**		
	Interview	**Observation**	**Document Review**
1. What is the *"current state"* of Shipyard's project disbursement process in terms of:			
a. the time is taken to approve one SOP?			
b. the cost incurred associated with *"current state"* of project disbursement process flow?	✓	✓	✓
2. How to revamp the *"current state"* of Shipyard's project disbursement process through BPR in terms of:			
a. reducing the cycle time to approved one SOP	✓	✓	✓
b. cost saving associated with project disbursement process flow			
3. What is the BPR CSF used to manage (possible) resistance to change from users of project disbursement process?	✓	✓	✓

3.5.1 Interview Approach

The interviews were conducted by the researcher (the team leader) and use indirect or semi-structured question. Indirect interview approach helps to avoid misunderstanding and clear the tension between interviewees (employees and subcontractors). The team leader is fully aware of role duality, and his position in the organization, thus to break the ice, it must be done informally but structured. Besides that, the whole idea is to allow interviewees to speak their mind on what they feel and have experienced about project disbursement process in its *"current state"* and *"desired state."* The interviewer needs to carefully listen to the replies and try to follow interviewees' flow of thought at that particular time (Dodge, 2011).

Interviewees were to explain the confidentiality of the interview, permission to record the interview using the digital audio recorder, and permission to ask any question related to the research or interview being conducted. Interviewees were first contacted through phone calls to set an appointment at their convenience of time and place. Most of the interviews were conducted at interviewees' office, and some were done at interviewer's office (interview with subcontractors).

The set of questions were constructed in accordance with this research interest. Some of the interview questions were adopted or modified from previous literature. Open-ended questions were asked, and interviewees were given the opportunity to respond and understand the questions before proceeding with the next question. Questions were rephrased when interviewees did not respond openly to the questions, and further explanations are required. The phrasing of the question can be modified; some

questions might not be relevant to others; thus, it can be omitted. The most important thing is, the interviewee must be a suitable person for the subject research and is independent (Dodge, 2011).

The interview was conducted through face-to-face communication, with single interviewee at each time and ranged about thirty (30) to forty (40) minutes each interview. The interview session was audio recorded to ensure no information were lost, transcribed on paper and verified by the interviewee within a day to complete the document.

The interview is divided into four (4) parts;

Part 1: Introduction. Getting the necessary personal profile of interviewees, such as age, gender, working position, years of services, qualification, employment status and general knowledge of the problem in project disbursement process. Interviewees personal profile is necessary to seek interviewees' "authority" of the research topic (Jepsen & Rodwell, 2008).

Part 2, and 3: Using indirect questions to get specific information in answering the research question as shown in Table 3.9 below. Part 4: Closing the interview session and expressing appreciation to all interviewees for participating in the interview. Details of interview questions are enclosed in

Appendix E, and interview recording transcription is written in the template form as per Appendix F. Data from the interview will be transcribed and analyzed using NVIVO 11 software.

Table 3.9
Mapping of Research Questions and Interview Questions

Research Questions	Provisional/Guiding Interview Questions	Defining
RQ1: What is the *"current state"* of Shipyard's project disbursement process in terms of a) the time is taken to approve one SOP? b) the cost incurred associated with *"current state"* of project disbursement process flow?	Are you satisfied with the current project disbursement process? Please elaborate your view especially in time and cost. (Vakola, 1999) What were redesigns process involved in your department or daily task? (Xiang, Archer, & Detlor, 2014)	Questions to establish the conditions of project disbursement process at *"current state"* status
RQ2: How to revamp the *"current state"* of Shipyard's project disbursement process through BPR in terms of a) reducing the cycle time to approved one SOP, b) cost saving associated with project disbursement process flow	Does revamping project disbursement process eliminate any unnecessary task from your daily routine? (Xiang et al., 2014) Does the time take to approve SOP is reduced compared to before BPR implementation? Please elaborate your reasoning (Kuhil, 2013; Setegn, Ensermu, & Moorthy, 2013) Did you observe any saving especially in cost after revamping project disbursement process? Please elaborate your reasoning (Setegn et al., 2013)	Questions to gather view on revamping project disbursement process
RQ3: What are the BPR CSF used to reduce (possible) resistance to change from users of project disbursement process?	In this revamping exercise of project disbursement process, what are the roles of top management? (Vakola, 1999) How would you evaluate top management support for BPR project? (Xiang et al., 2014) Does top management frequently communicate with project team and employees? (Crowe et al., 2002)	Questions to gather views on BPR CSF's-top management support.
	Is the communication channel efficient to convey necessary information about revamping project disbursement process? (Crowe et al., 2002) Is there an efficient channel to get feedback from employees about the change in project disbursement process? (Kuhil, 2013)	Questions to gather views on BPR CSF's-communication.

Table 3.9 (Continued)

Research Questions	Provisional/Guiding Interview Questions	Defining
	Does the objectives of project disbursement process being communicated to all Shipyard employees? (Xiang et al., 2014)	
	Did the Shipyard provide training on BPR requirements and how frequently it has been conducted? (Bekeli, 2012)	Questions to gather views on BPR CSF's-training.
	Is continuous training being offered as per new job requirement after BPR? (Kuhil, 2013)	
	Please discuss your involvement in designing a new process for project disbursement process if any? (Masumi, 2013)	Questions to gather views on BPR CSF's-employee's involvement.
	Have your job routine or task change after revamping project disbursement process? Please explain to what degree? High, moderate, Low (Kuhil, 2013)	
	Are the employees empowered to make decisions in project disbursement process especially at designing stage? (Crowe et al., 2002)	Questions to gather views on BPR CSF's-employee's empowerment.
	Does top management put extra pressure or too much of high expectation to complete revamping of project disbursement process? (Kuhil, 2013)	
	Any of your views or proposal being rejected by Shipyard management which relates to project disbursement process? (Kuhil, 2013)	

3.5.2 Observation

Observation is frequently adopted especially in AR cycle during the meeting, discussion, brainstorming, and presentation. In doing this, ORJI (a reflection by a researcher from observation, reaction, judgment, and intervention during observation of event or activities) framework becomes the guidelines. Coghlan (2009) stated that Schein introduced a method whereby researchers may reflect their experiencing,

understanding, judging, and acting based on observation, reaction, judgment, and intervention (ORJI).

It is a method when we (O) observe our experience and react/response sensitively to what we have seen, (R) reflecting and making (J) judgment on observation and sensitivity, and (I) intervene to ensure something happened. Attention is needed from O to R as individuals may not pay attention to details towards the reaction stage, thus hastily making judgment and action.

The team leader (the researcher) during the observation needs to be attentive in attending to the feeling as; i) initial reaction, ii) influencing judgment. ORJI framework will guide the researcher to separate feeling/sensitivity from reasoning process. It trains the team leader and the team members to do reflection and clear it from misunderstanding, inappropriate responses, decision and intervention based on incorrect data.

The team leader was involved in all observation process especially in doing planned change stages. Observations from other team members are also being discussed and compared to check any variances or new input between each other. The positionality of team leader and team members from respective cross-functional department involve in project disbursement process are shown as per Table 3.10. The team members are comprised of HoD of the respective cross-functional department in project disbursement process or the person recommended by the HoD from the respective department and empowered together with the team leader by the Shipyard management to monitor and plan the progress of this change process.

Table 3.10
Team Leader and Team Members Involvement from Cross-functional Department

Departments	Team Leader	Team Member	Directly	Indirectly
DeptA	1	1	✓	
DeptB	-	1	✓	
DeptC	-	3	✓	
DeptD	-	2	✓	
DeptE	-	2	✓	
DeptF	-	1		✓
DeptG	-	1		✓
Total	**1**	**11**		

The observation for this research started and ended parallel with research progress as per Figure 3.1. Notes and information during observation activities provided more understanding of project disbursement process revamping objective and gave beneficial input to employees and subcontractors responds towards incoming resistance to proposed planned change program. Table 3.11 shows a list of major observation activities recorded by the team leader and team members during research progress. Data from observation were transcribed and analyzed using NVIVO 11 software.

Table 3.11
List of Observation during Revamping Project Disbursement Process

Activities	Observers		AR Cycle
	Team Leader	Team Members	
the complaint letter from subcontractors	✓		Pre-step: Context and Purposes
top-management instruction to revamp project disbursement process	✓		Pre-step: Context and Purposes
forming up the team members and support from the cross-functional department	✓		Pre-step: Context and Purposes
establishing *"current state"* and *"desired state"* of project disbursement process	✓	✓	Pre-step: Context and Purposes
brainstorming for BPR process of project disbursement process	✓	✓	AR cycle 1
cost benefit analysis on a selection of BPR IT system to be used	✓	✓	AR cycle 1
budget approval	✓		AR cycle 1
assessment on ERTC using FFA and interview	✓	✓	AR cycle 1 & 4
discussion with MARS consultant	✓	✓	AR Cycle 2

Table 3.11 (Continued)

Activities	Observers		AR Cycle
	Team Leader	Team Members	
further brainstorming on change design	✓	✓	AR Cycle 2
planning for training	✓	✓	AR Cycle 2
changes in GST	✓		AR Cycle 2
blueprint approved	✓		AR Cycle 2
user acceptance test	✓	✓	AR Cycle 2
system "Go Live"	✓		AR Cycle 2
training	✓	✓	AR Cycle 2, 3, & 4
demo to all HOD application of new BPR process	✓		AR Cycle 2
user feedback and discussion	✓	✓	AR Cycle 3 & 4

3.5.3 Document Review

Report on SOP approval days, minutes of meeting and training, CBA results, FFA results, fields log book, notes of discussion will be gathered and analyzed. All information gathered from this document was compiled to examine whether the system introduced can make SOP approval faster and an assessment of how the employees are accepting the changes in their working habits.

Ahuja (2007) explained that examining written text or artifact is different from reading the words as they are real evidence and exist as per that manner. Data from document review were transcribed and analyzed using NVIVO 11 software.

3.6 The Action Research Cycles for this Research

Listed below as per paragraph 3.6.1, 3.6.2, 3.6.3, 3.6.4, and 3.6.5 are anticipated AR cycles that will take place in this research progress. The cycles were organized based on the objective set to achieved in the respective cycles while deploying the overall change activities to revamp the project disbursement process using BPR. The needs for change and establishing of the *"current state"* of project disbursement process

(identifying the problem exist) are discussed in pre-step: context and purposes. The second cycle objective discusses BPR planning and initial assessment of ERTC using FFA by BPR team. The third cycle objective focus on the new system goes live (after BPR process) and planning for necessary training. The fourth cycle objective relates to the establishment of benchmark result for a new system after BPR took places and planning for training. The last cycle objective was to validate the benchmark results, planning for training, and a final assessment on ERTC using FFA by the BPR team after the revamping process completed.

This cyclical process needs to be cultivated through collaboration, participation, and active inquiry to foster internal change and the emancipatory concept of AR. Each cycle may be interrelated and supporting each other. The cycle might also not have a connection to each other but become the major individual cycle for the project. The cycles will stop until it reached specific time set or when it has achieved the objective set for the research progress (Coghlan & Brannick, 2014).

3.6.1 Pre-Step: Context and Purposes

Context and purposes are the pre-step processes that go through in the planning stage before moving to the first AR cycle. The need of change and identifying the problem exists (the pre-step: context and purposes objective) are identified during the establishment of *"current state"* of project disbursement process by the BPR team. The summarized activities in pre-step: context and purposes are illustrated as per Table 3.12.

Table 3.12
Anticipated Activities in Pre-step: Context and Purposes

Activities	Department Involved	Data Collection Strategies		
		Interview	Observation	Document Review
complaint letter from subcontractors	DeptA, DeptB, and DeptD,		✓	✓
top-management instruction to revamp project disbursement process	DeptA, DeptB, and DeptG		✓	
forming up the team members and support from cross-functional department	DeptA, DeptB, DeptC, DeptD, DeptE, DeptF, and DeptG		✓	
establishing *"current state"* and *"desired state"* of project disbursement process	DeptA, DeptB, DeptC, DeptD, DeptE, DeptF, and DeptG		✓	✓

It started with official complaints made by subcontractors, and the complaints are being discussed critically in the management meeting. Reducing the time and associated cost related to project disbursement process become the objective of revamping this process flow (BPR step 1). An instruction to revamp the project disbursement process being given to the HOD of DeptA with authority to set up a team that consists of representatives from another cross-functional department related to the project disbursement process (BPR step 2). The forming up of BPR team from a representative of the respective department concerned is critical in designing the new process flow for project disbursement process. On 28 October 2013, the first brainstorming session between team members (as per Table 3.10) held to chart the direction of this proposed planned change.

The first critical activities held under pre-step: context and purposes were to establish the *"current state"* and *"desired state"* of project disbursement process (BPR step 3). The establishment of these situation will help to forecast the change direction and establishing the needs of change for the issue raised by the subcontractors (Burgess,

2014; Goksoy et al., 2012; Guimaraes & Paranjape, 2013; Lilian et al., 2015; Mitchell, 2013; Mturi, 2014; Robbins & Coulter, 2012). None of the anticipated activities under pre-step: context and purposes are incomplete and need further review in next coming cycle. Secondly, the outcome of the *"current state"* and *"desired state"* for project disbursement process was brain-stormed, discussed and presented among team members and received the acknowledgment from the top management. The *"current state"* and forecasted *"desired state"* are illustrated as per Table 3.13.

Table 3.13
State of Project Disbursement Process

Current State	**Desired State**
work progress captured and planned manually	work progress to be captured and planned systematically
SOP took thirty days (30) to completely verified	to improve SOP approval days by four (4) days or lesser
SOP using manual verification process	SOP online verification process
SOP is produced manually/handwritten	SOP generated through a system
the process flow of project disbursement process too long	to revamp and shorten the process flow and eliminate waiting time/idle process
compilation of document for disbursement messy/tedious	to improve compilation of document by empowering the subcontractors
verification and compilation of document very costly	to reduce the cost to verify and compile a document for disbursement
late document submission for disbursement	to improve document submission for disbursement
non-availability status of the document submitted, hard to locate on the location of the document	to create a friendly platform between subcontractor and Shipyard to check their document status.

While completing the establishment of the *"current state"* of project disbursement process, manpower costing data are collected for both Shipyard employees' (from Shipyard Human Capital Department) and Subcontractor's clerical staff (during an interview with subcontractor management representative) to approved one SOP and verifying document for disbursement. Time taken to complete the above mentioned worked during manual SOP process and verifying document for disbursement before

revamping process is registered to compare and calculated the time and cost saving gained from this BPR exercises.

3.6.2 Action Research Cycle 1

AR cycle 1 emphasis on the second cycle objective which covers discussion on BPR planning (brainstorming for revamping process, CBA to select appropriate IT-based method, budget approval for BPR project) and initial assessment of ERTC using FFA by BPR team. Cycle 1 started from October 2013 until June 2014 and took about nine (9) months to complete. The Cycle 1 become the core planning for BPR implementation as it consists of main activities which will decide either the proposed planned change can proceed or not. The summarized activities in Cycle 1 is illustrated as per Table 3.14.

Table 3.14
Anticipated Action Research Cycle: Cycle 1

Activities (constructing, planning action, taking action, evaluating action)	**Department Involved**	**Data Collection Strategies**		
		Interview	**Observation**	**Document Review**
brainstorming for BPR process of project disbursement process	DeptA, DeptB, DeptC, DeptD, DeptE, DeptF, and DeptG		✓	
cost benefit analysis on selection of BPR IT system to be used	DeptA, DeptB, DeptC, DeptD, DeptE, DeptF, and DeptG		✓	✓
budget approval	DeptA and DeptF		✓	✓
assessment on ERTC using FFA and interview	DeptA, DeptB, DeptC, DeptD, DeptE, DeptF, and DeptG		✓	✓

The revamping of project disbursement process is concluded in three (3) core phases to be implemented; i) phase 1, capturing work progress in the system, ii) phase 2, approving SOP and QIR online (supporting documents for disbursement), and iii)

phase 3, a compilation of document for disbursement. Phase 1 and Phase 2 involves designing the new IT-based system, revamping work process flow, and creating new job function, while phase 3 concentrating on a compilation of document using empowerment concept to the Shipyard employees and subcontractors.

Table 3.15, illustrated the overall idea of these stages. In these phases researcher deals directly with the cross-functional department concern as it involves reviewing their current job practice. At this stage, the collaboration and involvement of all employees concerned will be tested at maximum level.

Table 3.15
Phases of Redesigning of Project Disbursement Process

Phase 1 **Capturing Work Progress**	**Phase 2** **Approving SOP & QIR**	**Phase 3** **Tax Invoice submission**
toolbox talks card report workshop weekly progress report observation on board interior, hull, outfitting, painting (IHOP) schedule MARS Planning work progress capturing S7003(DeptC1) cross-functional department; DeptB, DeptC, DeptC1, & DeptD	SOP approved by HOD DeptC2 SOP approved by HOD DeptC SOP approved by HOD DeptD SOP approved by HOD DepC3 QIR approved by the executive DeptE cross-functional department; DeptC, DeptD, & DeptE	compilation of document for disbursement; WO, QIR, SOP, & TI capturing in the system for disbursement process cross-functional department; DeptA & Subcontractor

Phase 1: Capturing work progress; in line with transformation objective to adopt best Korean work practice in ship repair work, new approach and way of doing work are being introduced at DeptC especially factors related to work planning and monitoring. Work progress is planned by DeptC1 and executed by DeptC2 or subcontractor and monitored by DeptD. Planning goes into detail about weekly works to be completed and how many man-days required to perform and complete the task. Progress is

planned, monitored and captured in the MARS*Planning on a weekly basis, and subcontractor needs to send their weekly work progress to DeptC1 to be captured in the MARS system.

Phase 2: Approving SOP and QIR online; when the progress of work reached a certain level of agreed milestone payment (negotiated during commercial negotiation) for the work between Subcontractor and the Shipyard, the system will trigger to create an online SOP and send to the respective approver set by DeptB during WO creation. The system will log the duration taken by each approver and recorded the overall time taken to approve the SOP.

Before the creation of SOP, certain work needs to be tested and certified by DeptE to confirm with the standard and quality required. QIR is also being produced and monitored manually. In conjunction with revamping the SOP process, QIR is also being revamped to be managed in the system like SOP. QIR is being approved and monitored by DeptE, and its progress is also captured in the system. Both QIR and SOP is now available through an online platform and can be accessed by Subcontractors from their offices.

Phase 3: Tax invoice submission; submission of tax invoices requires four (4) main documents to be compiled together, i.e., i) WO, ii) QIR (need verifications), iii) SOP (need verifications), and iv) tax invoice. Usually, subcontractors hire a runner to do this compiling (Ismail & Osman, 2016) and sometimes they also did not know what the requirements to be fulfilled before any disbursement can be submitted. Runners

will look for SOP and QIR approvers one by one to get the document signed and approved.

To improve this condition, empowerment concept is given to Subcontractors to encourage them to self-compile all documents and get it submitted by themselves. Enabling this, QIR and SOP must be made available to the subcontractors for them to access these documents and manage it by themselves. Safety and security element must be in place as this document become a valid document for disbursement and cannot be reproduced to avoid double processing and mishaps by anybody. Early submission increased chances to get early and faster disbursement and can be used to strengthen the respective subcontractor's cash flows position.

Subsequently, after the brainstorming is completed, the team need to discuss the main IT enabler issue in BPR implementation, i.e., what IT system to be used. The options available are either i) to invest in new IT system, ii) to further develop from existing SAP system, and iii) to further develop from existing MARS system. The selection must take into consideration that Shipyard already has so many systems in current working practices, either top management will support new investment on this requirement, and either the Subcontractors can follow to invest in the proposed new system. Involvement from subcontractors and their willingness to invest in the new system if needed are crucial as subcontractors will be the user for the process flow (revamping process) as well.

When the issue relates to heavy investment on the IT-based system, a comprehensive analysis using CBA (BPR step 4) must be performed to reduce BPR failure rate and

increase chances for success (Goksoy et al., 2012). An economic model of CBA introduced by Ali (2012) as per Table 3.16 is being used to do a review for this selection. Team members are being briefed by DeptF and Team leader on the input of the respective options available. The historical cost incurred on IT enabler by Shipyard for both MARS and SAP system is being presented to the team. All the members give the scoring for the cost and benefits/cost saving in terms of being favorable or unfavorable to the Shipyard. The options with more favorable selection by the team members are chosen to be used for revamping project disbursement process in the Shipyard.

Based on the CBA analysis done as shown in Table 3.16, the team had unanimously selected option 3 for the IT-based system and supported by top management to proceed with the proposed planned change. MARS being used widely in Shipyard working environment compared to SAP with limited modules subscribed. MARS had already established an existing platform (for RFQ processes) to interact with Subcontractors on I-MARS platform as per Appendix A. MARS software license is relatively cheaper compared to SAP as MARS calculated licensed per "company, unlimited user" while the SAP is calculated based on "number of the user, restricted user." Generally, all the options provided equal cost saving, except MARS relatively reasonable in terms of price and can use existing internal resources for training purposes.

Table 3.16
CBA Analysis for Selection of IT-Based System in Shipyard

Criteria	Option 1		Option 2		Option 3		Remarks
	favorable	unfavorable	favorable	unfavorable	favorable	unfavorable	
COST							
Purchasing Cost							
license cost		✓		✓	✓		option 1 unknown, option 2 per head, option 3 per company
installation/troubleshooting costs		✓		✓		✓	all required longer time to provide
support cost		✓		✓	✓		option 3 encourage local support compared to others
Cost of Learning New Software							
formal training cost	✓		✓		✓		all support normal training
informal training cost		✓		✓	✓		existing team can do informal training for options 3
self-training cost		✓		✓	✓		options 3 resources already exist
Additional hardware/software cost							
additional required hardware		✓	✓		✓		only option 1 required additional hardware
additional required software		✓		✓		✓	all required additional software
reaching optimal performance		✓	✓		✓		option 1 unknown
BENEFITS/COST SAVING							
New features							
immediate opportunity benefits	✓		✓		✓		all provided same opportunity benefits
future potential benefits	✓		✓		✓		all promised potential benefits
vacant of talents		✓		✓	✓		option 3 resources already available
Enhanced speed							
time-saving of workers	✓		✓		✓		all system is capable of achieving time-saving
increase of handling other jobs	✓		✓		✓		all system is capable of reducing the time
Competitive advantage							
reduce operational costs	✓		✓		✓		all system is capable of reducing operational cost
enhancing process	✓		✓		✓		all system is capable of enhancing the process
introducing new opportunities	✓		✓		✓		all system is capable of capturing/creating new opportunities

The next critical activities under this cycle were to get the approval for the budget on the proposed planned change. Since the issue raised as emergency situations and needed immediate action, there is no provisional budget provided earlier in the Shipyard Annual Budget for these purposes. Team leader, with all the support from other team members, had presented the proposal to Shipyard top management to seek for budget approval to proceed with the proposal. The approval is critical as it cracks the first "deadlock" for this change program and shows top management commitment and concerned towards this proposed planned change.

On 23 December 2013, Shipyard Director of Operations (DOO – top management who directed daily Shipyard business operations) had approved a sum of the budget to proceed with the proposed planned change of project disbursement process. The budget approval had allowed the team to arrange with MARS consultant (MARS consultant responsible for doing a design based on the end user requirement, programming development, user acceptance test and support on the system change request) to visit the Shipyard and discussed the new outlook of project disbursement process.

The *"desired state"* of project disbursement process as per Table 3.13 is being communicated with MARS consultant for their view and comments. Blueprint of project disbursement process need to be agreed for MARS consultant to proceed with system modifications and established system prototype for the propose change (BPR step 5).

Overall, the first blueprint for design process is concluded until V06 dated 28 July 2014 and the summarized blueprint development activities with MARS consultant are indicated in Table 3.17.

Table 3.17
Blueprint for Design Process-Summarize Activities

Version	Date	Short Description of Changes
V01	20 November 2013	new file created
V02	20 May 2014	changes after design meeting on 14 May 2014
V03	3 June 2014	changes after skyped meeting on 3 June 2014
V04	14 July 2014	updated details regarding back-reporting options
V05	14 July 2014	programming updates
V06	28 July 2014	updated after changes on site (after UAT)

The last critical activities that took place in AR cycle 1 was the initial assessment on the current ERTC before deployment of BPR took place. Based on FFA guidelines as per (Coghlan & Brannick, 2014), team members established the initial status of ERTC within Shipyard working environment as presented in Table 3.18. Scoring of a maximum of five (5) is being assigned by team members to respective items and totaled up to get the average scoring for all criteria. Team leader oversees the results and makes an effective intervention during the process when necessary. Further details on this assessment will be discussed in paragraph 4.4.1 and 4.4.2 later.

Table 3.18
Assessment on ERTC at Current State

Driving Forces	Restraining Forces
external pressure to change	job insecurity
transformation agenda	system complexity
new job description	prevent status quo
internal pressure to change	afraid of losing authority
in-house training	afraid of unknown
communications	intensive training
top management support	BPR top-down approach
employee's empowerment	high IT cost to invest

Overall, AR cycle 1 concluded the need for change in project disbursement process and deploying BPR implementation steps from step 1 until 5, i.e., i) prioritized process objective, ii) identified process to redesign, iii) understand and measure the benchmark, iv) identified the right IT method, v) design and build prototype as per (Davenport & Short, 1998). The completed activities are finalized and given a prediction for next AR cycles activities, while uncompleted activities are carried forward to next subsequent cycle for subsequent process. None of the anticipated activities under AR cycle 1 are incomplete and need further review in next coming cycle.

3.6.3 Action Research Cycle 2

AR cycle 2 concentrated on the effort for the new system goes live (after BPR process) and planning for necessary training on a new system involving the system users (Shipyard employee's and Subcontractors' staff). Cycle 2 started from June 2014 until December 2014 and took about 6 months to complete. The summary of activities in Cycle 2 is illustrated in Table 3.19.

Discussion between MARS consultant continued to capture any further amendment required. UAT was conducted from 21 July 2014 until 1 August 2014 (BPR step 6). The final blueprint for design process being finalized on 28 July 2014 and new process "Go Live" for the first time on 4 August 2014. On 5 August 2014, a system demonstration being presented for all Shipyard HoD's at the weekly meeting for their acknowledgment.

Table 3.19
Anticipated Action Research Cycle: Cycle 2

Activities (constructing, planning action, taking action, evaluating action)	Department Involved	Data Collection Strategies		
		Interview	Observation	Document Review
discussion with MARS consultant	DeptA, DeptB, DeptC, DeptD, DeptE, and DeptF		✓	✓
user acceptance test	DeptA, DeptB, DeptC, DeptD, DeptE, and DeptF		✓	✓
further brainstorming on change design	DeptA, DeptB, DeptC, DeptD, DeptE, DeptF, and DeptG		✓	
final blueprint for design process finalized	DeptA, and DeptF		✓	
system "Go Live"	DeptA and DeptF		✓	✓
demo to all HOD application of new BPR process	DeptA and DeptF		✓	
changes in GST	DeptA, DeptB, and DeptF		✓	✓
final blueprint for GST finalized	DeptA, and DeptF		✓	
planning for training	DeptA, DeptB, and DeptF		✓	

In October 2014, another change design associated with project disbursement process was being discussed with MARS consultant to amend the system programming. Starting from April 2015 onwards, shipbuilding/ship repair business need to cater for the statutory requirement on GST implementation. Blueprint for GST requirement being finalized on 25 November 2014 and successfully incorporated with the new system. After capturing all the requirements for system implementation, the needs for training being planned and organized. In conclusion, AR cycle 2 concludes with the deployment of BPR step 6 during the process. None of the anticipated activities under AR cycle 2 are incomplete and need further review in next coming cycle.

3.6.4 Action Research Cycle 3

AR cycle 3 focused on achieving the fourth cycle objective relates to the establishment of benchmark result for a new system after BPR took places and continuous planning for training to the users of the new system. Cycle 3 started from December 2014 until April 2015 and took about 4 months to complete. The activities in Cycle 3 are listed as per Table 3.20. First training for new system conducted on 15 December 2014 with involvement from Shipyard employees and Subcontractors staffs. The training conducted in Shipyard training room and organize internally with support from DeptF. Since Shipyard took the option number three for the selection of IT method, in-house training is made available locally and reduces its associated cost to the Shipyard and Subcontractors. After the training, the session is open to the floor to gather first feedback from another user with regards to the new system. All of the participants took part actively during the session and cannot wait for new ship repair project to come and tested the new BPR process.

Besides training, the other important activities in Cycle 3 was to collect SOP data and develop benchmark from the new process. Testing the revamping output required new ship repair project to be tested and followed all the revamping process flow. The target date is set on KDSR3 with is due to enter Shipyard for its refit maintenance on 10 November 2014. KDSR3 data will be the pilot data for the testing, and analysis from its process is set as a benchmark for new process flow.

Table 3.20
Anticipated Action Research Cycle: Cycle 3

Activities (constructing, planning action, taking action, evaluating action)	Department Involved	Data Collection Strategies		
		Interview	Observation	Document Review
training	DeptA, DeptB, and DeptF		✓	✓
testing and analyzing data from KDSR3-dry run/pilot test	DeptA and DeptF			✓
establish benchmark (KDSR3) on SOP approval days	DeptA and DeptF			✓
user feedback and discussion	DeptA, DeptB, DeptC, DeptD, DeptE, and DeptF		✓	

Eight (8) days after KDSR3 entered the Shipyard, the project encountered a tragedy and data collection plan for the pilot project and established a benchmark for new system process was put on hold. The tragedy changed the Shipyard working environment, and all Shipyard resources were used to rescue KDSR3. On April 2015, Shipyard managed to recover KDSR3, and the repair work continues from April 2015 onwards. Due to the tragedy on KDSR3, only training activities can be completed under Cycle 3 while efforts to develop benchmark result on SOP approval days from the BPR process were put on hold and carried forward to the next cycle.

3.6.5 Action Research Cycle 4

AR cycle 4 was planned as the last cycle based on the cycle objectives set earlier. Due to uncompleted activities in Cycle 3, the establishment of benchmark result in approving the SOP was completed in Cycle 4. Apart from establishment the SOP approval days benchmark, the original cycle objective in Cycle 4 are remaining and targeted to be complete in this cycle as well. Validating the SOP approval days benchmark, planning for training, and a final assessment on ERTC using FFA by the BPR team remains as important cycle objective within Cycle 4.

Cycle 4 started from April 2015 until December 2016 and took about 20 months to complete. The activities in Cycle 4 are included in Table 3.21. This cycle has taken the longest time compared to the previous cycles as the team needs to wait until KDSR3 is ready to produce SOP data to analyze (BPR step 7). Two (2) main activities from Cycle 3 are being brought forward to Cycle 4, i.e., i) testing and analyzing data from KDSR3-dry run/pilot test, ii) established a benchmark on SOP approval days. SOP's are collected from WO approved from April 2015 onwards until April 2016 with a duration of one (1) year. Data were downloaded from MARS system and the report displaying the date of approval by respective approver for each SOP. Respective approval days for each SOP are gathered and become the benchmark for new processes.

Table 3.21
Anticipated Action Research Cycle: Cycle 4

Activities (constructing, planning action, taking action, evaluating action)	**Department Involved**	**Data Collection Strategies**		
		Interview	**Observation**	**Document Review**
testing and analyzing data from KDSR3-dry run/pilot test	DeptA and DeptF			✓
establish benchmark (KDSR3) on SOP approval days	DeptA and DeptF			✓
testing and analyzing data from KDSR4 and KDSR5	DeptA and DeptF			✓
validating benchmark on SOP approval days	DeptA and DeptF			✓
analyzing discrepancies between KDSR3 and KDSR4 and KDSR5	DeptA and DeptF			✓
Training	DeptA, DeptB, and DeptF		✓	✓
user feedback and discussion	DeptA, DeptB, DeptC, DeptD, DeptE, and DeptF		✓	
assessment on ERTC using FFA and interview	DeptA, DeptB, DeptC, DeptD, DeptE, and DeptF	✓		✓

To further validate on the benchmark result established by KDSR3, the team plan to do a subsequent SOP data collection for the next incoming ship repair project. KDSR4 is due to enter the Shipyard on June 2015, and KDSR5 on September 2015. SOP data collection for KDSR4 and KDSR5 are important to confirm further the results generated by KDSR3 using the BPR process. All data collection can be collected parallel and plan to be closed on the same date, i.e., April 2016.

Apart from collecting SOP's data for KDSR3, KDSR4, and KDSR5, the Shipyard plans for continuous training to take place during the cycle. Overall, four (4) full day training using office desktop to train Shipyard employees and Subcontractors on the usage of BPR process flow is planned and conducted. The training was held as shown in Table 3.22 below. During training sessions, the user interface is being noted in the field notes for further reference.

Table 3.22
Training Schedule for Project Disbursement Process

Date	Trainer	Location	Participant	
			Shipyard Employees	Subcontractors
15.12.2014	in-house	shipyard training room	✓	✓
26.06.2015	in-house	shipyard training room	✓	✓
17.08.2015	in-house	shipyard training room	✓	✓
10.09.2015	in-house	shipyard training room	✓	✓

Besides training, preparation of detail work instruction, standard operating procedures, and a pamphlet with regards to new processes are being prepared for easy reference by Shipyard employees and subcontractors. Feedback from face to face training, discussions, meetings, emails, and suggestion from all users to the usage of BPR process being gathered and analyzed for further improvement when required.

The last critical activities conducted in Cycle 4 was conducting another assessment on ERTC after revamping the project disbursement process. During Cycle 1, the first assessment as per Table 3.18 was referred and reassessed. The ERTC assessment was important to confirm whether any of the BPR CSF's is deployed during the deployment of BPR that influence ERTC status on acceptance of change in the Shipyard's working environment. On completion of Cycle 4, all the anticipated activities for AR cycles are completed and all the required data on SOP approval days and assessment on ERTC were summarized for analysis. No new AR cycle anticipated for this research progress.

3.7 Data Analysis

This research adopted inductive procedure for research as recommended by Hart (2003) which are i) researcher gathers information and data, ii) questions are asked about the phenomenon, iii) data are classified and placed into categories, iv) patterns are looked for in the data, and potential theories are proposed, and v) theories are tested and developed, patterns are compared with other patterns and theories. Inductive research is more appropriate to Shipyard's research setting whereby there are no strong body of accepted theory within Shipyard organizations, and the research represents a piece of reflective study on the current issues in the Shipyard with an intention to change it (Tobi, 2014)

Data collected for this research vary in terms of archaic documentation, interviews, and observations notes. Three (3) themes were created, i.e., i) interviewee's profile, ii) project disbursement process status, and iii) reduced ERTC using BPR CSF's. All of

the data collected were converted to a transcribed form for the next process. After that, data reduction process began with continuous reading performed on the transcribed data to capture any emerging themes from each transcript. The file was saved in the same folders for easy referring to continue with "open coding procedure." All emerging themes identified and were separated accordingly to avoid misplaced of data in the system later (Dasuki, 2015).

The data was gathered, analyzed, and presented as per Creswell (2013) steps which are i) organize and prepare data for analysis, ii) read or look at all data, iii) start coding of all data, iv) used coding to generate themes or description for analysis, v) advance how this themes or description be used in qualitative narrative, vi) Interpretation of qualitative results.

