

**SOP DEVELOPMENT FOR ERP/SOFTWARE PROJECT
MANAGEMENT OF A CONSULTING COMPANY**



**A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Engineering in Engineering Management
(CU-Warwick)**

FACULTY OF ENGINEERING

Chulalongkorn University

Academic Year 2020

Copyright of Chulalongkorn University

การพัฒนามาตรฐานการปฏิบัติงานของบริษัทที่ปรึกษาสำหรับการบริหาร โครงการลงระบบอีอาร์
พี/ซอฟต์แวร์



วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิศวกรรมศาสตรมหาบัณฑิต
สาขาวิชาการจัดการทางวิศวกรรม ศูนย์ระดับภูมิภาคทางวิศวกรรมระบบการผลิต
คณะวิศวกรรมศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
ปีการศึกษา 2563
ลิขสิทธิ์ของจุฬาลงกรณ์มหาวิทยาลัย

ปิยนัฐ เวียงคำ : การพัฒนามาตรฐานการปฏิบัติงานของบริษัทที่ปรึกษาสำหรับการบริหารโครงการระบบอีอาร์พี/ซอฟต์แวร์. (SOP DEVELOPMENT FOR ERP/SOFTWARE PROJECT MANAGEMENT OF A CONSULTING COMPANY) อ.ที่ปรึกษาหลัก : ศ. ดร.

ปารเมศ ชุติมา

ในปัจจุบัน บริษัทที่ปรึกษาด้านระบบอีอาร์พี/ซอฟต์แวร์ประสบปัญหาในส่วนของ การเก็บข้อมูลจากผู้ใช้งานในระบบของบริษัทลูกค้า ส่งผลทำให้การออกแบบกระบวนการทำงานและกระบวนการเลือกระบบที่เหมาะสมในองค์กรลูกค้าไม่มีประสิทธิภาพ และทำให้เกิดปัญหาในอนาคต เช่น เกิดงบประมาณมากกว่าที่วางแผนไว้ และเกิดการทำงานนอกระบบที่มากกว่าจำเป็น เป็นต้น โดยสาเหตุหลักที่ทำให้เกิดปัญหาเหล่านี้ คือ ขั้นตอนการทำงานในโครงการตั้งแต่ต้นจนจบไม่ชัดเจนและไม่มีประสิทธิภาพ งานวิจัยนี้มีวัตถุประสงค์เพื่อพัฒนามาตรฐานการปฏิบัติงานของบริษัทที่ปรึกษาสำหรับการบริหารโครงการระบบอีอาร์พี/ซอฟต์แวร์ โดยเจาะจงที่กลุ่มบริษัทการผลิตในประเทศไทย โดยเริ่มจากศึกษาแนวทางการทำงานของบริษัทคู่แข่งจากเว็บไซต์ จากนั้นมีการสัมภาษณ์ผู้เชี่ยวชาญด้านอีอาร์พีทั้งหมด 3 ท่าน เพื่อขอคำแนะนำในการปฏิบัติงานโดยรูปแบบเป็นการถามตอบแบบละเอียดผ่านชุดคำถาม และมีการนำข้อมูลมาเข้ากลุ่มวิเคราะห์เพื่อให้ได้มาตรฐานปฏิบัติงานที่ครบถ้วน ผลลัพธ์ของงานวิจัยสามารถแบ่งขั้นตอนการทำงานออกเป็น 3 ระยะ คือ ระยะเตรียมตัว (Pre-assessment phase), ระยะเก็บข้อมูลจากการสัมภาษณ์ (Assessment phase) และระยะส่งมอบงาน (Post-assessment phase) โดยระยะที่สำคัญคือ ระยะเก็บข้อมูลจากการสัมภาษณ์ ได้มีการนำเทคนิคการสัมภาษณ์มาใช้ในช่วงเวลาการสัมภาษณ์ด้วย ได้แก่ การเตรียมชุดคำถามทั่วไปที่ต้องต้องใช้ถามผู้ใช้งานในระบบ การให้ผู้ถูกสัมภาษณ์อธิบายการทำงานในปัจจุบันเพื่อรับฟังปัญหาและวิธีที่ผู้ใช้งานแก้ไขด้วยตนเอง และการใช้กระดานไวท์บอร์ดช่วยในการสนับสนุนการสื่อสารข้อมูลของผู้ใช้ระบบให้ชัดเจนและเป็นลำดับขั้นตอนมากขึ้น หลังจากพัฒนามาตรฐานการปฏิบัติงานเสร็จสิ้น ได้มีการขอคำแนะนำจากผู้เชี่ยวชาญด้านระบบอีอาร์พีซึ่งเป็นผู้มีประสบการณ์ในฐานะลูกค้าและผู้ลงระบบ รวมทั้งยังคงทำงานในบริษัทที่ปรึกษาแห่งอื่น เพื่อให้คำแนะนำในการปรับปรุงมาตรฐานการทำงานให้ดีขึ้น จากนั้นผู้เชี่ยวชาญเห็นว่าสามารถนำมาตรฐานการปฏิบัติงานนี้ไปใช้งานได้ โดยหากพบขั้นตอนที่ไม่สมบูรณ์ให้บันทึกไว้และนำมาปรับปรุงในครั้งขึ้นไป



สาขาวิชา การจัดการทางวิศวกรรม
ปีการศึกษา 2563

ลายมือชื่อนิสิต
ลายมือชื่อ อ.ที่ปรึกษาหลัก

6270803521 : MAJOR ENGINEERING MANAGEMENT

KEYWORD SOP development, ERP implementation, Interview technique,

D: Project management, Consulting company

Piyanat Viengcome : SOP DEVELOPMENT FOR ERP/SOFTWARE
PROJECT MANAGEMENT OF A CONSULTING COMPANY. Advisor:
Prof. PARAMES CHUTIMA, Ph.D.

Presently, ERP/software consulting company has experienced in information gathering process from users in customer company which lead to insufficient to-be process development and vendor selection process. The unexpected results would be extra budget and high manual workload in organization. The possible root cause is unclear procedure to proceed the project management in ERP/software implementation. The objective of this research is to develop the standard operating procedure for ERP/software project management of a consulting company concentrated in manufacturing industry in Thailand. The methodology starts with studying of competitors' approach from their websites. The ERP expert interview is the next step, 3 experts were interviewed to gain the key points of each process of the project. Finally, the focused group was executed to brainstorm and digest the information to create new procedure. The result shows that there are 3 phases of the project which are Pre-assessment, Assessment and Post-assessment phase. The most important phase is the assessment phase. The interview techniques were adapted into use which are the question list preparation, narrative analysis by letting user explain their daily operations, and whiteboarding to visualize the user's thought into easy figure and constructive processes. Having established new procedure, the reviews from ERP experts who used to be the stakeholder and experienced in another consulting firms are utilized to revise the procedure. Moreover, ERP experts evaluate that this standard operating procedure can be valid into actual use.

จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY

Field of Study:	Engineering Management	Student's Signature
Academic Year:	2020	Advisor's Signature

ACKNOWLEDGEMENTS

Upon the completion of this dissertation, I would like to take this opportunity to express my appreciation to the following distinguished individuals.

Firstly, I would like to express my sincere gratitude to my advisor Professor Dr. Parames Chutima and my external examiner Associate Professor Dr. Chuvej Chansa-ngavej for the support and precious guidance throughout and dissertation since the beginning until completion. Moreover, I would like to thank to the chairman of the dissertation committee, Associate Professor Jeerapat Ngaoprasertwong for the great advice and feedback during the thesis proposal and defense.

Secondly, I would like to show my appreciation to three ERP experts who share the beneficial information to construct this thesis and my colleagues who attend to do the focused group which is the important part in the research, these people are the essential input for the dissertation.

Finally, my sincere appreciation to my parents, WMG professors, and colleagues for their supports, promotions and knowledge throughout the courses and degree.

Piyanat Viengcome

TABLE OF CONTENTS

	Page
ABSTRACT (THAI)	iii
ABSTRACT (ENGLISH).....	iv
ACKNOWLEDGEMENTS	v
TABLE OF CONTENTS.....	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
Chapter 1: Introduction	1
1.1 Introduction:	1
1.2 Problem Statement:.....	3
1.3 Research Objectives:	5
1.4 Research Question:	6
1.5 Hypothesis development:.....	6
1.6 Scope of the Research:.....	6
1.7 Expected outcomes:	7
Chapter 2: Literature Review.....	8
2. Literature Review:	8
Chapter 3: Research Methodology.....	15
3.1 Summary of Literature Review:	15
3.2 Interview the ERP Experts:	16
3.3 Research the Existing Framework/Practice:	16
3.4 Apply the Existing Information to Create a Standard Operating Procedure:	17
3.5 Design the Standard Operating Procedure:.....	17
3.6 Review the Standard Operating Procedure from Failure Cases Recovery:	20
3.7 Create the Complete Standard Operating Procedure and ERP expert evaluation:	21
3.8 Discussion and Summary:	21

Chapter 4: Result and analysis	22
4.1 Interview the ERP Experts.....	22
4.2 Research the existing Framework/Practice.....	37
4.3 Apply the Existing Information to Create a Standard Operating Procedure	39
4.4 Design the Standard Operating Procedure.....	39
4.5 Review the Standard Operating Procedure From Failure Cases Recovery	66
4.6 Create the Complete Standard Operating Procedure and ERP expert evaluation	67
Chapter 5: Discussion and Conclusion	89
5.1 Discussion of Research Results	89
5.2 Conclusion	90
5.3 Limitations of the study	91
5.4 Suggestion for future development.....	91
REFERENCES	93
APPENDIX.....	97
VITA.....	110

LIST OF TABLES

	Page
Table 3.1 The interviewees detail and their core experiences	16
Table 3.2 The participant detail and their core experiences	18
Table 4.1 The interviewees detail and their core experiences	22
Table 4.2 Question set for ERP expert interview	23
Table 4.3 Key Themes from ERP experts in question 1	24
Table 4.4 Key Themes from ERP experts in question 2.....	25
Table 4.5 Key Themes from ERP experts in question 3.....	26
Table 4.6 Key Themes from ERP experts in question 4.....	26
Table 4.7 Key Themes from ERP experts in question 5.....	28
Table 4.8 Key Themes from ERP experts in question 6.....	28
Table 4.9 Key Themes from ERP experts in question 7.....	29
Table 4.10 Key Themes from ERP experts in question 8.....	31
Table 4.11 Key Themes from ERP experts in question 9.....	33
Table 4.12 Key Themes from ERP experts in question 10.....	35
Table 4.13 The details of activity, duration, resource required and key person of each phase of ERP assessment project.....	43
Table 4.14 The difficulty level for each phase in three dimension.....	48
Table 4.15 The key problems of each phase from focused group experience.....	53
Table 4.16 The solutions of each phase of ERP implementation project	54
Table 4.17 Topics for material preparation before starting the Assessment phase	56
Table 4.18 The main question list for interview session	60
Table 4.19 The example of user requirement worksheet.....	62
Table 4.20 The description of MSCW type.....	62
Table 4.21 The example of user requirement for ERP vendor feedback.....	63
Table 4.22 The comments from ERP experts after evaluation the standard operation procedure.....	87

LIST OF FIGURES

	Page
Figure 1.1 Overview functions of ("what is ERP," 2020)	2
Figure 1.2 The relationship among ERP/software vendor, ERP consulting and customer company	3
Figure 1.3 The typical ERP/software implementation process.....	4
Figure 2.1 Requirement gathering process model (Browne and Ramesh, 2002)	13
Figure 3.1 The processes of focused group activity	18
Figure 4.1 Five Stages of assessment in ABeam (ABeam, 2010)	38
Figure 4.2 The processes of focused group activity	40
Figure 4.3 The cause-and-effect diagram or fishbone diagram of the problem in the implementation project	41
Figure 4.4 The Work Breakdown Structure (WBS) of ERP/Software implementation project in the consulting company	42
Figure 4.5 Example of organization chart (Harrin, 2017)	44
Figure 4.6 Example of IT roadmap ("What is an IT Roadmap?," 2020).....	47
Figure 4.7 Example of Retail customer journey mapping ("Customer journey map: The key to understanding your customer," 2021).....	50
Figure 4.8 Customer Journey mapping of ERP implementation project.....	52
Figure 4.9 Keywords process of pre-assessment phase	55
Figure 4.10 The example of schedule in the ERP implementation project	57
Figure 4.11 The typical departments and its grouping in manufacturing company	58
Figure 4.12 The example of production planning department.....	59
Figure 4.13 The example of process list in production planning department.....	59
Figure 4.14 The example of technology roadmap and its activities (Harmon, 2012) .	65
Figure 4.15 The example of technology roadmap in quarter basis (Malhotra, 2018) .	66
Figure 4.16 The relation between problems and actions in the new practice	67

Figure 4.17 The standard operating procedure of ERP implementation project Page 1	68
Figure 4.18 The standard operating procedure of ERP implementation project Page 2	69
Figure 4.19 The standard operating procedure of ERP implementation project Page 3	70
Figure 4.20 The standard operating procedure of ERP implementation project Page 4	71
Figure 4.21 The standard operating procedure of ERP implementation project Page 5	72
Figure 4.22 The standard operating procedure of ERP implementation project Page 6	73
Figure 4.23 The standard operating procedure of ERP implementation project Page 7	74
Figure 4.24 The standard operating procedure of ERP implementation project Page 8	75
Figure 4.25 The standard operating procedure of ERP implementation project Page 9	76
Figure 4.26 The standard operating procedure of ERP implementation project Page 10	77
Figure 4.27 The standard operating procedure of ERP implementation project Page 11	78
Figure 4.28 The standard operating procedure of ERP implementation project Page 12	79
Figure 4.29 The standard operating procedure of ERP implementation project Page 13	80
Figure 4.30 The standard operating procedure of ERP implementation project Page 14	81
Figure 4.31 The standard operating procedure of ERP implementation project Page 15	82
Figure 4.32 The standard operating procedure of ERP implementation project Page 16	83

Figure 4.33 The standard operating procedure of ERP implementation project Page 17	
.....	84
Figure 4.34 The evaluation form for SOP development.....	85
Figure 4.35 The evaluation result of SOP development for ERP/Software implementation project	86



Chapter 1: Introduction

1.1 Introduction:

Technological advancements have eased the way of life and helped in every aspect of life. Enterprise resource planning (ERP) is an integration of all business activities and processes to get better results. It can be further explained as a business entity has several processes which include manufacturing, finance, human resource, supply chain, procurement, finance, and several others and ERP helps in connecting all these processes in a way that the performance of the business entity is enhanced and it becomes easy for the management to check any process and meet the needs of business entity easily. ERP helps in knowing more about the requirements of production, finance, and all other departments as all the processes are linked together to know the status of all processes at once(Hsu, 2015). Considering the production process ERP helps in knowing about raw material needs and availability of it, as it also helps in knowing the supply chain working that which material is in shortage and will reach the business entity in how many days. The ERP system helps in knowing about the loopholes of the processes and their efficiency as the material wastage at every stage of the production process can be known easily. The ERP system helps take corrective actions timely and avoid the wastage of precious resources of the business entity. The ERP system improves the business process as complete information about the processes is provided to the top management so they can take prompt decisions for the business entity as process integration is eased(N. Phaphoom, Jian Qu, Adisorn Kheaksong, and Wongduan Saelee, 2018).



Figure 1.1 Overview functions of (Insights.sap.com, 2020)

The consultants are required for implementing the ERP system as an integration of all processes required skills in the ERP system so all the aspects of business entity are covered, and comprehensive information can be obtained from the ERP system without wasting any time. The consultant gets information about the requirements of the business entity and then moves toward taking steps for implementing an ERP system in the business entity to ensure a flawless system. The consultant put efforts to know about the weaknesses of the existing system and ensures that there is no repetition of the same mistakes in the ERP system. The consultant understands all the business processes and then works for making adjustments in the ERP system to meet all the requirements of the business entity (S. Rotchanakitumnuai, 2010). The consultant based on experience knows about the errors, flaws, and problems that can be faced by the business entity and then suggesting solutions for the problems in the ERP system. The consultant knows about the best practices of the industry and then suggests solutions so the best industry practices can be incorporated into the ERP system. The consultant designs system in a way that all the problems of the business entity are resolved and it becomes easy for the management to control the business activities easily. The consultant integrates all the related process so one department doesn't interrupt the work of other and only relevant information is provided to the employees. In this way, there is no wastage of time of employees, and they can work with more dedication for the

betterment of the business entity and increasing the profitability of the business entity(Allart, 2014).

1.2 Problem Statement:

The following information will describe the basic information of ERP consulting firm which researcher works for. This ERP consulting firm was established in 2017 from Japanese consulting firm with current total employees about 20 persons. The number of projects account for 4-5 annually with continuous growth. ERP consulting firm helps the customer company to design the best-fit system for them and suggest the vendors who can practically implement the ERP/Software in their business entities.

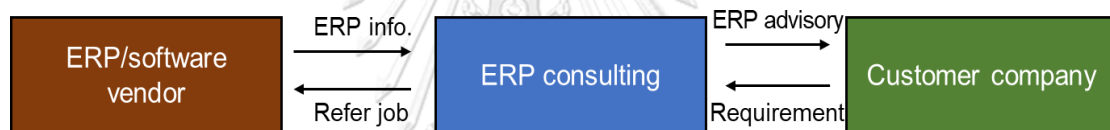


Figure 1.2 The relationship among ERP/software vendor, ERP consulting and customer company

The ERP implementation begins from gathering requirements from customer company, as shown in Figure 1.2. Based on the knowledges and experiences of ERP consulting firm, the proper choices of system advisory will be provided to customer company, for example, system name, vendor name, the budget and so on. If customer company needs to implement the ERP or software in their business entities, ERP consulting firm will hand over the implementation phase to ERP/Software vendor and act as a project management until the ERP implementation success, as step 3-6 in Figure 1.3.

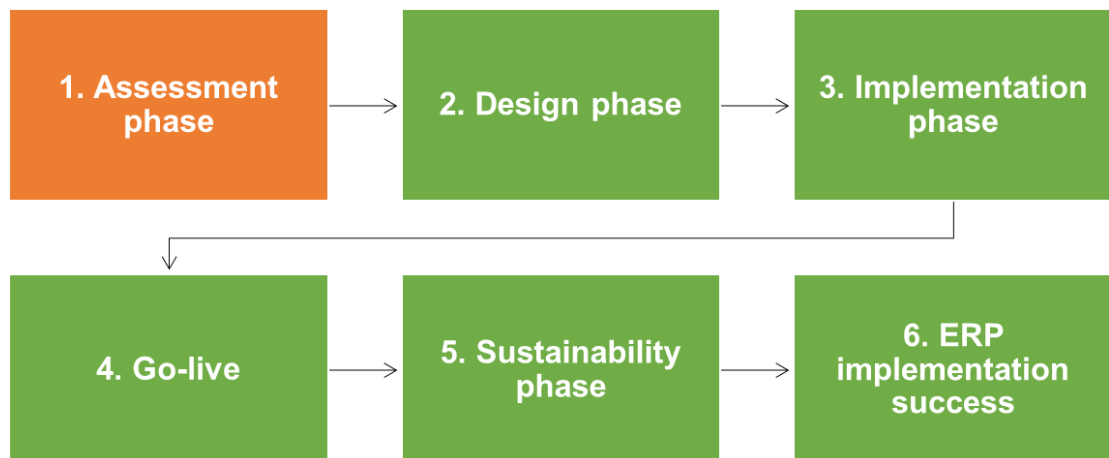


Figure 1.3 The typical ERP/software implementation process

Figure 1.3 shows the typical methods to implement the system and in order to obtain the final deliverables to customer company, ERP consulting firm requires to assess the current business process to find the problems and design the conceptual system for their organizations which step 1 and 2 in Figure 1.3. All steps are critically important to get the effective output. However, ERP assessment phase is the most significant factor to satisfy all customer's requirement because the new system is designed based on customer's requirements from assessment phase. The current practice to do the assessment and requirement gathering is unclear and unpattern so it can produce the unexpected events from following ERP implementation phases. There are 2 cases show that the pitfalls of ERP assessment step can generate the mega problem in the organization.

1.2.1 Company A, a dying fabric company: Having implemented the ERP, they have to invest more budget for another support software to interface the production control result to their main ERP because the complexity of production management is not suitable to use in ERP. The details of production management are shown as below.

- The production's condition setting for each product is contained several factors such as temperature, %chemical rate, time, pressure and sometimes it is varied by the raw material condition, so it is difficult to manage in ERP.

- The production result recordings in dyeing fabric product have to collect the quality (color shade, %shrinkage, black spot, etc.) and quantity aspect (how many and where the position of the defect on the product) which is required the data fields to record these results in ERP. That's why they are not success to use ERP as a main platform in their company.

The number of extra investments that customer paid is divided into 2 expenses which are the developing cost and the license to maintain the software by annual basis. For the software developing cost accounts for 2 Million Thai Baht to assess the problem and design the system blueprint with connecting to main ERP. The maintenance and software license cost is paid for 0.5 million Thai Baht per year.

1.2.2 Company B, an automotive company: Having implemented ERP, they cannot use some core functions in ERP to run their operation smoothly especially in planning module. The planning section is the core section in the organization, it begins from receiving an order of customer until launching the purchase order to suppliers. If the planning process was difficult to manage, then the relevant sections who use a plan would be in trouble.

Because the nature of their business that production schedule depends on the customer's demand, it leads them to revise the production plan frequently which affect to the purchasing raw material plan and also in-house production plan. The quick solution that they covered is, manual work on adjusting the plan for whole company which generated the high workload and sometimes it happened a human error by manual planning. The total of manpower for creating a plan and plan revision account for 320 man-hours per month.

1.3 Research Objectives:

To create the standard operation procedure or practice to assess/evaluate the current system and gather all important requirements from customer company which based on the case studies and relevant research.

1.4 Research Question:

1. How consultant role can improve the ERP/Software assessment process to analysis the current problems and design the new suitable system for customer company?
2. What is the CSF (Critical Success Factors) to implement ERP/software in the Manufacturing company in Thailand?

1.5 Hypothesis development:

This statement is about hypothesis development of standard operating procedure or practice to evaluate the current system. There are two considering topics based on research objectives and questions which there are:

H1: The ERP consultant has good impact on the assessment process of the customer's system.

H2: The assessment process in manufacturing companies can be improved by involving an ERP consultant.

1.6 Scope of the Research:

The scope of research is to improve the assessment process to analyze the current situation of customer company which is focused on manufacturing company in Thailand. This research will seek the weaknesses from using an unpattern practice and develop the new approach into use. The actual case studies would be considered and additionally the interview from ERP expert and targeted customer are proceeded to gather the main issues. This improvement would help both of consulting firm to finish their tasks with less number of mistakes and also customer company for efficient using ERP as a main system in their organization.

1.7 Expected outcomes:

From the research approach, the expected outcomes which are aimed to achieve as follows:

1. To gather all main issues in ERP assessment process which affect to design new proper system for customer.
2. To reduce the unexpected event and unclosed task after ERP implementation and also the addition cost to close the gap from insufficient new system design.
3. To reduce the customer's complaint from incompatible system with their actual operations.



Chapter 2: Literature Review

2. Literature Review:

The ERP system is being used all over the world due to its effectiveness and ease of operations as the modernization has enabled the business entities to move further and take bold steps. The business operations are moving towards complexity due to several transactions and involvement of more people as it can be seen in the big companies every department has more than fifty personnel for handling the business affairs of the business entity. Chompu-inwai (2015), says that the ERP system has come into existence for facilitating business operations and ensuring control over business decisions. Business entities all over the world are trying to implement enterprise resource planning so every business transaction can be checked easily and planning for the future can be done in advance with the help of ready information available in the system. The manufacturing concerns are overburdened as there are more processes to be looked after as considering the supply chain all the activities related to buying and delivering the raw materials need to be carefully monitored as one stage of process missed the business entity will have to pay for the losses in shape of losing customer orders and decreasing goodwill in the market(Chompu-inwai, 2015).

According to Chaveesuk (2017), enterprise resource planning helps in integrating all the processes to ensure that nothing is being missed in the production cycle. Manual bookkeeping has become very difficult as the speed and number of transactions are increased a lot and the business entity needs to keep the records safe so can be used later for different purposes. ERP implementation is considered to be a difficult task as there are several problems when the ERP implementation is planned. It is observed that there is resistance from employees who are working manually or on other systems as it becomes difficult for them to learn the new system so they put efforts to cancel the implementation of ERP. The top management plays an important role as their determination for implementing ERP tells the whole staff about the importance of implementing ERP. Implementation of ERP takes much time for the business entity who wants to implement in all the processes and then integrate it with all. The consultant works on identifying all the potential risks and problems before moving

towards the implementation process in any business organization. The consultant has got significant importance in implementing the ERP system and preparing the manufacturing company for the implementation process as organizational preparedness is also important in this regard(Chaveesuk, 2017).

Phaphoom (2018), describes that the consultant works on the requirements of the company and solves all the problems that will be faced by the business entity during the implementation of ERP. The consultant has got the responsibility to know about the organizational environment and then implement the ERP system according to the environment and business entity needs. The flaws of the ERP system should be discussed with the vendor so all these problems are avoided and necessary changes are made in the system. The consultant should have sound knowledge about the processes of the business entity then it becomes easy for the consultant to convey all the problems being faced by the personnel working on the ERP system. It can be further explained with the help of an example as a business entity dealing in the business of manufacturing blankets, plastic buckets, tarpaulin, and several other products(N. Phaphoom, Wongduan Saelee, Tunyawat Somjaitaweeporn, Sumeth Yuenyong, and Jian Qu, 2018). It can be further explained that a consultant must know about the complete process in the business organization the implementation of ERP is going to take place. Considering the production process of tarpaulin first of all material will be required by the production department and for this purpose, the production floor manager will issue a document named SIR which stands for store issue request. It means that the production floor manager will issue a request to the store for issuing all the required material after receiving a detailed work order from the production planning and controlling department known as PPC. PPC issues a work order which includes a plan of work describing the detailed specification of the order then the storekeeper issues the raw materials according to the requirements of the production floor and work order(Haddara, 2011).

Tarhini (2015) states that for manufacturing tarpaulin, it is known that high definition granule of plastic is required according to the recipe approved by the research and development department so there are no complaints about the products after manufacturing. The store when issues raw materials to the production floor then a

document known as STN or store transfer notes issues for keeping the records of raw material issuance from stores. The consultant tells the ERP team about the process so they can prepare the necessary reports in the system. After receiving raw material the production floor put the plastic granule in the machine known as extruder as it melts the plastic granule and then converts it into a thin plastic sheet which passes from water and cutters splits into wider yarn which is converted into the desired length by two more heaters spreading the sheet into desired yarn. From the extruder, the yarn is shifted to looms which are used for knitting fabric from plastic yarn(Tarhini, 2015). Looms are operated according to the requirements PPC department so there is nothing undesired and not acceptable by the customer.

The knitting of fabric is done by the looms and then this knitted fabric is transferred to the lamination department where a thin coating of the plastic granule is done on the fabric which is then turned into a tarpaulin. The tarpaulin is made of the required size which is attained after joining two pieces of tarpaulin and this process is known as welding as two parts of tarpaulin are joined together in the welding department. After this hamming is done on the tarpaulin and a rope is included in the sides according to the requirements of the customer. After this, the finished goods are ready for packing, and then folding of tarpaulin is done in the packing department. After folding the tarpaulin a yellow strip is tied and finally, the pack of tarpaulin is made. It is important to mention here that accessories being attached to the tarpaulin are issued by the accessories store so it is for the understanding of the consultant that he must know the process in details so all the documents are issued by ERP and all the reports which were being made manually or through Microsoft excel will be prepared in the enterprise resource planning system. A map of all business activities is made and handed over to the ERP team who use this information for implementing the system in the business organization(Beheshti, 2010). The production process of the only tarpaulin is described here as a business entity dealing in tarpaulin and several other products.

Kanthwongs (2010), says that the production process for different products is different as the production of the blanket is different but one thing is common which is the process followed by the personnel working in the business entity. The ERP consultant takes into account all processes attached to the production process and then

hands over the map of all activities to the ERP professionals so they can get the work done easily. The ERP professionals get it right in the first attempt as the consultant who knows about the production processes in detail guides them and tells them about the flaws and weaknesses identified in the system. It is observed that top management of a manufacturing concern wants to get the complete information on a single page as they want to grasp quickly about the situation prevailing in the business entity and for this purpose, the ERP system integrates all the business processes for getting desired information on a single click (Kanthawongs, 2010). The ERP system ensures to make all the business transactions in the system so there is facilitation in the system as compared to manual work. In the manual work, a business entry is searched for moving pages from begging to end but in the system, it can be done easily and without wasting any amount of time. The production process is very complicated comparing to the trading business or services sector as the production of several products takes place at the same time as there is more demand from the customers so more products are manufactured and the specific orders are also manufactured to earn more profit from the business operations. The business entity is considered to be successful for facilitating the employees as they put more effort into improving the work and manufacture the products with minimum wastage.

The wastage is an important factor attached to the production process as no product can be produced without incurring wastage of raw materials as to get perfect products the defective parts of the products are detached which are later sold to buyers who can use these as their raw materials. It is also possible that the business entity has established a complete manufacturing process for recycling the wastage of production. In this way, the ERP system also incorporates the entries of wastage and then disposes of according to the instructions of the top management. Thailand is making progress rapidly as it has become a good destination for international tourists and investors from all over the world so ERP implementation all over the country is considered to be important as it helps in adding more value to the company products and helps in earning more profit from the business operations. The ERP system is a very composite resource planning system and it becomes difficult for the employees to understand as it integrates all the production processes and other business activities. For facilitating the employees and making the production process easier the business entity designs and implements

an easy system that can be used easily as compared to ERP system as it has more processes and integration of the processes(S. Rotchanakitumnuai, Mark Speece, and Fredric William Swierczek., 2019).

The system software designed for facilitating the employees who cannot understand the ERP system can be sorted out in several ways and one of these is to provide comprehensive training for the employees continuously so they can learn more about the process and functionality of the enterprise resource planning. In this way, the extra expenses of designing and implementing a new software are avoided and employees can work with more determination. It is also possible to run manual and ERP systems together until the understanding of the system software has not been developed as it will help in avoiding the daily mistakes and will allow the work to be done with ease and comfort. It is also argued that the workload on the employees becomes doubled as they have to enter data into the ERP system and as well as in the easy software so the double workload becomes a problem for the employees and their efficiency is badly affected. The business entity should put efforts to make it easier for the employees in their mother language as the mother language provides ease of knowledge and the working environment of the business entity is also facilitated.

There is an increasing trend of using ERP systems as the country welcomes tourists and other business professionals so meeting international requirements improvements in the system are important. In Thailand the trend of implementing an ERP system is increasing due to the ease and effectiveness of the system as the business processes and activities can be checked and controlled easily. The consultant has got an important role in assessing the business entity's problems and suggesting solutions through the enterprise resource planning system in a systematic way. It is observed that the ERP system helps in improving the safety and security of business assets as every business transaction requires documentation and two or more persons from different departments are required as signing authority so the responsibility is split wisely. The manufacturing company needs to implement an ERP system as basic software for recording business transactions and analyzing the business performance easily as the top management can view concerned reports with an ease of just one click and complete

required information is available to them for decision-making purposes (Moohebat, 2010).

Understanding of ERP's benefits and how it helps the organizations in several dimensions is the one essential factor to develop the assessment process and new standard operating procedure. However, the interview session with the clients to get the clear requirements is another issue that should be considered. The obstacles that might occur during interview session would be human cognitive biases, the overconfidence of user is the good example of this difficulty (Browne and Ramesh, 2002). The other constraints that might lead consultant to get the uncompleted requirements would be the complexity of user requirement, the communication issues between users and consultants and the reluctance of users to raise the requirements.

The model for gathering the information from users should be utilized to standardize the interview processes and prepare for unexpected outcomes during the time of ERP assessment.

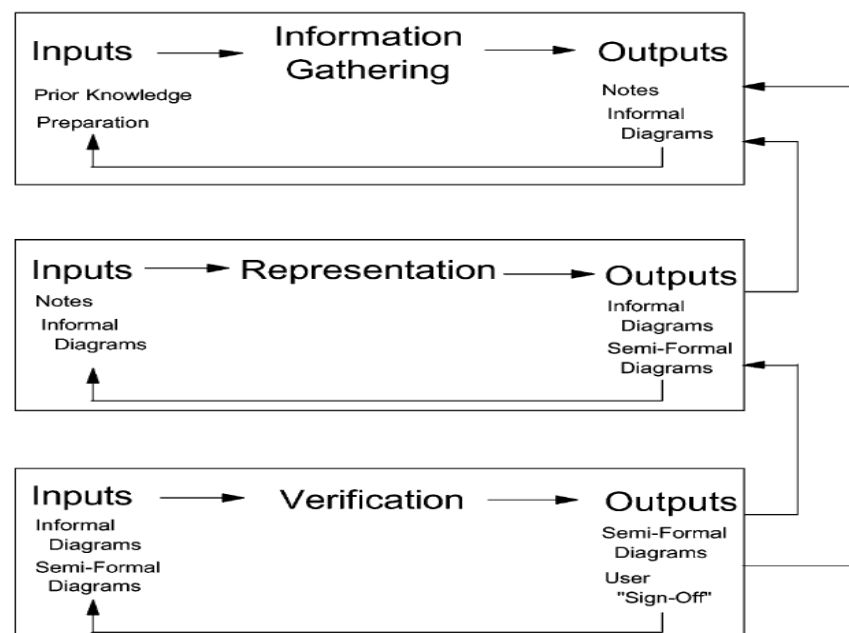


Figure 2.1 Requirement gathering process model (Browne and Ramesh, 2002)

In Figure 2.1, it shows the model to proceed the information gathering from users, each stage defines the inputs and outputs that should exist in the process. This

model is greatly useful for consultants to utilize in the interview session with the clients. The interview techniques should be implemented for better result in information gathering process. The most important outcomes would be the completed cognitive explanation from users and the flow chart, the decision mapping and whiteboarding are the best practice to draw the information from their understanding into external (Browne and Ramesh, 2002). The involved persons can also participate in the discussion and make the user's concerns are clearer. Using the narratives analysis is the one technique to know the insight detail of problems and actual operations that users did daily which lead to their concrete requirements (Alvarez and Urla, 2002).



Chapter 3: Research Methodology

3.1 Summary of Literature Review:

In the literature review, the work done in the ERP implementation was analyzed in details and it was known that a consultant must-have skills and knowledge about the whole process of the business entity as the consultant can guide the ERP team about implementing the ERP system in the business entity successfully without any major mistakes and flaws in the system. The business entity dealing in the manufacturing business of plastic tarpaulin and other products dealing at a large scale need to implement the ERP system to identify the loophole areas of the business entity and to put more efforts to make the ERP system accurate in the business operations. The consultant guides the ERP team about the production processes of the business entity and helps in making the ERP implementation easier as he has a strong grip over the production processes. It is discussed in the literature review that the consultant provides a map of the business activities and the documents required for conducting the business activities and then the ERP team based on the business activities and the required documents designs and implements the ERP system in the business entity.

The employees working on the ERP system information about the flaws and weaknesses of the software and then an action according to the requirements is taken to ensure the accuracy of the ERP system. It can be exemplified that in the manufacturing business entity a manager of the supply chain asks the consultant to consolidate stock of three shop floors and main store of plastic so he can check the available stock with just a single click then the ERP team will consolidate the reports together providing an option for the manager to view the reports easily. In this way, a solid ERP system is established providing help for the business entity to continue the business operations easily. It is discussed that the ERP team works on implementing the ERP system and making improvements in the system according to the requirements of the business entity.

The understanding of nature in manufacturing industry and the expected benefits from ERP are required to create the new standard operating procedure for

gathering information process. Blended with interview techniques to acquire the actual requirements from users is also considered to enhance the ERP assessment process.

3.2 Interview the ERP Experts:

An interview of the ERP expert is conducted for knowing about different factors related to ERP and business entity. Based on their expertise in this business, the expected outcome would be the failure cases of ERP implementation in the past and how to recover all those unsuccess cases especially in manufacturing industry. ERP experts are selected for interview based on their experiences in this business and their practical case studies in ERP assessment process. The table below shows the interviewees detail and their core experiences in this business.