1. Organize and prepare data for analysis: compile all available data (from the interview, observation, data review) for analysis, in a folder and arrange it accordingly for easy access and references. Create and keep this in a safe folder.

2. Read or look at all data: examine and go through all data to get the general feeling of information, discussion, and meaning. Transcribe the data for easy grouping and are related to the research interest. Transcribed data can be revisited until we can capture the emerging themes from the respective transcription if any.

3. Start coding of all data: create the coding and group them accordingly. Coding on topics that are directly related to research, unexpected or indirectly to research, or unusual to readers.

4. Use coding to generate themes or description for analysis: For this research, we will be coding based on interviewee's profile, project disbursement process status, reduced ERTC using BPR CSF's. An illustration of the process flow of data analysis using NVIVO adopted from Dasuki (2015) used in this research is as shown in Figure 3.5.

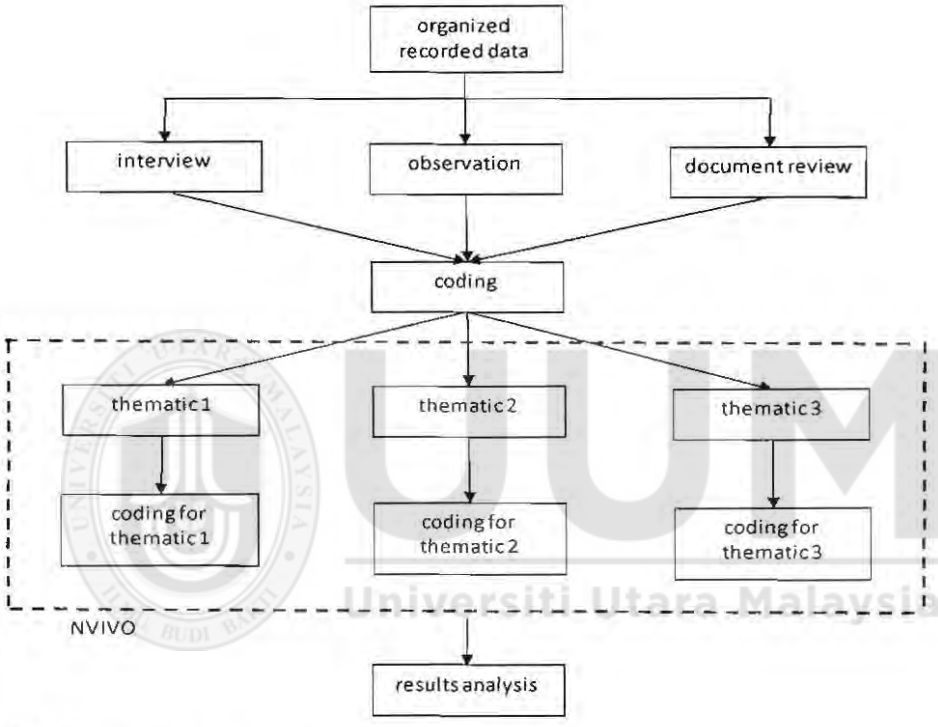


Figure 3.5
Process Flow for Data Analysis Using NVIVO
Adopted from Dasuki (2015)

After the coding process, all of the analyzed data is organized into categories and labeled with observation or notes during the interview, observation exercises, and document review. Next, the coding process will describe all of the categories for analysis. Codes will be created for all available information, and all categories will be analyzed in a general description using NVIVO 11. The general illustration of NVIVO

software procedures is per illustration in Figure 3.6. An easy step by step guideline to use NVIVO 11 is made available by the developer, QSR International in YouTube application by searching for "NVivo 11 for windows".

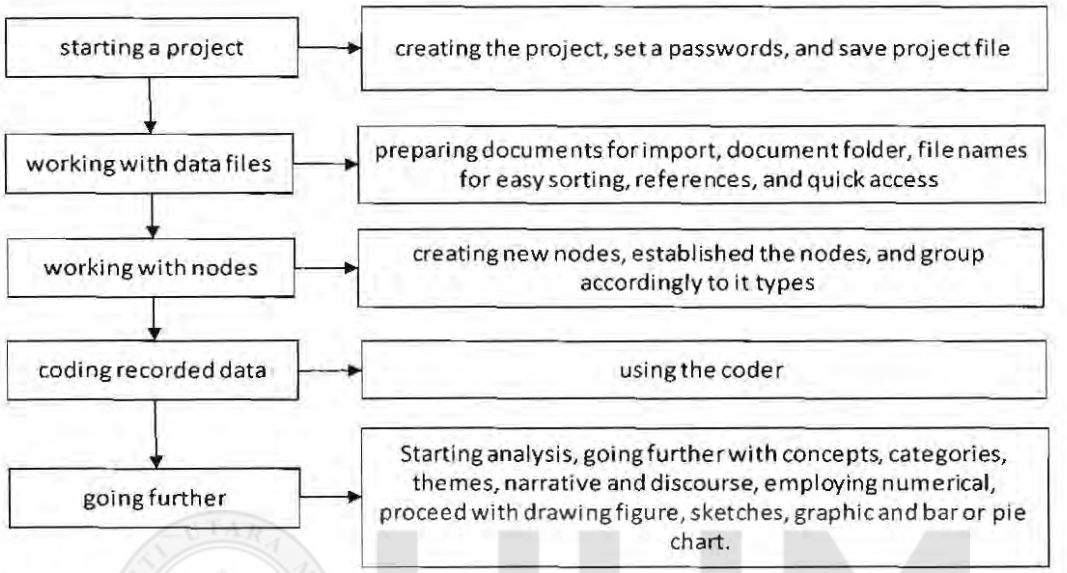


Figure 3.6
NVIVO Software Program Procedure
Adopted from Dasuki (2015)

After that, nodes will be created and grouped into categories accordingly for this research. The qualitative narrative is used to describe the themes. The purposes of this inductive data were to sustain, support or relate to the existing theory related to this research. It should be build up in the construction of the theories that have the same criteria in data collection (Johnston, 2014).

The study must adhere to the coding procedure and data analysis (Creswell, 2009), where the coding is not just simply organizing the data, the essence of it is to make the data understandable for further analysis (Catterall, 1996). Not all data will directly align into one category, in which it requires high understanding and interpreting the cross related data rigorously (Cassell, Buehring, Symon, & Johnson, 2006).

5. Advance how this themes or description be used in the qualitative narrative: we will present this in narrative passage to the finding of analysis. Figures, table, and charts will also be used to describe the analysis.

6. Interpretation of qualitative results: is a combination of reflection process and system output. The impact of changes from the BPR process to the acceptance of change in Shipyard staff, as well as recording new findings if any, in AR cycle will be interpreted.

Overall, qualitative data analysis can be presented interactively as per Figure 3.7 below:

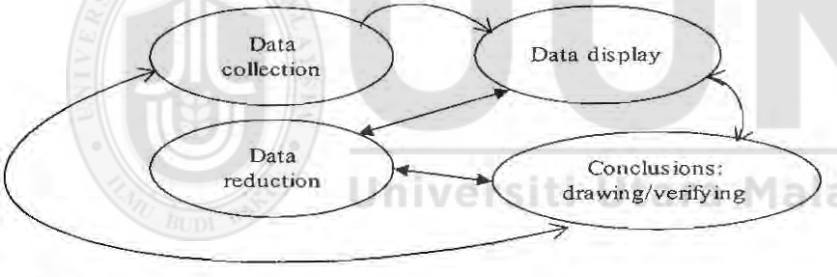


Figure 3.7
Components of Data Analysis: Interactive Model
Adopted from Miles and Huberman, 1994

Figure 3.7 illustrated how data display, data reduction, and data drawing took place in the overall process of data analysis. This interactive, continuous interaction helps to establish a better understanding of the emerging and constructed themes towards understanding the existing theories related to the research.

3.7.1 Data Reduction

Data reduction is a process of selecting, extracting, making it simpler, easier to understand the emerging themes from all available resources gathered earlier in data collection process. Data reduction aims to reduce a data set, the data will become less important, but the originality and reliability of the data are well looked after (Xia & Gong, 2014). It will reduce data count, and increased data information. For example, code names were assigned to the emerging themes that were organized into categories of concepts, ideas, patterns, relevant topics which were observed from interviewee's perspective.

3.7.2 Data Display

The next step of data analysis is data displays. It is a tool or technique to portray all possible solutions. Data display helps to summarize and submit all available data to reach a possible conclusion. Xia & Gong (2014) suggested a various method which can be used for arrangement and classification of data. The chosen techniques are based on the outcome of data reduction. Data display was later created to showcase findings and connections from all available sources of information gathered earlier.

3.7.3 Data Drawing and conclusion

The final steps of data analysis are to draw an initial conclusion based on cross-case of data information displayed and links these initial conclusions to verification processes. Conclusions are drawn according to the reliability of the methods and the

findings of the research (Xia & Gong, 2014). The idea was meant to confirm if the findings are appropriate before being labeled as final and conclusive. In qualitative research method, reliability, honesty, and consistency are vital to ensure results given are appropriate and conclusive.

In conclusion, data analysis for this research will be concluded in two categories; i) deployment of BPR to reduce the time and cost in project disbursement process, and ii) what is the possible BPR CSF's used to reduce possible ERTC in Shipyard's working environment. Data analysis are essential for the Shipyard to resolve its current issues and survive in this challenging shipbuilding/ship repair industry (Jirwe, 2011; Xia & Gong, 2014).

3.8 Summary

In summary, this chapter discussed applied research design being deployed as overall guidance in doing this research, methodology used for the research, data population and sampling, data collection strategies, interactive AR cycles during the research progress, and data analysis to conclude the findings of this research. The core part of this chapter is within four (4) interactive AR cycle conducted where most of the research activities happened, recorded, and analyzed. The conclusion of this chapter is vital to determine results for Chapter Four and Five later.

CHAPTER FOUR
DATA ANALYSIS AND FINDINGS

4.1 Introduction

This chapter discusses the data analysis and finding for this research. The analysis was based on SOP data collected at the *"desired state"* of project disbursement process, an observation made during project progress, an interview session with Shipyard employees and Subcontractors staff.

The chapter is divided into three (3) parts, i.e., i) personal demographic data (theme one), ii) BPR process output (theme two, directly related to research questions number one and number two), and iii) assessment on ERTC (theme three, directly related to research questions number three). Personal demographic data indicate interviewees strength and knowledge on research subject, BPR process output cover improvement in project disbursement process such as i) cost saving to verified SOP online, ii) verification documents for disbursement, and iii) improvement in the process flow. Results from BPR process output will indicate whether the first objective of this research is fulfilling or not.

Assessment on ERTC will uncover on what are the driving, and restraining forces existed during the revamping of project disbursement process in its *"current state"* and *"desired state."* It will help to understand how the driving forces are being strengthened and how restraining forces are being reduced using the influence of Shipyard BPR CSFs. It will indicate how Shipyard reduces ERTC during project

implementation and whether the second objective of this research is fulfilled or not. The next subsection of this chapter discusses interviewees personal demographic.

4.2 Personal Demographic of Interviewees

This section (theme one) gathered interviewees' general information in terms of personal and organizational demographics. The aims were to develop interviewee personal demographic information such as age, gender, working positions, year of services, higher education qualifications, and employment status. All of the interviews were done in the year 2016 in AR Cycle 1 and 2. The data were grouped into two main respondents who are the Shipyard employees' and Subcontractors personnel.

4.2.1 Shipyard Employees'

The interviews were done with seven (7) Shipyard employees as per Table 3.5. who are directly involved in project disbursement process and affected by the change. All the interviewees (Shipyard's employees) are selected based on their involvement in day to day of project disbursement process, have a wide knowledge on project disbursement process *"current state"* issues, having authorities on cross-functional departmental interest, and current approver for ship repair project SOP's and QIR's (the approver). The demographic data from Shipyard employees help to reveal vital information on the strengths and weaknesses of interviewees and their views on this change program especially on possible resistance that exist during the revamping of project disbursement process.

4.2.1.1 Employee's Interviewees' Age

Table 4.1 shows the interviewees age group in three (3) categories, i.e., i) 30 to 39 years old, ii) 40 to 49 years old, and iii) 50 to 59 years old. The categories of 40 to 49 years and 50 to 59 years comprise of the highest percentage with 42.86% each. Most of the interviewees are experienced employees, and none are a fresh graduate.

Table 4.1
Employee's Interviewees' Age

Age	Frequency	Percentage (%)
30 to 39 years	1	14.28
40 to 49 years	3	42.86
50 to 59 years	3	42.86
Total	7	**100.00**

4.2.1.2 Employee's Interviewees' Gender

Table 4.2 shows the interviewees gender in which male is 71.42% and female 28.58%. The results indicate that most of the Shipyard employees are male and dominating the work position in the Shipyard.

Table 4.2
Employee's Interviewees' Gender

Gender	Frequency	Percentage (%)
Male	5	71.42
Female	2	28.58
Total	7	**100.00**

4.2.1.3 Employee's Interviewees' Working Position

Table 4.3 shows interviewees working positions in four (4) categories, i.e., i) top managers, ii) middle managers, iii) executive, and iv) non-executive. Middle managers are the highest at 42.86% followed by top managers at 28.58% and executive and non-

executive with both at 14.28%. Middle managers and top managers are crucial for change process as they can be the drivers or driving forces towards BPR implementation.

Table 4.3
Employee's Interviewees' Working Position

Working Position	Frequency	Percentage (%)
Top Managers	2	28.58
Middle Managers	3	42.86
Executive	1	14.28
Non-Executive	1	14.28
Total	7	**100.00**

4.2.1.4 Interviewed Employees Years of Service in Shipyard

Table 4.4 shows interviewees years of services with Shipyard in three (3) categories, i.e., i) 1 to 5 years, ii) 6 to 10 years, and iii) more than 11 years. Year of services of more than 11 years is the highest percentage of 57.14%. The results indicate that most of the interviewees had served the Shipyard for a long time and had in-depth knowledge about the Shipyard's working environment, especially on project disbursement process.

Table 4.4
Employee's Interviewees' Years of Service in Shipyard

Year of Services	Frequency	Percentage (%)
1 to 5 years	2	28.58
6 to 10 years	1	14.28
More than 11 years	4	57.14
Total	**7**	**100.00**

4.2.1.5 Interviewed Employees Higher Education Qualification

Table 4.5 shows interviewees higher education qualification in three (3) categories, i.e., i) diploma, ii) bachelor and iii) master level. Diploma level is the highest at 42.84%, while both bachelor and master level are at 28.58% each. The results indicate whether education background influences the acceptance of change during revamping project disbursement process or otherwise.

Table 4.5
Employee's Interviewees' Higher Qualification

Highest Education Qualification	Frequency	Percentage (%)
Diploma	3	42.84
Bachelor	2	28.58
Master	2	28.58
Total	**7**	**100.00**

4.2.1.6 Interviewed Employees Employment Status

Table 4.6 shows interviewees employment status with Shipyard in two (2) categories, i.e., i) contract and ii) permanent. Permanent contract status is the majority with 85.72%. The results indicate whether employment status plays a major influence on acceptance of change during the revamping of project disbursement process or otherwise.

Table 4.6
Employee's Interviewees' Employment Status

Status	Frequency	Percentage (%)
Contract	1	14.28
Permanent	6	85.72
Total	**7**	**100.00**

4.2.2 Subcontractors Personnel

The interviews were done with five (5) subcontractors representative as per Table 3.6. All the Subcontractors representatives are from their management level and are familiar with the Shipyard working environment and are authorized to give views and comments on behalf of their Company. The demographic data from subcontractors will help to reveal vital information from interviewees especially their opinions on project disbursement process status in the *"current state"* and *"desired state."*

The feedback from an interview with subcontractors personnel will indicate whether the problem in the *"current state"* is resolved, or is continued at the *"desired state,"* and their acceptance towards change initiative in project disbursement process flow.

4.2.2.1 Interviewed Subcontractor's Age

Table 4.7 shows the Subcontractors interviewee age group which falls into three (3) categories, i.e., i) 30 to 39 years old, ii) 40 to 49 years old, and iii) 50 to 59 years old.

Table 4.7
Subcontractor's Interviewee Age

Age	Frequency	Percentage (%)
30 to 39 years	2	40.00
40 to 49 years	1	10.00
50 to 59 years	2	40.00
Total	**5**	**100.00**

Categories of 30 to 39 years and 50 to 59 years comprise of the highest percentage with 40.00% each. Most of the interviewees are experienced Subcontractors and are

not fresh graduate or entry level. For 30 to 39 years old age group, they are owners or related to the owners of the Company.

4.2.2.2 Subcontractor's Interviewee Gender

Table 4.8 shows the interviewed Subcontractors gender which is dominated by male 100%. The results indicated that the male workforce represents most of the Subcontractors in the Shipyard.

Table 4.8
Subcontractor's Interviewee Gender

Gender	Frequency	Percentage (%)
Male	5	100.00
Female	-	-
Total	**5**	**100.00**

4.2.2.3 Interviewed Subcontractor's Working Position

Table 4.9 shows the interviewed Subcontractors working positions are grouped into four (4) categories, i.e., i) top managers, ii) middle managers, iii) executive, and iv) non-executive. Top managers are the highest with 80.00% followed by middle managers 20%, and vital in giving support for Shipyard BPR implementation as they can be the champion and push the change initiative forwards effectively.

Table 4.9
Subcontractor's Interviewee Working Position

Working Position	Frequency	Percentage (%)
Top Managers	4	80.00
Middle Managers	1	20.00
Executives	-	-
Non-Executives	-	-
Total	**5**	**100.00**

4.2.2.4 Interviewed Subcontractor's Years of Service Working with Company

Table 4.10 shows the interviewed Subcontractors years of service with the company in three (3) categories, i.e., i) 1 to 5 years, ii) 6 to 10 years, and iii) more than 11 years. All of the interviewees have worked with the company for more than 11 years and have deep knowledge about the Shipyard's working environment and can give an opinion on project disbursement process at the *"current state"* and *"desired state."*

Table 4.10
Subcontractor's Interviewee Year of Services Working with Company

Years of Service	Frequency	Percentage (%)
1 to 5 years	-	-
6 to 10 years	-	-
More than 11 years	5	100.00
Total	**5**	**100.00**

4.2.3 Summary of Interviewee's Demographic

Summary for interviewee's demographic of age, gender, working position, years of service, higher education qualification, and employment status are listed in Table 4.11.

Table 4.11
Summary of Interviewee's Demographic

Age of Interviewees	Frequency	Percentage (%)
30 to 39 years	3	25.00
40 to 49 years	4	33.33
50 to 59 years	5	41.67
Total	**12**	**100.00**
Gender of Interviewees	**Frequency**	**Percentage (%)**
Male	10	83.33
Female	2	16.67
Total	**12**	**100.00**
Working Position	**Frequency**	**Percentage (%)**
Top managers	6	50.00
Middle managers	4	33.34
Executives	1	8.33
Non-Executives	1	8.33
Total	**12**	**100.00**

Table 4.11 (Continued)

Years of Service	Frequency	Percentage (%)
1 to 5 years	2	16.67
6 to 10 years	1	8.33
More than 11 years	9	75.00
Total	**12**	**100.00**
Higher Education Qualification	**Frequency**	**Percentage (%)**
Diploma	3	42.84
Bachelor	2	28.58
Master	2	28.58
Total	**7**	**100.00**
Employment Status	**Frequency**	**Percentage (%)**
Contract	1	14.28
Permanent	6	85.72
Total	**7**	**100.00**

The next subsection of this chapter discusses BPR process output in terms of time taken to approve the SOP, cost saving associated with project disbursement process, and improvement of a process flow for project disbursement process.

4.3 BPR Process Output

BPR process output (theme two) refers to improvement achieved in overall project disbursement process in terms of reducing time and cost saving associated with this process. The measurement is indicated by a number of days taken to approve SOP, cost saving related to the SOP verification, cost saving on verification of the documents for disbursement, and any other improvements achieved within the project disbursement process and process flow. The results are meant to fulfill and answer research questions and objective number one and two of this research.

4.3.1 Time Taken to Approve SOP

Two phases of data were collected, i.e., at the *"current state"* (before BPR, in pre-step: context and purposes), and at the *"desired state"* (after BPR in AR Cycle 4). The

SOP data were collected from KDSR1 and KDSR2 (for *"current state"*), and KDSR3, KDSR4, and KDSR5 (for the *"desired state"*). The data will establish how long it needed to approve the SOP. SOP verification requires three (3) approvers to approve the document, i.e., i) DeptC2, ii) DeptC, and iii) DeptD (during the *"current state"*). Total approval days is derived from the date of SOPs' ready for verification until the last approver approved the SOP. Results between the *"current state"* and *"desired state"* will indicate improvement achieved for the respective processes.

4.3.1.1 Current State

Table 4.12 shows SOP approval days for ten (10) selected Subcontractors who were involved in ship repair project for KDSR1 and KDSR2. From the 80 samples collected from both KD's, the total approval days are exceeding 7 days. To be precise, all of the SOP took more than 30 days to complete its approval stage. It is in line and confirmed with Subcontractor complaints that SOP took more than 1 (one) month to complete.

Table 4.12
SOP Approval Days for KDSR1 & KDSR2

Days	Frequency										Percentage
	SC1	SC2	SC3*	SC4	SC5*	SC6*	SC7*	SC8	SC9	SC10	(%)
0 – 2	-	-	-	-	-	-	-	-	-	-	-
3 – 4	-	-	-	-	-	-	-	-	-	-	-
5 – 6	-	-	-	-	-	-	-	-	-	-	-
more than 7	5	5	11	5	13	13	10	7	4	7	100.00
Total	**5**	**5**	**11**	**5**	**13**	**13**	**10**	**7**	**4**	**7**	**100.00**

Notes: *subcontractors who made complaints
: data collected during pre-step: context and purposes

The delays were also confirmed by interviewees during interviews in AR Cycle 1 and AR Cycle 4 based on their quotes below:

> *"SOP took a long time to get completely approved, we have experienced that for more than a month. My staff spends much time to get it completed. We must check whether the approver is around or not, had he completed signing the SOP, then we must send for another approver. So much time is needed to do follow up to ensure that all signatures are completed."*
>
> *Interviewee#09*

> *"Sangat lambat, perlukan banyak masa nak pergi tanya dan semak status. Hendak isi borang SOP lagi, bila isi ada banyak kesilapan. Kita nak hantar untuk dapat bayaran pun susah." (so slow, need to spend much time to ask and check the status. Need to fill in SOP form, there are many mistakes in filling in the form. We also faced difficulties in getting disbursement)*
>
> *Interviewee#12*

> *"Verification took longer time, something is not right in the Shipyard's process I believed. When we do follow up and asked, SOP approver said, "I need to check, I need to check," we also don't know what he wants to check. Reports are already submitted, it might be that he does not have time to go through or need somebody to explain or remind him"*
>
> *Interviewee#11*

> *"Sometimes I do not know where my SOP is now, is it with Tuan "A" (approver 1), or with Tuan "B" (approver 2), or already reach Tuan "C" (approver 3). Have to call everywhere to check our SOP whereabout status."*
>
> *Interviewee#10*

All interviewees above stressed on the delay to get the SOP approved due to the approvers were not around, approvers need more time to justify the work progress or difficulty to complete the SOP forms manually. The accumulated problems had created a delay in approving the SOP. The *"current state"* of SOP is managed by manual verification, and Subcontractors need to bring their respective SOP to each

approver one by one. It simply meant that the SOP moves or flows in a linear process from DeptC2 to DeptC, and to DeptD.

The process becomes worse when the approver is not available due to outstation duty, on long leave, need further verification on agreed project progress to approve the SOPs, waited for Subcontractor to collect, and others (serving notice of resignation and internal departmental reorganization). Subcontractor needs to wait for one approver to complete signing the SOP and bring it to another approver. When the first approver is not available, Subcontractor sometimes leaves their SOP's at the approver's office and come to collect it on the following day or later.

When the first approver completely approves the SOP, it will remain at his office until the Subcontractor come and collect it to be sent to the next approver. The document movements are recorded by a manual log at respective offices, and nobody knows exactly at what stage, or which approver is holding the document. At the *"current state,"* all SOPs are being approved in more than 7 days, or to be precise, more than 30 days.

Figure 4.1 shows the reason for late SOP approval for the selected sample during the *"current state."* Waited for subcontractors to collect the SOP and need further verification on agreed project progress to approve the SOP represent 41% and 35% respectively on why the SOPs were late to get approved. It indicates that i) manual process in linear line approval took a longer time to complete, manage, and is very ineffective and ii) there is no readily available or accurate source of references for the

work status to be referred for approving references and thus creating a delay in approving the SOP.

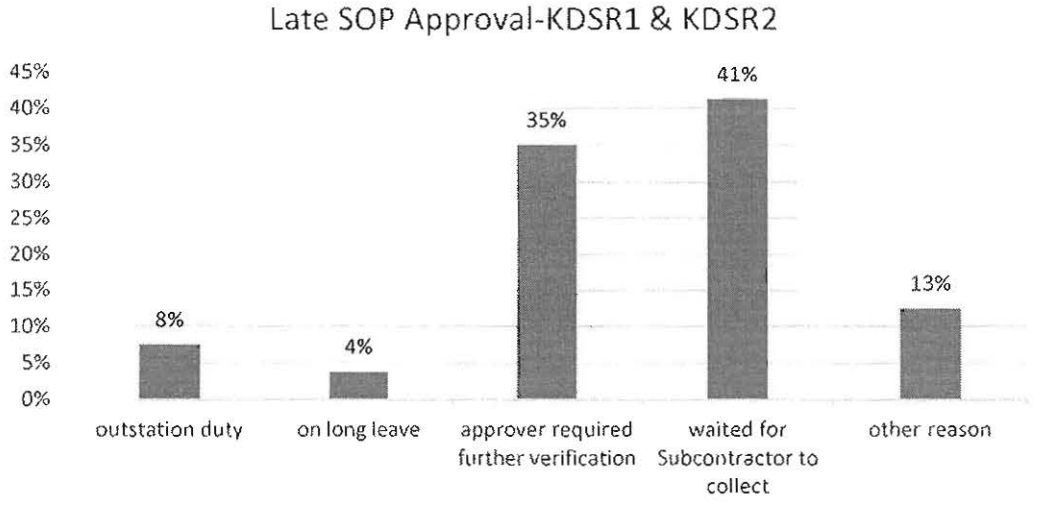


Figure 4.1
The reasoning for Late SOP Approval-KDSR1 & KDSR2

4.3.1.2 Desired State

Being developed in two (2) phases, i.e., i) to establish benchmark results (KDSR3), and ii) to validate the benchmark results (KDSR4 and KDSR5). The details walkthrough for the revamping system can be seen in Appendix G, while Appendix H shows the improvement of the process flow at the desired stage.

4.3.1.2.1 Established Benchmark System Output

Table 4.13 shows the completed SOP approval days for KDSR3 in four (4) categories, i.e., i) 0-2 days, ii) 3-4 days, iii) 5-6 days, and iv) more than 7 days. As per establishment of the *"desired state"* of project disbursement process in Table 3.13,

the targeted days to approve the SOP (reasonable time) are set at four (4) days. The results show that 88.98% of the SOPs managed to be approved within two (2) days.

Table 4.13
SOP Approval Days for KDSR3

Days	Frequency							Percentage
	SC1	SC3*	SC5*	SC6*	SC7*	SC8	SC10	(%)
0 – 2	32	1	92	3	179	35	3	73.09
3 – 4	4	-	5	1	35	25	5	15.89
5 – 6	3	-	1	-	19	9	2	7.20
more than 7	2	-	1	-	9	5	1	3.82
Total	**41**	**1**	**99**	**4**	**242**	**74**	**11**	**100.00**

Notes: *subcontractors who made complaints
: data collected in AR Cycle 4

The main reason for the drastic changes in approval days is due to:

i) Changes in work process for ship repair work following adaptation of Korean Best Practices, whereby monitoring and planning aspect become vital and a must for all projects. Weekly planning by DeptC1, followed by weekly submission of Subcontractor work progress report allows the progress being updated and monitored on a regular basis. Regular submission of work progress reports allows systematic capturing of work progress in the system to match with agreed payment milestone in Subcontractors WO. When the work progress reached or exceeded the milestone payment progress, the system will send email to SOP approver to approve the SOP online. Approver can easily review the work progress online which is duly verified by DeptC1 for easy referring and approving.

ii) Online system enables the respective SOP's to reach all of the approvers at the same time without waiting for the first approver to completely gives his approval. Online systems enable all approvers to access the SOP to commit their approving works

easily. No runner is required to bring the documents all over the places, and this eliminates idle time of waiting for somebody to bring the SOP to the respective approvers.

The findings are supported by views made by interviewees during interviews session in AR Cycle 1 and AR Cycle 4 as per their quotes below:

"approving SOP have improved a lot. I can complete the approval within two or three minutes, easy to refer and MARS system keeps prompting which SOP is not yet approved. The most important part was the project progress being agreed upon by both parties and duly verified before it reaches me for approving."

Interviewee#04

"The process now become more organized because of the availability of the system. Work progress duly verified. We just need to cross check and comments when we do not agree. Much faster compared to before, detailed work planning and weekly report by subcontractor help to accelerate the verification of work progress. Clerical work is eliminated, and most importantly my table is clean, not overloaded with subcontractor's documents."

Interviewee#05

"Yes, it improves a lot and developing on the same system that we are currently using. I can approve the SOP without having to wait for another approver to approve. Every day, the system will update on the SOPs ready to be approved, and SOPs are waiting for my approval. Approval can be completed within minutes, unless if we are not around due to outstation or long leave. I believe it becomes easier since we can check and capture the progress frequently. Even though detailed planning, continuous work monitoring, and weekly reporting are tedious, but it helps to make a firm and confident decision on verification of agreed work progress."

Interviewee#06

All of the interviewees agreed that the process flow to approve the SOP were improved and changed. The main factors that improve the situations where the work progress being duly verified and agreed before approving of SOP are by way of detailed planning, closed monitoring, and weekly work progress submitted. To further

established the improvement, the system was set up to make the information easily accessible, to give notification, to reduce human errors, and to make the work more organized.

However, due to certain reason, 11.02% of the SOPs were approved longer than the targeted four (4) days.

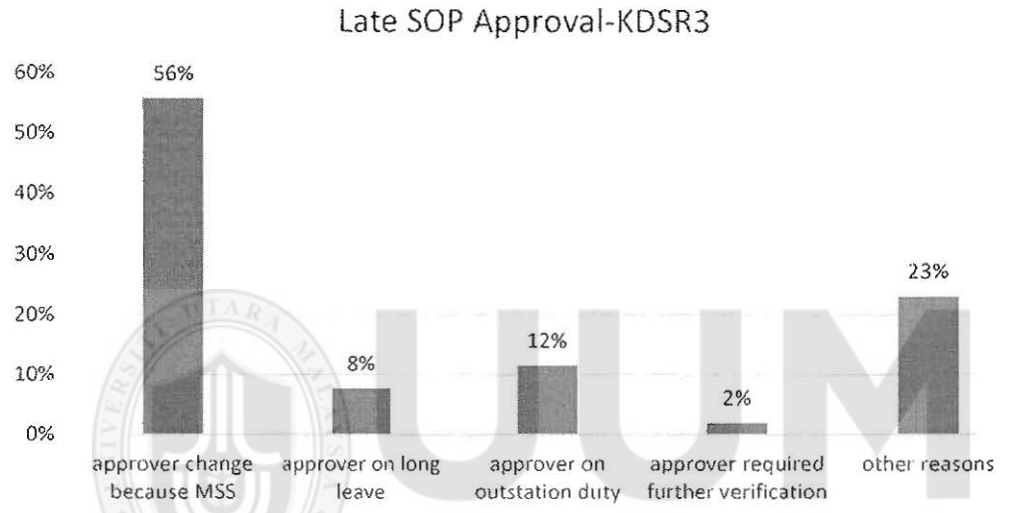


Figure 4.2
The reasoning for Late SOP Approval-KDSR3

Figure 4.2 shows five (5) main reasons why the SOP for KDSR3 was approved in more than four (4) days. 56% of the delay was because of the changes with the approver due to Mutual Separation Scheme (MSS) which happened in January and June 2016. The MSS offered were taken by the current approver, and this change the job functions among the remaining staff, and it took some time to reorganize. Other reasons stood at 23% and the second highest reason for late approval, it is a combination of minor reasons such as approver is serving his notice of resignation, approver just being promoted to approver level, reorganization of department, unit,

and tasks involving the respective approver. It is further noted that reason for further verification on agreed project progress is reduced to the minimum level of 2% from the total delay and there are no issues on waited for subcontractors to collect the document occurred, as the system has now changed to online approval.

In conclusion, data from SOP of KDSR3 shows that the SOP can be completed to be approved within the desired target (below four (4) days) and delays in the *"current state"* such as waiting for the document to be collected and no quick reference for work progress are minimum and almost non-existence.

4.3.1.2.2 Validating Benchmark System Output

To further validate the benchmark and findings in KDSR3, SOP results for KDSR4 and KDSR5 are listed below. Table 4.14 shows the completed SOP approval days for KDSR4 in four (4) categories, i.e., i) 0-2 days, ii) 3-4 days, iii) 5-6 days, and iv) more than 7 days.

Table 4.14
SOP Approval Days for KDSR4

Days	Frequency							Percentage
	SC1	SC3*	SC5*	SC6*	SC7*	SC8	SC10	(%)
0 – 2	14	48	84	15	72	11	10	66.32
3 – 4	9	21	22	6	18	-	6	21.40
5 – 6	1	9	1	5	6	2	-	6.27
more than 7	2	3	2	7	-	2	7	6.01
Total	**26**	**81**	**109**	**33**	**96**	**15**	**23**	**100.00**

Notes: *subcontractors who made complaints
: data collected in AR Cycle 4

The results show that 87.72% of the SOP managed to be approved within 4 days, and 66.32% of it is completed and approved within two (2) days. The approved SOP of

more than four (4) days (a total of 12.28%) is also noted in the sample of KDSR4. Figure 4.3 below displays the reasons for the SOP which was approved in more than four (4) days. Approvers on long leave (36%) and the approver changed because of MSS (30%) are the influencing factors for a SOP to be approved in more than four (4) days in KDSR4. While for the reason that the approver requires further verification on agreed project progress be at a minimum level of 2%.

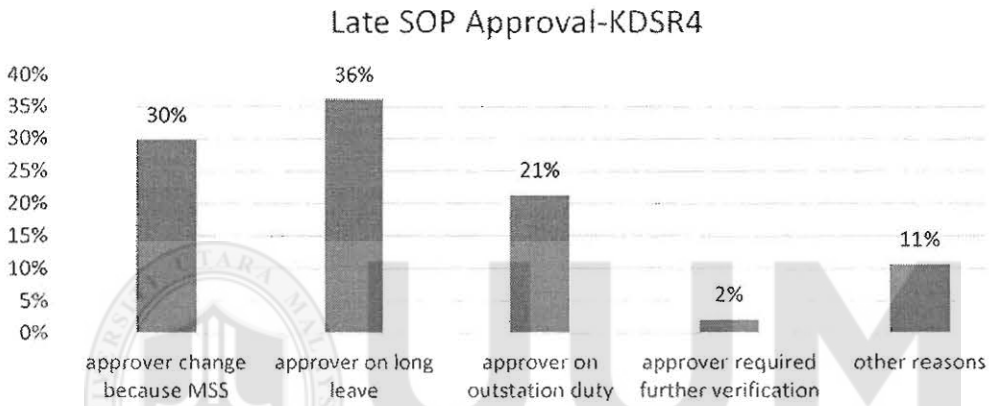


Figure 4.3
The reasoning for Late SOP Approval-KDSR4

Table 4.15 below shows the completed SOP approval days for KDSR5 which are displayed in four (4) categories, i.e., i) 0-2 days, ii) 3-4 days, iii) 5-6 days, and iv) more than 7 days.