Table 3.1 The interviewees detail and their core experiences

ERP expert	Position	Experience year	Core experience
A	Manager	14	ERP implementation for groundwork and project management in manufacturing company
B	Senior consultant	10	ERP user and ERP assessment process in variety of business ex. Automotive, Food, Consumer product, etc.
C	Business consultant	10	ERP programmer and ERP pre-sale

3.3 Research the Existing Framework/Practice:

Research and study the existing practices in ERP assessment is also important to know about the generic approaches way to proceed in the process. Having researched the current frameworks, it can draft the baseline of the new standard operating procedure and then the enhancement contents or improvements in practice would be

adapted in next step. Competitor company's strategic should be additionally observed to get to know their approaches and take it as a consideration.

3.4 Apply the Existing Information to Create a Standard Operating Procedure:

To create a standard operating procedure, the 3 approaches are applied to develop and enhance the assessment process. The researching of current framework or practice is the initial approach to adapt the contents and concerns into use. The second approach is digesting the information from ERP experts and targeted customers to fulfill the new standard operating procedure more effective, and it is blended on the actual manufacturing environment. Additionally, the interview techniques are required to apply in this process to enhance the information gathering process.

3.5 Design the Standard Operating Procedure:

The focused group discussion in company is used in this process to create the standard operating procedure for ERP assessment. Having gathered the information from ERP experts and done the current research for ERP project management to establish the standard operating procedure, the internal process to brainstorm and analyze the new standard operating procedure in consulting company is also required to shape the new procedure. The discussion process in focus group activity is shown as Figure 3.1.

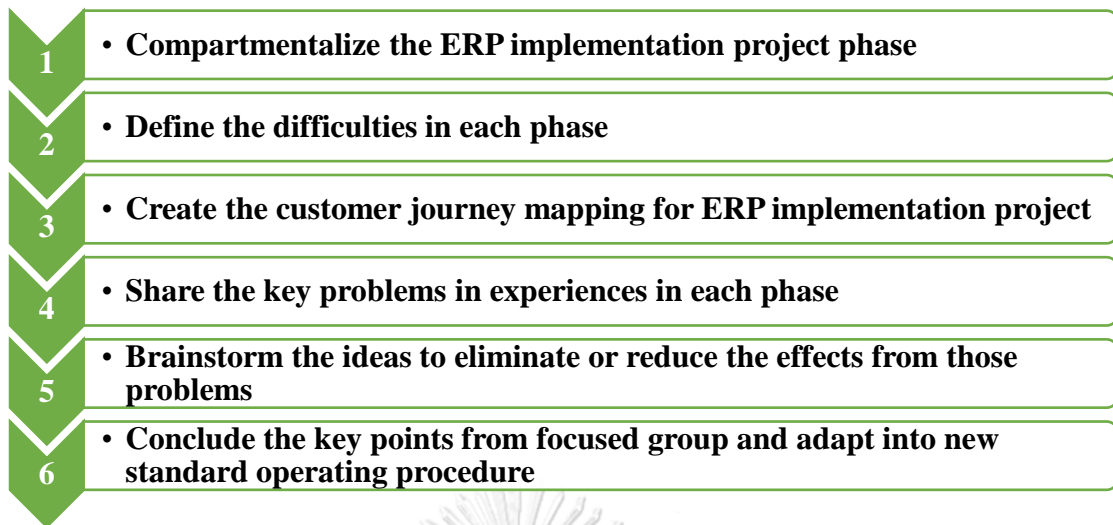


Figure 3.1 The processes of focused group activity

The participant in focused group consists of consultants who had the several experiences in ERP implementation project in manufacturing company. The Table 3.2 shows the participant detail who join in the focused group.

Table 3.2 The participant detail and their core experiences

Participant	Position	Experience year	Core experience
A	Senior Consultant	10	ERP implementation in manufacturing company (Financial section)
B	Consultant	7	ERP implementation in manufacturing company (Supply chain management section)
C	Consultant	6	ERP implementation in Automotive and Retail company (Supply chain management section)
D	Consultant	5	ERP developer and implementation in Service company
E	Business Development	5	ERP pre-sale

The members of focused group are selected from the background of participant and experience in the ERP/Software implementation project which is varied in several industries and areas. The main industry is manufacturing company to gain the characteristic of this industry which is complicated in production scale. Other industries can also fulfill the key points and provide the interesting information for development. Moreover, some members used to be the stakeholder in the ERP implementation project which had experiences as a customer and an IT vendor in their previous work journey. The experiences and knowledges from participant will be discussed and analyzed in the session to acquire the valuable baseline for developing a standard operating procedure.

A research technique that uses a group of people to collect data through interaction with different people to get the required information and results. A focused group is selected through careful selection of people examining their capabilities about interacting with other people and getting the required results. The group is comprised of a small number of people who are selected after following the strict procedures for this purpose as no one is selected who can't interact with people. The activity of the focused group moves around getting the required information from the people who are linked with the information (Giannone, 2020). The group focuses on knowing about the people that what they think, how they behave, and discuss different matters. The focused group activity is all about holding small group discussions to know how they think about the topic, their behavior about the topic, and what they tell about the topic. The group is focused on the activity as they are given a specific topic and then their talk about the topic in a defined way that how it will affect them and several other impacts of the topic on the survey (Bornmann, 2013).

It can be exemplified that a business entity is concerned about knowing the effectiveness of its products and the company wants to assess this through focused group activity. The group will discuss the experience of the company products and the mistakes, flaws of the company products. The group will discuss what more is required from the products so the improvement can fulfill the desired target of the customers. It will be helpful for the business entity to make improvements in the products and make them successful in the market. Round table conversations are done to get the required results about the product. The business entity can get information about the minds of

the customers and then the decisions about the company products can be made easily(Olson, 2010).

The business entities and government institutions are run by some sort of instructions that work as a guide for all the employees. The standard operating procedure is a document or instruction which works as guiding the employees to perform any business activity or any other activity that how the business activity will be performed, what steps are necessary to complete the activity, who can perform the activity, and which will be the channel to perform the activity. It can be better exemplified that everyone has become familiar with the term due to the spread of the Covid-19 pandemic as the governments all over the world are emphasizing to follow the SOPs of coronavirus. It means the governments have described the standard operating procedures which can help avoid the coronavirus and be safe from this pandemic disease(Auch, 2010). It can be said that for attaining any objective standard operating procedures need to be followed.

There are several other examples of standard operating procedure as in a business entity the procurement can be made only through following a standard operating procedure otherwise no procurement of any item can be made. First of all, a demand requisition will be initiated and then the procurement department will get rates of the product, then the comparison of rates and specifications of products is made, and then the lowest priced product will be bought for the company. The payment will be released for the cash purchases and a cheque will be issued for the products having more amount. So can be standard operating procedures are designed by the business entity for getting the work done in a better way(Galens, 2011). It is not possible that funds are released before the demand is generated and it is also not possible that the signing authorities in the whole process are ignored.

3.6 Review the Standard Operating Procedure from Failure Cases Recovery:

Having gathered the information to draft the standard operating procedure, the recovery of failure cases in the past is evaluated to ensure that can be solved those

issues. The concept of review is comparing between possible root causes with the researched information that can recover those pain points or not.

3.7 Create the Complete Standard Operating Procedure and ERP expert evaluation:

Having collected all data and designed the core of standard operating procedure, there will be creating the practice which helps to increase the efficiency and effectiveness in ERP implementation project. The final evaluation from ERP experts is necessary for proving that this standard operating procedure is valid for utilization in actual case. ERP experts will express about their opinions. There will be feedback and additional recommendation which is used to response the customer's perspective and eliminate the loopholes of ERP implementation.

3.8 Discussion and Summary:

Having completed the new standard operating procedure for ERP assessment process, there will be making discussion to evaluate the expected outcomes. The result of research will be discussed and summarized in following topics:

3.8.1 Developed Processes in ERP/Software Implementation Project

New standard operating procedure and processes in ERP/Software implementation project will be discussed whether how new procedure helps improve the process and eliminate the pitfalls in the project.

3.8.2 Benefits for a consulting company

The benefits from research in several aspects will be discussed whether how it impacts to the consulting firm from individual to the whole organization.

Chapter 4: Result and analysis

4.1 Interview the ERP Experts

4.1.1 Question list

ERP experts are selected for interview based on their experiences in this business and their practical case studies in ERP assessment process. Some experts had the experience in another company which provide this service with standard practice which they can provide the precious answer and recommendation for developed standard operating practice. The table below shows the interviewees detail and their core experiences in this business.

Table 4.1 The interviewees detail and their core experiences

ERP expert	Position	Experience year	Core experience
A	Manager	14	ERP implementation for groundwork and project management in manufacturing company
B	Senior consultant	10	ERP user and ERP assessment process in variety of business ex. Automotive, Food, Consumer product, etc.
C	Business consultant	10	ERP programmer and ERP pre-sale

The question set for interview with ERP expert is shown in Table 4.2, 10 questions are prepared for discussing in the main issues of ERP assessment process in order to develop the standard operating procedure.

Table 4.2 Question set for ERP expert interview

No.	Question
1	What is the key success factor to implement ERP system in manufacturing company in Thailand?
2	What are the concerns and important issues during assessment process with customer?
3	What is generic step of assessment process that ERP expert does?
4	Who should be involved in the meeting of the pre-assessment process and during assessment process?
5	What required document that customer need to prepare before interview session in assessment process?
6	Who should be interviewed in the session (operators, leader or manager) to gather the requirements?
7	How to lead the interview session to gather the requirements from customer? What are the key points or effective steps to run the session?
8	What is the interview technique that ERP expert apply in the session to gather the requirements from customer?
9	Is there any failure case that ERP expert experienced in manufacturing company? What is the root causes of this failure?
10	Any recommendation for SOP development?

4.1.2 Question and answer

The questions in previous section have been used as a core conversation in the interview session with ERP experts. The keywords of each question for SOP development are summarized in the Table 4.3-4.12.

Question number 1 asks about the key success factor that help to smoothly implement the ERP in manufacturing company. The key theme of each interviewee is shown as Table 4.3.

Table 4.3 Key Themes from ERP experts in question 1

Question 1		What is the key success factor to implement ERP system in manufacturing company in Thailand?
Keyword	ERP Expert A	Completion of user requirements and understanding of customer's problems
	ERP Expert B	Understanding of current work condition of customer and their difficulties involved with system
	ERP Expert C	Completion of user requirements to design the new system for customer

Two ERP experts share their opinions of key success factors in ERP implementation project that completion of user requirement in assessment session to interview the users is highly important. Because those user requirements will be the database for designing the new system for customer and it related to solutions to eliminate the chronic problems in customer organization which affect to their satisfaction of new system.

ERP implementation is considered to be a challenging job in a manufacturing concern as the employees are satisfied with their working and they don't want to change the style and method of working. ERP can be implemented through following different success factors which include first of all support of executives and top management as they allow the implementation of ERP and the majority of the employees in the company follow their decisions. The employees should be involved in the process of ERP implementation as it develops a sense of responsibility for the employees and they feel pride for implementing and working on a new system. The scope of the projects should be defined clearly so the employees can put more effort to get the work done through ERP applications. It is also necessary to plan to optimize the business processes for ERP implementation as it will help in preparing the employees for this process in advance and they start to learn about the processes(Hailu, 2012).

The implementation of ERP is a big change in a manufacturing concern so it is better to apply a proactive approach for the change management and the employees should be aware of the benefits of ERP implementation as it will help to inspire them for the change process. An expert should be hired who knows all the processes of the

manufacturing concern as the ERP team needs an expert for guidance and knowledge about the processes of the company. The expert plays an important role in implementing the ERP as the production processes are complex and the ERP team cannot develop the requirements of the reports and processes easily. The employees should also be trained for this purpose as it helps in reducing their fears and then can work on learning the processes easily and it will also help in improving their efficiency(Ahmad, 2013).

Question number 2 asks about the concerns during the requirements gathering process (assessment process). The key theme of each interviewee is shown as Table 4.4.

Table 4.4 Key Themes from ERP experts in question 2

Question 2		What are the concerns and important issues during assessment process with customer?
Keyword	ERP Expert A	Correct and completed information from users
	ERP Expert B	The process of assessment is systematic (get the information and confirm with related level and department)
	ERP Expert C	How to explain the question to users to acquire the exact information and precise requirements from users

All experts provide that the information from users should be correct and precise, so the interview session is also important in the assessment process to get those user's requirements. The interview techniques need to be considered in this process in order to extract the information from users.

Question number 3 asks about typical working steps doing ERP assessment for implementation project. The key theme of each interviewee is shown as Table 4.5.

Table 4.5 Key Themes from ERP experts in question 3

Question 3		What is generic step of assessment process that ERP expert does?
Keyword	ERP Expert A	3 steps: Kick-off step, Assessment, and support step
	ERP Expert B	2 steps: Kick-off step and Assessment step
	ERP Expert C	3 steps: Kick-off step, Assessment, and Go-live step

The Kick-off step is mentioned from all experts that it should proceed this step because the scope of project in terms of area and timeframe will be clarified, and it is necessary to plan for overall project. The resource of manpower and budget are also determined in this step. Another interesting step would be support step or go-live step, this step is provided to customer for post-support in system aspect such as PMO for ERP implementation phase, IT roadmap for customer organization which is involved with customer's satisfaction.

Question number 4 asks about the key persons who should be involved from beginning to the final phase of ERP implementation. The key theme of each interviewee is shown as Table 4.6.

Table 4.6 Key Themes from ERP experts in question 4

Question 4		Who should be involved in the meeting of the pre-assessment process and during assessment process?
Keyword	ERP Expert A	The decision maker who has the most influence in organization
	ERP Expert B	Users who do the routine job
	ERP Expert C	Supervisors and users who do the routine job

The decision maker in organization has the most influence in the ERP implementation project and also can provide the direction of the overall project. Supervisors and users in routine job can provide the exact requirements and the current problems. Higher level of job position can be able to confirm the user requirements and provide the long-term vision in their departments.

Every department in a manufacturing department has its importance as no department in the manufacturing company is created without its functional importance in the company. The production planning and controlling (PPC) department in the manufacturing company is considered to be the most influential department as nothing in the factory can be produced without the consent and approval of the PPC department. The production planning and controlling department is responsible for managing the supply chain of the company, managing the production of the products, managing the delivery of products, arranging funds for local procurements, imports, and other expenses. The department is responsible for managing the business affairs of the company as the department manages the sale orders and manufactures products according to the customer requirements (Strandhagen, 2017).

The department is responsible for managing the printing department of the company as all local requisitions of the printing department are arranged by the PPC department. PPC department also arranges all the accessories for a product manufactured for example a plastic bucket is produced and needs to be delivered to the customer. The plastic bucket needs to be packed in a carton, needs to be placed on pallets, and stickers of logos need to be placed on the bucket. So it can be said that the PPC department oversees all the business affairs starting from arranging the raw materials, producing the products, delivering the products, arranging funds, and doing several other important works in the company. The planning in the business entity is considered to be the most important function as the future of the business entity is based on effective planning. PPC department is responsible for the planning of production and then controlling all the related affairs for attaining the business objectives of the company (Zhong, 2013). The department plans the receivables and payables of the company and makes the payments at a better time.

Question number 5 asks about the necessary document in interview session that customer should readily prepare in the meeting. The key theme of each interviewee is shown as Table 4.7.

Table 4.7 Key Themes from ERP experts in question 5

Question 5		What required document that customer need to prepare before interview session in assessment process?
Keyword	ERP Expert A	Actual document for daily routine job and system operation on computer screen
	ERP Expert B	Every related manual and report in daily job
	ERP Expert C	Actual document and some mistakes on the report that they usually found in their job

The actual document and tangible evident from operation are the best example for ERP consultant to observe and analyze the problems in customer organization. Sometimes operators did not notice their mistakes or abnormal in their routine job because of familiarity. Therefore, that kind of document should be highly required in the interview session.

Question number 6 asks about the key persons who should be stood by in the interview session for getting the user requirements. The key theme of each interviewee is shown as Table 4.8.

Table 4.8 Key Themes from ERP experts in question 6

Question 6		Who should be interviewed in the session (operators, leader or manager) to gather the requirements?
Keyword	ERP Expert A	Operator level for detail operation, leader level for confirmation and manager level for overview/big picture observation
	ERP Expert B	Operator level for explanation in actual job and leader level for support and confirmation
	ERP Expert C	Operator level for explanation and sharing the difficulties in their routine job and leader level for confirmation

Operator level or groundwork level are the key person to acquire the exact the information and additionally the difficulties from their routine operation. This information will be the beneficial for developing the solution and designing the new system. Moreover, leader or supervisor level who had the long experience in those jobs also can provide the support comment based on their expertise and surely confirm the actual operation or groundwork. For manager level, this position can express their point of views or output images that what system should do and additionally give the information of their future business ex. merge and acquisition, new business unit, organization transformation, etc.

Question number 7 asks about the step to do the interview session for gathering the user requirements. The key theme of each interviewee is shown as Table 4.9.

Table 4.9 Key Themes from ERP experts in question 7

Question 7		How to lead the interview session to gather the requirements from customer? What are the key points or effective steps to run the session?
Keyword	ERP Expert A	Clarify the business case and utilize interview technique
	ERP Expert B	Make a sequence of interview session and organize the people who join the session which related between department
	ERP Expert C	Prepare the question list and utilize interview technique

Interview techniques are highly required to utilize in the session to extract the information from users which should be accurate and authentic. The process to get the information should be constructed by having the question list and the art of asking the question. Moreover, involved people should be surely stood by in the meeting to collect all business cases and make the decision together for preventing the out-of-scope event. The sequence of meeting is the one important factor to arrange all related interviewed departments and confirm the user requirements each item constructively.

The interview session is considered to be very important for the interviewer as well as for the interviewee as the interviewer will get a good human resource who can lead the business entity to the heights of success and on the other hand, the interviewee can get a good career and livelihood for his life. The typical interview session from beginning to the end are being described below:

- The first step of the interview session is the introduction of the candidate and also of the interviewer as the candidate gets the knowledge about the interviewers and be conscious about the interview. In these steps the interviewer and the interviewee both want to give the first good impression as both are on the stage of getting something good. At these steps both the parties to the interview need to be courteous and should start with a smiling face as it helps in building a strong and good impression on both sides(DeCuir-Gunby, 2011).

- The second step in the interview session is conducting a small talk with the interviewee. Small talk helps normalize the candidate and build a positive relationship with the candidate. It helps in knowing more about the behavior of the candidate and its way of conversations with the interviewers. The interviewer should try to talk about the interests of the candidate as it will help in building a friendly environment which will help in exploring the candidate more.

- The third step in the interview process is information gathering from the candidate. The candidate is judged about his preparedness for the interview. The interviewer asks about different things to judge the way of communication, is his/her communication organized, the candidate talks concisely, the candidate is confident, the fluency of language if he/she is not a native speaker of the language, the body language of the candidate, and several other aspects of the interviewee(Saunders, 2015).

- The fourth step in the interview process is the question/answers of the candidate as in this step the interviewer asks about the field of the candidate and tries to check the knowledge of the candidate about the field. The interviewer asks different questions related to the job so the knowledge and capability of the candidate can be checked. In this step, the candidate also asks questions about the salary package, annual leaves, and other benefits, and the business operations of the company. This helps both parties in concluding that the candidate has the required capability, and the business entity is offering the required benefits for the candidate.

- The fifth and last step of the interview process is wrapping up the interview and in this step, the business entity strives to satisfy the candidate and the candidate put efforts to satisfy the interviewers to conclude the interview successfully. In this step greetings and handshake is made to convey a good message to the interviewer and the interviewer puts efforts to convey a good message for the candidate to build a positive relationship. This step helps close the interview with a pleasant note on both ends(Haryanti, 2021).

Question number 8 asks about the interview technique used in the interview session to gather the user requirements from users. The key theme of each interviewee is shown as Table 4.10.

Table 4.10 Key Themes from ERP experts in question 8

Question 8		What is the interview technique that ERP expert apply in the session to gather the requirements from customer?
Keyword	ERP Expert A	Prepare the question list for each department and particular process group
	ERP Expert B	Utilize the whiteboard for drawing the overall picture and make clear of customer's understanding
	ERP Expert C	Utilize the workflow to visualize the work process and use it for confirmation the customer's understanding

Several interview techniques should be applied in the interview session, for instance, whiteboarding, workflow utilization, question by storytelling, etc. The objectives of this session are the current problem clarification and understanding of overall customer's system. This interview session is a critical major event for getting the user requirement which is required the sufficient data for new system draft.

The interview is considered to be very important for the business entity as it helps in getting good human resources who can put their efforts to attain business objectives. The interview is conducted to get more information from the candidate and then based on that information the decision about the suitability of the candidate is

made. Several interview techniques can help get more information from the interviewees some of these techniques are being described below:

- It is better to choose a good and attractive location for the interview as it helps in relaxing the candidate so he/she tells more and provides more information which is required by the business entity. A good location conveys a positive message to the candidate about the position of the company and it attracts the interviewee towards the job. The location is considered to help build a positive relationship between the interviewer and the interviewee as both are in a pleasant place so this comfort helps in conducting a better and more objective interview(Jacob, 2012).

- The interviewer can get more information from the interviewee on making a list of questions in advance as it will help the interviewer to ask relevant and good questions from the interviewee. The questions made in advance will help in getting the required information from the interviewee as all the questions will be made considering keeping in mind the aim that more information from the interviewee is required. It is also better to schedule duration for the interview that if it is an initial interview then 20 to 30 minutes interview is good and 5 to 10 questions can help get the complete required information. The questions should be related to the behavior of the interview so a good and moderate behavior candidate can be selected for this purpose(Vrij, 2014).

- The resume of the candidate tells whole about him/her so it is important to review the resume of the candidate carefully and also the cover letter as enough information is available in these sources.

- The interview should be conversational, not confrontational as polite conversations help get the required information and the interview which is not in a good tone can create problems for the company as well the interviewee so it is better to conclude the conversation with greetings.

- It is better to explain the whole process to the interviewee as it relaxes him and can build real expectations from the business entity.

- The group interview can help get more information from the candidate as different group members will ask different questions which will help in judging the right personality of the candidate. Different group members can focus on different aspects of the candidate and more information can be obtained.

- It is also good to take follow up of the interview even the candidate is not selected for the job still it is the responsibility of the interviewers to inform the candidate about the failure as it makes the candidate facing the situations bravely. These techniques can be fruitful for getting the required information from interviewees(Anyan, 2013).

Question number 9 asks about the experiences of failure case in manufacturing company and the reason of those failure cases. The key theme of each interviewee is shown as Table 4.11.

Table 4.11 Key Themes from ERP experts in question 9

Question 9		Is there any failure case that ERP expert experienced in manufacturing company? What is the root causes of this failure?
Keyword	ERP Expert A	Failure case: Design the new system based on every user requirement but it requires a lot of operations or manpower to record the data in the system and generate the manual work in the future. Root cause: Lack of user requirement analysis and lack of consideration in operation after ERP implementation
	ERP Expert B	Failure case: Uncompleted gathering of user requirements in the assessment step. Root cause: Some key person did not join the session
	ERP Expert C	Failure case: Uncompleted gathering of user requirements in the assessment step. Root cause: The detail operation/problem from users were not clear and the conclusion is not aligned between customer and consulting party

The failure cases from ERP experts' experience were the best practice for developing the standard operating procedure. Most of the cases have the root cause

from mistakes in interview session which associated with contents of interview and key persons. The conclusion part in interview session is also important to align the understanding and conceptual image between customer and consulting party.

The ERP implementation is considered to be a challenging job as it takes more time to implement the new enterprise resource planning module in a manufacturing company. There are several examples of failure cases of ERP implementation which include Hewlett Packard's failure of ERP implementation which caused a \$160 million loss to the company in the year 2004(360cloudsolutions, 2020). The business entity started implementing ERP in the North American divisions and the project was to implement a centralized ERP system to eliminate the hurdles of different systems. The aim behind ERP implementation was to have firm control over the business affairs of the company and to reduce operational costs but the ERP implementation ended up in a disaster and caused a huge loss to the business entity. It was observed that small issues were gathered to cause of big disaster for the business entity as the business entity wanted to control its business units from a single module of ERP that the business entity should have a firm grip over its business operations but it ended up in a disaster(Stanciu, 2013).

It is something of more interest to know the real cause of this failure it happens that a business entity is running its manual set up as well as the ERP implementation so both systems are working together unless ERP is fully implemented and controlled by the business entity after several test checks. The manual system will be left using when the business entity has become sure about the successful implementation of ERP systems after several successful test checks to ensure the successful implementation, as well as the team who is controlling ERP business operations, have got a grip over the business operations. It was observed in the case of Hewlett Packard that a decision in hurry was made about the checking of ERP system without proper checking of the system and its successful implementation as the concerned authorities were very sure about the success of ERP centralizing system so the manual system was left to use before proper working of ERP systems. So when it was implemented and checked it caused huge loss to the business entity because backlogged orders happened and there was revenue loss due to improper catering of the sales orders(Sun, 2015).

So it can be said that the ERP implementation caused a huge loss to the business entity just because of improper test checks and leaving the manual systems before successful implementation of ERP systems. It was good to leave the manual workings when the implementation had become successful but the business entity couldn't continue its manual operations so there was a huge loss. Nike in the year 2000 and 2001 spent \$400 million for updating their supply chain systems and ERP systems and it was observed that there was occurred a loss of \$100 million in lost revenue and different lawsuits against the business entity. So it can be said that the ERP implementation had caused huge losses to several business entities due to failure in the implementation of ERP systems(360cloudsolutions, 2020).

Question number 10 asks about the additional advice for developing the standard operating procedure. The key theme of each interviewee is shown as Table 4.12.

Table 4.12 Key Themes from ERP experts in question 10

Question 10		Any recommendation for SOP development?
Keyword	ERP Expert A	The contents and timeframe should be strictly scoped for preventing the extra job
	ERP Expert B	The summary of each step should be regular confirmed, for instance, current problems analysis, to-be design and develop user requirement step to ensure the customer's comprehension
	ERP Expert C	The knowledge of ERP capability is significantly required for ERP consultant to design the new system based on customer's problem analysis

The step to scope the project is the initial stage to proceed among related parties. The extra job and unclosed project are the most impact issue for ERP implementation project because it requires time and resource to cover the unfinished jobs. To prevent those unexpected events, every single step of ERP assessment should be confirmed and agreed the conclusion with next action together between customer and consulting

company. Moreover, the basic knowledge of ERP, the function in ERP and its limitation should educate for ERP consultants to effectively design the new system landscape.

The standard operating procedures are considered to be very crucial for the business entity as there is no work done without following the standard operating procedure in the business entity. The important factors required for creating standard operating procedures are being described below:

- The first important factor is creating a blueprint for repetitive tasks in the business entity as it can be issuing raw materials in a manufacturing concern on daily basis for the production process. It can be receiving raw materials from the import department or some other routine tasks. Receiving raw materials will include an inwards gate pass then receiving the materials in the warehouse and then issuing the raw materials against a move order and a production plan(Tallyfy.com, 2020).

- It is also an important factor for creating a standard operating procedure to make a list of all business processes so it will become easier to develop the SOPs for the processes.

- Another important factor in this process is planning the process as this factor helps find all the mistakes and flaws in the processes and then making rectifications in the processes so there is less wastage of company resources. In this phase, the whole process will be planned according to the requirements of the business entity.

- The fourth factor in this process is to outline and launch all processes so no process is omitted from the SOPs and it is also communicated to all employees so they can follow the process(Danish, 2010). Then the stage comes where the process should be written and reviewed so the flaws and mistakes can be eliminated. This stage will help make improvements in the standard operating procedures.

- Another important factor that needs to be considered is to assign and automate routine tasks as it can be exemplified that material requisition is generated from the production department and then the procurement department takes rates from the market and then all the rates are communicated to the finance department. The finance department after approval of rates issues finance for the requirement and then the purchase of materials is done. So it can be said that these routine tasks are made a standard operating procedure and then needs to be followed by all employees.

- The last factor which needs to be considered is maintaining the whole process that no one should be allowed to bypass this whole process. The standard operating procedure also defines the signatories of the process that who will sign what documents to be held responsible for this all(Ayala, 2010).

All these factors are important for making a standard operating procedure and after making a standard operating procedure it becomes the responsibility of the top to lower-level management that they ensure the implementation of standard operating procedure and no one is allowed to miss any single procedure in the standard operating procedure. It will help in following the standard operating procedure and ensuring there is mishandling of the raw materials or any other thing. The standard operating procedure help ensure the safety of the company assets and maintain the quickness of the processes.

4.2 Research the existing Framework/Practice

The current competitors in Thailand, who run the similar business for ERP consulting service, have their own unique core values to service customer. The research on the existing framework or practice is required to construct the ideas and selling points of the ERP implementation service project. The research on website of competitors is the best method for study due to confidential of their services. The first company, KPMG is the one of big four company in accounting consultancy, has serviced the full-looped ERP support for customer from the system selection to helpdesk support. Typically, KPMG is dominant on the financial advisory and tax consulting, however the ERP advisory becomes more required in market due to the tangible price of ERP packages. From this information, It builds the core value of KPMG that is the combining of the deep knowledge of finance, accounting with technical ERP functionality of their employees. The knowledge of business process with ERP applications understanding can help the customer to provide the precise information with timely for better decision making and select the ERP functionality to increase the business performance (KPMG, 2021). The second company, ABeam consulting is the Japanese IT strategy and management consulting firm, has provided the quick assessment to extract the system requirements from users to obtain the major

current issues and system recommendation. Figure 4.1 shows the 2-4 weeks assessment approach with IT and user departments.

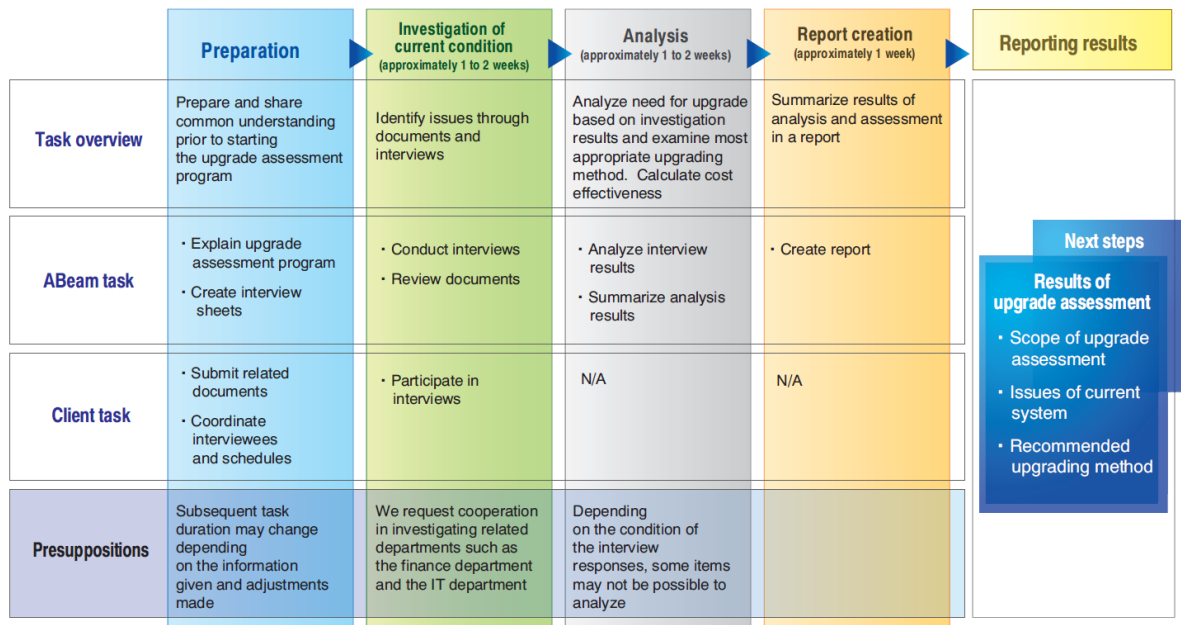


Figure 4.1 Five Stages of assessment in ABeam (ABeam, 2010)

The five stages of assessment are defined in Figure 4.1, the preparation stage is set for common understanding alignment and related document preparation. The project schedule and resources including department and interviewee list were determined in this stage. The interview session only conducts about 1-2 week associated with main users and departments. The remaining 3 stages are related to interview analysis and report creation to report the result of quick ERP assessment (ABeam, 2010). The last company, Hitachi Vantara is the IT consulting who provide the variety of IT packages for manufacturing company in Thailand, has the full-looped ERP service from vendor selection to helpdesk support. The core values of this firm are the expertise in several ERP implementation which is not only ERP software but also the IIoT or Industrial Internet of Things and providing the ROI, Return of Investment, to support the decision making for system selection (Hitachi, 2019). From this expertise, it levels up the firm to gain more opportunities in more choices of system to implement in one organization.

4.3 Apply the Existing Information to Create a Standard Operating Procedure

The previous sections, ERP experts' interview and existing framework or practice research, have contained the principles and some pitfalls in ERP implementation project. A set of questions have been thrown to the experts who have the deep different experiences in ERP package project. The essential contents from expert interview session are the crucial concerns, the effective solutions, the failure cases in ERP implementation project. The following section is current framework or practice in the market study. Having researched the existing information from competitors' website, several key messages and approaches in ERP assessment were adapted into use. These collected data will be discussed in focused group and formulated into concrete steps.

4.4 Design the Standard Operating Procedure

Having gathered the information from ERP experts and done the current research for ERP project management to establish the standard operating procedure, the internal process to brainstorm and analyze the new standard operating procedure in consulting company is also required to shape the new procedure. The participants in the focus group consists of consultants who had the several years of experiences in ERP implementation project in manufacturing companies. The discussion process in focus group activity is shown as Figure 4.2 which is developed in a consulting company.

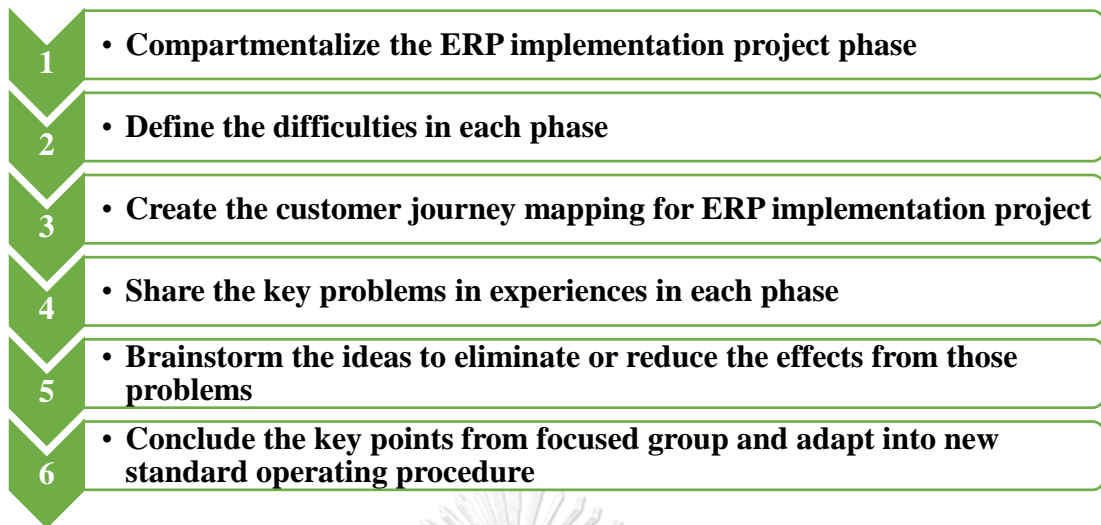


Figure 4.2 The processes of focused group activity

The focus group experience

Before starting to design the new standard operating procedure, the root cause of the problems that happened in the project should be clarified in order to eliminate those main causes. Figure 4.3 shows the cause-and-effect diagram or fishbone diagram of the problem which is “Customer got troubles from new imperfect system implementation”. The main categories are divided into 4 consisted of Man, Method, Material and Management. Members in the focus group have been discussed and raised all possible causes into the diagram, the most members identified that “Less experience of consultant who interview the user” and “No concrete processes to assess customer’s current situation” are the critical causes to generate the problem. This information will be benefit for the development of new practice in next step.