Table 4.15
SOP Approval Days for KDSR5

Days	Frequency							Percentage (%)
	SC1	SC3*	SC5*	SC6*	SC7*	SC8	SC10	
0 – 2	2	1	1	7	6	7	-	26.38
3 – 4	4	8	3	19	2	5	2	47.25
5 – 6	6	-	4	-	1	2	5	19.78
more than 7	-	4	-	1	1	-	-	6.59
Total	**12**	**13**	**8**	**27**	**10**	**14**	**7**	**100**

Notes: *subcontractors who made complaints
: data collected in AR Cycle 4

The results show that 73.63% of the SOP was managed to be approved within 4 days, and 26.38% of it was completed and approved within two (2) days. KDSR5 results show that approving the SOP within four (4) days is still achievable (at 73.63%) even though the percentage of completed SOP in two (2) days were reduced to 26.38%. The duration of data compilation for KDSR5 is shorter, i.e., eight (8) months compared to KDSR3 which is twelve (12) months and KDSR4 in ten (10) months. It is also noted that 26.37% of the samples within KDSR5 were approved in more than 4 days.

Figure 4.4 below shows the reasons for the SOPs which were approved in more than four (4) days for KDSR5. The approver was on long leave (38%), and the approver changed because of MSS (33%) are the main reasons for approving the SOP in more than four (4) day. It also noted that the criteria of the approver required further verification on agreed project progress is non-existence in the sample data of KDSR5.

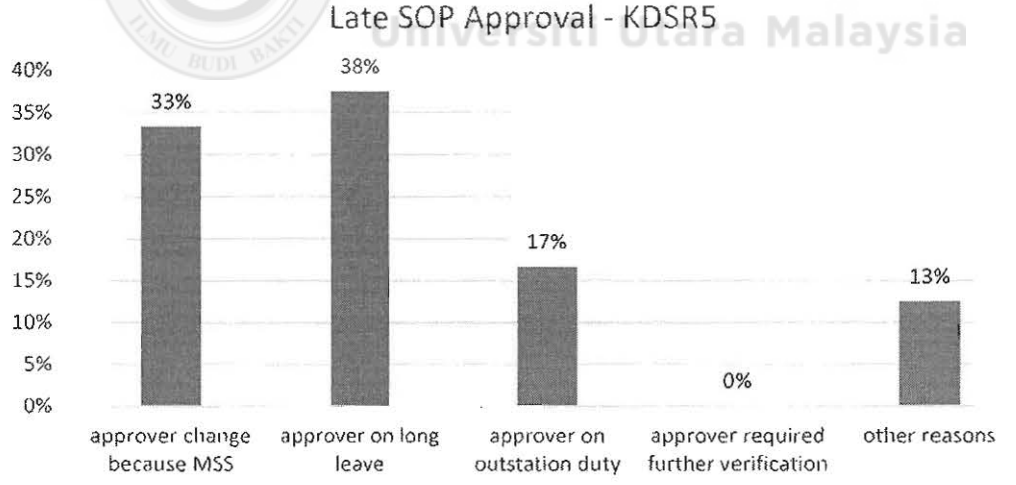


Figure 4.4
The reasoning for Late SOP Approval-KDSR5

The trends in the completion of SOP approval days for KDSR4 and KDSR5 are in alignment with the results of SOP approved for KDSR3, whereby it can be completed

within the *"desired state"* of less than four (4) days, i.e., achievements of more than 70% each and a reduction of days of 87%, i.e., 30 days – 4 days (26 days reduction). Apart from the above findings, no individual behavioral approving pattern was noted even though the approver is the same person for the different project except for DeptD as per Table 4.16.

Table 4.16
Approvers' for Respective Department

Department	KDSR3	KDSR4	KDSR5	Approvers
DeptC2	✓	✓	✓	same approver for same discipline of work
DeptC	✓	✓	✓	same approver for same discipline of work
DeptD	✓	✓	✓	different approver for different project
DeptC3	✓	✓	✓	same approver for different project

It shows that the approval made is based on the availability of the system (SOP online) and work progress ready to be reviewed at any time in MARS system. Improvement in SOP approval process suggests that the benchmark of KDSR3 and it is validating results from KDSR4 and KDSR5 are purely derived from the improvement of work process within project disbursement and not due to individuals who might be driven by the approver's behavior.

4.3.2 Cost Saving Associated with Project Disbursement Process

Two (2) cost saving associated with revamping project disbursement process, i.e., i) approving SOP, and ii) submission of the document for disbursement are analyzed and presented as below. These activities were done in pre-step: context and purposes and during an interview in AR Cycle 1 and AR Cycle 4. Data for Shipyard manpower cost are collected from Human Capital Department (the salary cost) and divided with an hour per day, and further calculated to established manpower cost per minute. While

cost information for Subcontractor personnel is gathered during an interview with their management and further calculated to get manpower cost per minute.

Minutes spent to get one SOP approved, and verification document for disbursement in *"current state"* are recorded and compared with revamping process in *"desired state."* Manpower cost per minute multiples with the time taken to complete approving one SOP and verification document for disbursement are calculated to get the total cost incurred to complete the job. Differences between cost incurred during the *"current state"* process and *"desired state"* process will indicate the cost saving gained after revamping process took place.

4.3.2.1 Approving SOP

The costing for approving SOP during the *"current state"* and *"desired state"* is established and compared. Assuming there is no delay such as approver is not available, no further verification on agreed project progress is required, no waiting for the document to be collected, minimum minutes spent to approve one SOP are calculated, multiplied with the established manpower cost per minute (basic salary/196 hours per month/60 minutes) to come out with total cost to complete the approval of one SOP in minutes measurement. The formula to calculate the cost to approve one SOP are: activities x minutes spent per activity x manpower cost per minute. The details calculation and comparison are shown in Table 4.17 below:

Table 4.17
Manpower Costing for SOP Approval

Activities	Department	Personnel	Minutes Spent	Manpower Cost per minute#	Total Manpower Cost
current state					
preparation & submission	Subcontractor	runner	8	0.10	0.80
checking & approving	DeptC2	executive	3	0.43	1.29
collection & submission	Subcontractor	runner	5	0.10	0.50
checking & approving	DeptC	managerial	2	0.60	1.20
collection & submission	Subcontractor	runner	5	0.10	0.50
checking & approving	DeptD	managerial	3	0.60	1.80
					6.09
desired state					
checking & approving	DeptC2	executive	2	0.43	0.86
checking & approving	DeptC	managerial	2	0.60	1.20
checking & approving	DeptD	managerial	2	0.60	1.20
checking & approving	DeptC3	HOD	1	0.94	0.94
					4.20

Source: # equivalent to actual manpower cost, converted to minutes
: data collected during pre-step: context and purposes, and interview in AR Cycle 1 and AR Cycle 4

The costing to approve SOP during the *"current state"* requires three (3) approvers, and subcontractors need to hire a runner to bring the SOP to respective approver in a linear process. The total cost to approve one SOP in the *"current state"* is RM6.09. While for *"desired state"*, no runner is required, the SOPs are made available online in the respective approver screen, and another approver added in the process, i.e., DeptC3 as per project disbursement process flow at *"desired state"* in Appendix H. Time spend to validate the work progress is also reduced as planning the work, monitoring the work, and capturing work progress are duly verified by DeptC1 earlier. The cost to approve one SOP in *"desired state"* is RM4.20.

The cost saving gained from revamping the project disbursement process at approving the SOP is RM1.89, i.e., RM6.09-RM4.20, which represent saving of 31% from the *"current state"* status. Should the number of approvers remain at three (3) stages, the

cost saving is up to 46%. In conclusion, revamping of project disbursement process had benefitted both Shipyard and Subcontractor in terms of cost saving to verify the SOP for disbursement process.

The saving is also noticeable by the Subcontractors based on their quotes during the interview in AR Cycle 1 and AR Cycle 4 as shown below:

> *"Before, we hire a runner to compile and submit the SOP and other documents for disbursement, but since the Shipyard established new process flow, the completely approved documents are available online and can be accessed at our office. My admin clerk can monitor the status and do the compilation. The most important thing is we must strictly follow the Shipyard project planning and submit our weekly report."*
>
> *Interviewee#08*

> *"new process educates us to do self-compilation of a document like we submit our income tax. The disbursement documents, i.e., SOP and QIR can be printed easily from I-Mars when it is completely approved. We compile all the documents for disbursement in our office and courier to the Shipyard."*
>
> *Interviewee#10*

All of the interviewees above agreed that the new processes had given them cost saving when they do the compilation of documents on their own. The self-compilation become easier when the Shipyard improved on the process to approve the SOP and make the disbursements document easily to compile and access from their office (I-Mars platform).

Revamping process applies empowerment concept, where it allows the best possible solutions to be implemented. When brainstorming for revamping process, the idea of self-compilation was proposed and discussed. The *"current state"* of the project disbursement process is clouded with many clerical, administrative, and tedious work.

Thus, self-compilation with the help of online solutions eliminates these processes and relying on the runner work, which in return gave both parties a saving on approving SOP online.

4.3.2.2 Verification Documents for Disbursement

Verification document for disbursement refers to complete supporting documents being compiled together by Subcontractors, i.e., WO, QIR, SOP, and TI, and submitted to DeptA for the final verification before key-in, in the SAP system and proceed with disbursement process. It is the time and cost incurred by DeptA to ensure that all of the supporting documents are in "good to pay" status.

During the *"current state,"* this compilation is done by Subcontractors runner, and two (2) main documents are produced manually, i.e., QIR and SOP. Manually preparing documents is exposed to human error such as the wrong % of work progress stated, wrong project number, wrong WO number, the amount and figures are not tallied, and the documents were not filled in. This error can cause rework in terms of runner need to resubmit, and DeptA needs to recheck the document. A minimum of two (2) times resubmission was observed during the *"current state"* process. The details of the calculation and comparison for verification document for disbursement are shown in Table 4.18 below. The formula to calculate the cost to verify document for disbursement are: activities x minutes spent per activity x manpower cost per minute.

Table 4.18
Manpower Cost for Verification Document for Disbursement

Activities	Department	Personnel	Minutes Spent	Manpower Cost per minute#	Total Manpower Cost
current state					
received and checking	DeptA	clerical	5	0.10	0.50
rejection of document	DeptA	clerical	3	0.10	0.30
resubmit document	Subcontractor	runner	4	0.10	0.40
rejection of document	DeptA	clerical	3	0.10	0.30
resubmit document	Subcontractor	runner	4	0.10	0.40
approved and posted on SAP	DeptA	executive	3	0.34	1.02
					2.92
desired state					
received and checking	DeptA	clerical	3	0.10	0.30
rejection of document	DeptA	clerical	3	0.10	0.30
resubmit document	Subcontractor	clerical	2	0.10	0.20
approved and posted on SAP	DeptA	executive	1	0.34	0.34
					1.14

Source: # equivalent to actual manpower cost, converted to minutes
: data collected during pre-step: context and purposes, and interview in AR Cycle 1 and AR Cycle 4

At the *"current state"* status, a cost to verify the documents for disbursement is at RM2.92 with consideration of only minimum rejection happened. While at the *"desired state,"* the cost to verify after revamping project disbursement process was reduced to RM1.14, with a reduction of RM1.78 and represent 61% of saving. The main factors which influence the reduction are i) empowerment to both Shipyard and Subcontractors to redesign the new way to process project disbursement, and more accountability by subcontractors to make sure their document is in order before submission is made and ii) two (2) main documents, i.e., SOP and QIR are now produced through I-MARS which reduced human error on detailed information for the respective documents.

A checklist was established for subcontractors to check their documents before submission, and online processing enables the subcontractors to receive and print QIR and SOP from their offices through I-Mars portal. Empowerment indirectly gives more control, responsibility, and accountability for subcontractors to do self-compilation, and the big rewards are when all of the document is in order, and to get disbursement faster from the Shipyard. A quote from one of the interviewees supporting this finding in AR Cycle 4 is as below:

> *"After the revamping, we trained the Subcontractors to manage their disbursement documents. We prepared the checklist for them to follow, compile, and check the minor details inside the document. Furthermore, Subcontractors now do the compilation of disbursement documents on their own, easy to educate and follow our new processes, rejection was reduced, my work on checking disbursement document is now very minimal."*
>
> *Interviewee#02*

The Interviewee agreed that checking process becomes faster since subcontractor makes fewer mistake after being given proper training and checklist to follow. Subcontractors can compile on their own (self-compilation) and can easily understand Shipyard requirements. In conclusion, revamping the project disbursement process enables empowerment to happen and redesigning of the process flow of project disbursement process has gained the Shipyard a reduction of 61% to verify the documents submitted for disbursement.

4.3.3 Improvement of Process Flow

As per Figure 1.1, two (2) places were identified during pre-step: context and purposes as a bottleneck to the process, i.e., i) SOP approval, and ii) verification of documents

for disbursement. Table 4.19 displays the details of the activities in SOP approving process and document verification being revamped to improve its process flow and reducing the time and saving cost.

The revamping is also assisting with the transformation effort while reorganizing the Shipyard organization where DeptC and DeptC2 are combined with DeptD and DeptC3. Establishment of DeptC1 enables better management, planning, and enhance work processes within ship repair work. Work progress being duly verified and captured in MARS system enables the options to revamp SOP approval and verification of documents for disbursement to take place. In conclusion, the process flow of project disbursement process being revamped and shortened as per Appendix H.

The next subsection of this chapter discusses the assessment on ERTC during revamping project disbursement process which is divided into driving forces and restraining forces for change.

Table 4.19
Improvement of Project Disbursement Process Flow

Activities	Current State	Desired State	MARS usage		Remarks
			New add-on	System optimization	
Approving SOP					
MARS project planning	optional, sometimes use Microsoft project	the requirement, all project planning must use MARS planning		✓	enable for the MARS system to be fully utilized
creation pay plan percentage during the commercial negotiation and WO creation	optional, not being used	requirement, as a mechanism to trigger system to create SOP when % work progress reached pay plan percentage		✓	enable for the MARS system to be fully utilized and possibilities to plan for online SOP approval
capturing work progress	monthly and offline	weekly and online	✓		enable online approval to be designed and programmed
SOP processing method	offline/manual	online, through MARS and connected to subcontractors using I-Mars platform	✓		eliminate the delay of linear approval, faster approval obtained when % work progress being duly verified by DeptC1
notification to approve SOP	manual, inform by a subcontractor	by email notification from MARS system, continues reminder of email until SOP is approved	✓		faster and traceable, does not influence by human factors
layer of approver	three (3) approvers are required	four (4) approvers are required, in addition from DeptC3	✓		to shorten verification of documents, approval of DeptC3 were brought forward at SOP level since % work progress available in the system. DeptA does not need to send the document to DeptC3 to verify the TI
SOP accessibility	manual and difficult, managed by an individual	can be accessed online, easy to monitor and manage.	✓		increase accountability, responsibilities, self - belonging and enable empowerment to a subcontractor to self-compile the documents

Table 4.19 (Continued)

Activities	Current State	Desired State	MARS usage		Remarks
			New add-on	System optimization	
Verify Documents for Disbursement					
checking on work progress	Manual and need to send for TI verification by DeptC3	easy and reliable to refer to MARS screen	✓		manage to eliminate the requirement for DeptC3 to verify TI, shortened the flow
verification process	messy and tedious	easy and manageable, empowerment to a subcontractor to self-compile	NA	NA	empowerment increase accountability and self-belonging, reduce possible human error during compilation of documents for disbursement
documents rejection rate	minimum of two	minimum one or none	NA	NA	empowerment reducing mistake and saving time to verify the documents
verification time	about 22 minutes with a minimum of two (2) rejections	about 9 minutes with a minimum of two (2) rejections	NA	NA	enable cost saving of 61% on manpower used to verify documents
capturing TI	using SAP to post the TI	all must use MARS to capture TI and interface to SAP		✓	to enable easy checking on work progress, and controlling and monitoring TI not more than total WO (contract amount)
more interfaces with a subcontractor	fewer interfaces, using a runner	empowerment of Subcontractors, direct interface to resolve any issues	NA	NA	empowerment create a collaborative working environment with the subcontractor and increase the involvement of both to discuss any issues or problems

4.4 Assessment on ERTC

Assessment on ERTC (theme three- during AR Cycle 1 and AR Cycle 4) referred to the assessment made on any possible resistance that may come from Shipyard employees and Subcontractors during the revamping of project disbursement process. The assessment is made using two methods, i.e., a semi-structured interview for employees and Subcontractors who are involved directly in this change process as shown in Table 3.7 and FFA from BPR team members as shown in Table 3.10. The factors are grouped into two main categories, i.e., driving and restraining forces during the *"current state"* and the *"desired state"* of project disbursement process.

The overall intention is to determine the BPR CSF used to reduce any possible resistance to change from employees during changes of project disbursement process.

4.4.1 Driving Forces for Change

Driving forces are forces or factors that sustain Shipyard proposed planned change towards revamping of the project disbursement process. These driving forces might be stimulated using Shipyard BPR CSF's to achieve further impact on the proposed planned change. The driving forces will be accessed twice at *"current state"* and *"desired state"* status. The assessment was made using FFA and interviews with Shipyards employees and the subcontractors.

As shown in Table 3.18, the driving forces emerged within Shipyard working environment during the revamping of the project disbursement process are external

pressure to change, transformation agenda, new job description, internal pressure to change, in-house training, communications, top management support, and employee's empowerment.

4.4.1.1 Current State

In pre-step: context and purposes, an initial assessment was made on the current ERTC status within Shipyard working environment and follow up with interview and FFA in AR Cycle 1. FFA results were brainstormed, discussed, and presented with the team members and the results of driving forces towards revamping of the project disbursement process are shown in Table 4.20. Eight (8) driving forces at the *"current state"* is discussed and linked with potential BPR CSF's that can be used to strengthen further the driving forces in creating and forcing the needs of change to take place and accommodate the revamping of project disbursement process.

Table 4.20
Driving Forces at Current State-Hierarchical List

Driving Forces	Points	Potential BPR CSF's
transformation agenda	4.25	effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment
internal pressure to change	4.13	
external pressure to change	4.13	
top management support	4.00	
communications	3.88	
In-house training	3.75	
employee's empowerment	3.63	
new job description	3.63	

An early assessment from FFA shows the scores for transformation agenda, internal pressure to change, external pressure to change, and top management support of above 4.00 point as available known driving forces that can influence the BPR change acceptance within Shipyard working environment. While the scores for

communications, in-house training, employee's empowerment, and job description is below 4.00 point respectively.

The BPR teams aim to increase the scoring for driving forces below 4.00 points and maintain all the driving forces above 4.00 points at the *"desired state"* to ensure the driving forces can be sustained and help to reduce the possible ERTC while revamping the project disbursement process. The influence of Shipyard BPR CSF's such as effective top management support, effective communications, effective training, employee's involvement and employee's empowerment were used to influence the available driving forces to achieve this.

4.4.1.2 Desired State

After the deployment of BPR and changes taking places in the *"desired state"* (during AR cycle 4), there are changes in influence and strength of the available driving forces within Shipyard working environment. As per FFA produced by BPR team members in Table 4.21 below, driving forces, i.e., top management support, communications, employee's empowerment, and in-house training are topping the hierarchical list with scoring above 4.50 points, and the remaining driving forces stood steadily above 4.00 points. The driving forces above 4.50 are further discussed to establish the total impact towards the revamping process.

Table 4.21
Driving Forces at Desired State-Hierarchical List

Driving Forces	Points	BPR CSF's
top management support	4.75	effective top management support, employee's empowerment, employee's involvement
communications	4.63	effective communications
employee's empowerment	4.63	employee's empowerment
In-house training	4.50	effective training, employee's involvement
transformation agenda	4.38	effective communications, effective top management support
internal pressure to change	4.25	employee's involvement
external pressure to change	4.25	effective communications
new job description	4.13	effective training, employee's involvement

Top management support increased from 4.00 to 4.75 with an increase of 18.75%, communications increased from 3.88 to 4.63 with an increase of 19.33%, employee's empowerment increased from 3.63 to 4.63 with an increase of 27.55%, and in-house training increased from 3.75 to 4.50 with an increase of 20.00%. As per detailed brainstorming with the BPR team members, there are significant influences from BPR CSF's that further strengthen these driving forces such as effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment.

1. Top management supports as driving forces are being further strengthened by BPR CSFs such as effective top management support, employee's involvement, and employee's empowerment. Top management in Shipyard had portrayed positive support and reaction towards deployment of the project from beginning till the end. Top management showed great commitments in making the change happened by getting involved in the BPR change activities such as selecting training and meetings, helping in resolving dispute within cross-functional department interest, allowing BPR team members to highlight, discussed, and propose the best solutions, and understanding the financial requirement for design changes and

support the budget requirement to further invest in IT system changes. The interviewees mention the same view during interviews session in AR Cycle 1 and AR Cycle 4 as per quotes below.

"Our DOO frequently highlighted this issue in our departmental meetings. DOO reminds us that we must make sure all the documentation from our ends (WO, SOP, and QIR) must be ready and completed for Subcontractors to submit their disbursement timely and properly. We must review our current process. It is a huge blow, when Subcontractors already completed the work, but cannot submit their disbursement because of documentation not ready and in place, either Subcontractors faults or Shipyard faults does not matter, but the situation of delay is unacceptable"

Interviewee#03

"DOO frequently seeks for our feedback regarding the new way of SOP being processed during our tea time and meeting outside. He shows great support to resolve our problems. We must support this change initiative and show our involvement and commitments as well. For us, the process now is far better from before."

Interviewee#08

"Our top management show great support and encouragements towards our progress. Our IT budget will not get through if he did not support and recommend it. Without financial support, it is very difficult to amend the design process, and the whole project could stop just there only."

Interviewee#01

All of the interviewees above agreed with the influence of top management support in ensuring the change progress are moving in the right direction. Top management showed great supports and concern for revamping progress by getting involved, give financial support on IT system requirement, and communicate with all stakeholders concerned.

Top management willingness to empower BPR team to propose and plan for revamping processes, ability to change the management style from top-down

approach to bottom-up approach and vice versa, have encouraged all the affected employees to get involved in the change process and contributed for the revamping needs.

2. Communications as driving forces become stronger with the support of BPR CSFs of effective communications. During the change progress, BPR team is constantly relaying to all parties the objective of the revamping process, positive news regarding revamping benefits and progress of the change initiative. The communications towards revamping objective are captured through the interviewee's quotes during interviews in AR Cycle 1 and AR Cycle 4 as below.

"for me, revamping objectives are very clear. I also feel ashamed with such delay. I did not realize it took so long for an SOP to get completed, might be I just complete my part and did not follow up on what their next action and what causes the delay. Anyhow, it is good to feel that we have moved on and beat the long delay in this process."

Interviewee#05

"the objective was very clear, we must cut short of the approval process to a reasonable time, but definitely not 30 days. I believed it is unfair to subcontractors to face such delay in this process. Hopefully, this will help the subcontractors to submit their disbursement earlier and get prompt payment from Shipyard."

Interviewee#06

"we can communicate to BPR team member easily either by email, WhatsApp, meeting or just walk-in to meet them. Sometimes we are packed with our routine work, so do the BPR team, but our queries to them will be responded within 24 hours or less than that. Furthermore, the help desk is available, and we do it locally, easy to discuss and decide."

Interviewee#04

"We do receive a constant update from Shipyard on the change progress, for us we want this change faster because we have direct benefits towards this change. But we know planning must be in great details and covers all the cross-functional

department requirements. We want the change to be everlasting and not just to resolve one or two issues only."

Interviewee#08

The interviewees agreed that effective communications towards change program, get the employees clear with revamping objectives, giving prompt feedback to queries and issues asked and put the employees in perspective towards the issues in project disbursement process.

The platform of communications varies, from as simple as "WhatsApp" discussions, emails, notes of the meeting, Shipyard directives, and discussions during the training session. The most important part was how the messages reached the audience and getting back their respective responses to further explain to their needs and queries.

During the earlier kick off the new processes, Shipyard through DeptF had established "Helpdesk team" to follow up and resolve any queries from the user of the system. Using "help desk" as a communications platform, users know whom to refer to when they encounter any problem in the system either technical or non-technical. The availability of "Helpdesk team" and fast responding to queries eliminate the habits or the possibility to return and used the old process when the users are stuck with some issues or problems. Helpdesk maintains a log to record any queries, questions, comments, and feedback towards the new system and the records were reviewed to seek system weaknesses or further improvements. BPR CSF's of effective communications help to strengthen the forces of communication during this change progress.

3. Employee's empowerments as driving forces are fostered by empowerment concept through BPR CSF's of employee's empowerment. During the brainstorming session, one of the team members commented that project disbursement process carries too many clerical and tedious work especially at approving the SOP level and submission of disbursement documents. One of the suggestions that were being put forward to be explored and worked on was the empowerment of employees to revamp the project disbursement process and manage (compile) disbursement documents by themselves (the Subcontractors).

BPR change involved cross-functional department, and the revamping process needs a lot of explanations and discussion with all parties involved. Empowerment helps to create collaborative working conditions whereby employees can speak and say their opinions without feeling afraid or being discriminated. From collaborative scenario, employees are easily involved in the change process and contribute their opinions and ideas for betterment. This will ensure the BPR change direction moving forwards by implementing a best possible solution that is agreed and accepted by all parties. Interviewees supported this notion which can be seen in the following quotes during interviews in AR Cycle 1 and AR Cycle 4:

> *"yes, we brainstorm, discuss, brainstorm, present, and decide together with cumulative understanding and decision. We resolve and propose our solutions to the management, they listened, considered, approved, and supported it. Korean Best Practice emphasized on weekly planning, we took advantage on that to capture weekly progress in the system, then we propose online approving process using MARS system, but we don't have the same platform with Subcontractors to access the output of MARS. We propose to expand the usage of I-Mars platform, by putting online reports/status for SOP and QIR. All the ideas came during a brainstorming session, and we realized it through the BPR*

change process. and finally, it helps and working well."

Interviewee#01

"there is pressure to complete the project on time, but it is manageable and reasonable. We ensure the project progress are shared and make it known by all employees involved. Team leader ensured and monitored our progress continuously. If we get stuck, all members will meet, and we discuss. No extra pressure, just working in a faster way."

Interviewee#03

"as far as I remember, none, if top management does not agree, they will give comments and propose the options available for us to further discuss and think. We do not receive any instruction in terms of "order" or "directive."

Interviewee#07

All interviewees agreed that empowerment helps to move on the change initiative with minimal pressure to complete the project. Empowerment encourages the employee to be involved during a brainstorming session by forwarding ideas and solution to be discussed. From a spark of an idea being further explored and debated will become a holistic solution to revamp the process.

Empowerment only can happen when the top management support it, because from their authorities, top management who are willing to empower the lower level employees to proceed with change process, hold the accountability, responsibility and make the BPR change happened. This will indirectly release unnecessary pressure from the BPR team to manage the project smoothly. Using empowerment, BPR team was able to allocate necessary resources from Shipyard to be in the project.

Through empowerment, Subcontractors are now capable of doing self-compilations of their disbursement documents. Online reports for SOP and QIR are now

available to be accessed from I-Mars at their office. This revamping is not just to instill accountability to Subcontractors but help them to eliminate unnecessary cost of hiring a runner to do this compilation. Forces of employee's empowerment are being strengthened by BPR CSF's during the revamping of the project disbursement process.

4. In-house training as driving forces are stronger with the influence of BPR CSF's effective training. In-house training helps to reduce the job skill gaps between *"current state"* and *"desired state,"* to manage the training event efficiently, to reduce training cost, to plan and organize for continuous training events, and being used as a platform for live communications with the system's user. With the influence of effective training, in-house training programs became effective and received numerous involvement from all stakeholders concerned.

During the interviews session held in AR Cycle 1 and AR Cycle 4, the interviewees highlighted their involvement in the training and its benefits to them as per below quotes.

> *"I remember attending three trainings organized by Shipyard for this new process. Training was conducted locally, easy for us to attend and organize our time with daily job routine. There are staffs from DeptB, DeptC, DeptC1, DeptC2, DeptC3, and DeptD, and many subcontractors were involved in the training as well. All of them took part and ask questions, might be because they are eager to use the new processes, and using an in-house trainer, it was easy to communicate."*
>
> *Interviewee#03*

> *"yes, I remember attending a few trainings organized for the SOP new processes. As approvers, we need to know how to use the system, and how it can assist me to do fast checking and approving of the SOP. I must understand how*

the system works, how data are being inputted, and what is the expected output. All this will influence my decision to make fast approving later."

Interviewee#07

"After the main training conducted earlier, we had several training refreshments course in small groups to discuss specific issues and technical problems. The beginning of the process flow started in our department, and many changes took place especially to capture the work progress on a weekly basis. Luckily the training is not a one-off event. Our in-house trainer and BPR team are easy to be approached and ask questions."

Interviewee#05

The above interviewees agreed that effective in-house training helped them to get ready with the new processes. Training in effective planning allowed effective involvement from all parties and became a platform to discuss raised issues. The forces of in-house training are being strengthened by the influence of BPR CSF's in terms of effective training and have helped Shipyard to close the skill gaps of employees and the Subcontractors to adopt with the new processes of project disbursement.

BPR CSF's of effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment become strengthening agents to strengthen the driving forces within the Shipyard working environment during the revamping of the project disbursement process.

4.4.2 Restraining Forces for Change

Restraining forces are forces that may hamper the change in project disbursement process to take place by way of pushing Shipyard employees into undesired direction.

These forces need to be analyzed and neutralized so that it can help to shift the forces towards the intended direction, reduce possible resistance from employees, and increase the possibility for change acceptance among the stakeholders of the process. Restraining forces will be accessed twice at the *"current state"* and *"desired state"* status. The assessment was made using FFA and interviews with Shipyards employees and the subcontractors during AR Cycle 1 and AR Cycle 4.

As shown in Table 3.18, the available known restraining forces during the revamping of the project disbursement process are job insecurity, system complexity, prevent status quo, afraid of losing authority, afraid of the unknown, intensive training, BPR top-down approach, and high IT cost to invest.

4.4.2.1 Current State

During AR cycle 1, an initial detail assessment was made on the possibility of restraining forces that may occur in corresponding to revamping project disbursement process. BPR bring change, and change carries resistance, anchored by various restraining forces especially from employees involved.

Table 4.22
Restraining Forces at Current State-Hierarchical List

Restraining Forces	Points	Potential BPR CSF's
job insecurity	4.75	effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment
high IT cost to invest	4.75	
system complexity	4.63	
afraid of unknown	4.63	
intensive training	4.63	
BPR top-down approach	4.38	
prevent status quo	4.38	

Table 4.22 shows results from FFA of *"current state"* restraining forces, which the seven (7) restraining forces are identified and linked with potential BPR CSF's within Shipyard working environment that can be used to neutralized or weaken the restraining forces. The results show that all of the restraining forces scored point of above 4.00 which led by job insecurity and high IT cost to invest at 4.75 points each, system complexity, afraid of the unknown, and intensive training at 4.63 points each, and BPR top-down approach and prevent status quo at 4.38 points each. It indicates a lot of uncertainties from employees regarding revamping process that might be clouded by negative perceptions towards BPR implementation and not enough information on the change process reaching lower level employees at an earlier state.

The BPR team aims to neutralize and reduce the restraining forces with the influence of Shipyard BPR CSFs such as effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment. Restraining forces cannot be eliminated or removed, but it can be neutralized or reduced to support the driving forces or reduce the resistance that comes from Shipyard employees.

4.4.2.2 Desired State

After the completion of revamping project disbursement process with the application of Shipyard BPR CSF's, it is noticeable that the impact of the restraining force becomes smaller and marginal within Shipyard working environment. From FFA assessment made by BPR team members as per Table 4.23, most of the restraining forces had been reduced from 42.92% to 51.40% respectively. Afraid of the unknown

was reduced by 51.40% become 2.25, intensive training was reduced by 51.40% become 2.25, prevent status quo reduces by 48.63% become 2.25, high IT cost was reduced by 49.89% become 2.38, BPR top-down approach was reduced by 42.92% become 2.50, job insecurity was reduced by 47.37% become 2.50, and lastly system complexity was reduced by 46.00% become 2.50.

Further discussions with BPR team members shows that BPR CSF's such as effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment become a neutralizing agent to reduce respective restraining forces to become smaller and marginal.

Table 4.23
Restraining Forces at Desired State-Hierarchical List

Restraining Forces	Points	BPR CSF's
afraid of unknown	2.25	effective top management support, effective communications, effective training, employee's involvement
intensive training	2.25	effective top management support, effective training, employee's involvement, employee's empowerment
prevent status quo	2.25	effective communications, employee's involvement, employee's empowerment
high IT cost to invest	2.38	effective top management support, effective training, employee's involvement, employee's empowerment
BPR top-down approach	2.50	effective top management support, employee's involvement, employee's empowerment
job insecurity	2.50	effective top management support, effective communications, effective training
system complexity	2.50	effective communications, effective training, employee's empowerment

1. Restraining forces afraid of unknown: was further reduced with the influence of BPR CSF's of effective top management support, effective communications, effective training, and employee's involvement. When employees first heard about the proposed planned change of project disbursement process, they might not have full detail on how it will be implemented, how it will affect their daily work, what

will happen to them, are they still needed in the process flow, how can they contribute, are their knowledge equivalent to the new work requirement and standard, should their fate end up with jobless condition and more.

Employees might discuss it with their colleagues based on hearsay and develop negative perceptions towards it. They might hear it the first time when their respective HOD inform this matter being discussed during Shipyard management meeting and does not aware what are the subsequent event and planning will take place after that. Employees might be concentrating on their daily routine and not concentrating on the revamping issues until the change process reach them and force them to follow.

To overcome the feeling of afraid of the unknown, all stakeholders involved must brief and explain properly on why the change must take place. What happened in the *"current state"* process that causes so much delay and giving the problem to other stakeholders, what are the standards at the *"desired state"* which Shipyard aiming for, and what are the changes needed to move from the *"current state"* to the *"desired state."*

Top management plays their roles by setting up change direction, aligned it with current Shipyard transformation change program, approved the proposed change objectives to be worked on, get all the middle managers together to support the change process, and set a reasonable target to be achieved. Top management willingness to change their management style from top-down approach to bottom-up approach and vice versa accordingly to project progress and needs, help to give

a chance for BPR team to smoothen the big impact of revamping process. The top management influence to reduce the feeling of afraid of the unknown is also noted through below mentioned quotes during interviews in AR Cycle 1 and AR Cycle 4.