implementation project

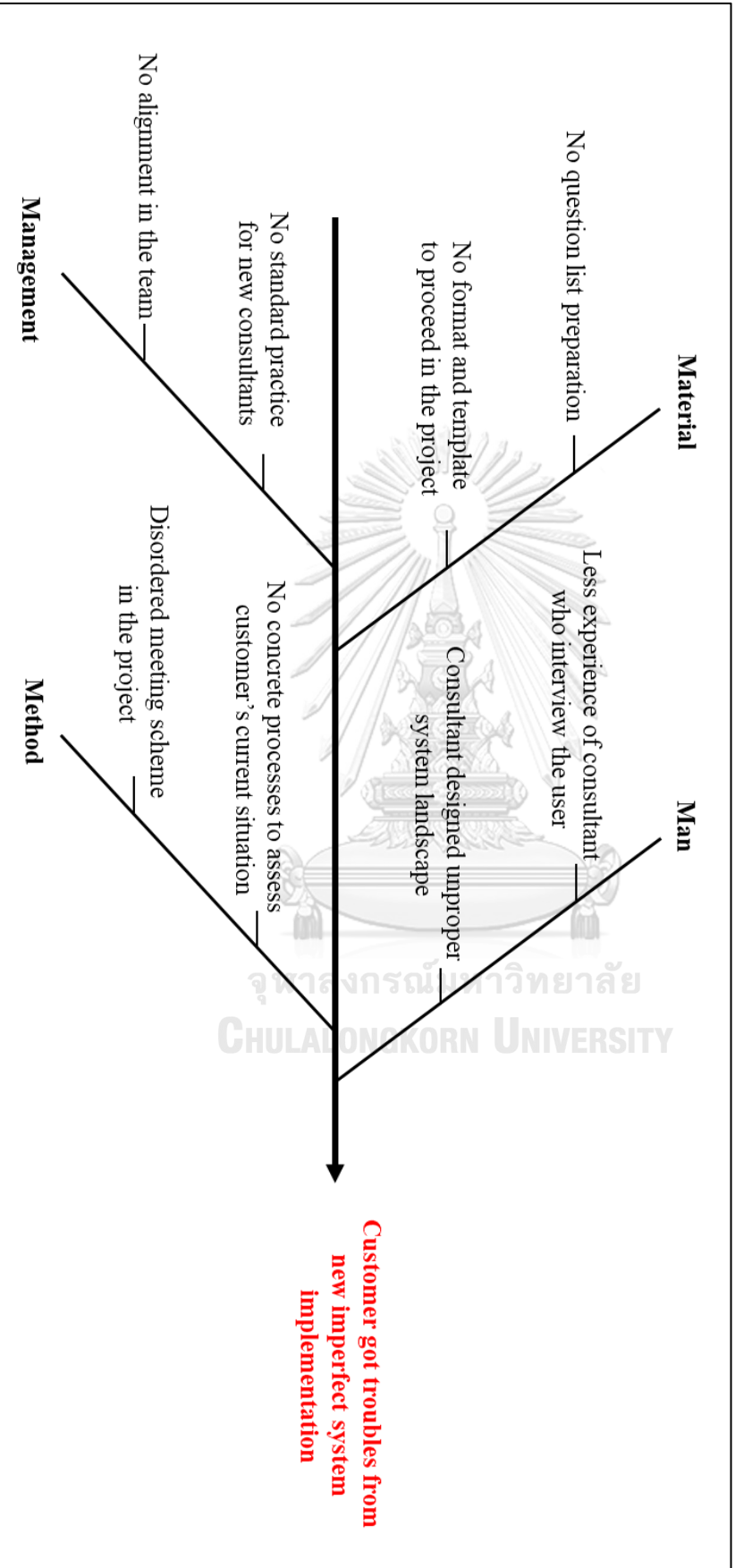


Figure 4.3 The cause-and-effect diagram or fishbone diagram of the problem in the

4.4.1 The first step in the focus group would be that team compartmentalize the ERP implementation project phase. This action would identify the number of levels in the ERP implementation project and clarify the scope of each level in terms of contents and time. Figure 4.4 shows the Work Breakdown Structure (WBS) of ERP/Software implementation project in the consulting company that focus group formulated into 3 levels of activity in the project. In the discussion, team has pointed out the phases of ERP implementation project into 3 phases which are Pre-assessment, Assessment and Post-assessment phase respectively. Table 4.13 shows the detail of each phase which activity, duration, resource required and key person of each phase of ERP assessment project for consulting company.

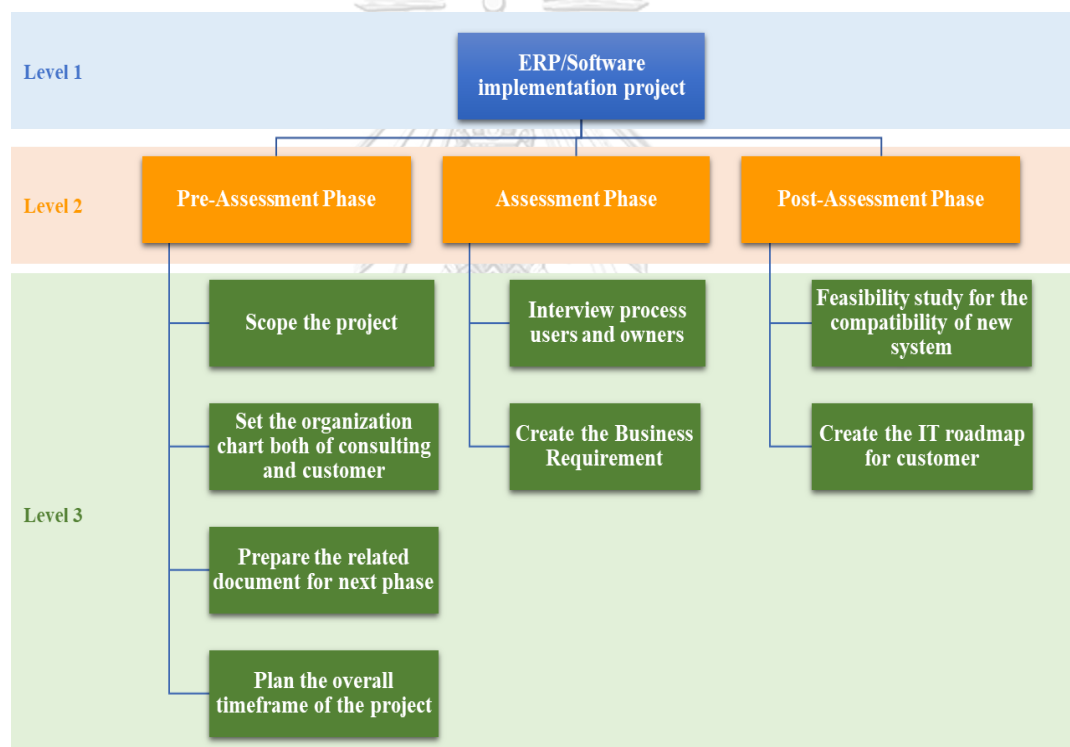


Figure 4.4 The Work Breakdown Structure (WBS) of ERP/Software implementation project in the consulting company

Table 4.13 The details of activity, duration, resource required and key person of each phase of ERP assessment project

Phase	Activity code	Activity	Preceding Activity	Duration	Resource required	Key person from customer
Pre-assessment	A	Scope the project	-	1 week	1 PM	- Decision maker: IT Lead, Business Lead, President and Director
	B	Set the organization chart	A	1 week	1 PM	
	C	Prepare the related document for next phase	B	1 week	2 C	
	D	Plan the overall timeframe of the project	C	1 week	1 PM + 2 C	
Assessment	E	User interview for gathering the system requirement for design the new system	D	3-4 month	1 PM + 2 C	- Process User - Process Owner - Manager
	F	Create the Business Requirement	E	1-2 month	2 C	
Post-assessment	G	Feasibility study for the compatibility of new system with system requirements	F	2 weeks	1 PM + 2 C	- Decision maker: IT Lead, Business Lead, President and Director - ERP implementor
	H	Create the long-term plan for customer to implement the system	F	2 weeks	1 PM	

Note: PM = Project Manager and C = Consultant

The initial stage of ERP implementation project focused on the preparation of resources and document from customer side, the detail activity, the duration and key person are shown in Table 4.13. The proper duration of this phase should be 1 month for setting the objective, scoping the contents, establishing the core team and

determining the milestones for overall project. The organizational chart helps know the hierarchy of the business entity and helps in understanding the culture of the business entity. The organizational chart is important for understanding the responsibilities of different designations. It is also helpful in knowing about the persons who are responsible for different departments and chains of command. The organizational chart is helpful for the employees to know about the team leaders and their roles in the team as no one can better perform if he doesn't know about his position and the persons who are leading him(Canonico, 2010). The organizational chart helps improve the efficiency of the business organization as everyone is responsible to someone and everyone has to answer for his responsibilities. A project can be better managed through an organizational chart as is shown below.



Figure 4.5 Example of organization chart (Harrin, 2017)

Figure 4.5, project organizational chart is more helpful in understanding the organizational chart as the project sponsor is leading the whole team especially the project manager and after this, the project manager is responsible for managing the whole team including three main team leaders who are directly reporting to the project manager. These three team leaders are responsible for their teams and getting all the tasks done by the team. It can be said that the organizational chart is helpful in understanding who is reporting to whom and who is responsible for what tasks in the

project. The organizational chart is considered to be very important as it helps in easing long-term planning, the organization can be restructured with ease, and it is also helpful in knowing about the reporting of all tasks to the leaders, project manager, and project sponsor. The organization can achieve its goals as all employees are conveyed goals of the business entity and they all put efforts to achieve organizational goals(Aubry, 2018).

The project completion is very important and for this purpose, planning plays an important role as every stage needs proper planning of resources, labor, time, and all activities. The planning of all stages of the project helps in being very clear about organizational objectives from the project as it can be the objective of a business organization to increase its efficiency up to 90% and reduce wastage of resources so the clear objective will help in motivating the project team to put more effort to achieve the organizational goals. The planning of the project will help increase the chances of hitting milestones as the planning provides guidance at every stage and if the performance is not up to the mark then actions can be taken to make improvements. The planning is also helpful in assessing different risks associated with the project as it can be completing the project after the completion data so the efforts can be put to increase the speed of work on the project site and the project can be completed before time as it will help in saving more organizational resources and increasing the profitability(James, 2020).

The planning is also crucial for identifying task dependencies as which task needs to be completed first and which will be completed afterward. It will help in assigning all the project tasks to the project team in a sequence and will lead to the timely completion of the project. The planning of the project activities helps make better communication with the project team in conveying the importance of all project activities. It can be said that the planning has more important for the project because a project can't be completed without effective planning and the business entity will not be able to earn some good revenue from the project in absence of project planning so the planning in a project should be given more importance(Balta, 2015).

Moving on to next phase of ERP implementation project, it is called as Assessment phase. In this critical phase mainly concentrated on user interview session to gain the data which is called the system requirement or user requirement. The duration of this phase might vary from 3 to 6 months which related to size of the

organization and scope of the project. The final stage of ERP implementation project is post-assessment phase which focused on customer support for feasibility study and creating the long-term plan. The duration of this phase is planned about 1 month for doing those activities. The third party, ERP implementor company, would participate in this phase for sharing the ERP comprehensive and capability to establish the IT roadmap or long-term plan for customer.

The information technology roadmap is a way used by the business entity to reach a specific organizational goal related to IT as it can be the organizational goal to implement IT in the whole business entity, it can also be the business goal to shift the company's data to a cloud system or any other business goal. The IT roadmap will help in taking to the destination through making a roadmap and then planning in the same steps to reach the business goal. The IT roadmap is a strategic level plan for taking initiatives related to IT as implementing ERP systems in the business entity or any other business goal (Productplan.com, 2020). The importance of the IT roadmap can be described through the benefits it is providing to the business entity in this modern age of technology. IT roadmap helps make IT initiatives and then being successful in the IT operations. The IT roadmap helps in saving money and other precious resources of the business entity as the roadmap will help in moving step by step towards the goal so no activity will be useless in this regard.

The following figure describes the IT roadmap in detail and helps in understanding it easily. The IT roadmap helps run the technology systems of the business entity smoothly and providing ease of use for all the concerned personnel. The IT roadmap helps increase the speed of operations and improve the efficiency of business operations. The IT roadmap will help in improving the planning of the business operations and increasing the effectiveness of business operations. The IT roadmap is crucial for planning the assignments in the business entity and getting the assignments done within due time. The IT roadmap is also helpful in knowing about the future needs of the business entity related to information technology (Calegari, 2015).

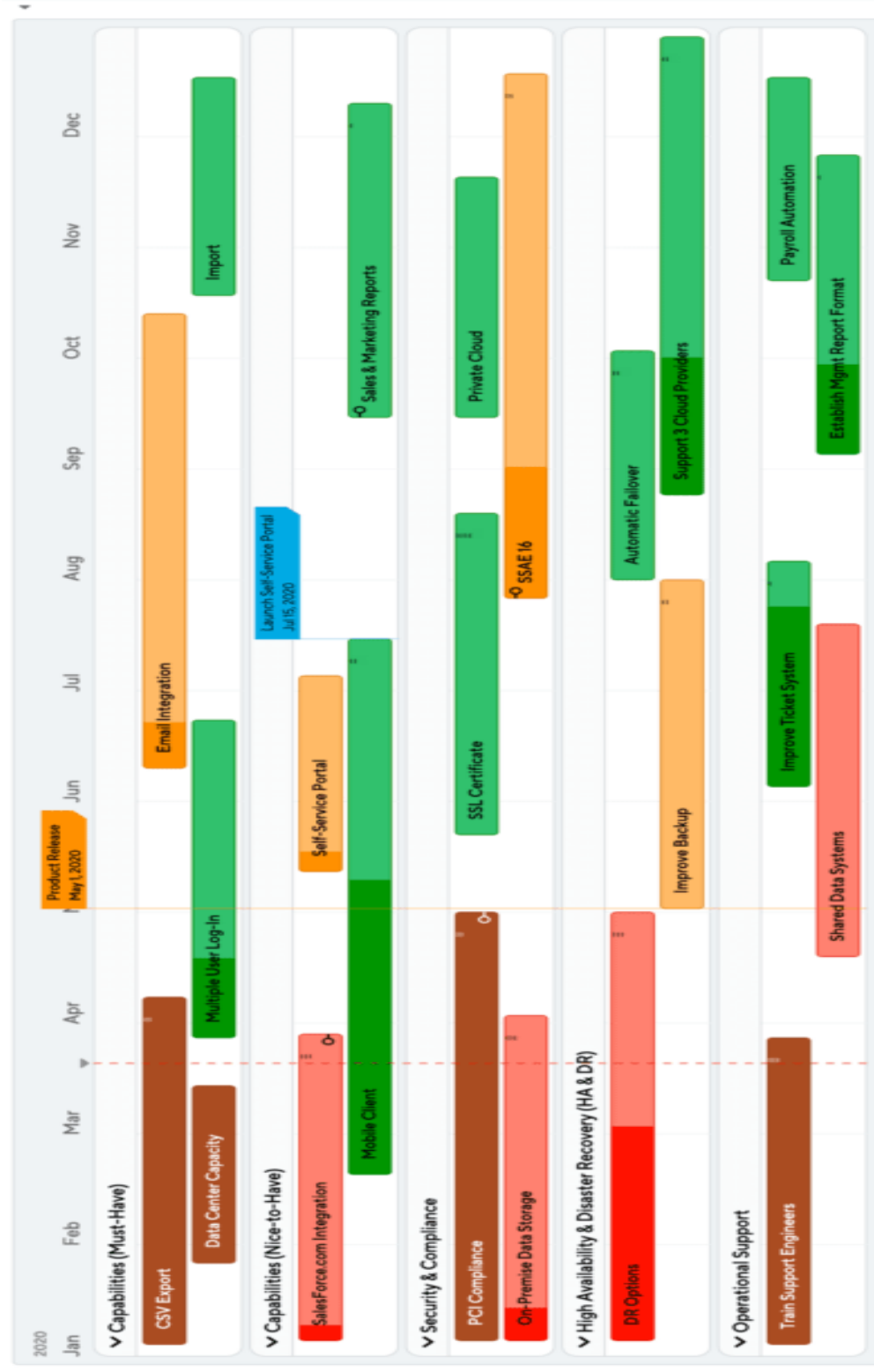


Figure 4.6 Example of IT roadmap (Productplan.com, 2020)

4.4.2 The second step would be that team defines the difficulties in each phase of ERP implementation project. Knowing the challenges of each phase could help consultant to predict the possible problems that might face during the project and readily solve the difficulties on time. The detail of difficulties of each phase is shown in Table 4.14. The category of difficulties could be divided into 3 dimensions which are process, people and documentation issues. Moreover, the difficulty's level is measured by high, medium and low to prioritize the importance of each dimension to put the effort in those categories.

Table 4.14 The difficulty level for each phase in three dimension

Phase	Process (Method)	People (Man)	Document (Material)
Pre-assessment	Medium	High	Low
Assessment	High	Medium	Low
Post-assessment	Medium	Low	Medium

Pre-assessment phase requires the strong support from people who is the decision maker in the project because this phase concentrated in project management. Timeframe and contents should be constructively defined coordinating with customer in order to prevent the extra job and unsatisfaction issues from customer. It is greatly important to have the decision maker from customer company attending in the meeting. Those people would possibly be IT section, business strategy section, production section that it depends on which department dominated in that company. Having these empowered people in the first phase, the project would smoothly proceed in terms of scope and direction from the beginning.

Assessment phase is the part of gathering the user requirements associated with having the interview session. The effective user requirements must be concise and directed to customer's pain points. To acquire those user requirements, the processes of assessment phase are required to well formulate for interview session. Not only collecting the requirements from customers, but the confirmation should also be

proceeded regularly. The approval person could be the leader of those jobs or related departments who share the operation. Having habitually performed the confirmation step, the uncleared points during the project will significantly decreased.

The feasibility study and creating of IT roadmap are the major tasks in post-assessment phase. The evidence which could be the paper or files in computer need to be systematically stored for using as a reference and the confidential of this evidence is the one important consideration in this phase. Comparing the advantages and drawbacks of the system choices might be difficult if there is no session to discuss with system implementors. Therefore, the discussion of system capability with each implementor vendor is a must event. Another issue is a process to communicate with customer about the long-term plan. The explanation session is required to clarify the cause and effect in particular milestone in long-term plan. Having done these activities, the last phase of ERP implementation project will possibly be ended with high appreciation.

4.4.3 Create the Customer Journey Mapping for ERP implementation project

The customer journey map is a visual display of customer engagement with the business entity. It can be further explained that a customer map is the interaction of the customer with the products, services, brands, and the mode of interaction through a physical store or online store. The customer journey mapping helps in knowing more about the customer and his interaction and allows the business entity to work on the areas which take focus of the business entity and can be improved. It also enables the business entity to see the area where it is doing good and the customer appreciates it so it can be said that doing good attracts more customers and increases the business revenue(Delighted.com, 2021)

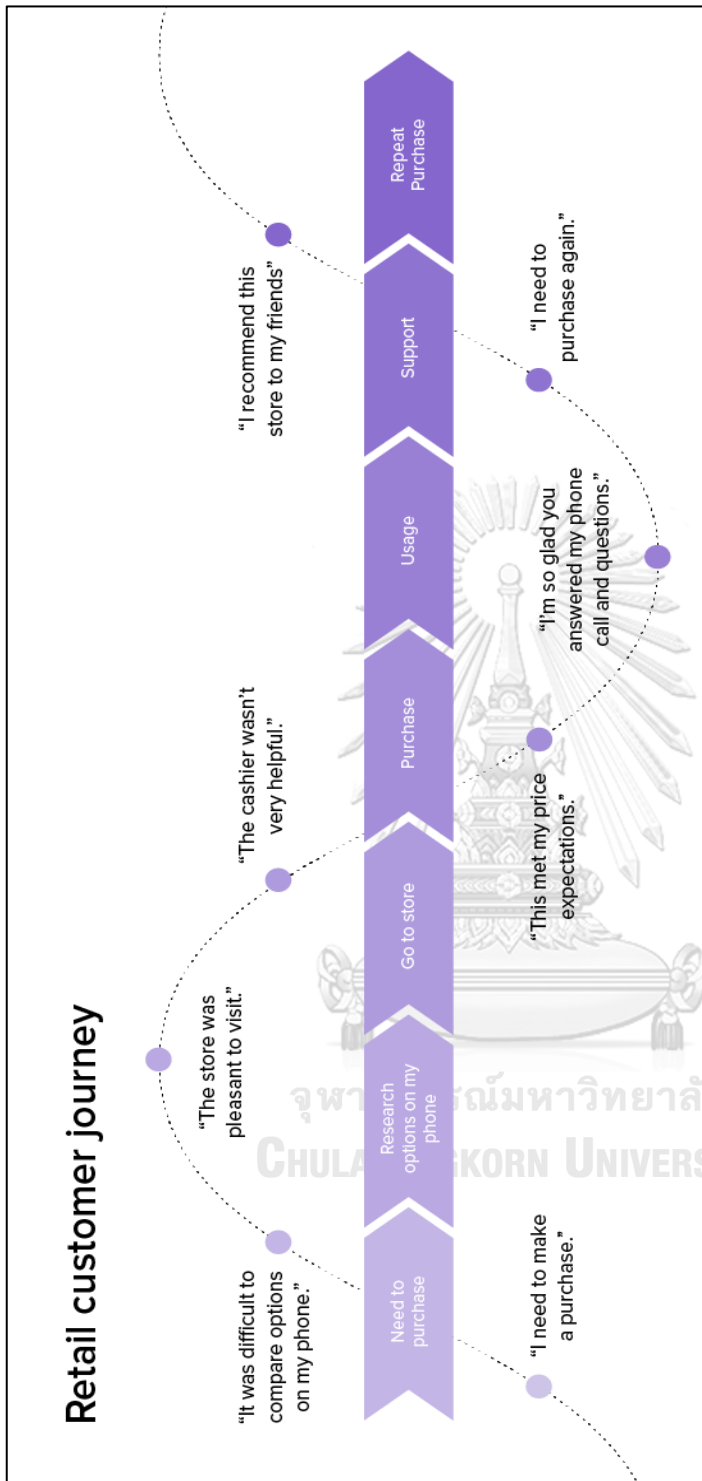


Figure 4.7 Example of Retail customer journey mapping (Delighted.com, 2021)

Figure 4.7 shows all the points which customer faces while making interaction with the brands and products. The customer journey mapping shows all the touchpoints that the customer considers while interacting with the company products as to how the customer heard about products and services of the company and the customer has interacted with the business entity. Customer mapping has several benefits which include the business entity shows empathy with the customers as it knows about the pain points of customers. The customer journey is completely viewed and the flaws and mistakes are tried to eliminate(Andrews, 2013). The gaps between the customer and the business entity are decreased and efforts are made to improve the customer experience so the business entity can increase its business revenue. The customer mapping helps in predicting the customer behavior as to what products the customer will like and buy shortly so the business entity can decide accordingly. The business entity can focus on the customer requirements and can eliminate the pain points of the customer so the customer feels good while interacting with the business entity as it will help in increasing the business profitability of the company(Micheaux, 2019).

To deeply understand the touchpoints of customer actioned with ERP implementation project, the customer journey mapping is established to know the customer's pain points in the process. Figure 4.8 shows the customer journey mapping of ERP implementation project described the customer experiences and customer needs in each step which is beneficial for standard operating procedure development.

Phase	Pre-assessment				Assessment (interview session)		Post-assessment	
	Scope the project	Set the organization chart	Prepare the related document for next phase (interview session)	Plan the overall timeframe of the project	User interview for gathering the system requirement for design the new system	Confirm the user requirements by each department	Feasibility study for the compatibility of new system with user requirements	Create the long-term plan for customer to implement the system
Customer need	Clear contents and specific resource setup	Reasonable organization chart and responsibility	Completed request for document for preparation	Clear timeframe, person in charge, and activities in each milestone	Professional interview experience from ERP consultant	Right on point and short time confirmation	Critical judgment for system options and have benefits for consideration	Obvious roadmap and reasonable for implementation with their organization
Moment of truth	😊	😞	🔴	😞	🔴	😞	😞	😞
Customer experience (positive)	●			●		●	●	●
Customer experience (negative)	●	●	●		●			
Customer perspective	Customer feel neutral about to kick-off the project and expect to know what they are going to do	The organization chart was set, customer received more tasks to do so it is the burden for them to handle many job at the same time	Several requests to prepare the document and it takes time to search or find it	Customer know the overall project in terms of timeframe and person in charge then they can manage their own jobs	Several questions were thrown to customer and repeated sometimes. Some questions need to clarify and check later	Customer are willing to confirm what are the exact requirements and happy to hear the recap from interview session	Reasonable and detailed data for the system options judgment	Clear next actions for system implementation in the long-term plan

Figure 4.8 Customer Journey mapping of ERP implementation project

4.4.4 Share the key problems in experiences in each phase

Table 4.15 The key problems of each phase from focused group experience

Phase	Key problems
Pre-assessment	<ul style="list-style-type: none"> - Set the insufficient resource for the project - Overdue of schedule from lack of organization chart
Assessment	<ul style="list-style-type: none"> - Cannot interview to receive the user requirement or missed some user requirement - Possible to get wrong information from user
Post-assessment	<ul style="list-style-type: none"> - Unable to close the project due to unclear issues remained - Low satisfaction level from ambiguous customer's understanding

Most of the key problems in each phase are familiar with previous section that shared by ERP experts about the failure cases. In the initial phase, the critical problems would be the project management issues which is related to planning and team setting for ERP implementation project. The effect from these problems can be observed to the final result. Moving to the assessment phase, the possible failure would associate with the process of getting the information from user which is the most crucial in the implementation project. The root causes of the problem might be the capability of interviewer and their interview skills which required a lot of experiences and expertise in specific area. The final phase, post-assessment phase, is related to customer satisfaction building. The difficulty of this phase is unclear customer's understanding from the beginning until this phase which generate the communication problem. The communication between ERP consulting and customer should be enhanced to have the proper scheme and route for discussion.

4.4.5 Brainstorm the ideas to eliminate or reduce the effects from those problems

Table 4.16 The solutions of each phase of ERP implementation project

Phase	Key problems	Solutions
Pre-assessment	- Set the insufficient resource for the project	- Have the proper meeting with decision maker to set the direction and accurate resource including organization chart and responsibility of each person in charge
	- Overdue of schedule from lack of organization chart	
Assessment	- Cannot interview to receive the user requirement or missed some user requirement	- Enhance the interview techniques in session for effective getting the information from users - Confirm the system requirements regularly with users to ensure the receiving data
	- Possible to get wrong information from user	
Post-assessment	- Unable to close the project due to unclear issues remained	- Have the regular confirmation meeting with customer to clarify some unclear points and manage the expectation of customer
	- Low satisfaction level from ambiguous customer's understanding	

4.4.6 Conclude the key points from focused group and adapt into new standard operating procedure

The focused group has revealed the main structure of ERP implementation project and its caution of each phase in the project. The constructive pattern in project was formed and divided into 3 phases which are Pre-assessment, Assessment and Post-assessment phase. The business activities in each phase are established and clarified

step by step. The proper duration of each phase was discussed to determine the time based on activities and size of project in the organization. In the assessment phase, the main problem was clarified that the interview step to gain the user requirements is the difficult process. The interview techniques were utilized to solve this difficulty in order to acquire the sufficient data from users. Additionally, the last phase of the project associated with creating the customer satisfaction was formulated to have clear operations or specific meetings. The following section will be explained about new standard operating procedure structured on experts' interview, existing framework research and focused group execution.

4.4.7 Design the Standard Operating Procedure

Having gathered and digested the key points from ERP expert interview and focused group discussion, the standard operating procedure of ERP assessment process will be established as following paragraph.

The steps of ERP assessment process can be divided into 3 phases which is Pre-assessment process, Assessment process and Post-assessment process respectively. The standard operating procedure for ERP implementation project will be accomplished in the following paragraph.

4.4.7.1 Pre-assessment phase

The pre-assessment process is set for resource and document preparation before starting the assessment process. The objectives of this phase would be team setting and planning for the whole project from the beginning to the end of the project. Figure 4.9 shows the keyword of this phase is 4S which mean Scope, Set, Stand by and Schedule.



Figure 4.9 Keywords process of pre-assessment phase

As shown in Figure 4.9, starting with Scope keyword, the contents and areas implemented ERP in organization have to be concretely scoped by discussing with the decision makers of the customer in the project. The key persons of customer would possibly be business transformation department, IT department and production department which depends on who dominant in that organization. The approach way to contact the key persons is E-mail because it can be delivered to all related persons to acknowledge this information at the same time.

Next step is Set, the organization chart and responsibilities for both of customer and ERP assessor company have to be constructively set for determining the roles of team members. Having clarified the person in charge for each party, the communication between customer and ERP assessor company will be highly effective and on point. Phone number and e-mail of each person in charge need to be informed in the place where everyone can access such as Sharepoint, Cloud or other trusted platforms.

Moving to Stand by, some evidence in actual working need to be declared during the Assessment phase. Basically, the daily routine document, daily report and the document which have the issues or problems in operation are required to declare to ERP assessors for better understanding in detail. This action will help reduce the time for preparation in interview session.

Table 4.17 Topics for material preparation before starting the Assessment phase

No.	Interview Session	Participant	Interview Date	Overview Discussion Topic	Request Documents

The example of material preparation before starting the assessment phase is shown in Table 4.17. This template table consists of participant who will join in the meeting, the main topics what will be discussed and the document requirement from customer for more convenient to visual the current working condition.

Last keyword is Schedule, the overall timeframe of the project including time, events and people who involve in the project should be defined in each milestone, for

example, assessment step, confirm step and conclusion step. The reasons behind this action are visual monitoring the activities in the project and systematic task follow up.

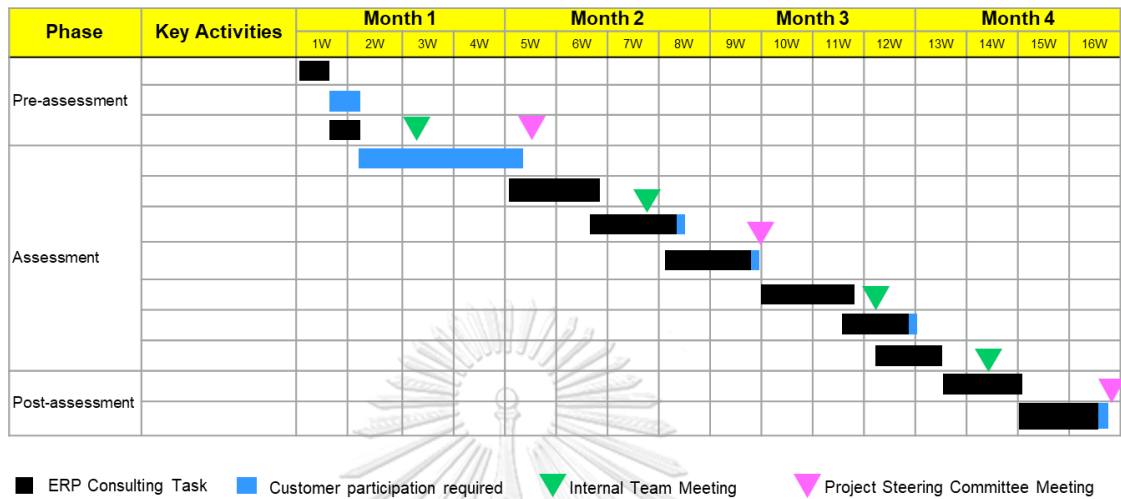


Figure 4.10 The example of schedule in the ERP implementation project

Figure 4.10 illustrates the timeframe for overall project consisted of phases of the project, key activities, and symbol of each meeting type, for instance, internal meeting and committee meeting with customer which can be designed depended on situations. This timeframe template would be benefit for both of customer and ERP assessor company to utilize it as a tool for monitoring the key activities.

CHULALONGKORN UNIVERSITY

4.4.7.2 Assessment phase

The assessment phase is a major part of the ERP implementation project because this part can provide the information from customer’s interview. The following paragraph will be described the steps of this critical phase.

- Compartmentalize into significant departments of customer, for instance, product design, production planning, purchasing, procurement, production control, production management, quality control, quality assurance, shipping, logistic, sale, marketing, accounting, human resource, training and so on.

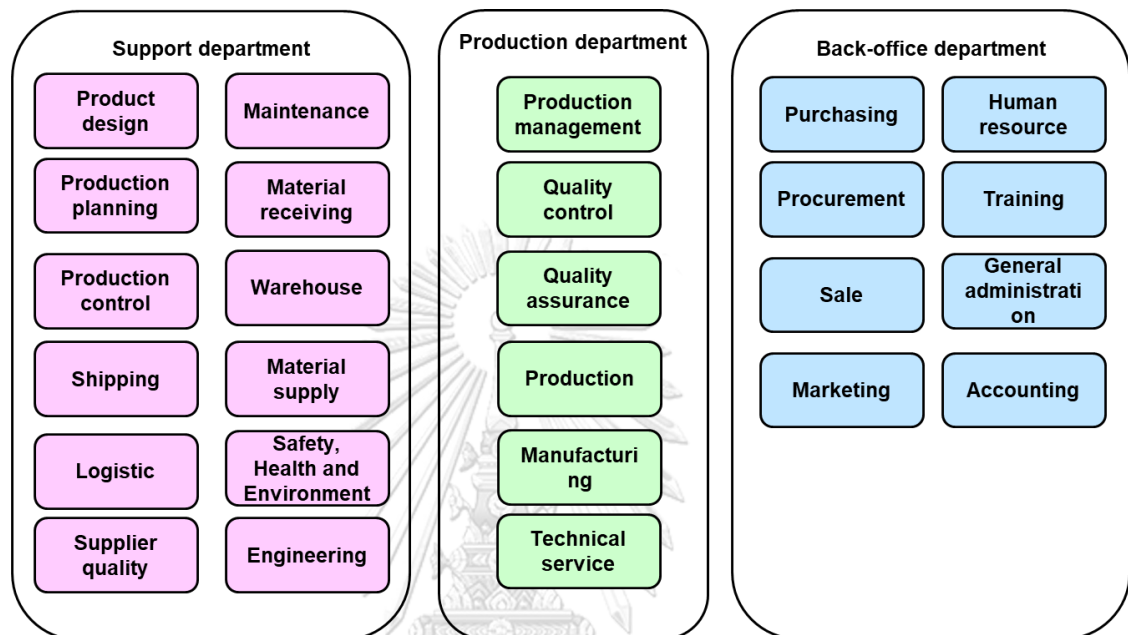


Figure 4.11 The typical departments and its grouping in manufacturing company

The typical departments in manufacturing company in Thailand were shown in Figure 4.11. The groups of departments are divided into 3 categories consisted of support department, production department and back-office department. This activity would help distinguish the departments in customer company to manage all interview sessions and properly assign key persons from each department for assessment process.

- Clarify the group of operations in each department, the Figure 4.12 shows the example of production planning department. Normally, the process groups of all departments consist of master set up for work center, unit, item code, item name, etc., create the job, edit the job, and issue the report for next departments utilization. Some companies have their own sections in each department which is the alternative method to define the major operations by using the sections as a reference.



Figure 4.12 The example of production planning department

- List the major tasks in each group of operations by using MECE concept which is Mutually Exclusive Collectively Exhaustive. The idea of this concept is trying to raise all main tasks in each operation group without overlapping. The tasks listed can possibly be an action or a pattern of work which depends on the users' familiarity.

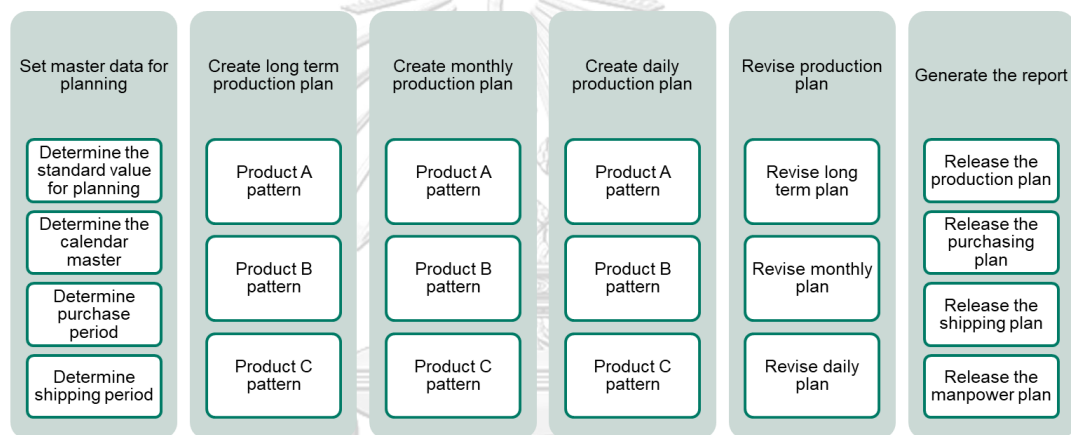


Figure 4.13 The example of process list in production planning department

- Assign the involved users to narrate the current operations and main problems in their tasks based on previous sections. Users who provide the information should be in operation and supervisor level because operators can explain the element of operations and the difficulties of routine operation neatly and supervisors can confirm the high level of concerns and operations. It is more efficient, if the managerial level could be participated in the session because this user level can provide the impact and requirements which related to their department and other departments.