> *"Shipyard DOO took this revamping of project disbursement process very seriously, I still remember he was always saying that " if you want to make any changes in any of your work processes, do it now while we are still working on transformation initiative and when I am still around. I will fully support all the proposal/changes that will bring good to our Shipyard". DOO was very supportive, he listens to our idea, make amends and recommendations when necessary, and support the implementation. In return, we make good project progress and ensure this project can be completed on time. DOO involvement and /detail concerns on project progress help to clear the view of change direction and make other employees speak up and discuss revamping process as well. This indirectly makes all employees aware of the situation and eliminate the feeling of the unknown."*
>
> *Interviewee#02*

> *"Seldom I see our DOO change his management style to bottom-up approach and empower many people. Normally ex-top servicemen will stick to their top-down approach and run the project as per his direction, might be the influence of transformation initiative provided more view and options in terms of management styles for him to choose and decide. Anyhow our BPR team did provide him with effective information, and DOO needs to intervene during departmental conflicts and assist him in making the correct management decision. This flexibility gives much comfort to all employees, when you feel comfortable, you will not be distracted by the feeling of the unknown."*
>
> *Interviewee#06*

All of the interviewees highlighted the positive influence displayed by top management towards the revamping process. Top management positive influence indirectly helps to eliminate the feeling of afraid of the unknown, putting the change direction clearly and manage the change process using flexible management style.

Constant communication from top management and BPR teams to the employees involved in revamping process helps to clear the unknown status from all employees. The proposed change is to resolve the delay issue by way of improving

the work process, and those involved will be trained and equipped with relevant skills to do the job. Should the employees feel that they are not capable of performing the new job description, they will be allocated and transferred to other suitable places. To further eliminates the feeling of the unknown, all employees are encouraged to get involved in the revamping process by way of sharing their ideas with the BPR team, attending the training organized, asking questions, and focusing on the project objectives to resolve the current issue in project disbursement process. Interviewees share their same thought as per below-mentioned quotes during interviews in AR Cycle 1 and AR Cycle 4.

> *"Shipyard does give us frequent feedback and communicate on the revamping progress update. We are being informed clearly of what we must do next and what is our role to play to support the change in this work processes. They also invited us to join the training for new work processes (project disbursement process). We believe that the effort is for betterment, not moving backward."*
>
> *Interviewee#09*

> *"during training, our trainer shared how the new processes would be and what our roles are in this new process. At first, we feel afraid also because many changes happened at our level, anyhow the new process being established using our input. I am not comfortable doing so many messy works, but it is being simplified by way of introducing the effective system."*
>
> *Interviewee#04*

Interviewees agreed that effective communications help to eliminate the feeling of the unknown when the revamping status being communicated effectively. It makes employees feel comfortable and get involved in the change process.

2. Restraining forces of intensive training: being neutralized by BPR CSF's of effective top management support, effective training, employee's involvement, and employee's empowerment. Employees feel the burden to get retrain and follow the

intensive schedule for training, workshop, and classes organized by Shipyard to fill the skill gaps from the *"current state"* to the *"desired state."* To reduce this perception, top management had promised that the change impact will be smoothened and rearrange accordingly and will not become an additional burden on top of the current daily work routine. The training emphasized on back to basic processes, making people, and job creation to foster the belonging from employee's and Subcontractors towards the Shipyard.

BPR team had planned for local training to be conducted, using in-house who are familiar with the Shipyard surrounding, and flexible training time to avoid clashes with the tight Shipyard operational schedule. The top management empowers the employees to design the change process and propose the best solution, where these will create conducive collaborative training environment and help to foster involvement from the employees and Subcontractors during training sessions. Interviewees gave some comments towards the intensive training as per quotes below during interviews in AR Cycle 1 and AR Cycle 4.

> *"When the BPR team table up their training plan for project disbursement process, and adding up additional training for transformation program, I felt a bit congested and boxed up. Luckily the project disbursement process does in-house training so that we can request for flexible time, sometimes it is very difficult to get approval from the HOD to be excused from work to go for training. This help to reduce intensive training for us."*
>
> *Interviewee#01*

> *"kami di panggil untuk hadir banyak latihan bagi memahami cara baru untuk menghantar dokumentasi pembayaran. Banyak perkara yang diubah, dan penerangan diberi sebaik mungkin oleh jurulatih untuk memastikan kami boleh buat dan ikut keperluan. Masa latihan juga boleh pilih, saya dan kumpulan saya pilih untuk datang semua latihan. Latihan juga percuma, tanpa ada apa-apa bayaran yang dikenakan." (we were asked to attend much training to understand the new process to submit payment documentation. Many things*

were changed, and the trainer sufficiently briefed us to ensure that we can use it according to our needs. We can also choose the time for the training, and our group chooses to attend all training. The training is free.)

Interviewee#12

The Interviewees highlighted their concerns for the intensive training and how it is being reduced by the Shipyard. The perceptions of intensive training being reduced with a combination of effective top management support, effective training, employee's empowerment, and employee's involvement when it changes the intensive and tiredness of training made them eager to see the outcome from their own design which is developed together to resolve the Shipyard current problem.

3. Restraining forces of preventing status quo: become smaller with the application of BPR CSF's of effective communications, employee's involvement, and employee's empowerment. Employees felt that what they are doing is correct, for the best interest of the Shipyard, and should be protected. The feelings come from so many years of doing the same work routine, and nobody highlighted to them what went wrong and what needs to be improved.

Highlighting the impact of delays in the SOP approval through constant communications with employees, and accumulated problems from that delay for both Shipyard and Subcontractors, employees involved are now aware that their work routine needs to be revisited and changed. Apart from that, BPR team had engaged and get them involved in sharing ideas and propose for improvement solutions together. Quotes from interviewees during interviews in AR Cycle 1 and AR Cycle 4 regarding how the status quo is being reduced are as below.

"At first, we did not realize what really cause the delay that makes subcontractors sent a complaint, when BPR team put the overall view of the problem, only then we realized on the impact and consequences for both Shipyard and Subcontractors. Our current process has many loophole and redundancies; we have to improve and resolve the problem that we created by our own complexity (messy processes)."

Interviewee#07

"our daily job routine changes a lot after we started using the new process flow, at first it is not easy to adopt new work process, after two or three months, when everything starts to click, and all parties respond correctly to the new process, it becomes easier, and I feel more excited. Furthermore, for the old process, I did inherit this flow from previous people, and there is no chance to improve this. It is a correct call now to revamp everything when the problem starts coming and knocking on our door for solutions."

Interviewee#02

"the first time when BPR team discuss with us to change our current job routine, we thought of what this guy wants to do, change other people job. After that, they called us and explained and communicated with us clearly; then they manage to put us in correct perspective. For so long we are doing this job routine, we thought it helps, but the other way around happened. BPR team asked us to give ideas, now we forward to them our suggestions, and our proposal becomes the solution for the new process. We are glad and happy to contribute."

Interviewee#05

All interviewees agreed on the influence of effective communications, employee's involvement, and employee's empowerment in defusing a feeling to protect the status quo. A little empowerment to the employee's concerns, with constant effective communications from the Shipyard, managed to get the employees involved in the revamping process and reduced their feeling or action to protect the status quo.

4. Restraining forces of high IT cost to invest: is being reduced with BPR CSF's of effective top management support, effective training, employee's involvement, and employee's empowerment. When the new system takes place, all stakeholders are

concerned about how many shipyards must spend on new IT technology since the proposed change use BPR and adapting IT as its main enabler. Shipyard employees are aware of the high cost to invest in IT system as they are familiar with the IT enabler within Shipyard working conditions since the year 2000. Any proposed change to use new IT system might invite unnecessary comments and perception from Shipyard employees and raises their resistance.

During CBA process to choose the appropriate IT-based system, top management stressed on the concern to control the unnecessary IT cost, optimize what Shipyard already have in place, considered an open concept of IT system so continuous improvement/system changes can be applied, and considered Subcontractors involvement and their ability to invest in the new system. Effective top management support in understanding the financial cost on IT system and setting up effective directions, helped the BPR team to make the right decision on selecting IT-based system and avoiding BPR project to be burdened by unnecessary financial cost. The high cost of IT system is being discussed as per below-mentioned quotes during the interviews session in AR Cycle 1 and AR Cycle 4 below.

"We did attend the training planned by the Shipyard for this new process. So, I need to schedule my people to attend the training. First, I thought that the Shipyard would bill our company later, but all the training is free of charge for us to attend and to be involved. Even when the Shipyard changes the design process, we also do not need to pay for anything (buy a new system or upgrading). It helps us a lot to control our cost in the new process."

Interviewee#11

"I saw a lot of improvement in the process flow and a lot of training organized locally by the Shipyard for this revamping work. I did ask my staff whether the Shipyard charge us any fees for training, they said it is all free. I heard the Shipyard pay some money for changing their design process in MARS system, I guess they will pass to us the cost or at least, asked us to buy or invest on some

IT software, but they plan it otherwise. Optimize the same platform we are using in I-Mars."

Interviewee#09

"I believed DOO advised us to use and optimized (with some changes in the design process) the MARS system to help us to control the burden of financial cost. If not, we must think of how to get a subcontractor to invest in the new system, and we need to get trained first before we can train other people. it will be difficult and take a longer time to complete this project if we move to new IT system."

Interviewee#01

"we did the right choice of not changing too much on the IT system because it gives us the opportunity to get more involved in providing local training, redesign based on our own proposal, and most importantly reduce unnecessary financial cost. Of course, we cannot change the system without using the MARS consultant, but at least we manage to control the situation and less money spent by everybody involved."

Interviewee#02

All interviewees agreed that effective top management support, effective training, employee's involvement, and employee's empowerment managed to control and avoid unnecessary financial cost on IT system during the change process. Effective training in terms of doing in-house training, using Shipyard in-house trainer, help desk assistance, flexible training time, and collaborative training conditions help to further reduce the IT cost by reducing and controlling associated cost related to the training requirement. Changes in process flows which relies on IT system, critically need new training to be conducted to close the skill gaps from the *"current state"* to the *"desired state."*

Employee's empowerment in designing the system change eliminate unnecessary obliterate concept in revamping existing process and avoiding rework to redesign the workflow which is already in place. Designing the system change internally

reduce design change cost and excess training which are not required and taking employees and Subcontractors precious time. When the users are empowered, they are more likely to be vigorously involved in the change initiative, easy to understand the change needs, increase their acceptance towards change process, and avoid needless cost on training and designing the new IT system.

5. Restraining forces of BPR top-down approach: being neutralized by BPR CSF's of effective top management support, employee's involvement, and employee's empowerment. Employees feel that BPR only work with top-down approach whereby they will be forced and ordered to do something against their will and beliefs. This type of resistance coming from a negative perception of deploying BPR when top-down approach become the key elements for BPR project success.

To reduce this restraining force, Shipyard top management had shown their capabilities to change the management style from top-down approach to bottom-up approach and their willingness to empower the employees to chart and design for the change to take place. Top management allowed the change to be cultivated from the inside, giving ample time for internal change requirement to be established, and allowing employees to plan and monitor the change progress. The influence of effective top management support is noted in the below-mentioned quote during interviews in AR Cycle 1 and AR Cycle 4.

> *"Our DOO play an important role as an effective change agent during revamping process. His capability to change the management style, empower the employees, and invite us to get involved in change process helps to clear much perception among us. At first, we thought these changes would come as*

direct order or instruction to follow from Shipyard management, then we were invited to give an idea for revamping process, they use our idea, and realized it."

Interviewee#05

Effective top management support in showing positive support and reactions towards change program, flexible management style has allowed employee's involvement and employee's empowerment to become more effective. The perception of the hard part of top-down approach was reduced and replaced by giving more responsibility and accountability to certain employees to lead the change process. This eventually reduced the resistance of BPR top-down approach and increase more chances for change acceptance.

6. Restraining forces of job insecurity: being reduced with the influence of BPR CSF's of effective top management support, effective communications, and effective training. Employees are concern whether their current job is secured, or they will end up with the jobless situation after the revamping process is completed. Top management ensures all employees that adequate training will be provided to fill in the gaps and none will be left behind.

For those who cannot contribute to the new process and incapable of absorbing the new training and requirement, they will be relocated to other places, so that they can contribute to the Shipyard through other means. Constant and effective communications on the impact of the revamping process will help employees to be ready with change requirement, while effective training can develop or sustain their current work skill for the new job requirement. Restraining forces of job insecurity

are being neutralized as per below-mentioned quote during an interview in AR Cycle 1 and AR Cycle 4.

> *"our DOO always communicate with us that we must be able to change for us to grow and contribute better for future of Shipyard. Shipyard supports us by ensuring our job in safe hands and provided necessary training for us to improve, we must involve and move towards the same directions. Furthermore, Shipyard cannot be in static condition, so do us. If we refuse to change and move on, who want to secure, or at least make sure Shipyard have a future project, and we have more work to do. Our job is secured if we protected the future of our Shipyard."*
>
> *Interviewee#04*

Restraining forces of job insecurity is reduced by way of comfort given by top management, constant effective communications to the employees, and effective training provided to the employees to get them ready for the change process.

7. Restraining forces of system complexity: become smaller with the impact of BPR CSF's of effective communications, effective training, and employee's empowerment. Employees are of the opinion that revamping will introduce system complexity that will be difficult to follow and push them out from the job requirement. The biggest hurdle during the revamping of project disbursement process is to ensure that the work progress can be captured in the system on a weekly basis.

To capture the work progress on a weekly basis, detailed planning, progressive work monitoring, and weekly reporting must be in place which is the backbone of the Korean best practices during Shipyard transformation process. The Korean best practice concept is not just involving the Shipyard employee's but Subcontractors as well. To accommodate adapting to Korean best practices and reducing system

complexity; effective communications, effective training and employee's empowerment are combined and deployed rigorously.

> *"we were asked what the best way will be to improve project disbursement process. I was thinking the new approach to ship repair project that we embark through transformation initiative. Since we emphasis on detail planning, monitoring, and weekly work progress for ship repair work, there must be something that we can tap and flow for revamping of project disbursement process. Ship repair project planning done through MARS, so it becomes easier to capture the work progress in MARS system, and link to respective WO. Through this, we explore the possibility of the automatic creation of SOP, when the progress of work reaches the agreed milestone, MARS will trigger to create the SOP. The idea then grows and being further improved to complete the whole process flow. The work process becomes understandable since we design it internally, being trained, and tested as per our requirement set earlier."*
>
> *Interviewee#04*

Training for Korean best practice activities is constantly conducted parallel with the training requirement for revamping project disbursement process. This will ensure that the training provided is sufficient for employees to face any system complexity. The feeling of afraid of system complexity become neutralized and manageable when the change is constantly communicated, the design is locally made through empowerment concept, and in-house training is provided to reshape further the job skill required for the work.

4.5 Summary

In summary, this chapter discusses data analysis and findings of this research which started with interviewees personal demographic, BPR process output, and an assessment on ERTC during revamping project disbursement process. BPR process output is concluded with three (3) major findings, i.e., i) improvement in approving of SOP at the *"desired state"*, ii) gaining of cost saving associated with project

disbursement process which saves time in approving SOP and verification of documents for disbursements, iii) improvement in project disbursement process flow whereby the process becomes shorter and simpler.

The assessment on ERTC showed how Shipyard BPR CSF's of effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment helps to strengthen the driving forces and reduce/neutralized the restraining forces of possible ERTC from Shipyard employees during the revamping of the project disbursement process. The assessment is being concluded with strengthening the driving forces and reducing the restraining forces towards acceptance of change in BPR implementation. Strengthening the driving forces and reducing the restraining forces directly helps to reduce ERTC and increase the success rate of BPR implementation.

The next chapter will discuss the findings from BPR process output and assessment on ERTC, and its direct impact towards achieving the research objectives and any other findings indirectly concluded throughout this research.

CHAPTER FIVE
DISCUSSION AND CONCLUSION

5.1 Introduction

This chapter discusses and concludes the research finding and results from the previous chapter. In summary, the research was concluded in five-chapters, chapter one is an introduction, chapter two is a literature review, chapter three methodology, chapter four data analysis and findings, and lastly chapter five discussion and conclusion. This chapter starts with a recapitulation of research, discussion and analysis, other findings of the research, the contribution of research, suggestions for future research, and lastly conclusions.

5.2 Recapitulation of Research

This research came into the picture when Shipyard stakeholders (the Subcontractors) start to complain regarding the delay in approving of a SOP (Ismail & Osman, 2016; Ramachandra, 2013), which is one of the important documents needed to be submitted for disbursement process. The delays prompted negative domino effects in the relationship between Shipyard with the Subcontractors, and the Subcontractors with their suppliers, and if not being resolve will become worse and difficult to manage as per discussion in paragraph 1.1.3.

This issue pushed the overall flow of project disbursement process to be revamped to reduce SOP processing time and gained any saving which is related to project disbursement process. To revamp the process flow, BPR is being deployed in

Shipyard. Revamping required changes, and changes bring ERTC together with it (Pardo del Val & Martínez Fuentes, 2003). This research also discusses what may be the possible BPR CSF's used to reduce the ERTC in Shipyard while revamping the project disbursement process.

As per above, the following research questions were established for this research:

1. What is the *"current state"* of Shipyard's project disbursement process in terms of:
   a. the time is taken to approved one SOP?
   b. the cost incurred associated with *"current state"* of project disbursement process flow?
2. How to revamp the *"current state"* of Shipyard's project disbursement process through BPR in terms of:
   a. reducing the cycle time to approved one SOP
   b. cost saving associated with project disbursement process flow
3. What is the BPR CSF used to reduce (possible) resistance to change from users of project disbursement process?

The research questions were established to achieve the following objectives:

1. To understand the *"current state"* of Shipyard's project disbursement process in terms of:
   a. the time is taken to approved one SOP
   b. the cost incurred associated with *"current state"* of project disbursement process flow

2. To revamp Shipyard's project disbursement process through BPR with the intention to:

   a. reduced time is taken to approved one SOP

   b. create cost saving associated with project disbursement process flow

3. To reduce possible resistance to change from users of project disbursement process using BPR CSF.

To further understand the requirement to deploy BPR and threat that is coming from ERTC towards BPR implementation, the detailed relationship between BPR, change reaction process, and ERTC are reviewed in the literature review in chapter two. BPR implementation steps as per (Davenport & Short, 1998) were chosen to suit with Shipyard environment, issues related to BPR key elements in radical change, clean slate process, and top-down approach are discussed as per Table 2.1, influence of BPR CSF's in Shipyard working environments such as effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment are discussed in Table 2.3, and threat of ERTC towards BPR implementation were deliberated in paragraph 2.2.5.

Underlying theories of Kurt Lewin's three steps model of change in terms of unfreezing, change, and refreezing are studied to get a better understanding of how the change will happen or evolved in this research. A planned change through Action Research as per Figure 2.6 is used to create the direction and urgency for internal change requirement by establishing the *"current state"* and *"desired state"* status of project disbursement process as per Table 3.13.

Eliminating threat from ERTC towards BPR implementation, three-factor partial mediation model of resistance to change developed by Peccei, Giangreco, Sebastiano in 2011 are used to understand how ERTC can be reduced. This model stated that PBC, OC, IIC, and ATC has a direct negative relationship with RTC whereby when PBC, OC, IIC, and ATC increased, RTC decreased and vice versa. BPR has its strength in the respective CSF's, strengthening the respective CSF's and established the direct relationship with PBC, OC, IIC, and ATC will end up with reducing ERTC at another end.

This research is about resolving current issues in Shipyard business processes by way of deploying BPR to revamp project disbursement process with an objective to reduce processing time and gaining cost saving from associated processes related to project disbursement process. Besides that, the research also makes an assessment of ERTC that may appear in reflections from Shipyard employees and Subcontractors, towards revamping effort in project disbursement process. The intention was to understand what is BPR CSF's used in reducing the ERTC during revamping project disbursement process in the Shipyard.

The overall research took about thirty-eight (38) months to complete which started in October 2013 and ended in December 2016. The research is divided into two phases which are i) deployment of BPR and ii) assessment of ERTC and comprises four (4) major AR cycles which are interrelated with each other. After the deployment of BPR, 946 sample of SOP's were selected (duration of 12 months from April 2015 – April

2016) from KDSR3, KDSR4, and KDSR5, which represented 53.35% from a total population of SOP from the period under study. The SOP approval time was classified into 0-2 days, 3-4 days, 5-6 days and more than 7 days and target of the reasonable approving day are set for less than 4 days at the desired stage.

Assessment on ERTC was concluded using FFA scoring between BPR team members and interview of twelve (12) interviewees affected by revamping of project disbursement process. The assessment started with analyzing the driving and restraining forces at the *"current state"* and *"desired state,"* factors (influence of BPR CSF's) that are strengthening the driving forces and weakening the restraining forces and establishing how the Shipyard BPR CSF's help to reduce ERTC. The overall research objective, research questions, measurement criteria, and validation method are displayed in Table 5.1 below.

Table 5.1
Research Objective, Research Questions, Measurement Criteria, Validation Method

Research Objective	Research Questions	Measurement Criteria	Validation Method
to understand the *"current state"* of Shipyard's project disbursement process in terms of a) the time taken to approved one SOP, b) the cost incurred associated with *"current state"* of project disbursement process flow	what is the *"current state"* of Shipyard's project disbursement process in terms of a) the time taken to approved one SOP? b) the cost incurred associated with *"current state"* of project disbursement process flow?	-NA-	-NA-

Table 5.1 (Continued)

Research Objective	Research Questions	Measurement Criteria	Validation Method
to revamp project disbursement process with the intention to reduce the time taken to approve SOP and create cost saving for a more effective process flow.	how to revamp the current Shipyard project disbursement process, in terms of reducing the cycle time to approve SOP and cost to Shipyard?	reducing SOP approval days (time)	less than 4 days
		saving on approving of one SOP (time and cost)	reducing time and cost
		saving on verification document for disbursement (time and cost)	reducing time and cost
		improvement of project disbursement process flow (time)	shorten the process flow
to reduce possible resistance to change from a user of project disbursement process using BPR CSF.	what is the BPR CSF used to reduce (possible) resistance to change from a user of project disbursement process?	effective top management support	FFA and interviews
		effective communications	FFA and interviews
		effective training	FFA and interviews
		employee's involvement	FFA and interviews
		employee's empowerment	FFA and interviews

5.3 Discussion of Analysis Results

The analysis of the results of this research are grouped into three parts (3), i.e., i) BPR process output, ii) reducing ERTC, iii) other findings from this research. BPR process output discuss on i) reducing SOP approval days, ii) saving on the cost associated with project disbursement process, and iii) improvement of project disbursement process flow. In general, it answers the first and second question and fulfills the first and second objective of this research.

Reducing ERTC discuss on the influence of Shipyard BPR CSF's which are effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment to reduce employees ERTC effects from revamping project disbursement process. In general, it answers the third question and fulfills the third objective of this research.

Lastly, other findings discuss on three (3) findings related to BPR implementation in Shipyard which is i) eliminating the fear to implement BPR, ii) establishment of Shipyard BPR key CSF's, and iii) reframing Shipyard BPR key CSF's towards the three factors partial mediation model of resistance to change developed by Ricardo Peccei in 2011.

5.3.1 BPR Process Output

Discuss the results and analysis of BPR system output in approving SOP, gaining cost saving related to project disbursement process, and improving process flow of project disbursement process as per finding in pre-step: context and purposes and AR Cycle 4.

5.3.1.1 Reduce SOP Approval Days

As per discussion in the previous chapter, *"current state"* of project disbursement process requires thirty days (30) to approve the SOP. After revamping of the process flow in three phases, i.e., i) capturing the work progress, ii) approving the SOP, and iii) tax invoice submission, the time required to approve the SOP significantly reduces to less than four (4) days as per set target for the *"desired state."*

Table 5.2
Summary Results SOP Approval Days-Desired State

Project	0 – 2 days	3 – 4 days	5 – 6 days	More than 7 days
KDSR3	73.09%	15.89%	7.20%	3.82%
KDSR4	66.32%	21.40%	6.27%	6.01%
KDSR5	26.38%	47.25%	19.78%	6.59%

Table 5.2 above shows the percentage of approval days from a sampling of SOP of KDSR3, KDSR4, and KDSR5 in 0-2 days, 3-4 days, 5-6 days, and more than 7 days. After the revamping process, there is significant improvement achieved to approve the SOP, as per benchmark set in KDSR3 (approved less than 4 days) as well as the validating results from KDSR4 and KDSR5. KDSR3 achieved 88.98%, KDSR4 87.72%, and KDSR5 73.63%.

As per discussion in paragraph 4.3.1.1 and Figure 4.1, the main reasoning for the delay in approving SOP was mainly due to i) approver requires further verification on agreed project progress before approving the SOP and ii) idle time waiting for Subcontractor to collect the SOP and bring it to the next processes. To resolve this issue, revamping project disbursement process at phase 1, capturing the work progress and phase 2, approving SOP & QIR were developed.

To overcome the issue of the requirement for further verification on agreed project progress before approving SOP, revamping processes focuses on ways to make the information available to the respective approver and ensuring the work progress being duly verified before reaching the approver to approve the SOP. In doing this, BPR team had to tap the efforts of Korean Best Practices in ship repair project which focus on detailed planning, work monitoring, and weekly reporting by Subcontractors.

During transformation activities, DeptC1 being further established and incorporated in ship repair work practices. Incorporation of DeptC1 in ship repair work practices allows more detailed planning and work monitoring implemented to manage better and control the work progress. New reporting tools and work monitoring activities

such as i) toolbox talk card report, ii) interior, hull, painting, outfitting (IHOP) schedule, iii) work execution plan (WEP) and iv) observation onboard activities are implemented. DeptC1 prepared detailed work planning, DeptC2 executed and monitored the work progress, Subcontractor prepared the weekly report, and DeptC1 verified and captured the weekly work progress in MARS*Planning progressively.

The overall project planning is currently executed holistically through MARS*Planning rather than a piecemeal effort in Microsoft Excel, Microsoft project and others. The overall effort had a clean slate the old work practices and the transformation objective help in accomplishing the radical change in ship repair work practices. After BPR exercise, it becomes possible to capture the Subcontractors activities, and work progress in one platform (MARS*Planning) that can be accessible by all related department required this information for their work.

At *"desired state,"* (completing of revamping process phase 1), detailed work progress, work information, work status, and work verification are provided and duly verified before it reached SOP approver. This enables the respective approver to make easy references for any information and verification needed for them to approve the SOP faster. Another part that causes delay was idle time waiting for documents to be collected and brought to the next processes. In the current practices, the SOP is being approved in linear process flow whereby approver number 1 must completely approve the SOP; then it goes to the next approver, i.e., approver number 2 and approver number 3 subsequently. The linear flow will be stuck when the approver is not available to approve the SOP and waited for the Subcontractor (or runner) to come and collect their approved SOPs for the next process.

To clean slate this process, and with the help of I-Mars platform, BPR team had planned and transferred all these work activities and processes in one system and platform. The SOP creation and approving must take place in a system where all parties can access it. In doing this, the system must have a specific indication when it can create the SOP and send to the respective approver. Since the work progress is now captured in the system, an agreed milestone and percentage by both Shipyard and Subcontractor must be reached to indicate the disbursement plan percentage (payment milestone).

During commercial negotiation between Shipyard (DeptA, DeptB, and DeptC) and the Subcontractor before issuing the WO, the disbursement plan percentage are discussed and agreed. For example, disbursement is made twice, i.e., 50% each (please refer to Appendix G item 1). It means that for this WO, two SOP will be prepared for work progress of 50% each. When the cumulative work progress in the system (captured by DeptC1) reached 50%, the system will be triggered to create online SOP for the respective approvers, and the approvers are set and link to the respective SOP by DeptB according to their approver limit of authority in Shipyard.

The system will notify the approver to approve the SOP (please refer to Appendix G item 9), and the notification to respective approver will stop when they approve the SOP in the system. This process changes the linear process flow and radically eliminate idle time waiting for the SOP to be collected by Subcontractor and brought to the next process. At this stage (completing of revamping process phase 2), the overall process to approve the SOP are being radically changed from the *"current state"* process and idle time waited for SOP to move from one process to next process,

and function of a runner are totally removed and taken out from the *"desired state"* process.

The overall SOP approval process improvement is also noted and agreed during the interview sessions with interviewees #04, #05, and #06. The summarized improvements are:

1. the availability of online system makes it easy to refer and more organized (the work progress, and SOP approving).
2. prompt notification by the system to approve the SOP and reminder of the outstanding SOP to be approved.
3. work progress duly verified.
4. the SOP approving system is no longer in the linear process flow.

Table 5.3 summarized the overall results and achievement of reducing SOP approval days.

Table 5.3
Summary Results of Reduce SOP Approval Days

Criteria	Current State	Desired State	Remarks
SOP approval days.	30 days or more than one (1) month.	70% of SOP being approved in less than 4 days from all the three (3) KDSR's tested after revamping project disbursement process. Reduced time of 26 days with a total cost saving of 86%.	research question and research objective number two achieved and fulfilled from this conclusion. A radical change in SOP approval process flow and dramatic improvement in SOP approval days are achieved.

5.3.1.2 Saving on Cost Associated with Project Disbursement Process

Revamping process had a clean slate and obliterated the workflow of project disbursement process to reduce the time spent to approve SOP radically. The spillover from this revamping exercise is converted to manpower cost per minute rate to capture the cost saving gained to approve one SOP and to verify document for disbursement. The improvements are in terms of i) activities and ii) minutes spent are shown in Table 5.4 below.

Table 5.4
Improvements Activities for SOP Approval between Current State and Desired State

Criteria	Current State	Desired State	Remarks
overall activities (preparation, submission, checking, approving, and collection)	requires all the activities to be performed to send the manual SOP for the next approving processes	only checking and approving activities required to approve SOP. Manual preparation of SOP, submission, and collection of SOP to send for next approver are removed from process	revamping process remove/reduce clerical process, i.e., the runner functions. Overall activities reduced from five (5) to two (2) activities only. Reduced activities help to reduce time spent and gained saving in manpower costing to approve one SOP.
department involvement	involvement from Subcontractors and three (3) departments in Shipyard	involvement from Shipyard department only with additional approver added to SOP process become four (4) approval/department	subcontractor's involvement removed and replaced by online system and approving of SOP being strengthened by adding another approver to the process and to revamp TI verification process later.
time spent by respective approver to approve SOP	average about 3 minutes spent to approved one SOP	average about 2 minutes to approve one SOP	online system provided up to date information for SOP approver to make a fast decision and smoothen approving the process. Reduce time spent and gained saving in manpower costing to approve one SOP.

Table 4.18 illustrates activities in the verification of document for disbursement. Revamping had removed runner functions in project disbursement process and empowered the subcontractors to self-compile their documents for submission. MARS system enables the approver to approve SOP online, and I-Mars platform enables the SOP and QIR to be printed at Subcontractors offices to be self-compiled. SOP generated by MARS system eliminates human error in preparing the documentation such as wrong project name, project number, work progress percentage, and start and end date of the work. Empowerment increases accountability of Subcontractors towards submission of their documents for disbursement, easy to follow the checklist prepared by Shipyard before submitting documents, and in general reduce rejection rate to a minimum level as per an interview with DeptA staff who checked and monitored the process.

In summary, revamping had radically changed and enabled clean slate project disbursement process by:

1. eliminating and removing clerical and idle waiting time in project disbursement process flow.
2. improvising the ship repair project planning in one platform (MARS*Planning) and easy monitoring of Subcontractor work progress in a system.
3. empowering Subcontractors to self-compile their disbursement documents, increasing accountability, and reducing time checking to verify the documents.

The summary of cost saving gained from approving one SOP and verification document for disbursement are shown in the table below.

Table 5.5
Summary Results of Cost Saving from Project Disbursement Process

Criteria	Current State	Desired State	Remarks
cost saving on approving one SOP	incurred manpower cost of RM6.09 to approve one SOP	cost reduced to RM4.20 with a saving of 31% from *"current state"*	research question and research objective number two achieved and fulfilled from this conclusion. Huge cost saving of 31% achieved in approving one SOP after revamping process completed.
verification documents for disbursement	incurred manpower cost of RM2.92 to verify documents submitted for disbursement	cost reduced to RM1.14 with a saving of 61%	research question and research objective number two achieved and fulfilled from this conclusion. Huge cost saving of 61% gained in verification document for disbursement after revamping process completed.

5.3.1.3 Improvement of Project Disbursement Process Flow

As per discussion in Table 4.19 and illustration of project disbursement process flow as per Figure 1.1 (at *"current state"*) compared with Appendix H (at *"desired state"*), revamping process had radically changed, established a clean slate, and dramatically improved the overall process flow for project disbursement process in Shipyard. The work process starting from project planning, work monitoring, capturing of work progress, approving QIR and SOP online, and submission of TI had radically changed and enabled for dramatic improvement in research objective to reduce time to approve one SOP and gained cost saving in approving one SOP and verification document for disbursement.

The dramatic improvement, in general, had established a clean slate and shorten the overall flow of project disbursement process during the *"current state"* which rely on manual work process, manual reporting, clerical and administrative work, linear process flow, and dependency on human effort to move and press forward on the process flow. At the *"desired state,"* by adopting from Korean Best Practices, revamping process phase 1 concentrated on detail project planning, close work monitoring, and weekly work reporting to capture the work progress in MARS system to support revamping process phase 2.

Revamping process phase 2 established a clean slate for clerical work, idle waiting time, linear process flow and moving the approving process from manual approval to the online approving platform. It capitalized the work progress captured in phase 1 to enable radical changes in approving the process of SOP and QIR and managing the document through an online platform, i.e., I-Mars. Phase 3 of revamping further capitalized on a radical change in phase 1 and phase 2 to enable empowerment concept to Subcontractors by self-compiling documents for disbursement, increase accountability and responsibility during submission of disbursement documents, and gained time and cost saving in overall processes of project disbursement flow.

In general, all nine (9) activities of project disbursement process during *"current state"* as per Figure 1.1 are being radically changed, clean slate is established, and dramatically reduced to only five (5) activities as per Appendix H. The detailed summary of improvements in project disbursement process are shown in Table 5.6 below.

Table 5.6
Summary of Improvement Activities in Project Disbursement Process

Activities	Current State	Desired State	Remarks
A to B	activity between two different department	activity within a department. DeptC and DeptD are combined in one main department in DeptC3	improve the process as it becomes a transaction in one department, and eliminate clerical and administrative work
B to C	no changes	no changes	no changes
C to D	manual QIR to Subcontractors	online QIR accessible through I-Mars platform by Subcontractors	improvise the process by enabling empowerment to Subcontractors to self-compile and access the document through I-Mars platform
D to E	manual SOP approval process	online SOP approval through MARS and accessible by Subcontractors through I-Mars platform, activity within a department. DeptC2 are combined within one main department in DeptC3	radically change ship repair work process through adaptation of Korean Best Practices during Shipyard transformation. Work planning, work monitoring, and work progress are captured and monitored in MARS*Planning
E to F	manual SOP approval process	online SOP approval through MARS and accessible by Subcontractors through I-Mars platform, activity within a department. DeptC are combined with one main department in DeptC3	radically change ship repair work process through adaptation of Korean Best Practices during Shipyard transformation. Work planning, work monitoring, and work progress is captured and monitored in MARS*Planning
F to G	manual SOP approval process	online SOP approval through MARS and accessible by Subcontractors through I-Mars platform, activity within a department. DeptD are combined within one main department in DeptC3	radically change ship repair work process through adaptation of Korean Best Practices during Shipyard transformation. Work planning, work monitoring, and work progress is captured and monitored in MARS*Planning
G to H	compiling and checking of QIR, SOP, and TI by DeptA and submit to DeptC3	the activity is now removed and not needed. The disbursement documents are now self- compiled by t the Subcontractors	the process being obliterated and improvise through empowerment concepts
H to I	verify Subcontractors TI and other supporting documents for disbursement	the activities are now removed and not needed. DeptC3 become the fourth approval in SOP online. The work progress is duly verified by DeptC1	the process being obliterated and improvise in SOP approval process within D to G process

Table 5.6 (Continued)

Activities	Current State	Desired State	Remarks
I to J	sending verified disbursement documents from DeptC3 to DeptA	the activities are now removed and not needed. Subcontractors will submit the compilation of documents to DeptA after completing activity G to H	the process being obliterated. Subcontractors can send the disbursement document after completion of self-compilation and checking at G process

5.3.2 Reducing ERTC

As per discussion and findings (during interview in AR Cycle 1 and AR Cycle 4) in paragraph 4.4.1.2 and 4.4.2.2 and results in Table 4.21 and Table 4.23, the five BPR CSF's of effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment were used during revamping of project disbursement process and manage to strengthen the driving forces and weaken the restraining forces within the Shipyard working environment.