- The core session of assessment phase is the workshop with customer users by interview and observing the actual operation. This activity associated with the information gathering from users requires the experiences and skills of ERP assessors who interview the users in the session. The interview techniques and tools will increase

the efficiency of this activity especially ERP assessors who have a few years of experience. At initiate step, the preparation of question list is strongly required for having the conceptual information of the process in the organization. Table 4.18 shows the example of a question list that will be used as a base question for interview session of all departments.

Table 4.18 The main question list for interview session

Question group	Question list
Master	<ul style="list-style-type: none"> - What kind of master data maintained in the system? - How to record/edit/control the master data? - Who are the responsible persons for master data management?
Planning	<ul style="list-style-type: none"> - What kind of data been used for planning? And what departments? - How many patterns of planning in department? - How to create the plan/forecast document? - Who are the planners in the department?
Operation	<ul style="list-style-type: none"> - What is the required document/order for execute the operation? - How to create the work order/operation in the system? - How many patterns in operation of the department? - How to record the operation result and detail in the system? - Who are the responsible persons for operation management in department?
Report	<ul style="list-style-type: none"> - What is the required data/document for generating report? - How to create the reports in the department? - How many the types of report in department? - How often to generate the report? Period or request? - Who are the responsible persons for report creation in department?
Other	<ul style="list-style-type: none"> - What is the main problem that facing frequently?

Question group	Question list
	<ul style="list-style-type: none"> - How often the main problem occurred? And how long to solve it? - What the document looks like? - How to promptly solve the problem from daily routine?

The question list which is shown in Table 4.18 would be utilized to ask the interviewees in the session. Trick for ERP assessor of asking is 5W2H which stands for “What”, “Where”, “When”, “Who”, “Why”, “How” and “How many”. The smooth flow of conversation between assessor and user is also greatly important to gather all user requirements. Consequently, the question sets thrown to users are required to be seamless, the trick of 5W2H is necessary in difficult time when the interviewers got blank.

Not only techniques for asking the question to users, but the analysis of narration from users is also important for some interview benefits. Basically, the basic question was thrown to users for allowing them to narrate or express the detail of operation. Having listened the narrative from users, ERP assessors have to analyze all wordings and digest into core message which is exact user requirement. The outcomes from narrative would be the habitual practice associated with imperfect system that users usually do on their routine. The explanation is also applied to describe the cultural context and how users solve the problem step by step. ERP system is the unique integrated system which related to several sections both of material and information flows (Alvarez and Urla, 2002). Consequently, narrative style is required to tell the story and ERP assessors need to clarify each step of operation by investigating with more asking and proofing by the evidence both of document and system’s screen.

Another technique to extract the data from users would be whiteboarding, this equipment will help visualize the user’s thought into the same image among the participant. The figures written on the whiteboard could possibly be flow chart, mind mapping, process flow, matrix, message and so on (Browne and Ramesh, 2002). This method is the part of 2-ways communication between ERP assessors and users, the

participation of users in the session and the willing to add the benefit information related to current situation will gradually increase.

- ERP assessors design the user's requirements based on the ERP's capabilities aspect. The answers from interview sessions will be developed into user requirements which is the needs of customer in terms of technical wording related to ERP capability.

Table 4.19 The example of user requirement worksheet

No.	Operation group	Function name	Title	User requirement description	MSCW

Table 4.19 shows the example of user requirement worksheet for ERP assessor to constructively establish the overall user requirements. The highlights of this worksheet would be function name and MSCW. The function name is the description of what system function run because it will reflect the solutions that could fix the problems for customer. Another highlight is MSCW, stands for MoSCoW prioritization method, it will help to visual the importance of user requirements. MSCW can be divided into 3 groups which are Must have, Should have and could have. The description of MSCW type is mentioned in Table 4.20.

Table 4.20 The description of MSCW type

MSCW	Description
Must have	The main function required (strong recommended)
Should have	The support function required, help operate the main function (medium recommended)
Could have	Not necessary for main function (low recommended)

- EPR assessors reconfirm with users about their needs of system requirements. Summarization of user requirements and system solutions should be comprehensively

reviewed and confirmed by key persons before going to the next step. This action can be repeated until the explanation of user requirements to key persons were clear.

4.4.7.3 Post-assessment phase

- Discuss with ERP implementor parties about system requirement details. The issues of system requirement are the percentages of ERP support based on existing user requirements and the solutions from EPR functions that can solve the problems for customer company.

Table 4.21 The example of user requirement for ERP vendor feedback

No.	Operation group	Function name	Title	User requirement description	MSW	ERP support	Module/System	Comment

Table 4.21 should be delivered to ERP implementor companies for fill-in the column ERP support, Module/System and Comment. The ERP support column can be filled the following words, “Fully support”, “Partial support”, “Customization”, “Not recommended” and “Not support”. The wording of Customization means the system can support but need to write the program by custom. Another wording is Not recommended which means the system can support but it is too complicated to put it in the system. All of these wording will be inputted by ERP implementors to estimate the capability of the systems.

- Having received the feedbacks from ERP implementors, the conclusion of ERP capabilities that how much system can solve the major current problems of customer should be established to observe the possibility of each ERP option. The summary worksheet could be an easy table in Excel or PowerPoint file to visualize the basic data to customers.

- The comparison of ERP options will be summarized to report to customers. The details of percentages of system support, ability to correct the problems including

price should be summarized for doing the decision making from customer's management team. The aspects of comparison would be Technical, Tactic and Commercial evaluation. The Technical evaluation is associated with technical capability including system functions, user friendly, technology, solutions, industry understanding, etc. Secondly, the Tactic term is the evaluation regarding tactical capability including project management, approach, methodology, team capability, etc. The last aspect is Commercial evaluation associated with cost competitiveness, Return of Investment, benefits and so on. These three dimensions can be adapted for ERP option comparison to visualize the overall picture of system in the organization and establish the long-term strategic plan in the future.

- The last task of post-assessment phase in the project is Technology roadmap for customer's system. The objective of this task is to conceptualize the period of implementation the system or ERP in the organization. The benefit from this technology long-term plan would be the effective IT management for customer company, the consequence of the programs or system will be correctly aligned with the other business perspectives.

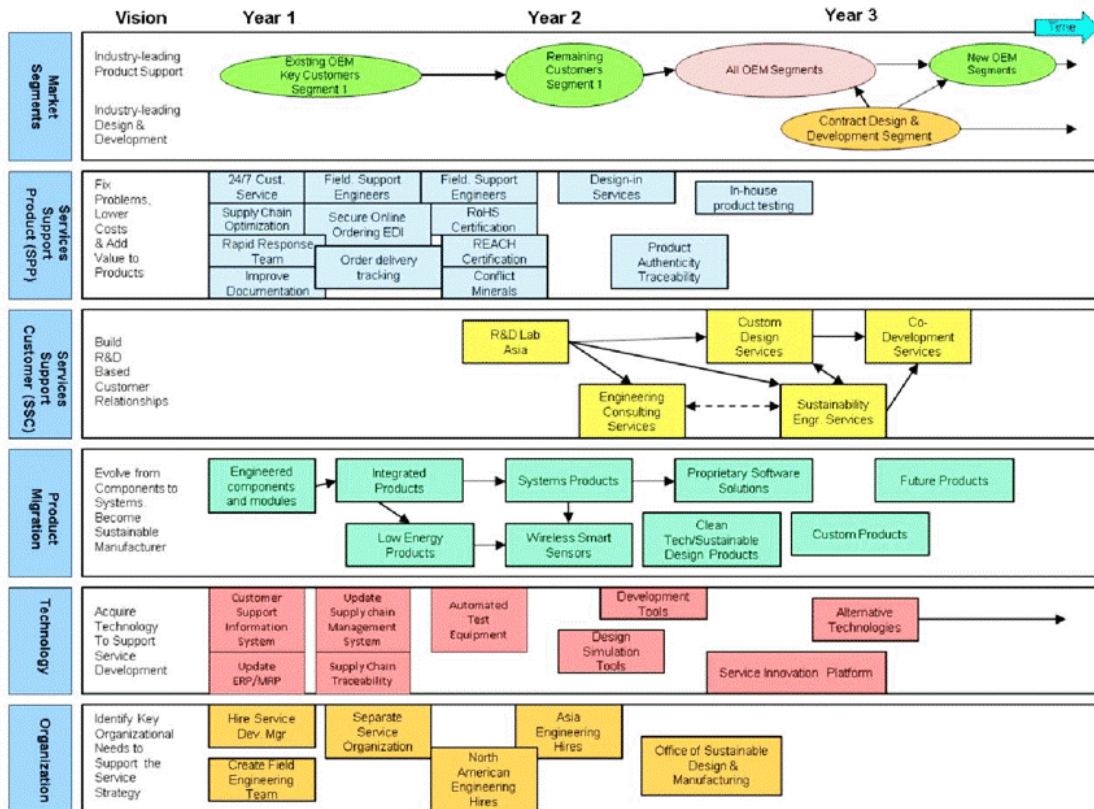


Figure 4.14 The example of technology roadmap and its activities (Harmon, 2012)

The example of technology roadmap is shown in Figure 4.14, the technology activities will be planned in the overall activities in the organization. Not only the technology activities will be set in the long-term plan of company, but business aspects including organization, policy and external drivers also need to be considered in the technology roadmap. The plan could be established in annual or quarter basis, Figure 4.15 illustrates the example of technology roadmap in quarter basis.

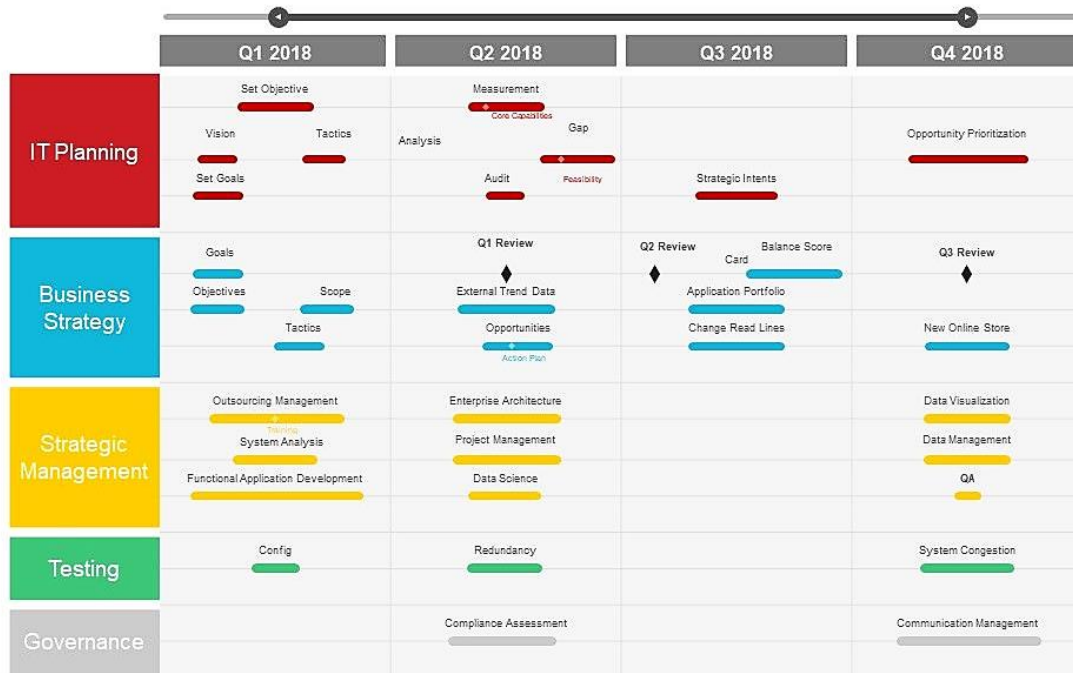


Figure 4.15 The example of technology roadmap in quarter basis (Malhotra, 2018)

The core value of this activity would be efficient planning for all system in the customer company, the flow of system installation aligned with other perspectives can prevent the waste cost and resource in the organization. The format of roadmap is not limited to previous examples, it depends on design of ERP assessors who execute in this task. Sometimes, technology roadmaps are not required for typical ERP assessment project, however the appreciation of customer will possibly rise from effort on this activity.

4.5 Review the Standard Operating Procedure From Failure Cases Recovery

Regarding to 2 failure case studies, first case is the uncompleted collection of user requirements, and second case is about the unknown of business nature which lead to extra investment for customized program and manual work for troubleshooting in the operation. Based on the developed activities in the standard operating procedure, it can solve these problems. The concept of new standard operating procedure for ERP implementation project can eliminate these troubles from drafted processes in project which construct from collecting the key messages from ERP experts and proceeding a focus group. Figure 4.16 illustrates the relation between problems and actions in the

new practice which proves the concept in new practice can solve the failure cases in the past.

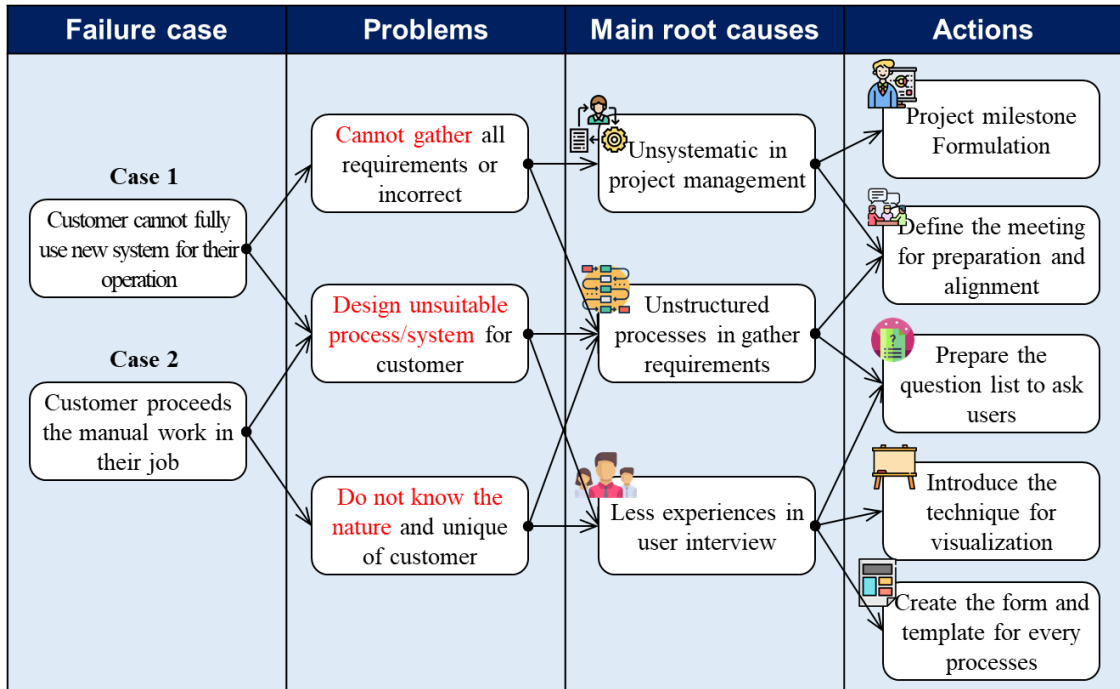


Figure 4.16 The relation between problems and actions in the new practice

4.6 Create the Complete Standard Operating Procedure and ERP expert evaluation

Having drafted the standard operating procedure, the completed version of standard operating procedure will be established in this section. Figure 4.17-4.33 shows the standard operating procedure of ERP implementation project from the preface to the end.