Within the changing environment, the driving forces and restraining forces must be controlled and influenced to move together within the change direction and support the revamping objectives. Based on this condition, the BPR CSF's had influenced and connected to employees' PBC, OC, IIC, ATC, and ERTC respectively. As per Figure 2.7, PBC, OC, IIC, and ATC have a negative and direct impact on RTC. When PBC, OC, and IIC increased, ATC increased, and RTC decreased accordingly.

5.3.2.1 Effective Top Management Support

Top management support is a catalyst for any change program in any organization or Shipyard. Even though it might be viewed with the perception of BPR hard part of the

top-down approach, employee's perception can be neutralized by way of effective support, roles, and intervention from top management.

Table 5.7
FFA Summary for Effective Top Management Support

BPR CSF	Driving and Restraining Forces	Remarks
effective top management support	top management support	strengthening driving forces in Shipyard
	transformation agenda	strengthening driving forces in Shipyard
	afraid of the unknown	reducing restraining forces in Shipyard
	intensive training	reducing restraining forces in Shipyard
	high IT cost to invest	reducing restraining forces in Shipyard
	BPR top-down approach	reducing restraining forces in Shipyard
	job insecurity	reducing restraining forces in Shipyard

Table 5.7 shows the impact of effective top management support during FFA by BPR team members on driving and restraining forces during the revamping of project disbursement process. As per discussion in Table 2.4, paragraph 4.4.1.2 and 4.4.2.2, driving forces and restraining forces have to be managed and aligned towards change direction to increase the PBC, OC, IIC, and ATC. Effective top management support has strengthened the driving forces of top management support and transformation agenda and weaken restraining forces of afraid of the unknown, intensive training, high IT cost to invest, BPR top-down approach and job insecurity.

Effective top management support becomes influential when the top management can adapt to flexible management style from top-down to bottom-up approach, and vice versa. Flexible management style helps to neutralize BPR hard part of the top-down approach, creating positive perception towards top management support, moving forward revamping activities faster, setting a clear and achievable target for revamping objectives, and reducing pressure to face the revamping process among employees.

Effective top management support can smoothen the communication process by breaking the communication barrier between top management and the affected employees. Top management makes themselves available to be approached and communicate. Issues, agenda, and proposal regarding revamping process are quickly discussed and decided. This will later strengthen communication channel to become more effective, responsive, and accelerate revamping activities especially at critical places between stakeholders and cross-functional departments. The efforts show the commitment from top management towards revamping activities, and influence employees' desire to stay and be involved in Shipyard revamping activities.

Top management willingness to empower the employees to do certain task and job, sharing the authority with a lower level of employees, increase accountability and responsibility among employees have resulted in making the employees feel needed, honored, and appreciated. This allows the best possible solution to be gathered internally to design, plan, and execute the revamping process within Shipyard rather than using external resources or consultant to resolve project disbursement process issues. The employee's perceived benefit of the change, and increase their desire and commitment towards revamping activities and make them more involved in the revamping process.

Empowerment influence positive attitude and reaction from employees and creating collaborative working condition within Shipyard working environment. Project disbursement process flows to many cross-functional departments, thus effective and conducive working conditions must be created to allow smooth discussion, reaction, and response to their needs. The collaborative working condition will generate the best

solution to resolve any issues as all affected employees are sharing their views, concern, and solution for improvement.

The collaborative working condition can stimulate effective involvement from all employees to be involved and contribute effectively to the revamping activities and effort. Not only employees, but top management are also heavily involved in revamping activities such as training, discussion, and engaged with all the stakeholders on project progress, status, and impact of revamping to the desired process. Empowerment instills accountability and responsibility on the employees to work harder and to have specific purposes to achieve. The efforts increased employees' desire and commitments towards their empowered task and increased their involvement in revamping activities accordingly.

The influence of effective top management support in strengthening driving forces, weakening restraining forces, and reducing ERTC are also noticeable during interview sessions in AR Cycle 1 and AR Cycle 4 as shown in Table 5.8 below.

Table 5.8
Interviewee Summary of Effective Top Management Support

BPR CSF	Interviewees' Quotes	Remarks
effective top management support	*DQO always communicate... #04* *DOO frequently highlight... #03* *DOO remind us... #03* *DOO frequently seeks... #08* *DOO was very supportive... #02* *management style... flexibility... #06*	showing great support by Shipyard top management to be involved, ask around, communicate, supportive, and flexible in management style that helps to influence driving forces, restraining forces, and ERTC.

In summary, effective top management supports through flexible management style, easy and smooth communications, empowerment, collaborative working condition, and involvement had increased employees' PBC, OC, and IIC, and positively

influenced ATC to increase, and reduce ERTC during the revamping of project disbursement process.

5.3.2.2 Effective Communications

Communications become effective tools to reach all stakeholders at any level, relay and give accurate information about revamping of project disbursement process, receiving queries and given response to the Shipyard employees on revamping needs, progress, and status, and most importantly portrayed on what may happen in the future involving employees after the revamping process completed. Effective communications can convey the positive news and stimulate strong driving forces and reduce restraining forces and ERTC accordingly.

Table 5.9
FFA Summary for Effective Communications

BPR CSF	Driving and Restraining Forces	Remarks
effective communications	communications	strengthening driving forces in Shipyard
	transformation agenda	strengthening driving forces in Shipyard
	external pressure to change	strengthening driving forces in Shipyard
	afraid of the unknown	reducing restraining forces in Shipyard
	prevent status quo	reducing restraining forces in Shipyard
	job insecurity	reducing restraining forces in Shipyard
	system complexity	reducing restraining forces in Shipyard

Table 5.9 shows the impact of effective communications during FFA by BPR team members on driving and restraining forces during revamping project disbursement process. As per discussion in Table 2.5, paragraph 4.4.1.2 and 4.4.2.2, driving forces and restraining forces have to be managed and aligned towards change direction to increase the PBC, OC, IIC, and ATC. Effective communications have strengthened the driving forces of communications, transformation agenda, and external pressure to

change and weakened restraining forces of afraid of the unknown, preserving status quo, job insecurity, and system complexity were reduced at *"desired state"* with the influence of effective communications.

Effective communications become influential when Shipyard is using the simpler medium of communications to communicate, faster responds towards revamping queries from employees, and creating positive working condition within Shipyard works environment. The medium of communications used during revamping process varies such as brainstorming session, morning talk, email, WhatsApp discussion, internal memo, meetings, and IT help desk.

The simple medium of communications breaks the barriers to preventing status quo, BPR top-down approach, and afraid of the unknown. It removes the bureaucracy in communication and allowed employees to speak their mind and share their views. By doing this, Shipyard and employees can exchange views, respond effectively towards revamping requirements, and make correct and best solution in designing and planning for revamping progress. It enables the revamping objectives, progress, and status to reach all level of employees and make the revamping activities and needs easy to follow and understand. The efforts generate more involvement from employees towards revamping activities.

Simpler communications smoothen the communication process and enable BPR team to respond and give fast feedback regarding revamping issues and status. It effectively established the urgency for revamping needs, showing commitment from Shipyard about revamping progress, stopping bad news or rumors which may spread

incorrectly, and put all affected employees in correct perspective and moving forward together to achieve revamping objectives.

The revamping objectives and the change needs are informed, explain, discuss and communicates thoroughly to reduce uncertainty and stress from the pressure of revamping needs. The revamping needs are established to wake up the employees from status quo and to get them involved in revamping activities. Employees felt the benefit of change towards them and getting more involved in the revamping activities.

Simpler communications and faster response to revamping queries help to create positive working condition within Shipyard environment. Employees from cross-functional departments can easily communicate, share views, and discuss opinions about revamping issues and coming out with the best solution to design the revamping plan. When communicating in the positive working atmosphere, BPR team can sense any human-related factors that may have gone through unnoticed without proper attention and justifications. The efforts increase perceived benefit of change among the employees make them involve effectively in revamping activities.

Table 5.10
Interviewee Summary of Effective Communications

BPR CSF	Interviewees' Quotes	Remarks
effective communications	*revamping objectives are very clear...#05* *the objective was very clear...#06* *we did not realize what really cause the delay...#07* *we can communicate to BPR team member easily...#04* *we do receive constant update...#08* *Shipyard does give us frequent feedback...#09*	shows that the revamping objectives are being communicated clearly to all employees, get the employees in perspective to move from status quo, an easy way to communicate to smoothen the communication process, and continuous update on revamping status and progress.

The influence of effective communications in strengthening driving forces, weakening restraining forces, and reducing ERTC are also noticeable during an interview in AR Cycle 1 and AR Cycle 4 sessions as shown in Table 5.10 above.

In summary, effective communications through the simpler medium of communication to communicate, faster responds towards revamping in getting queries from employees and creating positive working condition had increased employees' PBC and IIC, and positively influenced ATC to increase, and reduce ERTC during revamping project disbursement process.

5.3.2.3 Effective Training

Training is essential to reduce the gap between current process and desired process. It is the responsibility of Shipyard to ensure that sufficient training was provided to all affected employees to help them to be ready with revamping requirement. Training must be effectively planned to generate effective impact for revamping efforts.

Table 5.11
FFA Summary for Effective Training

BPR CSF	Driving and Restraining Forces	Remarks
effective training	in-house training	strengthening driving forces in Shipyard
	new job descriptions	strengthening driving forces in Shipyard
	afraid of the unknown	reducing restraining forces in Shipyard
	intensive training	reducing restraining forces in Shipyard
	high IT cost to invest	reducing restraining forces in Shipyard
	job insecurity	reducing restraining forces in Shipyard
	system complexity	reducing restraining forces in Shipyard

Table 5.11 shows the impact of effective training during FFA by BPR team members on driving and restraining forces during revamping project disbursement process. As per discussion in Table 2.6, paragraph 4.4.1.2 and 4.4.2.2, driving forces and

restraining forces have to be managed and aligned towards change direction to increase the PBC, OC, IIC, and ATC. Effective training has strengthened the driving forces of in-house training and new job descriptions and weaken the restraining forces of afraid of the unknown, intensive training, high IT cost to invest, job insecurity and system complexity.

Effective training becomes effective when Shipyard manages to equip and prepare the employees for revamping process using in-house training concept to conduct the training requirement. Training becomes a platform to gather and attract more involvement from employees to be involved in the revamping activities. Employees require the training to equip themselves with new job skills, and at the same time curious about progress and status of revamping effort.

During the training session, they can communicate, discuss and meet with other stakeholders and exchange responses to each other on the change related issues. The training gives upgraded employee's job skill and get them ready for new job requirement and know how to do new tasks. Besides that, processes between cross-functional department can be tested and realigned during a training session. Any gaps can be discussed and proposed for improvement with involvement from all stakeholders.

When Shipyard approved the training schedule for the change process and ensured that the training is for the benefits of the employees, the employees felt encouraged and honored. Even though new training comes with extra cost and time, the training requirement is not ignored and eliminated by Shipyard management. The efforts make

the employees feel the perceived benefits to them, more involved in the revamping process, more committed and have more desire to stay and progress with their career with Shipyard.

In-house training enables Shipyard to strengthen empowerment to internal employees, locally design the training requirement based on Shipyard desired working condition, manage to control the training cost compared to using external trainer, flexible training time to accommodate employees tight working schedule, and easy to interact between trainer and employees to encourage effective involvement during training sessions.

The training requirement is designed locally to suit the internal employee's requirements and making them more effective for employees to adapt and follow. An in-house trainer can easily identify the training gap and able to propose effective training method to be adopted by the employees involved. The in-house trainer provides more convenience in the learning process between trainer and employees, where the employees can ask and raise any questions during training program and interacted effectively during training sessions. In-house trainer reduces excessive training cost, provides flexible training hours, and encourages effective involvement during training sessions.

The training schedules were rearranged accordingly as per operational requirement, which does not burden the employees to rearrange their working time and to get permission to go for training from respective HOD. Employees felt that the training will prepare and guide them for the change effort and the change will bring benefit for both Shipyard and employees. The perceived benefits of employees managed to get

them more involved in revamping activities during revamping project disbursement process. The influence of effective training in strengthening the driving forces, weakening restraining forces, and reducing ERTC are also noticeable during interview sessions in AR Cycle 1 and AR Cycle 4 as shown in Table 5.12 below.

In summary, effective training managed to equip and prepare the employees for revamping process and using in-house training concept to conduct the training requirement had increased employees PBC, OC, and IIC, and positively influence ATC to increase, and reduce ERTC during revamping project disbursement process.

Table 5.12
Interviewee Summary of Effective Training

BPR CSF	Interviewees' Quotes	Remarks
effective training	*training was conducted locally, easy for us to attend and organize our time with daily job routine... #03* *we need to know how to use the system, and how it can assist me to do fast checking and approving of the SOP... #07* *it helps us a lot to control our cost in the change process... #11* *the trainer sufficiently briefed us...#12* *we can also choose the time for the training... #12* *we manage to control the situation, and less money spent by everybody involved... #02* *trainer shared how the new processes would be and what our roles are in this new process... #04* *our in-house trainer and BPR team are easy to be approached and ask questions... #05*	shows the effectiveness of training to equip employee's skill for new the process, easy to be involved and communicated with flexible time, manage to control the raising training cost, and communicated on how the new work process/job scope would be.

5.3.2.4 Employee's Involvement

Employee's involvement in revamping project disbursement process is critical to ensuring the change activities are smooth, accepted and sustainable. Employees must

be persuaded or convinced to get involved in revamping activities and expose them to the benefits of revamping project disbursement process.

Table 5.13
FFA Summary for Employee's Involvement

BPR CSF	Driving and Restraining Forces	Remarks
employee's involvement	top management support	strengthening driving forces in Shipyard
	in-house training	strengthening driving forces in Shipyard
	internal pressure to change	strengthening driving forces in Shipyard
	new job descriptions	strengthening driving forces in Shipyard
	afraid of the unknown	reducing restraining forces in Shipyard
	intensive training	reducing restraining forces in Shipyard
	prevent status quo	reducing restraining forces in Shipyard
	high IT cost to invest	reducing restraining forces in Shipyard
	BPR top-down approach	reducing restraining forces in Shipyard

Table 5.13 shows the impact of employee's involvement during FFA by BPR team members on driving and restraining forces during revamping project disbursement process. As per discussion in Table 2.7, paragraph 4.4.1.2 and 4.4.2.2, driving forces and restraining forces have to be managed and aligned towards change direction to increase the PBC, OC, IIC, and ATC. Employee's involvement has strengthened the driving forces of top management support, in-house training, internal pressure to change, and new job descriptions and weaken the restraining forces of afraid of the unknown, intensive training, prevent status quo, high IT cost to invest, and BPR top-down approach.

Employee's involvement becomes influential when it was generated through collaborative and conducive working environment. Employees' involvement accommodates smooth communication, effective training, and empowerment. When all employees involved, they will communicate which each other to discuss and propose all the best able solution to be considered and implemented in revamping

process. Employee's involvement will ensure all the issues are being considered and taken care off before any decision being finalized.

Involvement will expose the employees to correct perspective of needs to change, get them ready for revamping actives, show commitment to being with Shipyard to resolve any issues and ensure all the activities planned during revamping can proceed and succeed. The efforts increase employee's commitment and desire to stay at Shipyard and effectively influent their involvement in revamping activities of project disbursement process. The influence of employee's involvement in strengthening driving forces, weakening restraining forces, and reducing ERTC are also noticeable during interviewee's in AR Cycle 1 and AR Cycle 4 session as per quotes in Table 5.14 below.

Table 5.14
Interviewee Summary for Employee's Involvement

BPR CSF	Interviewees' Quotes	Remarks
employee's involvement	*we explored the possibility...#04* *we designed it internally...04* *all parties responded correctly to the new process...#02* *they manage to put us in correct perspective...#05*	showing great and beneficial involvement from all parties in supporting revamping activities, empowerment concept, and putting the employees in correct perspective regarding revamping project disbursement process.

In summary, employee's involvement generated through collaborative and conducive working environment had increased employees OC and IIC, and positively influence ATC to increase, and reduce ERTC during revamping project disbursement process.

5.3.2.5 Employee's Empowerment

Empowerment is a great method to empower the certain individual to perform certain job function and task in designing, planning, and executing planned change initiative. During revamping project disbursement process, empowerment is used to clean slate idle time, clerical work, administrative work and increase accountability and responsibility to all stakeholders within this process.

Table 5.15
FFA Summary for Employee's Empowerment

BPR CSF	Driving and Restraining Forces	Remarks
employee's empowerment	top management support	strengthening driving forces in Shipyard
	employee's empowerment	strengthening driving forces in Shipyard
	intensive training	reducing restraining forces in Shipyard
	prevent status quo	reducing restraining forces in Shipyard
	high IT cost to invest	reducing restraining forces in Shipyard
	BPR top-down approach	reducing restraining forces in Shipyard
	system complexity	reducing restraining forces in Shipyard

Table 5.15 shows the impact of employee's empowerment during FFA by BPR team members on driving and restraining forces during revamping project disbursement process. As per discussion in Table 2.8, paragraph 4.4.1.2 and 4.4.2.2, driving forces and restraining forces have to be managed and aligned towards change direction to increase the PBC, OC, IIC, and ATC. Employee's empowerment has strengthened the driving forces of top management support and employee's empowerment and weakened the restraining forces of intensive training, prevent status quo, high IT cost to invest, BPR top-down approach, and system complexity.

Employee's empowerment becomes significant when it is fully supported by top management to enable empowerment to run and flow effectively. Empowerment only

happens when top management is willing to share their authority and responsibility to a lower level of employees to perform certain job and responsibility. Empowerment display reputation and respect for empowered employees, and employees felt supported and respected to perform the task and job assigned to them. Empowerment increased accountability and responsibility in managing tasks and usually end with success.

Empowerment enables Shipyard employees to locally design, plan, execute, and monitor revamping progress and status of project disbursement process. Empowerment also enables in-house training being developed accordingly with the current work environment and easy to follow by all Shipyard employees. Both empowered tasks had influenced the creation of collaborative and conducive work environment between cross-functional employees to discuss, propose, and resolve any revamping issues in project disbursement process.

Collaborative and conducive work environment had generated a best possible solution to revamp project disbursement process and most importantly being crafted internally to adjust to Shipyard capabilities and working environment. This effort and opportunities had increased employees desire to stay with Shipyard and influenced their effective involvement in revamping project disbursement process.

The influence of employee's empowerment in strengthening driving forces, weakening restraining forces, and reducing ERTC are also noticeable during an interview session in AR Cycle 1 and AR Cycle 4 as shown in Table 5.16 below.

Table 5.16
Interviewee Summary for Employee's Empowerment

BPR CSF	Interviewees' Quotes	Remarks
employee's empowerment	*we resolved and proposed our solutions to the management... #01* *we proposed online approving process using MARS system... #01* *we proposed to extend the usage of I-Mars platform... #01* *there is pressure to complete the project on time, but it is manageable and reasonable... #03* *we do not receive any instruction in terms of "order" or "directive" ...#07*	showing authority in designing, planning, executing, and monitoring the revamping progress with strong support from top management to internally crafted the solution within project disbursement process.

In summary, employee's empowerment when fully supported by top management to enable empowerment to run and flow effectively in revamping of project disbursement process had increased employees OC and IIC, and positively influence ATC to increase, and reduce ERTC during revamping project disbursement process.

5.4 Other Findings of Research

Other relevant findings that can be shared from this research are i) eliminating the fear to implement BPR, ii) establishment of Shipyard BPR key CSF's, and iii) reframing Shipyard BPR key CSF is towards three-factor partial mediation model of resistance to change by Ricardo Peccei. These findings hopefully can revamp the fading views of BPR usage and become useful guidelines to help future BPR practitioner to implement their project in respective industries.

5.4.1 Eliminating the Fear to Implement BPR

When first introduced to BPR, the first portrayed picture was fear of the BPR consequences. Fear of BPR is noticeable through perception of its hard part in key elements such as radical change, clean slate process, and top-down approach (A & Sheriff, 2016; Eby, Adams, Russell, & Gaby, 2000; Mutua, 2013; Vithessonthi, 2005) and fear of its high failure rate on project implementation (Altinkemer, Ozcelik, & Ozdemir, 2011; Masumi, 2013; Mturi, 2014; Nicholds & Mo, 2015). Even though, there are many BPR CSF's that can be referenced for its implementation, its failure statistic in literature seems to overshadow the future benefits of BPR project.

BPR is overshadowed by its hard part of the key elements such as radical change, clean slate process, and top-down approach as per discussion in Table 2.1. Perception of employees must be neutralized towards this element before the project starts. Research in Shipyard showed that management does not need to look far to overcome the negative perception of BPR hard part, internal relevant BPR CSF's can be used effectively and influenced the perception to become positive.

Most of the negative perceptions are due to uncertainties about work environment, i.e., losing authorities, many colleagues leaving, required extensive new training, lack of communications i.e., middle managers did not communicate to bottom line, ineffective change agent, changes were introduced too fast, i.e., fast and fix solutions needed, and too many new systems were introduced.

Effective top management support is key to BPR implementation. Top management support, action, and reaction will chart the overall perception from the employees about the BPR implementation. Top management became the change leader and allowed its first liner or most trusted manager to continue, manage, and monitor BPR progress. The most important rules played by top management here are to set the objectives clearly for the project to achieve, let it runs and manage internally, and intervene effectively when required.

Effective intervention is required when the project hit a stumbling block in managing conflict from cross-functional departments, support on financial resources when it involves further monetary investment and keeps the wind of change flowing and alive at reasonable paces. Effective top management support will reduce negative perception from employee's regarding top-down approach concept and understanding.

Effective communications are vital to relay the positive news and impact about BPR program. In the first place, it will communicate what the crisis or problem is happening in current work practices and need revamping is. It is a wakeup call for the employees to get them ready for a change. Employees feel complacent doing the same work with the same practices, and suddenly the habits need to be radically changed. Negative perception will happen when employees are unable to see the benefits of change and feel what the Shipyard planning is a waste of money and time. Effective communications will relay the steps by steps of BPR change program, a requirement needed for new job scope, training plans for the employees, status and impact of the

BPR change program, and most importantly benefits of change program to the employees, relevant stakeholders, and the Shipyard.

Employee's involvement is neutralizing top-down approach by getting the affected Shipyard employees to be involved in the designing stage and completion of the blueprint of BPR project. Radical changes in the current job scope are also reduced by way of frequent brainstorming and discussion with the related cross-functional department involved. Thus process redundancy and manual system are removed and improved. This will ensure relevant work practices can be improved or upgraded, and new work practices needs for new training can be identified and managed effectively.

Employees empowerment indicate authority, accountability, and responsibility shared together with relevant, respected employees involved. Empowerment is fostering conducive working collaboration between the cross-functional department and push for more involvement from relevant parties. When everybody gets involved, meet, and frequently discuss, the best practical solution to revamp project disbursement process will surface and can be followed by everybody.

To eliminate the fear of BPR failure, team leader, change agent, or managers who lead the BPR project must really understand what the problem or situation are required to be overcome (the objective), how the internal factors can influence the change direction, how the change evolved and developed locally, how to implement the BPR in terms of using it implementation steps, key elements, and CSF's. What is being written in literature is guidance and serve as a reference to assist and give deep insight

into how BPR can be implemented in the organization to achieve the intended objective. The organization should not follow blindly on how to implement the BPR and forbid any alteration or modification to suit the research area or setting.

Most organizations are at their maturity level, especially for an organization that seeks a change due to survival or at their downward trend in performance. Thus, clean slate and obliterate are not necessarily a must or have to be followed. For example, a Shipyard business condition that is already running IT enabler in the current work environment. Implementing BPR does not mean investing in new IT system and throw away the existing software which is being used and invested for years.

A control and specific modification inside the current IT-based system are sufficient to achieve the desired process. Some of the functions are already inside the old module, but the system is not fully utilized due to certain reason. Despite concentrating on a clean slate and radical change effort, effective existing system usage can be applied. This will eliminate the fear that implementing BPR will incur a high financial cost to buy a new system.

IT system is no longer an "alien" thing in current business working condition, most of the software being built on open concepts and can accommodate certain customization. Many organization is being supported by internal IT department to support the IT-based system issue and requirement locally. This will give a good opportunity for Shipyard to run its training without depending on an existing software

vendor. High new training cost can be managed and avoided towards implementing new training requirement.

BPR is always being compared with other change initiative process such as Six Sigma and Total Quality Management (Azhar, 2013), on which one is better. Both are change initiative and should be used to complement each other usage and performance. The focus should be on the final contributions of BPR to Shipyard, and not limited to what are the criteria of BPR, Six Sigma, or Total Quality Management.

BPR and AR shared the same criteria to foster internal employee's understanding towards acceptance of BPR change such as collaborative activities and discussion, involvement in change planning or process, and cross-functional change impact. These elements indirectly reduce, top-down approach and prevent unnecessary radical change and clean slate process which might become an impulse for another resistance from employees.

BPR practitioner must have the creativity and courage to influence their respective internal BPR CSF's available within their working environment, while negative perception of BPR hard part and high failure rate of BPR implementation must be neutralized, and key CSF's such as effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment must be utilized and working effectively to eliminate the fear of BPR.

5.4.2 Establishment of Shipyard BPR Key CSF's

During the implementation of BPR project in Shipyard, many CSF's were related to the project progress, and the moment a project gets stuck, a few of CSF's emerged as the key to influence, move forwards, and support other CSFs towards the revamping initiative. This type of CSF's can be considered as a key to BPR project progress and managed to influence current threat and everlasting issue in BPR which is ERTC.

There are stages/threats, whereby the project progress may hit a stumbling block and stalled the deployment of revamping progress in Shipyard. Selection of IT-based system may go haywire if it is wrongly selected and led to unnecessary financial cost and hindered Subcontractor's involvement in revamping activities. Approving of IT budget-without full support and approval from the top management, may stop the project at this level, like the tragedy on KDSR3 which stalled the project progress for six months and prevented testing of the SOP data. Without Shipyard enormous efforts to salvage the ship, the revamping process flow and system may not have any SOP data to be tested.

The following BPR CSF's of effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment had managed to complement each other during the critical stage and become key to Shipyard BPR CSF's. When BPR team explored the opportunity and dependency of BPR on IT system, the surrounding feeling at that time was a wise decision must be made before this revamping initiative just stalled at the planning stage.

During selection of the IT-based system, effective top management support, employee's empowerment, employee's involvement, and effective training complement each other to come out with the best solution in CBA analysis for IT system. Top management put a clear guideline on how the system should be operated. The system must have an "open concept" system whereby further improvement can be added on in future, the decision must take into consideration Shipyard existing IT enabler system, employees feelings and thoughts must be addressed, and Subcontractors must be able to follow and support the changes made in the process.

Top management willingness to empower BPR team to design, plan, execute, and monitor the revamping progress increased accountability and responsibility among empowered employees and generated effective involvement from all, to contribute to CBA process. Collaborative and conducive working environment allow the ideas to flow and be discussed intelligently, and the CBA selection manage to be included with a design for in-house training which can reduce the training cost and time later on. Effective training together with employee's involvement complement each other to make the training program easy to follow and less stressful for employees.

Locally designing the revamping plan and in-house training program, make the selection of IT-based system much welcome by stakeholders' concern. Selection of IT system ends up with the minimum cost incurred by Shipyard to add new function and redesign the process in MARS system. While using existing MARS system, the Shipyard can do its in-house training program and have less dependency on MARS consultant. No cost incurred by Subcontractors to invest in new IT system as MARS

is being extended to the Subcontractors using I-Mars platform (free Internet-based application).

Effective top management support, employee's empowerment, employee's involvement, and effective training complement each other in making the best selection for the IT-based system and become key CSF's in moving forward the revamping activities faster. Should the wrong decision be made at this stage, Shipyard will have incurred the unnecessary financial cost and unable to attract employees and Subcontractors to involve in this revamping activity effectively.

During the anxious time to get IT budget approved, effective top management support, effective communications, employee's empowerment, and employee's involvement complement each other to get the budget accepted and approved. Employee's involvement and employee's empowerment complement each other through high accountability and responsibility in the making revamping a success for the Shipyard. BPR team and the team leader effectively communicate with top management on how to manage this project in terms of managing the financial cost, BPR implementation steps, and revamping successful rate.

Shipyard top management influence and get support from a higher level of management (within Group) to approve the IT budget and support for its endorsement. To get other higher-level management approval, they must have the buy-in in the overall revamping design, plan, and objectives to ensure its success. Effective top management support and effective communications manage to relay the benefits of

this revamping process to top management, getting their approval, and push forward for project execution.

Effective top management support, effective communications, employee's empowerment, and employee's involvement had to complement each other and became key CSF's to justify the need for revamping and get the IT budget approved to proceed with the revamping process. Should the IT budget did not get an endorsement from top management level, the revamping progress may stop at this planning stage and unable to progress and allow the revamping effort to take places. Shipyard may have to consider another way to resolve issues in project disbursement process and might end up with another stumbling block or mountain to climb.

During the difficult time to recover from the KDSR3 tragedy, effective top management support, employee's empowerment, effective training, and employee's involvement complement each other to make the changing mood alive and moving. After the new system "Go Live" in August 2014, the BPR team waited for the new incoming project to be tested with the revamping process. In November 2014, after four (4) months of waiting, KDSR3 entered the Shipyard for her refit routine maintenance. Unfortunately, after that, a tragedy occurred on KDSR3 and took until April 2015 to recover. The new process was being left idle without any data to be tested for about nine (9) months.

At this particular juncture, top management played their roles to recover KDSR3, communicating with Shipyard employees and Subcontractors that the tragedy can be recovered to instill their belief and confidence. On the other part, BPR teams

communicating with all the affected stakeholders in revamping process to be patient and wait for the right time to start using the new process. The priority at that particular time was divided, the urgency to recover the tragedy in KDSR3 being focused on and other activities become less priority.

Employees and Subcontractors were eager and anxious to use the new process. The idle time created the vacuum to be filled up so that revamping initiative will not slowly dying and forgotten. Based on the accountability and responsibility empowered to BPR teams, more in-house training was organized, more follow up meeting on unresolved issues, more discussions on the proposal and employees view yet to be presented, and more small group discussions between team members, affected employees, and the Subcontractors were conducted.

Effective top management support, employee's empowerment, effective training, and employee's involvement become key CSF's and complements each other to ensure the revamping is still ongoing and move forward. Should the situation being ignored, most probably Shipyard will revert to old work practices at *"current state"* and straight away kills the revamping activities from happening.

The BPR key CSF's, i.e., effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment had to complement each other and moved forward the revamping initiative towards the right direction at critical stages in Shipyard. Beyond that, it also stimulates another relevant CSF's to become stronger and effective to make Shipyard

revamping plan successful. Table 5.17. below show summarized BPR key CSF's in Shipyard during revamping project disbursement process.

Table 5.17
Summarized Shipyard BPR Key CSF's

Shipyard BPR Threats	**Shipyard BPR Key CSF's**	**Complement Other BPR CSF's**
selection of IT based system	effective top management support	top level management commitment, flexible management style, effective communications, enable smooth empowerment concept, improving cross-functional communications, fostering employee's involvement and commitment, support BPR financial resources, support BPR IT requirement
	employee's empowerment	top-level management commitment, effective communications, improving cross-f unctional communications, fostering employee's involvement and commitment
	employee's involvement	support effective communications, support effective training, support empowerment concept, support BPR financial resources
	effective training	support BPR financial resources, strengthen empowerment concept, fostering employee's involvement, collaborative working condition
approving of IT budget	effective top management support	top-level management commitment, effective communications, improving cross-functional communications, support BPR financial resources, support BPR IT requirement, strong and committed leadership
	effective communications	improving cross-functional communications, accommodate top management support functions, less bureaucratic structure, support BPR financial resources
	employee's empowerment	top management support, collaborative working condition, employee's involvement, training, communications
	employee's involvement	support effective communications, support effective training, support empowerment concept
tragedy KDSR3	effective top management support	effective communications, improving cross-functional communications, strong and committed leadership, effective training, top-level management commitment
	effective communications	accommodate top management support function, less bureaucratic structure, support employee's involvement, support empowerment concept
	employee's involvement	improving cross-functional communications, accommodate top management support function, support empowerment concept
	effective training	support effective communications, support employee's involvement, support empowerment concept, accommodate top management support function

5.4.3 Reframing Shipyards' BPR Key CSF Towards Three-Factor Partial Mediation Model of Resistance to Change

As per discussion in paragraph 5.3.2 and 5.4.2, Shipyard BPR key CSF's have a positive impact on reducing resistance and increasing acceptance towards revamping of project disbursement process among employees and Subcontractors. Effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment stimulating each other by creating positive perceptions, conducive work environment, thought, and feeling among employees to perceive that there are benefits from the revamping to them, feeling more desirable to stay and committed to the Shipyard, and feeling of being involved and needed in the new system.

To further understand how this BPR key CSF's influence PBC, OC, IIC, and ATC, a detail discussion on paragraph 4.4.1.2 and 4.4.2.2 suggested how driving forces being strengthened and restraining forces being weakened by Shipyard BPR key CSF's. After influencing driving forces and restraining forces, it influences the employees and Subcontractors to perceive benefits towards them, increased their commitment and desire to stay with Shipyard, and effectively involved in revamping activities during project progress.

Paragraph 5.3.2.1, 5.3.2.2, 5.3.2.3, 5.3.2.4, and 5.3.2.5 elaborate in detail how Shipyard BPR key CSF is being reframed to respective PBC, OC, IIC, and ATC. The reframing shows a connection can be established between Shipyard BPR key CSFs

and Peccei Model of RTC. The relationship has direct and positive effect whereby when Shipyard BPR key CSF's are strong, PBC, OC, IIC, and ATC are also strong or increased respectively. The summarized reframing of Shipyard BPR key CSF's to Peccei model are shown in Table 5.18 below.

Table 5.18
Reframing Shipyard BPR Key CSF's to Peccei Model of RTC

BPR key CSF's	Peccei Model	Remarks
effective top management support	PBC, OC, IIC	direct positive relationship with each other
effective communications	PBC, IIC	direct positive relationship with each other
effective training	PBC, OC, IIC	direct positive relationship with each other
employee's involvement	OC, IIC	direct positive relationship with each other
employee's empowerment	OC, IIC	direct positive relationship with each other

5.5 Summary of Research Objective and Other Findings

In summary, this research had answered the research question and objective number one to establish the *"current state"* of Shipyard's project disbursement process in terms of time taken to approved one SOP and cost incurred associated with *"current state"* of project disbursement process flow. Figure 1.1 discussed the lengthy process flow in project disbursement process which are due to delay in approving an SOP and messy process to compile tax invoice for disbursement process. Table 4.12 concluded time taken to approve one SOP which is more than 30 days. Table 4.17 and Table 4.18 disclosed manpower cost incurred to approved one SOP and to verified document for disbursement respectively.

For research question and objective number two, i.e., to revamp project disbursement process with the intention to reduce the time taken to approve SOP and create a cost saving for more effective process flow, Table 5.3 shows improvement in approving of SOP at 86% from 30 days to 4 days. Table 5.4 shows improvement of activities and

time spent within project disbursement process, Table 5.5 shows cost saving gained after revamping project disbursement process in verification of one SOP and document submission for disbursement of 31% and 61% respectively. Table 5.6 explains the overall improvement of project disbursement process flow as illustrated through a comparison between Figure 1.1 and Appendix H.

For research question and objective number three, "what are BPR CSF's used to reduce ERTC during revamping project disbursement process?", paragraph 5.3.2 discusses in detail on how effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment which are Shipyard BPR key CSF's influencing PBC, OC, IIC, and ATC to reduce ERTC. These five (5) BPR key CSF's are being used effectively to reduce ERTC during revamping project disbursement process.

Besides answering the main research question and objective, this research concluded another three (3) findings directly related to BPR project implementation. Paragraph 5.4.1 discuss on the finding of how Shipyard eliminates the fear to implement BPR which comes from its high percentage of failure rate, perception on BPR "hard part," and commitment on IT system and strong financial cost. Paragraph 5.4.2 discuss on the finding of the establishment of Shipyard BPR key CSF's which become critical factors for moving forward with the revamping activities and complement other CSF's when revamping is in slow progress and hitting a stumbling block. The establishment also indicates the progress of BPR success factors findings and usage from criteria of

success factors (SF's) to critical success factors (CSF's), and key critical success factor's (key CSF's).

Paragraph 5.4.3 discuss the finding to understand further how Shipyard BPR key CSF's reduce ERTC by reframing it to three-factor partial mediation model of resistance to change. The connection of effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment to PBC, OC, IIC, and ATC showed the positive direct relationship between each other. It relates to how BPR key CSF's manage to reduce ERTC through a relationship with PBC, OC, IIC, and ATC accordingly.

5.6 Contributions of Research

This research had contributed both on theoretical and practical contribution to the knowledge of BPR, change process, and resistance to change. On theoretical contributions, it helps to understand further how BPR key CSF's can be used to reduce ERTC, and on practical contributions, it helps the industry players with new perspective towards BPR implementation and given options to resolve issues on verification of Subcontractor work progress and delay in disbursement process between the main contractor and Subcontractors.

5.6.1 Theoretical Contributions

The finding from this research help to further understand how to use BPR key CSFs in reducing ERTC among employees and directly increase high level of acceptance

towards change effort and BPR successful rate. Continuing from results in Table 5.18, a relationship between Shipyard BPR key CSF's and theoretical framework developed by Ricardo Peccei in 2011, Three-Factor Partial Mediation Model of Resistance to Change (Figure 2.7) are being established. Combination results and understanding from Table 5.18 and Figure 2.7, a research framework as per Figure 5.1 below being proposed to be used in future.

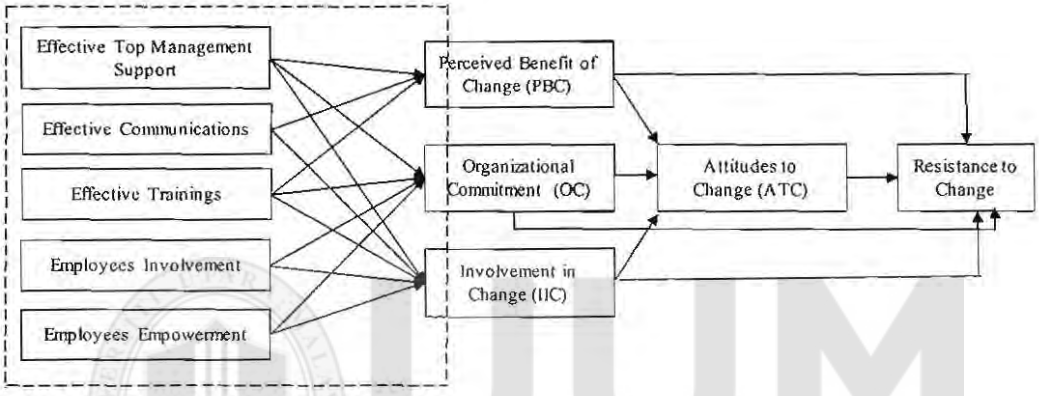


Figure 5.1
Research Framework: Model of BPR Key CSF is to Reduce RTC

Figure 5.1 shows the research framework established in this research which shows the reframing of Shipyard BPR key CSF's towards PBC, OC, IIC, and ATC. Results in paragraph 5.3.2 and 5.4.3 show that effective top management support increased PBC, OC, IIC, and ATC, effective communications increased PBC, IIC, and ATC, effective training increased PBC, OC, IIC, and ATC, employee's involvement increased OC, IIC, and ATC, and lastly employee's empowerment increased OC, IIC, and ATC. The relationships are illustrated in the dotted square in Figure 5.1.

Expanding from this illustration and adapting from the findings of Ricardo Peccei research in 2011, it can be further accepted that effective top management support,

effective communications, effective training, employee's involvement, and employee's empowerment have a direct relationship to increased PBC, OC, IIC, and ATC. When PBC, OC, IIC, and ATC increased, ERTC will be decreased. This statement is further supported by findings in this research whereby Shipyard BPR key CSF's had managed to reduce Shipyard ERTC during revamping project disbursement process.

To use this research framework, an establishment of organizations' key CSF's must be developed, as a respective research area has a different objective, settings, and organization maturity level. After that, further understanding of potential direct or indirect relationship with the model can be seen or established. This model will help practitioners to get a better understanding of the influence of BPR key CSF's for project implementation, planning, reducing ERTC, and increase BPR successful rate at every organization.

5.6.2 Practical Contributions

The effort of this research helps Shipyard to reduce time and cost while processing project disbursement process. Radical reduction in days of 86% is noted in the time taken to approve SOP as it reduces the days taken to approve the documents from thirty (30) days to less than four (4) days, and even less than a day. Bigger cost saving in verification of SOP and compilations for documents for disbursement gained about 31% and 61% respectively for both Shipyard and Subcontractors when the process flow being revamped. Both time reduction and cost saving are beneficial, and more time and resources can be allocated for other purposes such as detailed planning and monitoring of work progress.

When the Subcontractors can compile and submit their disbursement earlier, they have higher chances to get disbursement faster and rolling their cash flow for another project and requirement. Within the industries, the issues of work progress verification is still hampering the project progress (Ismail & Osman, 2016; Ramachandra, 2013), the revamping idea of project disbursement process can be a guideline and reference for other industries to follow and apply, and subsequently help to generate more business opportunity with the help of cash flow liquidity.

Time reduction, cost saving, and faster cash flow will improve both Shipyard and Subcontractors in terms of time, cost, quality, and trust between both parties. The positive working collaboration will help to propel and foster the growth of shipbuilding/ship repair industry in achieving its objective and realizing its potential in the future. Every organization must face change process to sustain and become relevant to the industry. The biggest challenge for change came from ERTC, and the finding from this research shared how the ERTC can be reduced to avoid a failure in the change activities.

BPR is a proven tool to make a radical change for improvement related to this research. However, many organization will have the second thought to implement BPR due to it hard part of the clean slate, obliterate, top-down approach, and high finance cost. This research had found the effective influence of BPR CSFs of effective top management support, effective communications, effective training, employee's involvement, and employee's empowerment on how to reduce the ERTC by way of strengthening the driving forces and weakening the restraining forces within the

organization changing environment to support the change activities. The organization did not need to look far to create the change success but gave trust and empowerment to the strength of BPR CSFs to lead and manage the uncertainty and loophole in the change process.

The effective BPR CSFs become key to the success of proposed planned change and help to spread the positive aspect of BPR implementation together with the intended change objective. The hard part of the clean slate, obliterate, and top-down approach becomes less stressful with customization of this requirement by way of adapting to the BPR CSFs such as effective top management support, effective communications, employee's involvement, and employee's empowerment. The technical application of the above mention BPR CSFs can be referred in detail discussion at paragraph 5.3.2 and 5.4.1.

The burden of financial constraint to implement the BPR and adopting the more effective IT-based system become manageable with effective top management support, effective training, employee's involvement, and employee's empowerment. The influence of the abovementioned BPR CSFs in reducing BPR financial cost is discussed in detail as per paragraph 5.3.2.3. The change investment investing in BPR project gave good return in reducing operation processing time and manpower cost saving as per detailed discussion in paragraph 5.3.1.1, 5.3.1.2, and 5.3.1.3.

ERTC can be reduced at an early stage of the planned change process. The effective BPR CSFs such as effective top management support, effective communications,

effective training, employee's involvement, and employee's empowerment can be used to reduce the ERTC from incoming change activities by way of strengthening the driving forces and weakening the restraining forces which lead to reducing the ERTC from employees during planned change process. The finding from this research help other organization to adopt and apply the BPR CSFs as the main antecedent to resolve the potential problem from ERTC in their incoming change initiative.

This research also gives further motivation towards BPR perception that it is still relevant to the industries and a great management tool to help organization resolve their current problems.

5.6.3 Reflections on used of Action Research

The unique mixture of AR methodology and BPR criteria had created effective working collaboration among employees, BPR team members, and Shipyard management during the change activities and being reflected in overall findings for this research. The reflection of AR helps in i) resolving conflicts in BPR challenges and ii) established the influence of BPR CSFs towards reducing ERTC during change implementation.

Table 5.19 illustrated the challenges faced during research progress in the effort to deploy the BPR approach to revamp the project disbursement process. With the influence of BPR CSFs of effective top management support, effective communications, effective training, employee's involvement, and employee's

empowerment, the researcher manages to overcome the obstacles and reflected the AR reflection as below.

Table 5.19
AR Reflections on BPR Implementation Challenges

BPR Implementation Challenges	BPR CSFs	AR Cycle	AR reflection
CBA analysis for IT-based system selection	effective top management support, employee's involvement, employee's empowerment.	AR Cycle 1	reduce stress on the complexity of selection IT-based system and reduce the BPR overall implementation cost
approval of IT-based system budget	effective top management support, employee's involvement, employee's empowerment.	AR Cycle 1	ease the financial constraint on BPR implementation with support from management
high new training cost and time spent for new training	effective top management support, effective training, employee's involvement, employee's empowerment.	AR Cycle 3, and AR Cycle 4	reduce expectation of high training cost and burden of the tight training schedule.
project idle time due to tragedy on KDSR3	effective top management support, effective communications, effective training.	AR Cycle 3	moving forward and group the change direction at a difficult time
non-availability of new SOP project data	effective top management support, effective training, employee's involvement.	AR Cycle 3	instill hope and believe in the change process in difficult project phases.
a new requirement on GST	effective top management support, employee's involvement, employee's empowerment.	AR Cycle 2	moving forward and resolve all emergent issues during change progress

CBA analysis for IT-based system selection – the analysis not just help to select the appropriated IT-based system (in term of cost and effectiveness) but manage to avoid the conflict of using too many IT-based systems and help to maximize the usage of I-MARS platform further. Appropriate selection reduces the stress from top management to support the project financially and give more change for empowerment concept to the in-house trainer to contribute to the revamping activities especially at the design stage of the system. Effective top management support, employee's involvement, and employee's empowerment added further economic values to the

CBA analysis. The finding further reflected the influence of BPR CSFs to reduce finance cost in buying the new IT-based system and further maximizing the usage of existing MARS system and employees creativities in designing the new system design.

Approval IT-based system budget – the budget approval becomes the key point for the revamping activities to proceed further. Should no budget provided to commit to investing in the IT-based system, the design stage and revamping ideas might not be materialized, and all the planning become impossible to complete and commit. Effective top management support, employee's involvement, and employee's empowerment highlight the positive impact of revamping process and influence top management decision to approve the required budget. The finding further reflected the influence of BPR CSFs to cracked the first hurdle of revamping activities in getting the approval for IT-based system budget and move the change initiatives forwards to the next level.

High new training cost and time spent for new training – implementation new system and a new way of doing work required intensive training and tight schedule to be design and plan. Such planning requires high commitment from all parties affected by revamping process. Top management support decision to locally empowered employees to design the new process, planning the training with flexible working hours, and get the employees to contribute ideas on revamping process help to remove the dependency on MARS consultant and directly reduce the training cost incurred. Flexible working hour help the employees and subcontractors workers to get involved in training without jeopardizing their current work at hand. The finding further

reflected the influence of BPR CSFs to reduce finance cost related to the deployment of BPR and eased the financial constraints of all parties involved.

Project idle time due to tragedy on KDSR3 – due to the tragedy involving KDSR3, the revamping progress stalled, and the Shipyard urgency has changed towards resolving tragedy occur in KDSR3. Should no immediate and drastic action taken on revamping progress, employees might return to the old way of doing project disbursement, and the change initiative might be abandoned immediately. Effective top management support, effective communications, and employee's involvement manage to group back employees focus and direction towards the change objective. Top management continuously supports the change initiative, and BPR team keep communicating the positive impact on the revamping process to get all the related employees involved and motivated. The finding further reflected the influence of BPR CSFs to move the change program forwards when it is facing difficult time and become idle.

Non-availability of new SOP project data - after completion of the UAT and the system ready to "Go Live" and new process ready to be tested, the research facing another obstacle to wait for new ship repair project to came for REFIT. When KDSR3 entered Shipyard, all the employees waited anxiously to use the new system until the tragedy halt the excitement. Employees focus must be retained and their believed towards the effectiveness of new system should be protected. BPR team suggested more training planned to keep employees occupied with change activities, and fully supported by top management by given full empowerment to the local in-house trainer to do the training. The finding further reflected the influence of BPR CSFs to move the change program forwards when the research progress has no data to be analyzed

and divert the employees focus to another activity (training of new system) that directly related to the outstanding change activities.

A new requirement on GST- during the earlier design stage, the requirement for GST to the shipbuilding/ship repair industry still not clear. After completing the "Go Live" in August 2014, the new requirement on GST took place in April 2015. New changes on system design and training are required to upkeep the project disbursement process with GST statutory requirement. Effective top management support, employee's involvement, and employee's empowerment help to redesign the system change and manage to retrain the employee's concerns on this requirement. The finding further reflected the influence of BPR CSFs to support any new change requirement needed and gave ample and appropriate time to redesign the original change plan.

Through the reflection of AR, the research found a positive direct relationship between BPR CSFs and PBC, OC, IIC, and ATC and direct negative relationship with ERTC. The relationship helps to further understand how BPR CSFs influence to reduce ERTC. Driving forces become stronger, and restraining forces become weaker when the effective BPR CSFs were used and interact with employees and subcontractors concerned with project disbursement process.

Even though BPR had its hard part in a clean slate, obliterate, and top-down approach, the flexibility, customize, and reasonable effect of BPR CSFs manage to influence and highlight the positive impact of revamping process at the earlier stage. The influence of effective BPR CSFs, influence driving forces and restraining forces as per discussion in paragraph 5.3.2 and connected directly to the Three-Factor Partial

Mediation Model of Resistance to Change (Figure 2.7), and gave great understanding on how the ERTC become reduced (the relationship of BPR CSFs with PBC,OC,IIC,ATC and ERTC).

Reflection from this research also suggested that ERTC is more manageable when it can be predicted and anticipated at the earlier stage of the change initiative. Earlier assessment on ERTC using FFA by BPR team members gave vital input in planning to strengthen the driving forces and ideas to weaken the restraining forces towards revamping activities. At the end of the research, the findings show that the ERTC from revamping activities in project disbursement process in the Shipyard using BPR is reduced directly by the effectiveness of BPR CSFs applied during the project implementation.

5.7 Suggestions for Future Research

This research concentrates on the implementation of BPR to achieve its desired objectives, development of BPR key CSF's, and ways to reduce ERTC using Three-Factor Partial Mediation Model of Resistance to Change developed by Peccei. Future research related or as extensions to this research findings could be as follows:

1. to further established BPR key CSFs in a different organization, working background, and industries. Many organizations nowadays have reached their maturity level, different organizational beliefs, politics and culture, and at the peak or declining of their performance. Different key CSF's that are becoming the driving forces of BPR change effort might be established and give different views

for the future practitioner to use in their next BPR ventures. Options and opinions regarding BPR successful factors will be rich and exhaustive.

2. to further understand the link between same BPR key CSF's within different industries or different BPR key CSF's in the same industries and develop its relationship with Peccei theoretical model of RTC. This will add up a different relationship that might exist and help to understand how it can influence to reduce resistance to change when deploying BPR project.

3. to further test the research framework model as per Figure 5.1 at different research setting, working environment, and research objectives to strengthen the research framework impacts in helping the implementation of BPR, enhancing the knowledge within BPR, change theory, and RTC, and lastly to help to reduce ERTC during project implementation.

4. BPR is always overshadowed by its failure rates even though there is no global acceptance mechanism on how to measure its success unless looking at its objective either fulfilled or not. Future research should concentrate on BPR existing strength and potential to overcome the embedded problem with its implementation. Its CSF's and key CSF's are lives criteria that always help BPR to adapt to changing business environment. Exploring this avenue will increase positive statistic of BPR and slowly reducing BPR hard part in views from the people involved in the change process.

5.8 Conclusions

In conclusion, this research had achieved its main objectives to resolve Shipyard problem in project disbursement process and find ways to reduce ERTC using BPR CSFs. The findings help Shipyard to reduce time and gained cost saving from revamping activities within project disbursement process flow, help subcontractors to compile documents for disbursement faster, and increased chances to get disbursement earlier, and given other industry players a solution to resolve issues in verification of work progress (SOP) and cash flow liquidity between subcontractors. The findings also contributed to RTC knowledge whereby it has established the relationship between BPR key CSF's and three-factor partial mediation model of resistance to change, and directly help to reduce ERTC to increase BPR successful rate. In general, the results help to further understand the knowledge of BPR, change, and RTC and contribute positive results and outcomes towards BPR history.

REFERENCES

A, A. M., & Sheriff, A. (2016). An Investigation of Perception of Business Process Reengineering in Indian Manufacturing Industry. *European Journal of Business and Management*, *8*(4), 152–158.

Abdolvand, N., Albadvi, A., & Ferdowsi, Z. (2008). Assessing Readiness for Business Process Reengineering. *Business Process Management Journal*, *14*(4), 497–511.

Abraham, Arnold, & Oxenberry. (1996). The Self-discovering Organisation: Using Action Research to the Learning Organisation. In *Building a Learning Organisation Through Action Learning and Action Research, Singapore.*

Adelman, C. (1993). Kurt Lewin and the Origins of Action Research. *Educational Action Research*, *1*(1), 7–24.

Adler, P. A., & Adler, P. (1987). *Membership Roles in Field Research(Vol. 6.)*. Sage.

Ahmad, H., Francis, A., & Zairi, M. (2007). Business Process Reengineering: Critical Success Factors in Higher Education. *Business Process Management Journal*, *13*(3), 451–469.

Ahuja, R. (2007). Towards an Understanding of Excellence in Urban Pedagogy: A Portrait of a High School. *The Qualitative Report*, *12*(1), 1–19.

Al-Mashari, M., Irani, Z., & Zairi, M. (2001). Holistic Business Process Reengineering: An International Empirical Survey. In *Proceedings of the 34th Hawaii International Conference on System Sciences - 2001 Holistic* (pp. 1–10).

Al-Mashari, M., & Zairi, M. (1999). BPR Implementation Process: An Analysis of Key Success and Failure Factors. *Business Process Management Journal*, *5*(1), 87–112.

Al-Mashari, M., & Zairi, M. (2000). Revisiting BPR: A Holistic Review of Practice and Development. *Business Process Management Journal*, *6*(1), 10–42.

Aladwani, A. M. (2001). Change Management Strategies for Successful ERP Implementation. *Business Process Management Journal*, *7*(3), 266–275.

Alas, R. (2009). The Impact of Work-Related Values on the Readiness to Change in Estonian Organizations. *Journal of Business Ethics*, *86*(2), 113–124.

Ali, A. (2012). A Framework for Using Cost-Benefit Analysis in Making the Case for Software Upgrade. *Issues in Informing Science and Information Technology*, *9*, 399–409.

Alsudairi, M. A. T. (2013). Analysis and Exploration of Critical Success Factors of ERP Implementation : A Brief Review. *International Journal of Computer Applications*, *69*(8), 44–52.

Altamony, H., Tarhini, A., Al-Salti, Z., Gharaibeh, A. H., & Elyas, T. (2016). The Relationship Between Change Management Strategy and Successful Enterprise Resource Planning (ERP) Implementations: A Theoretical Perspective. *International Journal of Business Management & Economic Research*, *7*(4), 690–703.

Altinkemer, K., Ozcelik, Y., & Ozdemir, Z. (2011). Productivity and Performance Effects of Business Process Reengineering: A Firm-level Analysis. *Journal of Management Information Systems*, *27*(4), 129–161.

Amanquah, B., & Adjei, K. S. (2013). Business Process Reengineering (BPR) In the Financial Services Sector : A Case Study of Ghana Commercial Bank (GCB) Limited. *European Journal of Business and Management*, *5*(29), 59–66.

Amarantou, V., Kazakopoulou, S., Charzoglou, P. D., & Chatzoudes, D. (2016). Factors Affecting "Resistance to Change": An Explanatory Study Conducted in the Healthcare Sector. *International Journal of Strategic Innovative Marketing*, *2016*, 23–40.

Anjard, R. (1996). Applying Re-engineering. *Work Study*, *45*(7), 9–14.

Appelbaum, S. H., Degbe, M. C., MacDonald, O., & Nguyen-Quang, T.-S. (2015). Organizational Outcomes of Leadership Style and Resistance to Change (Part Two). *Industrial and Commercial Training*, *47*(3), 135–144.

Argyris, C. (1993). *Knowledge for Action*. San Francisco, CA: Jossey-Bass.

Argyris, C., Putnam, R., & Smith, D. M. (1985). *Action Science*. San Francisco: Jossey-Bass.

Atkinson, P. (2005). Managing Resistance to Change. *Management Services*, *49*(1), 14–19.

Auer, C., & Follack, M. (2002). Using Action Research for Gaining Competitive Advantage Out of the Internet's Impact on Existing Business Models. In *15th Bled Electronic Commerce Conference eReality: Constructing the eEconomy*

(pp. 767–784).

Azhar, Z. (2013). The Role of TQM and BPR in Executing Quality Improvement : A Comparative Study. *European Journal of Business and Management*, *5*(1), 1–10.

Azman, M. N. A., Dzulkalnine, N., Hamid, Z. A., & Bing, K. W. (2014). Payment Issue in Malaysian Construction Industry: Contractors' Perspective. *Jurnal Teknologi*, *70*(1), 57–63.

Azman, M. N. A., Dzulkalnine, N., Hamid, Z. A., Kamar, K. A. M., & Nawi, M. N. M. (2013). Payment Scenario in the Malaysian Construction Industry Prior to CIPAA. In *CIB World Building Congres Construction and Society, Brisbane 5-9 May 2013* (pp. 99–108).

Bakar, S. N. A. A. (2015). *Payment Issues - The Problems of Malaysian Construction Company*. *Universiti Malaysia Pahang*.

Bamford, D. R., & Forrester, P. L. (2003). Managing Planned and Emergent Change Within an Operations Management Environment. *International Journal of Operations & Production Management*, *23*(5), 546–564.

Bargal, D. (2006). Personal and Intellectual Influences Leading to Lewin's Paradigm of Action Research: Towards the 60th Anniversary of Lewin's "Action Research and Minority Problems" (1946). *Action Research*, *4*(4), 367–388.

Bekeli, H. (2012). *An Assessment on the Challenges and Achievements of BPR Implementation in the Oromia Civil Service and Good Governance*. Addis Ababa University.

Bertezene, S., & Martin, J. (2007). Internal Control, External Control, and Quality : The Case of Social and Medical Establishments in France. In *10th "Excellence in services" conference, Thessaloniki, Greece, 2007*.

Boustead, H. I. C. (2013). *BHIC Annual Report 2013*.

Boustead, H. I. C. (2014). *BHIC Annual Report 2014*.

Buckingham, M., & Seng, J. (2009). Making Change Work : Closing the Change Gap. *Human Resource Management International Digest*, *17*(3), 11–15.

Burgess, R. E. (2014). *A Correlational Analysis of Empowerment and Experience With Resistance to Change*. Walden University.

Burnes, B. (1996). No Such Thing as ... a " One Best Way " to Manage Organizational Change. *Management Decision*, *34*(10), 11–18.

Burnes, B. (2004). Kurt Lewin and the Planned Approach to Change: A Re-appraisal. *Journal of Management Studies*, *41*(6), 977–1002.

Burnes, B. (2007). Kurt Lewin and the Harwood Studies: The Foundations of OD. *The Journal of Applied Behavioral Science*, *43*(2), 213–231.

Burnes, B. (2009). Reflections: Ethics and Organizational Change – Time for a Return to Lewinian Values. *Journal of Change Management*, *9*(4), 359–381.

Burnes, B., & Cooke, B. (2012). The Past, Present, and Future of Organization Development: Taking The Long View. *Human Relations*, *65*(11), 1395–1429.

Burnes, B., & Cooke, B. (2013). Kurt Lewin's Field Theory: A Review and Re-evaluation. *International Journal of Management Reviews*, *15*(4), 408–425.

Cassell, C., Buehring, A., Symon, G., & Johnson, P. (2006). Qualitative Methods in Management Research: An Introduction to the Themed Issue. *Management Decision*, *44*(2), 161–166.

Catterall, M. (1996). Using Computer Programs to Code Qualitative Data. *Marketing Intelligence & Planning*, *14*(4), 29–33.

Chen, Y.-C. (2001). *Empirical Modelling for Participative Business Process Reengineering*. University of Warwick.

Coghlan, D. (2001). Insider Action Research Projects Implications for Practising Managers. *Management Learning*, *32*(1), 49–60.

Coghlan, D. (2003). Practitioner Research for Organizational Knowledge Mechanistic and Organistic-oriented Approaches to Insider Action Research. *Management Learning*, *34*(4), 451–463.

Coghlan, D. (2004). Action Research in the Academy : Why and Whither ? Reflections on the Changing Nature of Research. *The Irish Journal of Management*, *25*(2), 1–10.

Coghlan, D. (2009). Toward a Philosophy of Clinical Inquiry/Research. *The Journal of Applied Behavioral Science*, *45*(1), 106–121.

Coghlan, D., & Brannick, T. (2001). *Doing Action Research in Your Own*

Organization. London: Sage.

Coghlan, D., & Brannick, T. (2005). *Doing Action Research in Your Own Organization* (2nd ed.). London: Sage.

Coghlan, D., & Brannick, T. (2014). *Doing Action Research in Your Own Organization* (4th ed.). London: Sage.

Coghlan, D., & Jacobs, C. (2005). Kurt Lewin on Reeducation Foundations for Action Research. *The Journal of Applied Behavioral Science*, *41*(4), 444–457.

Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative and Mixed Approaches*. *Sage Publications* (3rd ed.). Thousand Oaks, California.

Creswell, J. W. (2013). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. *Sage Publications* (4th ed.). Thousand Oaks: Thousand Oaks, CA: Sage.

Crowe, T. J., Fong, P. M., Bauman, T. A., & Zayas-Castro, J. L. (2002). Quantitative Risk Level Estimation of Business Process Reengineering Efforts. *Business Process Management*, *8*(5), 490–511.

Cummings, S., Bridgman, T., & Brown, K. G. (2016). Unfreezing Change as Three Steps: Rethinking Kurt Lewins Legacy for Change Management. *Human Relations*, *69*(1), 33–60.

D'Ortenzio, C. (2012). *Understanding Change and Change Management Processes : A Case Study*. *University of Canberra*.

Dasuki, M. K. M. (2015). *Managing Quality Management Process in a Naval Ship Construction Company: A Qualitative Case Study*. Universiti Utara Malaysia.

Dave, B., & Appleby, C. (2015). Striving for Continuous Process Improvement-A Construction Case Study. In *Proceedings of the Indian Lean Construction*.

Davenport, T. H. (1993). *Process Innovation: Reengineering Work Through Information Technology*. Boston, MA: Harvard Business School Press.

Davenport, T. H., & Short, J. E. (1990). The New Industrial Engineering: Information Technology and Business Process Redesign. *Sloan Management Review*, 11–27.

Davenport, T. H., & Short, J. E. (1998). The New Industrial Engineering:

Information Technology and Business Process Redesign. *IEEE Engineering Management Review*, *26*(3), 46–59.

Dell'Aquila, M. E. (2017). *Factors Contributing to Business Process Reengineering Implementation Success*. Walden University.

Dennis, A. R., Carte, T. A., & Kelly, G. G. (2003). Breaking the Rules: Success and Failure in Groupware-supported Business Process Reengineering. *Decision Support Systems*, *36*(1), 31–47.

Dick, B. (2006). Action Research Literature 2004-2006: Themes and Trends. *Action Research*, *4*(4), 439–458.

Dick, B. (2011). Action Research Literature 2008-2010: Themes and Trends. *Action Research*, *9*(2), 122–143.

Dickens, L., & Watkins, K. (1999). Action Research : Rethinking Lewin. *Management Learning*, *30*(2), 127–140.

Dodge, P. R. (2011). *Managing School Behavior : A Qualitative Case Study*. Iowa State University.

Doherty, N. F., & King, M. (1998). The Consideration of Organizational Issues During the Systems Development Process: An Empirical Analysis. *Behaviour & Information Technology*, *17*(1), 41–51.

Dubey, S. K., & Bansal, S. (2013). Critical Success Factors in Implementing BPR in a Government Manufacturing Unit - An Empirical Study. *International Journal of Business & Management*, *8*(2), 107–124.

Dworski-Riggs, D., & Langhout, R. D. (2010). Elucidating the Power in Empowerment and the Participation in Participatory Action Research: A Story About Research Team and Elementary School Change. *American Journal of Community Psychology*, *45*(3–4), 215–230.

Eby, L. T., Adams, D. M., Russell, J. E. A., & Gaby, S. H. (2000). Perceptions of Organizational Readiness for Change: Factors Related to Employees' Reactions to the Implementation of Team-Based Selling. *Human Relations*, *53*(3), 419–442.

Edward, L. N., & Charles, E. (2013). The Role of Leadership in Business Process Reengineering " Leaders, Do You Want to Change ?" *Information and Knowledge Management*, *3*(2), 125–131.

Eftekhari, N., & Akhavan, P. (2013). Developing a Comprehensive Methodology for BPR Projects by Employing IT Tools. *Business Process Management Journal, 19*(1), 4–29.

Employment Act 1955, Pub. L. No. Act 265, 13 (1955). Malaysia.

Ernest, T. S. (2013). *Action Research: A Handbook for Practitioners* (4th ed.). Thousand Oaks, CA: Sage.

Fedor, D. B., & Herold, D. M. (2004). Effects of Change and Change Management on Employee Responses : An Overview of Results from Multiple Studies. In *Tappi Fall 2004 Technical Conference* (pp. 1–12).

Fitzgerald, B., & Murphy, C. (1996). Practical Application of a Methodology for Business Process Re-engineering. In *Coulson-Thomas, Colin. Business Process Re-engineering: Myth and Reality* (pp. 166–173). London, Kogan.

Franklin, M. (2014). 3 Lessons for Successful Transformational Change. *Industrial and Commercial Training, 46*(7), 364–370.

Fransen, M. L., Smit, E. G., & Verlegh, P. W. J. (2015). Strategies and Motives for Resistance to Persuasion: An Integrative Framework. *Frontiers in Psychology, 6*(August), 1–12.

French, S. (2009). Action Research for Practising Managers. *Journal of Management Development, 28*(3), 187–204.

French, W. L., & Bell, C. H. (1999). *Organization Development: Behavioral Science Interventions for Organization Improvement* (6th ed.). Englewood Cliff, NJ: Prentice Hall.

Fuchs, S. (2011). The Impact of Manager and Top Management Identification on the Relationship Between Perceived Organizational Justice and Change-oriented Behavior. *Leadership & Organization Development Journal, 32*(6), 555–583.

Fugate, M. (2012). The Impact of Leadership, Management, and HRM on Employee Reactions to Organizational Change. *Research in Personnel and Human Resources Management, 31*(1), 181–212.

Garg, P., & Agarwal, D. (2014). Critical Success Factors for ERP Implementation in a Fortis Hospital: An Empirical Investigation. *Journal of Enterprise Information Management, 27*(4), 402–423.

Georgalis, J., Samaratunge, R., & Kimberley, N. (2015). Change Process

Characteristics and Resistance to Organisational Change: The Role of Employee Perceptions of Justice. *Australian Journal of Management*, *40*(1), 89–113.

Ghatari, A. R., Shamsi, Z., & Vedadi, A. (2014). Business Process Reengineering in Public Sector: Ranking the Implementation Barriers. *International Journal of Process Management and Benchmarking*, *4*(3), 324–341.

Gibbs, D. J., Emmitt, S., Ruikar, K., & Lord, W. (2013). A Case Study Investigation into the Use of Computer Generated Visualisations to Assist with Construction Delay Claims. *Law and Dispute Resolution*, (May).

Goksoy, A., Ozsoy, B., & Vayvay, O. (2012). Business Process Reengineering: Strategic Tool for Managing Organizational Change An Application In a Multinational Company. *International Journal of Business and Management*, *7*(2), 89–112.

Greenwood, D. J., & Levin, M. (2007). *Introductions to Action Research: Social Research for Social Change* (2nd ed.). Thousand Oaks: Sage Publications.

Grey, C., & Mitev, N. (1995). Re-engineering Organizations : A Critical Appraisal. *Personnel Review*, *24*(1), 6–18.

Grundy, S. (1982). Three Modes of Action Research. *Curriculum Perspectives*, *2*(3), 23–34.

Guimaraes, T., & Paranjape, K. (2013). Testing Success Factors for Manufacturing BPR Project Phases. *International Journal of Advanced Manufacturing Technology*, *68*(9–12), 1937–1947.

Habib, M. N. (2013). Understanding Critical Success and Failure Factors of Business Process Reengineering. *International Review of Management and Business Research*, *2*(1), 1–10.

Habib, M. N., & Wazir, M. I. (2012). Role of Education and Training in the Successful Implementation of Business Process Reengineering : A Case of Public Sector of Khyber PakhtunKhwa (KPK). *World Journal of Social Sciences*, *2*(2), 172–185.

Hall, E. A., Rosenthal, J., & Wade, J. (1993). How to Make Reengineering Really Work. *Harvard Business Review*, *71*(6), 119–131.

Hammer, M. (1990). Reengineering Work: Don't Automate, Obliterate. *Harvard Business Review*, *68*(4), 104–112.

Hammer, M., & Champy, J. (1993). *Reengineering the Corporation A Manifesto for Business Revolution*. New York, NY: HarperCollins.

Hanif, M., Khan, Y. S., & Zaheer, A. (2014). Impact of Organizational Resistance to Change on BPR Implementation: A Case of State Bank of Pakistan. *European Journal of Business and Management*, *6*(4), 186–196.

Harrington, H. J. (1991). *Business Process Improvement: The Breakthrough Strategy for Total Quality, Productivity, and Competitiveness*. New York, NY: McGraw Hill.

Hart, C. (2003). *Doing a Literature Review - Releasing the Social Science Research Imagination*. London: Sage Publications.

Harvey, J. M. (2014). *Leaders' Experience of Employee Resistance to Organizational Change : A Qualitative Exploratory Inquiry*. Capella University.

Haseeb, M., Xinhai-Lu, Bibi, A., Maloof-ud-Dyian, & Rabbani, W. (2011). Problems of Projects and Effects of Delays in the Construction Industry of Pakistan. *Australian Journal of Business and Management Research*, *1*(5), 41–50.

Hasmori, M. F., Ismail, I., & Said, I. (2012). Issues of Late and Non-Payment Among Contractors in Malaysia. In *3rd International Conference on Business and Economic Research 2012, Bandung, Indonesia*.

He, X. J. (2005). A Comparative Study of Business Process Reengineering in China. *Communications of the IIMA*, *5*(1), 25–30.

Heathfield, S. M. (2016). How to Reduce Employee Resistance to Change You Can Minimize Resistance to Change with Appropriate Actions. Retrieved from https://www.thebalance.com/how-to-reduce-employee-resistance-to-change-1918992

Hendry, C. (1996). Understanding and Creating Whole Organizational Change Through Learning Theory. *Human Relations*, *49*(5), 621–641.

Hengst, M. Den, & Vreede, G.-J. De. (2004). Collaborative Business Engineering: A Decade of Lessons from the Field. *Journal of Management Information Systems*, *20*(4), 85–113.

Herr, K., & Anderson, G. L. (2014). *The Action Research Dissertation: A Guide for Students and Faculty* (2nd ed.). New York, NY: Sage Publications.

Herzog, N. V., Polajnar, A., & Tonchia, S. (2007). Development and Validation of Business Process Reengineering (BPR) Variables: A Survey Research in Slovenian Companies. *International Journal of Production Research*, *45*(24), 5811–5834.

Holter, I. M., & Schwartz-Barcott, D. (1993). Action Research: What is it? How Has it Been Used and How Can it Be Used in Nursing? *Journal of Advanced Nursing*, *18*(2), 298–304.

Hossan, C. (2015). Applicability of Lewin's Change Management Theory in Australian Local Government. *International Journal of Business and Management*, *10*(6), 53–65.

Huang, Z., & Palvia, P. (2001). ERP Implementation Issues in Advanced and Developing Countries. *Business Process Management Journal*, *7*(3), 276–284.

Huq, Z., & Martin, T. N. (2006). The Recovery of BPR Implementation Through an ERP Approach: A Hospital Case Study. *Business Process Management Journal*, *12*(5), 576–587.

Hussain, S. T., Lei, S., Akram, T., Haider, M. J., Hussain, S. H., & Ali, M. (2016). Kurt Lewin's Process Model for Organizational Change : The Role of Leadership and Employee Involvement : A Critical Review. *Journal of Innovation & Knowledge*, 1–7.

Iqbal, J. (2012). Towards a Framework for Implementation of Business Process Reengineering (BPR) Initiative. *Interdisciplinary Journal of Contemporary Research in Business*, *3*(11), 523–550.

Iqbal, N., Nadeem, W., & Zaheer, A. (2015). Impact of BPR Critical Success Factors on Inter-organizational Functions: An Empirical Study. *The Business & Management Review*, *6*(1), 152–165.

Ismail, A., & Osman, N. H. (2016). Empowering to Improve Submission of Claim Process in Local Shipyard, in Malaysia. *Sains Humanika*, *8*(4–2), 127–130.

Jamali, G., Abbaszadeh, M., Ebrahimi, M., & Maleki, T. (2011). Business Process Reengineering Implementation: Developing a Causal Model of Critical Success Factors. *International Journal of E-Education, E-Business, E-Management and E-Learning*, *1*(5), 354–359.

Jepsen, D. M., & Rodwell, J. J. (2008). Convergent Interviewing : A Qualitative Diagnostic Technique for Researcher. *Management Research News*, *31*(9), 650–658.

Jirwe, M. (2011). Analysing Qualitative Data. *Nurse Researcher*, *18*(3), 4–5.

Johnson, M. O. (2011). The Shifting Landscape of Health Care: Toward a Model of Health Care Empowerment. *American Journal of Public Health*, *101*(2), 265–270.

Johnston, A. (2014). Rigour in Research: Theory in the Research Approach. *European Business Review*, *26*(3), 206–217.

Judi, S. S., & Rosli, A. R. (2010). Contractor's Right of Action For Late or Non-Payment by The Employer. *Journal of Surveying, Construction & Property*, *1*(1), 65–95.

Jurisch, M. C., Ikas, C., Palka, W., Wolf, P., & Krcmar, H. (2012). A Review of Success Factors and Challenges of Public Sector BPR Implementations. In *2012 45th Hawaii International Conference on System Sciences* (pp. 2603–2612).

Kassahun, A. E. (2012). *The Effect of Business Process Reengineering on Public Sector Organisation Performance (a Developing Economy Context)*. RMIT University.

Kikwasi, G. J. (2013). Causes and Effects of Delays and Disruptions in Construction Projects in Tanzania. *Australasian Journal of Construction Economics and Building Conference Series*, *1*(2), 52–59.

Kim, J. H., Do, J. R., & Choe, Y. C. (2015). A Study of Success and Failure in ERP Implementation: The Case of the Agricultural Products Processing Center. *International Journal of Ue- Service, Science, and Technology*, *8*(7), 183–194.

Kotter, J. P. (2011). Leading Change : Change Management. *Harvard Business Review*, *4*, 44–49.

Kritsonis, A. (2005). Comparison of Change Theories. *International Journal of Scholarly Academic Intellectual Diversity*, *8*(1), 1–7.

Kuhil, A. M. (2013). *Business Process Reengineering and Organizational Performance: A Case of Ethiopian Public Banking Sector*. University of South Africa.

Larsen, M. A., & Myers, M. D. (1997). BPR Success or Failure?: A Business Process Reengineering Project in the Financial Services Industry. In *Proceedings of the eighteenth international conference on Information systems* (pp. 367–382).

Larsen, M. A., & Myers, M. D. (1999). When Success Turns into Failure: A Package-driven Business Process Re-engineering Project in the Financial Services Industry. *The Journal of Strategic Information Systems*.

Lee, J. (1995). *An Exploratory Study of Organizational/Managerial Factors Influencing Business Process Reengineering Implementation: An Emperical Study of Critical Success Factors and Resistance Management*. University of Nebraska.

Lewin, K. (1946). Action Research and Minority Problems. *Journal of Social Issues*, *2*(4), 34–46.

Lewin, K. (1947). Frontiers in Group Dynamics: Concept, Method, and Reality in Social Science; Social Equilibria and Social Change. *Human Relations*, *1*(5), 5–41.

Lilian, O. O., Uzochukwu, O. C., & Francisca, O. N. (2015). Business Process Reengineering and Organizational Performance of Selected Automobile Firms in Southeast of Nigeria. *European Journal of Business, Economics, and Accountancy*, *3*(5), 12–43.

Macredie, R. D., Sandom, C., & Paul, R. J. (1998). Modelling for Change : An Information Systems Perspective on Change Management Models. In Modelling for Added Value (pp 3-16). *Modelling for Added Value*, 3–16.

Maheswar, & Javalagi, C. M. (2014). A Review of Enterprise Resource Planning Implementation Issues. *The International Journal of Business & Management*, *2*(6), 28–34.

Maleki, T., & Beikkhakhian, Y. (2011). Business Process Reengineering Implementation : An Investigation of Critical Success Factors. In *2011 International Conference on Information and Finance IPEDR* (Vol. 21, pp. 17–21).

Marrow, A. J. (1969). *The Practical Theorist : The Life and Work of Kurt Lewin*. New York: Basic Books.

Masters, J. (1995). The History of Action Research. *Action Research Electronic Reader*, *22*.

Masumi, M. (2013). The CSFs, Quality Governance, BPR Performance and Gaining Competitive Advantage. *International Journal of Business and Management*, *8*(24), 48–63.

Maull, R. S., Weaver, A. M., Childe, S. J., Smart, P. A., & Bennett, J. (1995). Current Issues in Business Process Re-engineering. *International Journal of Operations & Production Management*, *15*(11), 37–52.

McAdam, R., & O'Hare, C. (1998). An Improved BPR Approach for Offline Enabling Processes: A Case Study on a Maintaining Process Within the Chemical Industry. *Business Process Management Journal*, *4*(3), 226–240.

McKernan, J. (1988). The Countenance of Curriculum Action Research: Traditional, Collaborative, and Emancipatory-Critical Conceptions. *Journal of Curriculum and Supervision*, *3*(3), 173–200.

Md Sin, M. A., & Razalli, M. R. (2015). The Influence of IT Infrastructure in Business Process Reengineering Project Performance in Islamic Banking. *Jurnal Teknologi*, *77*(4), 97–103.

Mehrjerdi, Y. Z. (2010). Enterprise Resource Planning: Risk and Benefit Analysis. *Business Strategy Series*, *11*(5), 308–324.

Mercer, J. (2007). The Challenges of Insider Research in Educational Institutions: Wielding a Double-edged Sword and Resolving Delicate Dilemmas. *Oxford Review of Education*, *33*(1), 1–17.

Meyer, J. P., & Allen, N. J. (1991). A Three-Component Conceptualization of Organizational Commitment. *Human Resource Management Review*, *1*(1), 61–89.

Meyer, J. P., & Herscovitch, L. (2001). Commitment in the Workplace: Toward a General Model. *Human Resource Management Review*, *11*(3), 299–326.

Michel, A., By, R. T., & Burnes, B. (2013). The limitations of dispositional resistance in relation to organizational change. *Management Decision*, *51*(4), 761–780.

MIGHT. (2011). *Malaysian Shipbuilding/Ship Repair Industry Strategic Plan 2020*. Cyberjaya.

Miller, V. D., Johnson, J. R., & Grau, J. (1994). Antecedents to Willingness to Participate in a Planned Organizational Change. *Journal of Applied Communication Research*, *22*(1), 59–80.

Ming-Chu, Y., & Meng-Hsiu, L. (2015). Unlocking the Black Box: Exploring the Link Between Perceive Organizational Support and Resistance to Change. *Asia Pacific Management Review*, *20*(3), 177–183.

Mitchell, G. (2013). Selecting the Best Theory to Implement Planned Change. *Nursing Management*, *20*(1), 32–37.

Mitra, P., & Mishra, S. (2016). Behavioral Aspects of ERP Implementation : A Conceptual Review. *Interdisciplinary Journal of Information, Knowledge, and Management*, *11*, 17–30.

Mlay, S. V., Zlotnikova, I., & Watundu, S. (2013). A Quantitative Analysis of Business Process Reengineering and Impacting Factors : The Case of Uganda. *The African Journal of Information Systems*, *5*(1), 1–26.

Mohamad, M. I., Nekooie, M. A., & Kamaruddin, N. C. (2012). The Adequacy of Contractual Provisions in Managing Construction Failure in Malaysia. *European Journal of Business and Management*, *4*(1), 22–38.

Mohapatra, S. (2013). *Business Process Reengineering Automation Decision Points in Process Reengineering*. New York: Springer.

Mosadeghrad, A. M., & Ansarian, M. (2014). Why do Organisational Change Programmes Fail? *International Journal of Strategic Change Management*, *5*(3), 189–218.

Mturi, P. N. L. (2014). *The Effect of Business Process Reengineering on Staff Turnover: A Case Study of KK Security Group of Companies*. United States International University-Africa.

Mutihac, R. (2010). *Managing Resistance and the Use of Internal Communication in Organizations Undergoing Change*. Aarhus School of Business.

Mutua, O. N. (2013). *Employee Perception on the Effects of Business Process Reengineering on the Performance of Mara-Ison Technologies*. University of Nairobi.

Natarajan, M. (2009). Exploring the Business Process Re-engineering: National Science Library's Experience. *Communications of the IIMA*, *9*(4), 85.

Nicholds, B. A., & Mo, J. P. T. (2015). Risk Assessment of Business Process Re-Engineering Projects. *Open Journal of Social Sciences*, *3*(March), 30–34.

Nisar, Q. A., Ahmad, S., & Ahmad, U. (2014). Exploring Factors that Contribute to Success of Business Process Reengineering and Impact of Business Process Reengineering on Organizational Performance : A Qualitative Descriptive study on Banking Sector at Pakistan. *Asian Journal of Multidisciplinary Studies*, *2*(6), 219–224.

Nissen, M. E. (1996). A Focused Review of the Reengineering Literature: Expert Frequently Asked Questions (FAQs). *Quality Management Journal*, *3*(3), 52–66.

Norman, K. (2012). Leading Service Improvement in Changing Times. *British Journal of Community Nursing*, *17*(4), 162–167.

O'Neill, P., & Sohal, A. S. (1999). Business Process Reengineering A Review of Recent Literature. *Technovation*.

Packard, T., Patti, R., Daly, D., & Tucker-Tatlow, J. (2012). Organizational Change for Services Integration in Public Human Service Organizations: Experiences in Seven Counties. *Journal of Health and Human Services Administration*, 471–525.

Palmer, B. (2004). Overcoming Resistance to Change. *Quality Progress*, *37*(4), 35–39.

Panayiotou, N. A., Gayialis, S. P., Evangelopoulos, N. P., & Katimertzoglou, P. K. (2015). A Business Process Modeling-enabled Requirements Engineering Framework for ERP Implementation. *Business Process Management Journal*, *21*(3), 628–664.

Pardo del Val, M., & Martínez Fuentes, C. (2003). Resistance to Change : A Literature Review and Emperical Study. *Management Decision*, *41*(2), 148–155.

Peccei, R., & Giangreco, A. (2005). The Nature and Antecedents of Middle Manager Resistance to Change: Evidence from an Italian Context. *The International Journal of Human Resource Management*, *16*(10), 1812–1829.

Peccei, R., Giangreco, A., & Sebastiano, A. (2011). The Role of Organisational Commitment in the Analysis of Resistance to Change Co-predictor and Moderator Effects. *Personnel Review*, *40*(2), 185–204.

Pei, X., & Cha, H. (2015). BPR Application in China of a SME Information Management. In *International Conference on Education Technology, Management and Humanities Science (ETMHS 2015)* (pp. 83–89).

Peters, M., & Robinson, V. (1984). The Origins and Status of Action Research. *Journal of Applied Behavioral Science*, *20*(2), 113–124.

Piderit, S. K. (2000). Rethinking Resistance and Recognizing Ambivalence : A Multidimensional View of Attitudes Toward an Organizational Change.

Academy of Management, *25*(4), 783–794.

Pieterse, J. H., Caniëls, M. C. J., & Homan, T. (2012). Professional Discourses and Resistance to Change. *Journal of Organizational Change Management*, *25*(6), 798–818.

Ramachandra, T. (2013). *Exploring Feasible Solutions to Payment Problems in the Construction Industry in New Zealand*. Auckland University of Technology.

Ramachandra, T., & Rotimi, J. O. B. (2011). The Nature of Payment Problems in the New Zealand Construction Industry. *Construction Economics and Building*, *11*(2), 22–33.

Ramachandra, T., & Rotimi, J. O. B. (2012). Construction Payment Delays and Losses: Perceptions of New Zealand. *Proceedings PMI New Zealand Chapter 18th Annual Conference 2012*, (September), 24–26.

Richard, N., & Agwor, T. C. (2015). Cost Benefit Analysis of Re-engineering the Business Process in Nigerian Banks. *Journal of Business and Retail Management Research*, *9*(2), 44–53.

Robbins, S. P., & Coulter, M. (2012). *Management* (11th ed.). New Jersey: Prentice Hall.

Rouhani, S., & Nateghi, M. (2015). Key Success Factors Evaluation Model of BPR Projects in Project Based Organizations. *International Journal of Review in Life Sciences*, *5*(7), 341–354.

Rynes, S. L., Mcnatt, D. B., & Bretz, R. D. (1999). Academic Research Inside Organizations: Inputs, Processes, and Outcomes. *Personnel Psychology*, *52*(4), 869–898.

Salimifard, K., Abbaszadeh, M. A., & Ghorbanpur, A. (2010). Interpretive Structural Modeling of Critical Success Factors in Banking Process Re-engineering. *International Review of Business Research Papers*, *6*(2), 95–103.

Sarayreh, B. H., Khudair, H., & Barakat, E. alabed. (2013). Comparative Study: The Kurt Lewin of Change Management. *International Journal of Computer and Information Technology*, *2*(4), 626–629.

Schein, E. H. (1996). Kurt Lewin's Change Theory in the Field and in the Classroom Notes Toward a Model of Managed Learning. *Systems Practice*, *9*(1), 27–47.

Self, D. R., & Schraeder, M. (2009). Enhancing the Success of Organizational

Change Matching Readiness Strategies With Sources of Resistance. *Leadership & Organization Development Journal*, *30*(2), 167–182.

Serban, A., & Iorga, C. (2016). Employee Resistance To Organizational Change Through Managerial Reengineering. In *Proceedings of the 10th International Management Conference* (pp. 366–374).

Setegn, D., Ensermu, M., & Moorthy, P. K. (2013). Assessing The Effect of Business Process Reengineering on Organizational Performance: A Case Study of Bureau of Finance and Economic Development (BoFED) Oromia Reginal State, Ethiopia. *Researchers World*, *4*(1), 115–123.

Sghari, A. (2016). Can the Staff Recognition Ensure Planned Process of Organizational Change? *Journal of Organizational Change Management*, *29*(5), 782–792.

Shaheen, G. M. (2016). Resistance to Change in Implementation of ERP Projects. *Journal of Strategy and Performance Management*, *4*(1), 24–38.

Shin, N., & Jemella, D. F. (2002). Business Process Reengineering and Performance Improvement: The Case of Chase Manhattan Bank. *Business Process Management Journal*, *8*(4), 351–363.

Soumyaja, D., Kamlanabhan, T. J., & Bhattacharyya, S. (2011). An Empirical Study on the Role of Context Factors in Employees' Commitment to Change. *International Journal of Learning and Change*, *5*(1), 33–50.

Stanton, S., Hammer, M., & Power, B. (1993). Reengineering: Getting Everyone on Board. *I.T. Magazine*, *25*(4), 22–27.

Subramoniam, S., Tounsi, M., & Krishnankutty, K. V. (2009). The Role of BPR in The Implementation of ERP Systems. *Business Process Management Journal*, *15*(5), 653–668.

Sulaiman, M. Y., Rahim, R. A., Mohamad, Z., Anas, A. S., Jalil, I. H. M., Ishak, M., … Intan, S. W. T. A. R. (2017). *Malaysian Shipbuilding/Ship Repair Industry Report 2017/2018*.

Sungaua, J., & Msanjila, S. S. (2012). On IT Enabling of Business Process Reengineering in Organizations. *Advanced Materials Research*, *403*(408), 5177–5181.

Taher, N. A. Bin, & Krotov, V. (2016). Business Process Reengineering: Addressing Sources of Resistance and Sabotage Tactics. *Journal of Competitiveness*

Studies, *24*(3), 145–164.

Taher, N. A. Bin, Krotov, V., & Silva, L. (2015). A Framework for Leading Change in the UAE Public Sector. *International Journal of Organizational Analysis*, *23*(3), 348–363.

Thomas, R., & Hardy, C. (2011). Reframing Resistance to Organizational Change. *Scandinavian Journal of Management*, *27*(3), 322–331.

Thomas Ng, S., Skitmore, M., & Chung, W. F. (2003). Ten Basic Factors to Identify Suitable Subcontractors for Construction Projects. In *CIB TG 23 International Conference* (pp. 1–8).

Thomson, P., & Gunter, H. (2011). Inside, Outside, Upside Down: The Fluidity of Academic Researcher "Identity" in Working with/in School. *International Journal of Research & Method in Education*, *34*(1), 17–30.

Tobi, S. U. M. (2014). *Qualitative Research & NVIVO 10 Exploration*. Kuala Lumpur: Aras Publisher.

Trader-Leigh, K. E. (2002). Case Study : Identifying Resistance in Managing Change. *Journal of Organizational Change Management*, *15*(2), 138–155.

Tran, H., & Carmichael, D. G. (2012). The Likelihood of Subcontractor Payment Downstream Progression via the Owner and Contractor. *Journal of Financial Management of Property and Construction*, *17*(2), 135–152.

Vakola, M. (1999). *Business Process Re-engineering and Organisational Change: Evaluation of Implementation Strategies*. University of Salford.

Vithessonthi, C. (2005). *A Perception-based View of the Employee: A Study of Employees' Reactions to Change*. University of St. Gallen.

Weerakkody, V., & Currie, W. (2003). Integrating Business Process Reengineering with Information Systems Development: Issues & Implications. *Business Process Management*, *2678*, 302–320.

Weerakkody, V., Janssen, M., & Dwivedi, Y. K. (2011). Transformational Change and Business Process Reengineering (BPR): Lessons from the British and Dutch Public Sector. *Government Information Quarterly*, *28*(3), 320–328.

White, A. M. (2004). Lewin's Action Research Model as a Tool for Theory Building A Case Study from South Africa. *Action Research*, *2*(2), 127–144.

Wittig, C. (2012). Employees' Reactions to Organizational Change. *OD Practitioner*, *44*(2), 23–28.

Xia, B. S., & Gong, P. (2014). Review of Business Inteligence Through Data Analysis. *Benchmarking*, *21*(2), 300–311.

Xiang, J., Archer, N., & Detlor, B. (2014). Business Process Redesign Project Success: The Role of Socio-technical Theory. *Business Process Management Journal*, *20*(5), 773–792.

Ye, K. M., & Rahman, H. A. (2010). Risk of Late Payment in the Malaysian Construction Industry. *World Academy of Science, Engineering, and Technology*, *4*(5), 538–546.

Yu, C.-S. (2005). Causes Influencing the Effectiveness of the Post-implementation ERP System. *Industrial Management & Data Systems*, *105*(1), 115–132.

Yue, W. (2006). Resistance, the Echo of Change. *International Journal of Business and Management*, *3*(2), 84–89.

Yukl, G., & Lepsinger, R. (2005). Why Integrating the Leading and Managing Roles is Essential for Organizational Effectiveness. *Organizational Dynamics*, *34*(4), 361–375.

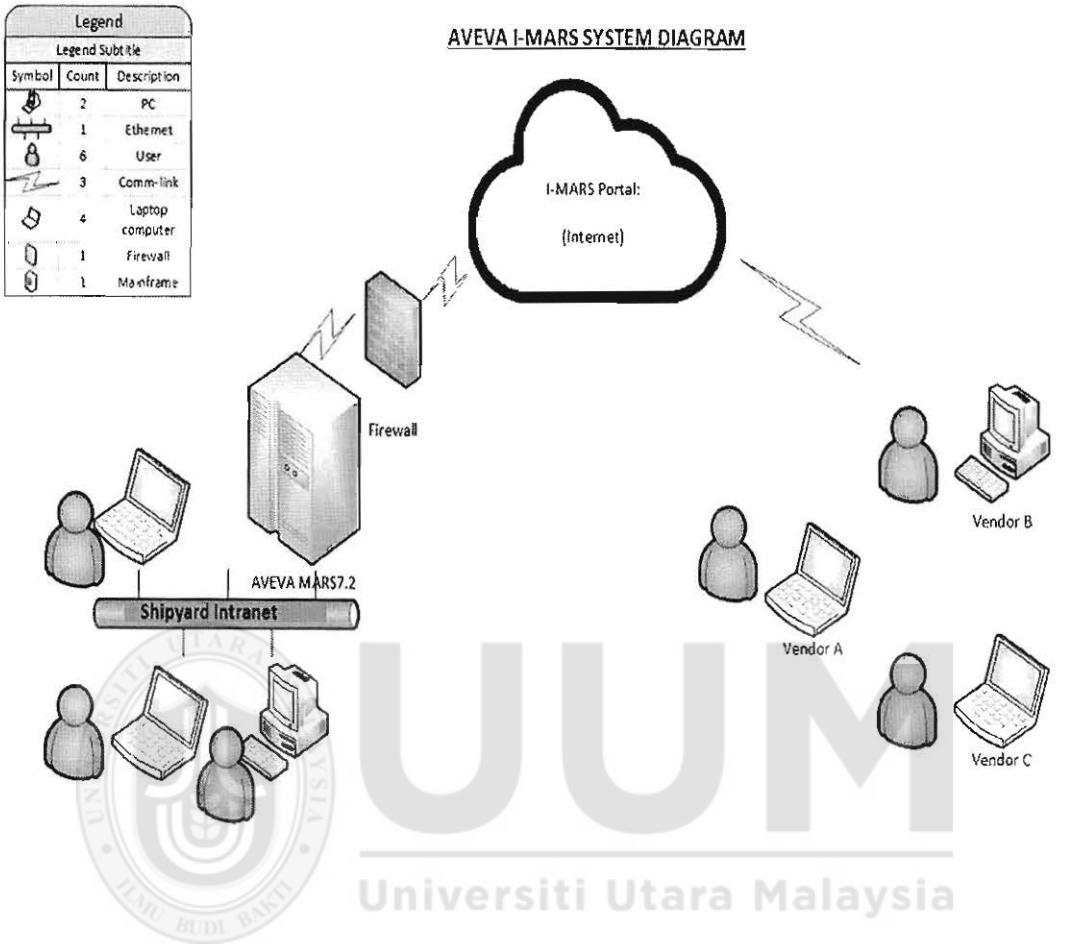
Zainal, K., Noor, A. M., Intan, S. W. T. A. R., & Mahfar, N. (2013). *Malaysian Shipbuilding/Ship Repair Industry Report 2013/2014*.

Zainal, K., Noor, A. M., Intan, S. W. T. A. R., Mahfar, N., & Jalil, D. S. A. (2016). *Malaysian Shipbuilding/Ship Repair Industry Report 2015/2016*.

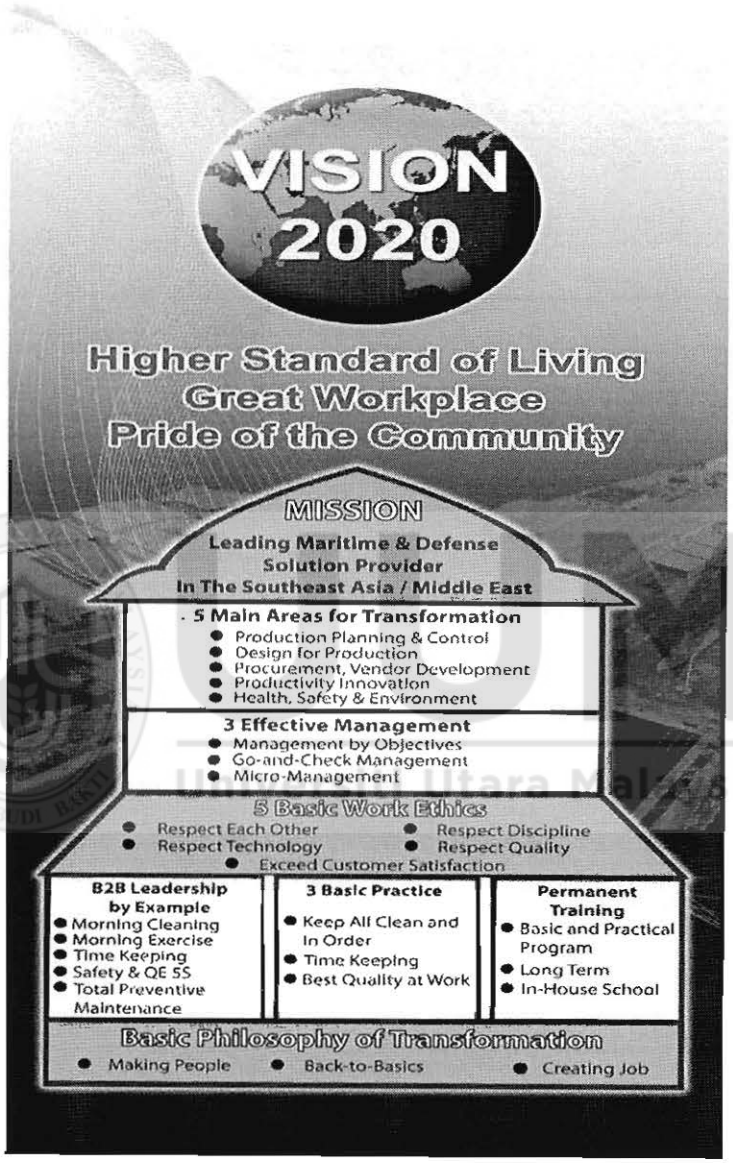
Zuber-Skerritt, O. (1993). Improving Learning and Teaching Through Action Learning and Action Research. *Higher Education Research and Development*, *12*(1), 45–58.

Zuber-Skerritt, O., & Perry, C. (2002). Action Research Within Organisations and University Thesis Writing. *The Learning Organization*, *9*(4), 171–179.

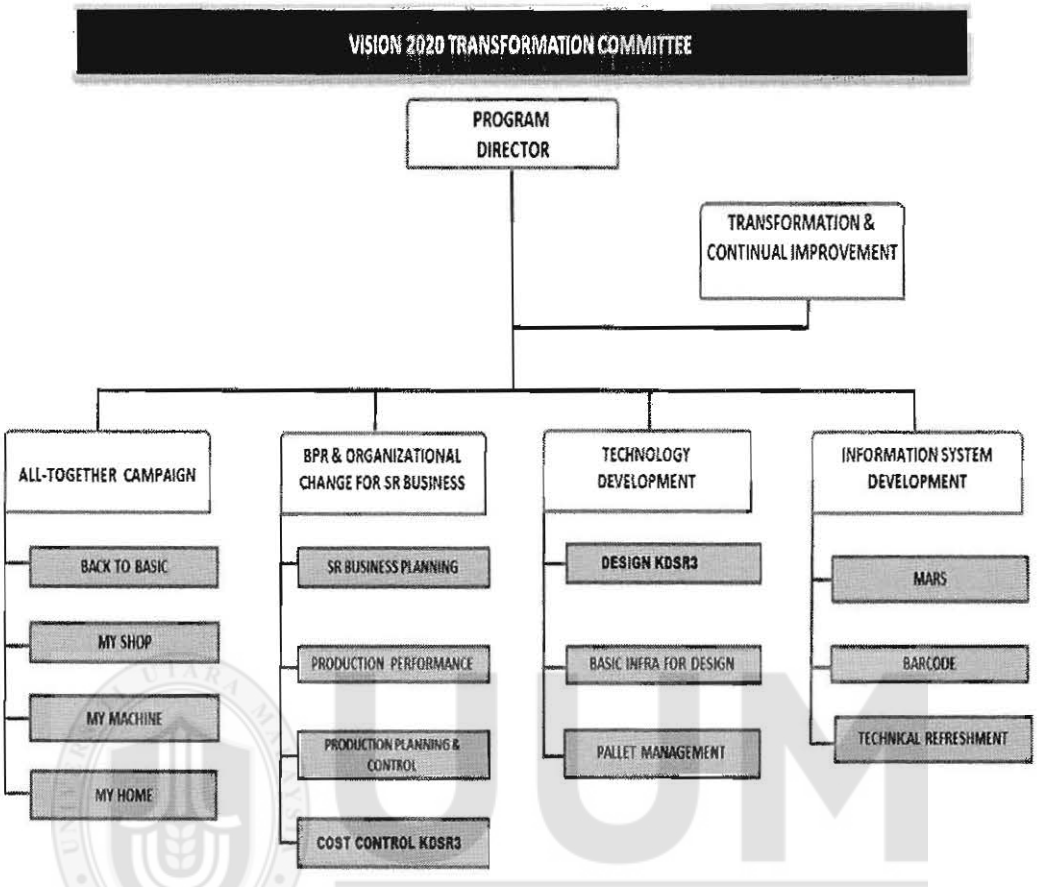
Appendix A
Graphical view of I-Mars Portal



Appendix B
Shipyard Transformation Mission



Appendix C
Shipyard Transformation Committee



Appendix D
Force Field Analysis Worksheet

FORCE FIELD ANALYSIS: PRACTICAL APPLICATION TOOL

Driving Forces (*for change*)	Rate It!
RESULT	

Proposed Change:

Restraining Forces (*against change*)	Rate It!
RESULT	

Appendix E
Interview Questionnaire

IMPROVING PROJECT DISBURSEMENT PROCESS IN ONE OF LOCAL SHIPYARD IN MALAYSIA

Name : _____

Position : _____

Department/

Company Name : _____

Date : _____

Time : _____

Place : _____

Age and Gender : _____

Direction (to be read to the interviewee)

These interview sessions were conducted as a part of the research study in Improving Project Disbursement Process in One of Local Shipyard in Malaysia. The purposes of this research study are:

1) To identify employees and subcontractor's views regarding current project disbursement process.
2) To identify ways to improve project disbursement process in term cost and time.
3) To assess any resistance from employees and subcontractor's that might exist in revamping project disbursement process.
4) To further understand how BPR CSF's can help to reduce ERTC during the revamping project disbursement process.

Part 1: Introduction and Demographic Information

1) Tell me about yourself?
2) What is your current position with Shipyard/Company?
3) How long have you have been working with Shipyard/Company?
4) What is your current position with Shipyard/Company?
5) What is your higher qualification background?
6) What is your employment status with Shipyard/Company?
7) Are you married?

IMPROVING PROJECT DISBURSEMENT PROCESS IN ONE OF LOCAL SHIPYARD IN MALAYSIA

Part 2:
Research Question Number 1

What is the *"current state"* of Shipyard's project disbursement process in terms of a) time taken to approved one SOP? b) cost incurred associated with *"current state"* of project disbursement process flow?

1) Are you satisfied with the current project disbursement process? Please elaborate your view especially in time and cost.
2) What were redesigns process involved in your department or daily task?

Research Question Number 2

How to revamp the *"current state"* of Shipyard's project disbursement process through BPR in terms of a) reducing the cycle time to approved one SOP b) cost saving associated with project disbursement process flow

1) Does revamping project disbursement process eliminate any unnecessary task from your daily routine?
2) Does the time take to approve SOP reduce compare to before BPR implementation? Please elaborate your reasoning
3) Did you observe any saving especially on cost after revamping project disbursement process? Please elaborate your reasoning

Part 3: Research Question Number 3

What is the BPR CSF used to reduce (possible) resistance to change from users of project disbursement process?

1) In this revamping exercise of project disbursement process, what are the roles of top management?
2) How would you evaluate top management support for BPR project?
3) Does top management frequently communicate with project team and employees?
4) Is the communication channel efficient to convey necessary information about revamping project disbursement process?
5) Is there an efficient channel to get feedback from employees about the change in project disbursement process?
6) Does the objective of project disbursement process being communicated to all Shipyard employees?

IMPROVING PROJECT DISBURSEMENT PROCESS IN ONE OF LOCAL SHIPYARD IN MALAYSIA

Part 3: Research Question Number 2 (Continued)

7) Did the Shipyard provide training on BPR requirements and how frequently it has been conducted?
8) Is continuous training being offered as per new job requirement after BPR?
9) Please discuss your involvement in designing a new process for project disbursement process if any?
10) Have your job routine or task change after revamping project disbursement process? Please explain to what degree? High, moderate, Low
11) Are the employees empowered to make decisions in project disbursement process especially at designing stage?
12) Does top management put extra pressure or too much high expectation to complete revamping of project disbursement process?
13) Any of you view or proposal being rejected by Shipyard management which relates to project disbursement process?

Part 4: Closing the Interview Session

Is there anything else that you would like to offer that I did not specially ask about?

Researcher's Remarks:

Thank you for your valuable time in participates in the interview session. The information you shared and give will contribute a significant understanding and values of this research project. If you have any further thoughts on this topic, you are welcome to call me at any time.
Thank you.

Appendix F
Interview Transcript

IMPROVING PROJECT DISBURSEMENT PROCESS IN ONE OF LOCAL SHIPYARD IN MALAYSIA

Name : _____

Position : _____

Department/

Company Name : _____

Date : _____

Time : _____

Place : _____

Age and Gender : _____

SUMMARIZE RESULTS OF INTERVIEW

Part 1: Introduction and Demographic Information

Part 2:
Research Question Number 1
What is the *"current state"* of Shipyard's project disbursement process in terms of a) the time taken to approved one SOP? b) the cost incurred associated with *"current state"* of project disbursement process flow?

Research Question Number 2
How to revamp the *"current state"* of Shipyard's project disbursement process through BPR in terms of a) reducing the cycle time to approved one SOP b) cost saving associated with project disbursement process flow

IMPROVING PROJECT DISBURSEMENT PROCESS IN ONE OF LOCAL SHIPYARD IN MALAYSIA

Part 3: Research Question Number 3

What is the BPR CSF used to reduce (possible) resistance to change from users of project disbursement process?

Part 4: Closing the Interview Session

Is there anything else that you would like to offer that I did not specially ask about?

Verification

Signature : _____ Date Interview: _____

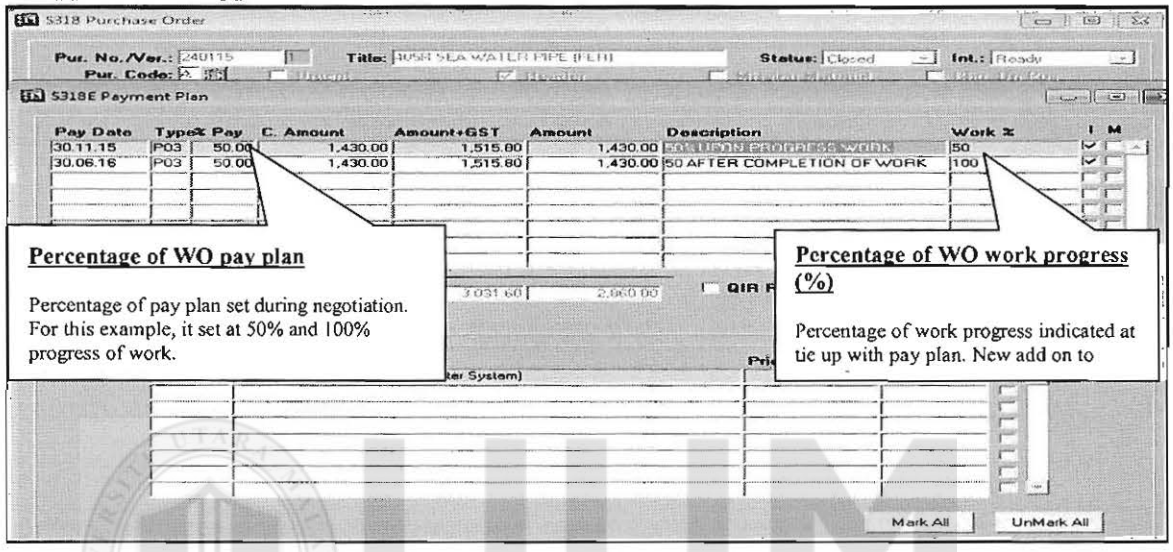
Thank you for your valuable time in participates in the interview session. The information you shared and give will contribute a significant understanding and values of this research project. If you have any further thoughts on this topic, you are welcome to call me at any time.

Thank you.

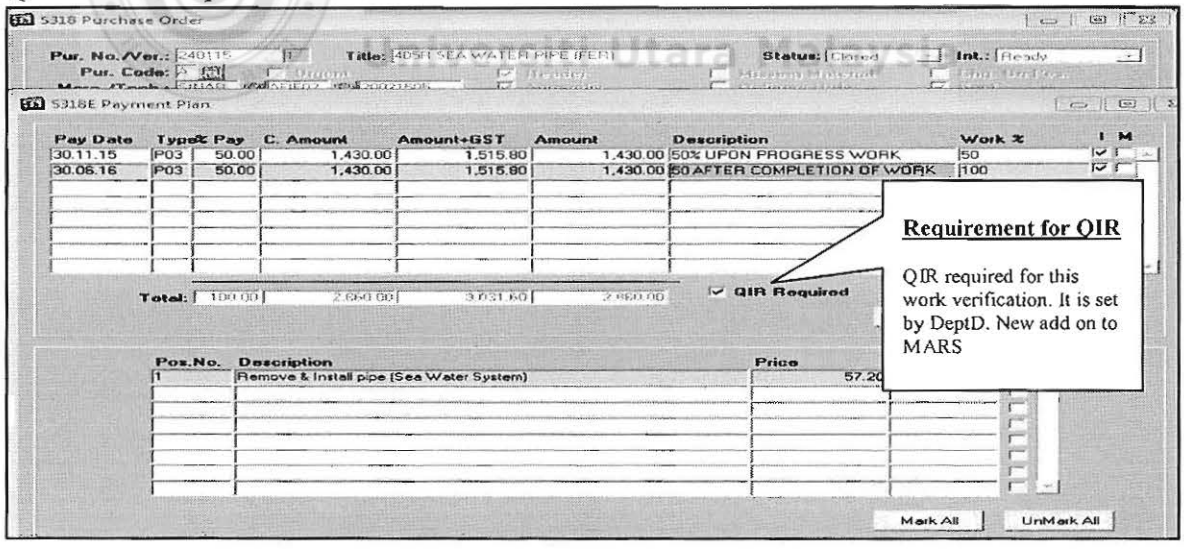
Appendix G
Walk Through Project Disbursement Process-Desired State

Assuming RFQ process, and selection of subcontractor completed, now at the stage of creation the WO, the next stages are:

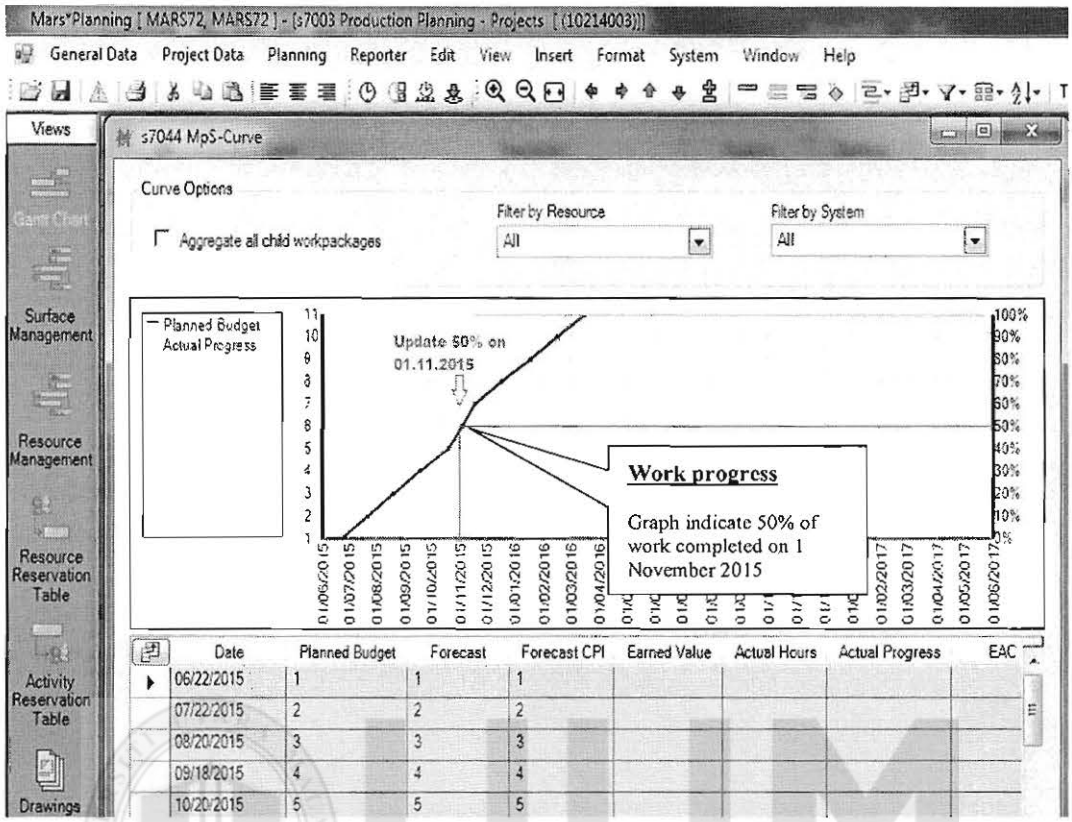
1. Creation of pay plan in WO to trigger system to create SOP and send to the approver for approval.



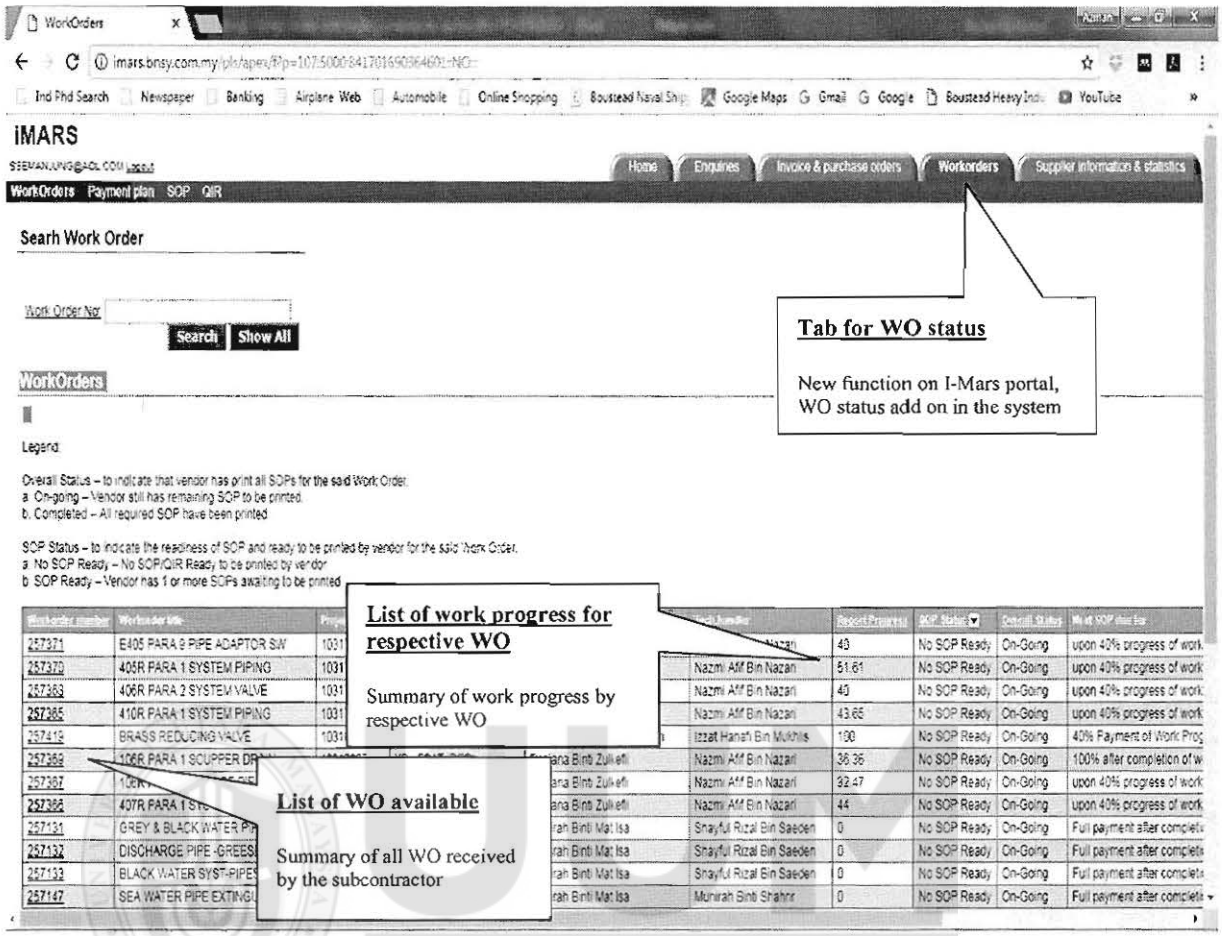
2. QIR is set as required for this work



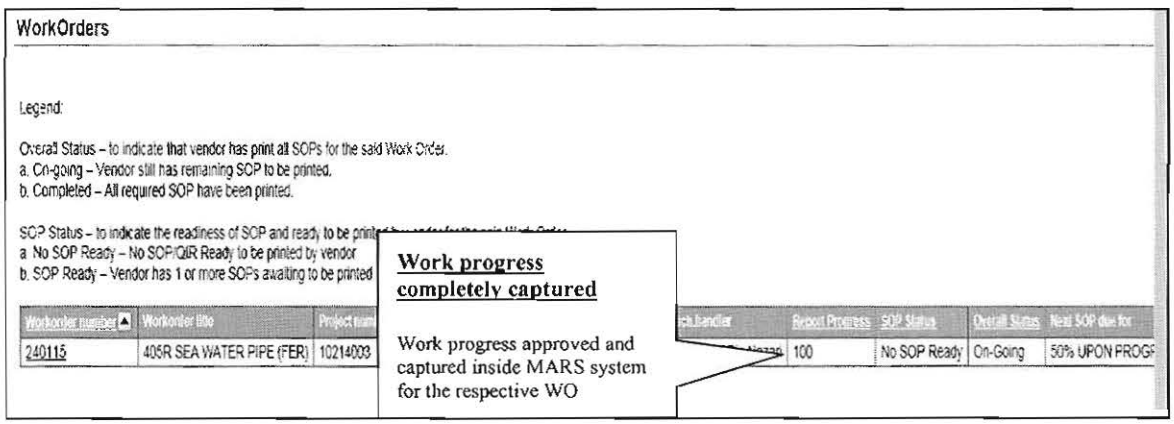
3. Capturing work progress through MARS*Production Planning



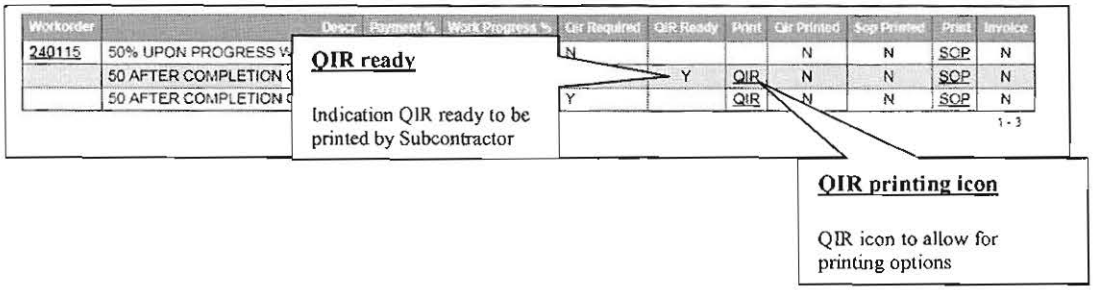
4. I-Mars portal interface, (subcontractor view)



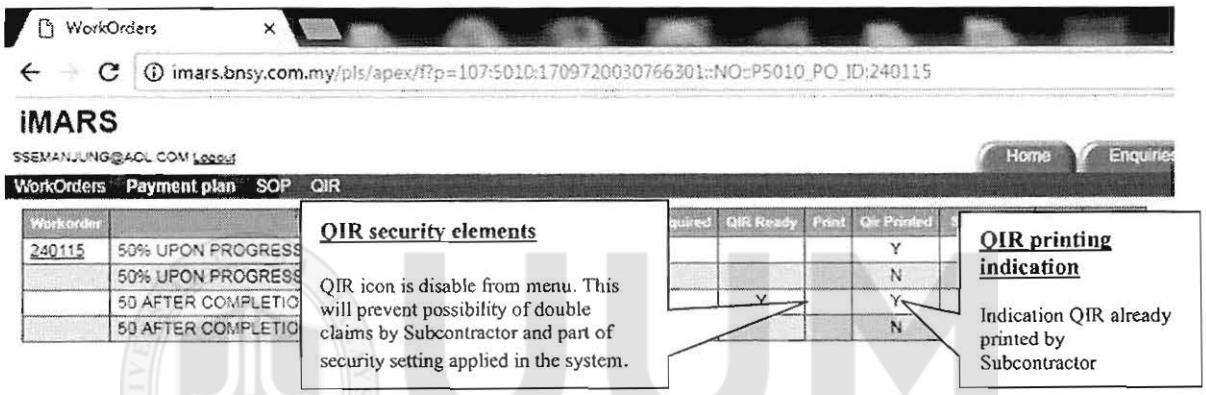
5. WO interface inside I-Mars portal, the status of work progress approved and captured in MARS is available for Subcontractor to review and check



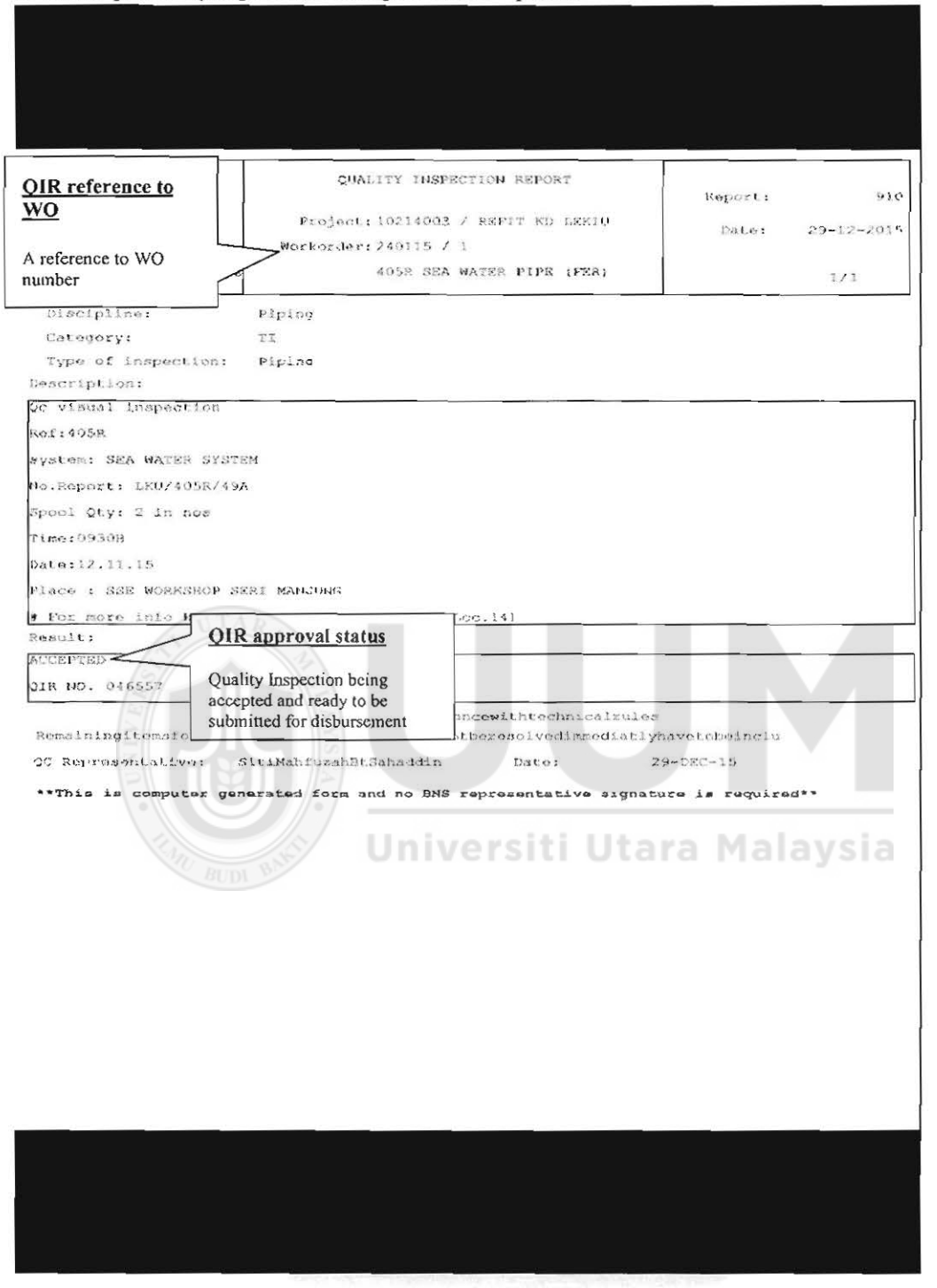
6. When DeptE completely approved the QIR, the screen will be displayed as below.



7. Once QIR printed, the status will be change as follows

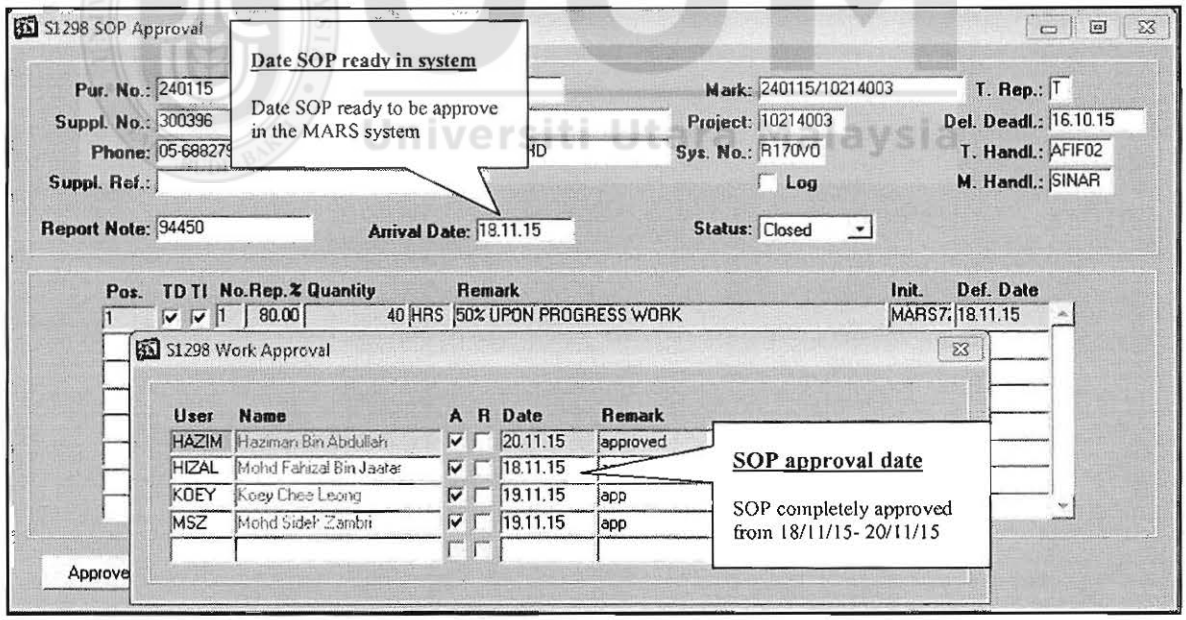


8. Example of QIR printed through I-MARS portal



9. Email notification from MARS help desk to individual approval to approve the SOP.

10. SOP completely approve from MARS system



11. SOP I-Mars portal interface, SOP ready to be printed

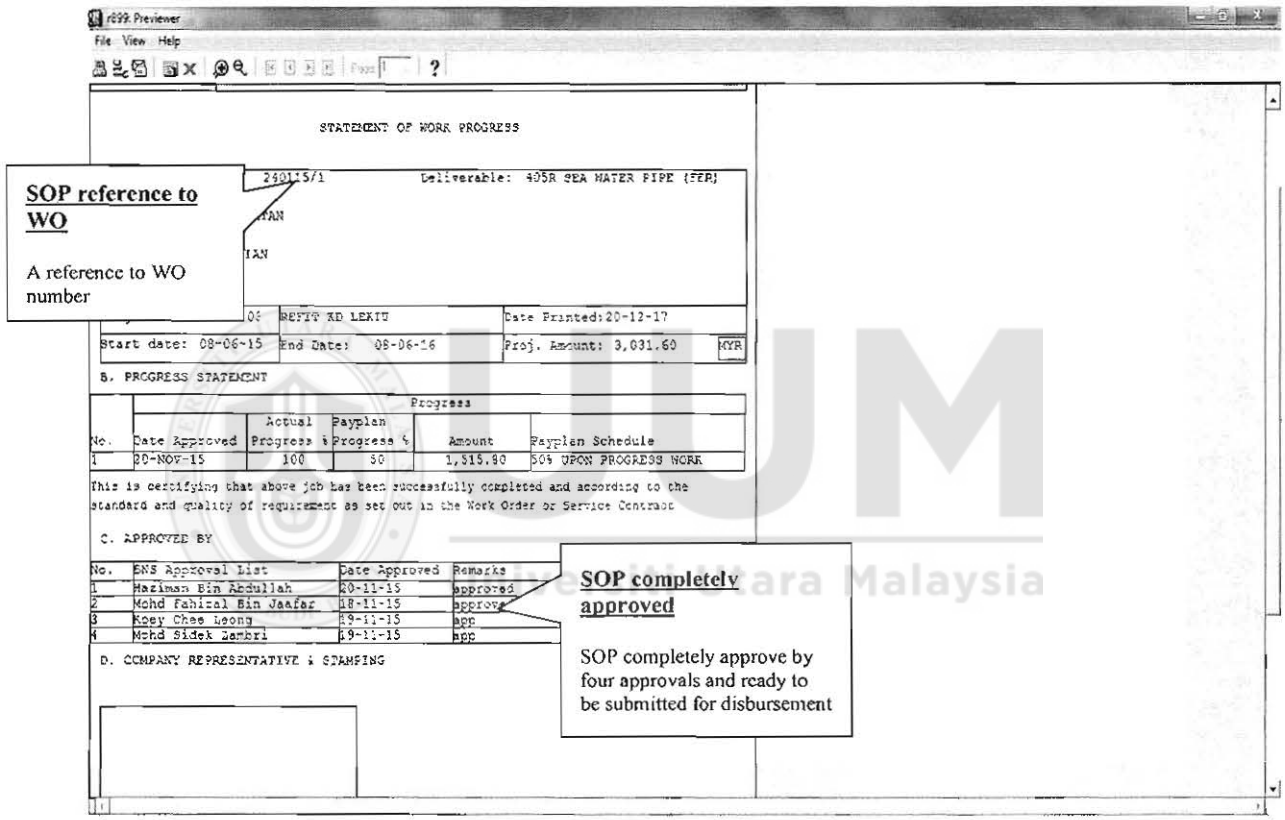
Workorder	Descr	Payment %	Work Progress %	Qlr Required	QlR Ready	Print	Qlr Printed	Sop Printed	Print	Invoice
240115	50% UPON PROGRESS WORK	50	50	N				N	SOP	N
	50 AFTER COMPLETION OF WORK	50	100	Y					SOP	N
	50 AFTER COMPLETION OF WORK	50	100	Y				N	SOP	N

1 - 3

SOP ready to print

Notification for SOP completely approved and ready to be printed

12. Example of SOP printed through I-Mars portal



SOP reference to WO

A reference to WO number

SOP completely approved

SOP completely approve by four approvals and ready to be submitted for disbursement

13. Once SOP printed, the status will be change as follows

Workorder	Descr	Payment %	Work Progre	Printed	Sop Printed	Print	Invoice
240115	50% UPON PROGRESS WORK	50			Y		N
	50 AFTER COMPLETION OF WORK	50		N	Y		N
	50 AFTER COMPLETION OF WORK	50		N	Y		N

1 - 3

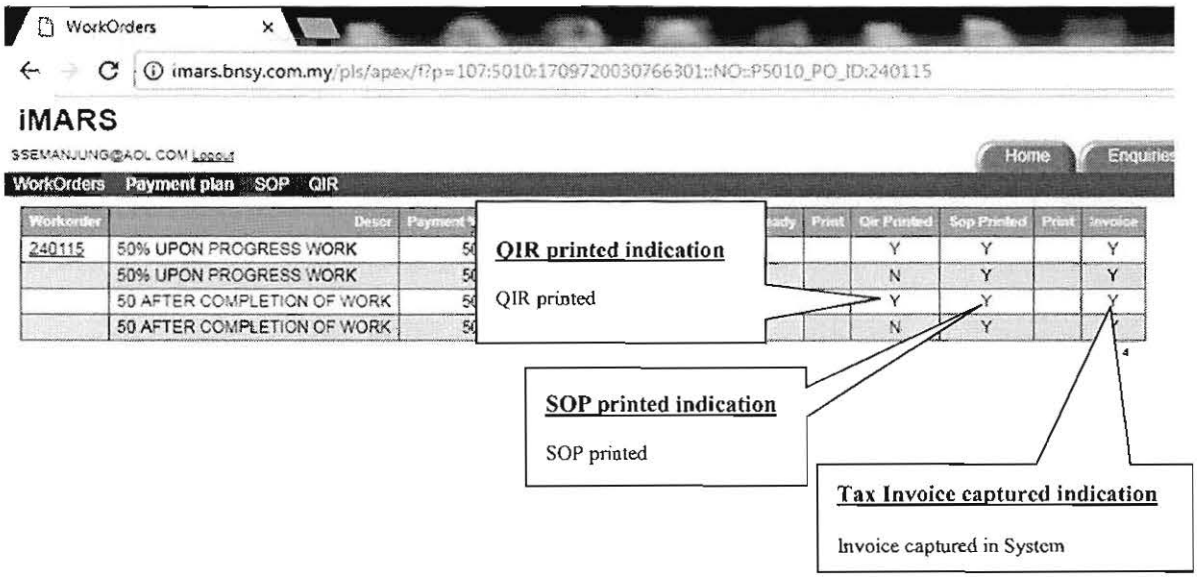
SOP printing indication

Indication SOP already printed by Subcontractor

SOP security element

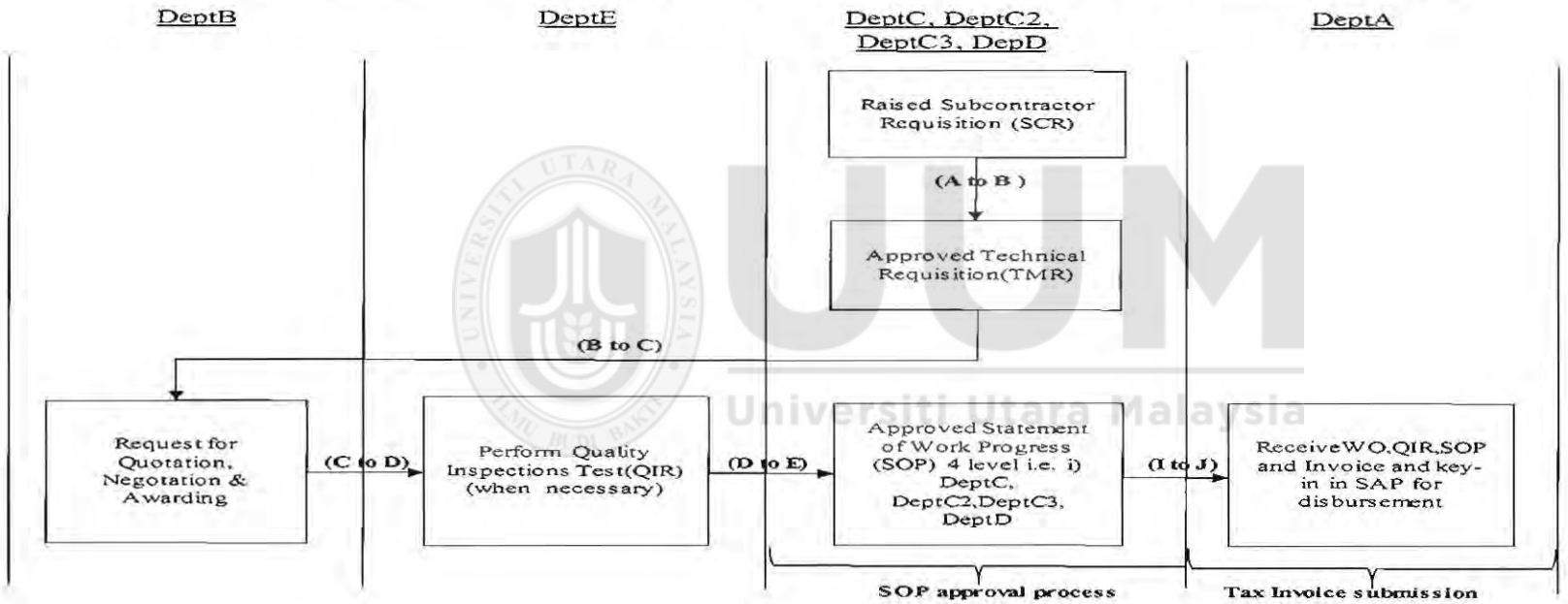
SOP icon is disable from menu. This will prevent possibility of double claims by Subcontractor and part of security setting applied in the system.

14. Print Screen invoice capture inside I-Mars platform



Appendix H
Project Disbursement Process-Desired State

Project Disbursement Process Within Crossfuntional Department in the Shipyard



Appendix I
List of Articles Published by This Research

No	Descriptions
1	Azman Ismail, Nor Hasni Osman, (2016). Empowering to Improve Submission of Claim Process in Local Shipyard, in Malaysia. Sains Humanika, 8(4-2), 127-130. Penerbit UTM Press. ISSN 2289-6996.
2	Azman Ismail, Nor Hasni Osman. Establishing Shipyards' Bpr Key Csf's During Revamping Project Disbursement Process. Journal of Economic & Management Perspective. International Economic Society. ISSN: 2523 5338. Accepted, waiting for publication.
3	Azman Ismail, Nor Hasni Osman. Neutralizing Perceptions of Bpr Hard Part Among Shipyard Employees. Journal of Economic & Management Perspective. International Economic Society. ISSN: 2523 5338. Accepted, waiting for publication.