Standard Operating Procedure : ERP/Software Implementation	
Preface	Prepared by: Piyanat V.
<p>Description</p> <p>This standard operating procedure is designed for the ERP/Software implementation project. It can be used for instruction for all levels especially for new coming members who has less experiences in this theme of project. Normally, the project will be compartmentalized into 3 phases of working which it has the ultimate purpose in each phase.</p> <p>Contents</p> <ol style="list-style-type: none"> 1. Instruction in Pre-Assessment phase 2. Instruction in Assessment phase 3. Instruction in Post-Assessment phase 4. Check list for project <p>How to use</p> <ol style="list-style-type: none"> 1. Read the instruction neatly and understand the purpose of each activity 2. The format established in the standard operating procedure can be revised based on the situation (You can think out of the box) 3. This standard operating procedure provides the main concepts of the project, and it can be varied by the user's experiences 	
© 2021. All rights reserved.	Page 1/17

Figure 4.17 The standard operating procedure of ERP implementation project Page 1

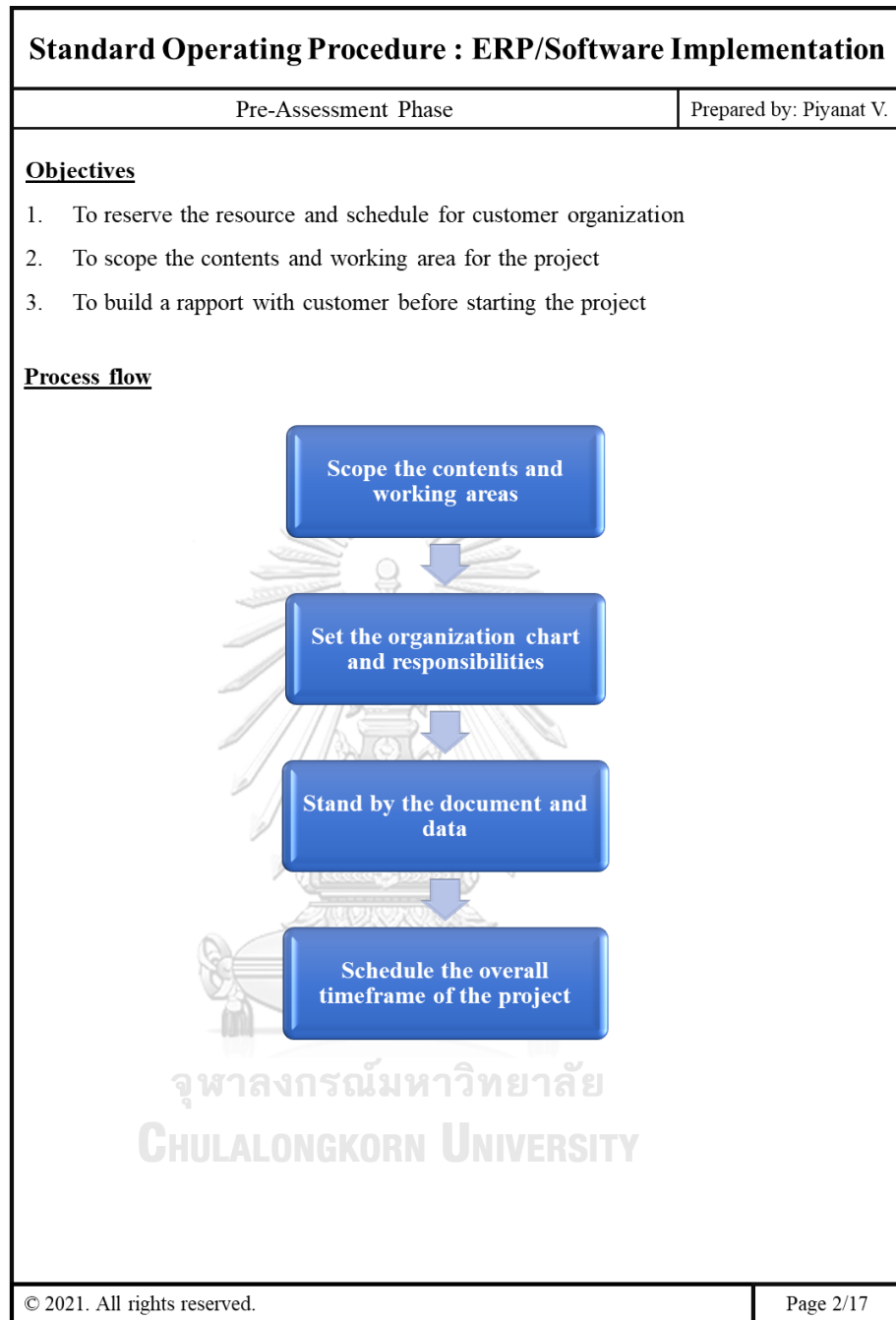


Figure 4.18 The standard operating procedure of ERP implementation project Page 2

Standard Operating Procedure : ERP/Software Implementation					
Pre-Assessment Phase				Prepared by: Piyanat V.	
<u>Instruction</u>					
1. <u>Scope</u> :					
- Study the company profile and the characteristic of the company, for example, the size, the products, the production type (make to order or make to stock) and so on.					
- The contents and working areas implemented ERP in organization have to be concretely scoped by discussing with the decision makers of customers in the project.					
- The key persons of customer would possibly be business transformation department, IT department, production planning department and production department which depends on who dominant in that organization.					
- The approach way to contact the key persons is E-mail because it can be delivered to all related persons to acknowledge this information at the same time.					
2. <u>Set</u> :					
- The organization chart and responsibilities for both of customer and ERP assessor company have to be constructively set for determining the roles of team members. Having clarified the person in charge for each party, the communication between customer and ERP assessor company will be highly effective and on point.					
- Phone number and e-mail of each person in charge need to be informed in the place where everyone can access such as Sharepoint, Share Cloud or other trusted platforms.					
- The table below is the format for contact list file sharing.					
Project Roles	Name	Position	Department	Email	Mobile Number
Project Manager					
Assistant Project Manager					
Project Coordinators					
Project Coordinators					
Process owner					
Process user					
© 2021. All rights reserved.				Page 3/17	

Figure 4.19 The standard operating procedure of ERP implementation project Page 3

Standard Operating Procedure : ERP/Software Implementation

Pre-Assessment Phase	Prepared by: Piyanat V.
----------------------	-------------------------

3. Stand by:

- The evidence in actual working need to be declared during the Assessment phase. Basically, the daily routine document, daily report, screen of program and the document which have the issues or problems in operation are required to declare for better understanding in detail.
- These evidence should be requested in advance for allowing time to customers preparing. This table below is the format for document request in the session, this table is also sent to customer for requesting the evidence.

No.	Interview Session	Participant list	Interview Date	Discussion Topic	Request Documents
1					
2					
3					

4. Schedule:

- The overall timeframe of the project including time, events and people who involve in the project should be defined in each milestone. This table below illustrates the format of timeframe for overall project consisted of phases of the project, key activities, and symbol of each meeting type, for instance, internal meeting and committee meeting with customer which can be designed depended on situations.

Phase	Key Activities	Month 1				Month 2				Month 3				Month 4			
		1W	2W	3W	4W	5W	6W	7W	8W	9W	10W	11W	12W	13W	14W	15W	16W
Pre-assessment																	
Assessment																	
Post-assessment																	

■ ERP Consulting Task
■ Customer participation required
▼ Internal Team Meeting
▼ Project Steering Committee Meeting

© 2021. All rights reserved.
Page 4/17

Figure 4.20 The standard operating procedure of ERP implementation project Page 4

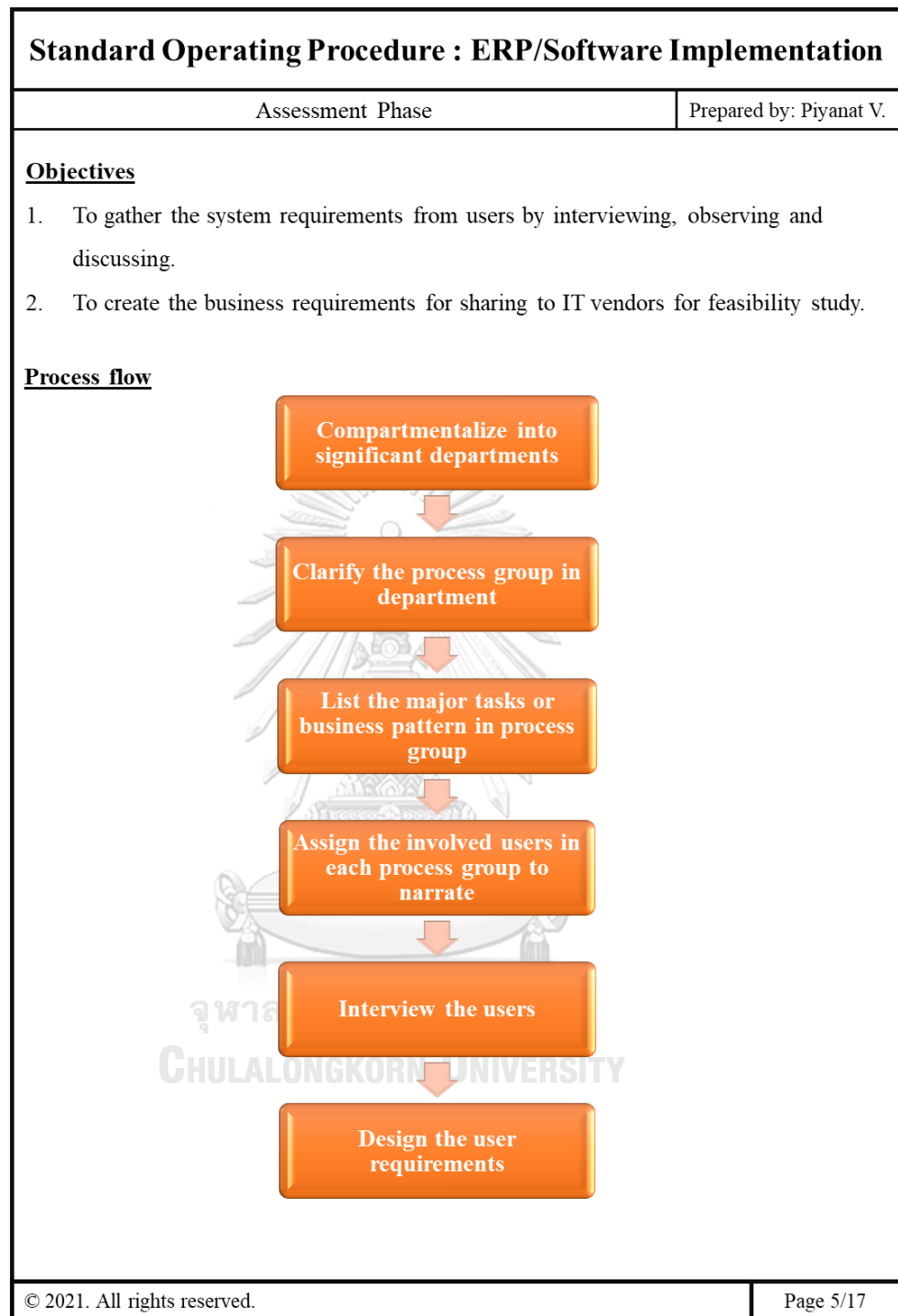


Figure 4.21 The standard operating procedure of ERP implementation project Page 5

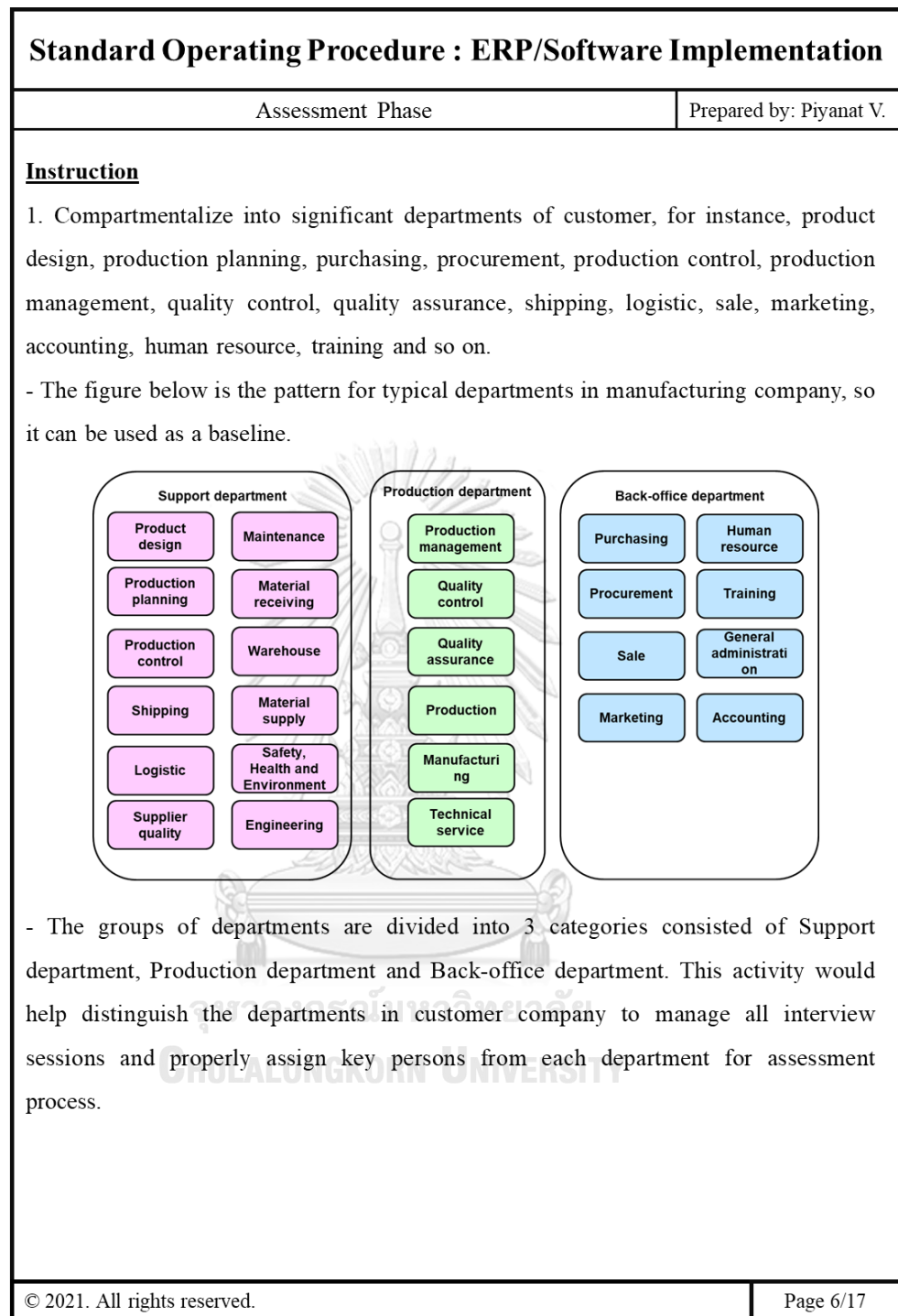


Figure 4.22 The standard operating procedure of ERP implementation project Page 6

Standard Operating Procedure : ERP/Software Implementation												
Assessment Phase			Prepared by: Piyanat V.									
<p>2. Clarify the group of operations in each department. Normally, the process groups of all departments consist of master set up for work center, unit, item code, item name, etc., create the job, edit the job, and issue the report for next departments utilization. Some companies have their own sections in each department which is the alternative method to define the major operations by using the sections as a reference.</p> <p>- The figure below is the format for input the operation groups.</p>												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr style="background-color: #FFD700;"> <td style="width: 10%;"></td> <td style="width: 20%; text-align: center;">Master</td> <td style="width: 10%; text-align: center;">➔</td> <td style="width: 20%; text-align: center;">Plan</td> <td style="width: 10%; text-align: center;">➔</td> <td style="width: 20%; text-align: center;">Execute</td> <td style="width: 10%; text-align: center;">➔</td> <td style="width: 20%; text-align: center;">Report</td> </tr> </table>						Master	➔	Plan	➔	Execute	➔	Report
	Master	➔	Plan	➔	Execute	➔	Report					
Operation group	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>					
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>					
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>					
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>					
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>					
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>					

Figure 4.23 The standard operating procedure of ERP implementation project Page 7

Standard Operating Procedure : ERP/Software Implementation				
Assessment Phase			Prepared by: Piyanat V.	
<p>3. List the major tasks in each group of operations by using MECE concept which is Mutually Exclusive Collectively Exhaustive. The idea of this concept is trying to raise all main tasks in each operation group completely but without overlapping.</p> <p>- The tasks listed can possibly be an action or a pattern of work which depends on the users' familiarity. The figure below is the format for input the action or pattern of each operation group.</p>				
Process group				
Operation group				
Action or Pattern				
<div style="display: flex; justify-content: space-between; font-size: small;"> © 2021. All rights reserved. Page 8/17 </div>				

Figure 4.24 The standard operating procedure of ERP implementation project Page 8

Standard Operating Procedure : ERP/Software Implementation	
Assessment Phase	Prepared by: Piyanat V.
<p>4. Assign the involved users to narrate the current operations and main problems in their tasks. Users who provide the information should be in operation and supervisor level because operators can explain the element of operations and difficulties of routine operation neatly and supervisors can confirm the high level of concerns and operations.</p> <p>- It is more efficient, if the managerial level could be participated in the session because this high level can provide the impact and requirements which related to their department and other departments.</p> <p>5. The core session of assessment phase is the workshop with customer users by interview. At initiate step, the preparation of question list is strongly required for having the conceptual information of the process in the organization. The table below describes the main question list that will be used as a base question for workshop of all departments.</p>	
Question group	Question list
Master	<ul style="list-style-type: none"> - What kind of master data maintained in the system? - How to record/edit/control the master data? - Who are the responsible persons for master data management?
Planning	<ul style="list-style-type: none"> - What kind of data been used for planning? And what departments? - How many patterns of planning in department? - How to create the plan/forecast document? - Who are the planners in the department?
Operation	<ul style="list-style-type: none"> - What is the required document/order for execute the operation? - How to create the work order/operation in the system? - How many patterns in operation of the department? - How to record the operation result and detail in the system? - Who are the responsible persons for operation management in department?
Report	<ul style="list-style-type: none"> - What is the required data/document for generating report? - How to create the reports in the department? - How many the types of report in department? - How often to generate the report? Period or request? - Who are the responsible persons for report creation in department?
Other	<ul style="list-style-type: none"> - What is the main problem that facing frequently? - How often the main problem occurred? And how long to solve it? - What the document looks like? - How to promptly solve the problem from daily routine?
<p><i>Note: Trick for an assessor of asking is 5W2H which stands for "What", "Where", "When", "Who", "Why", "How" and "How many". Consequently, the question sets thrown to users are required to be seamless, the trick of 5W2H is necessary in difficult time when the interviewers got blank.</i></p>	
© 2021. All rights reserved.	
Page 9/17	

Figure 4.25 The standard operating procedure of ERP implementation project Page 9

Standard Operating Procedure : ERP/Software Implementation											
Assessment Phase	Prepared by: Piyanat V.										
<p>- Having listened the narrative from users, an assessor has to analyze all wordings and digest into core message which is exact user requirement. The outcomes from narrative would be the habitual practice associated with imperfect system that users usually do on their routine. The explanation is also applied to describe the cultural context and how users solve the problem step by step. Consequently, narrative style is required to tell the story and an assessor needs to clarify each step of operation by investigating with more asking and proofing by the evidence both of document and system's screen.</p> <p>- The whiteboarding, this equipment will help visualize the user's thought into the same image among the participants. The figures written on the whiteboard could possibly be flow chart, mind mapping, process flow, matrix, message and so on.</p> <p>- The figure below is the basic pattern on whiteboard that can be applied into use.</p>											
<table border="1"> <thead> <tr> <th>Date:</th> <th>Department:</th> <th>Participant:</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Discussion area:</td> <td>Issues:</td> <td></td> </tr> <tr> <td>Reconfirm points:</td> <td></td> </tr> <tr> <td>Next actions and requests:</td> <td></td> </tr> </tbody> </table>		Date:	Department:	Participant:	Discussion area:	Issues:		Reconfirm points:		Next actions and requests:	
Date:	Department:	Participant:									
Discussion area:	Issues:										
	Reconfirm points:										
	Next actions and requests:										
<p><i>Note: Use the color to more visualize, by work status: blue = on plan, green = completed, red = delayed OR By work type: yellow = Maintenance, green = Light repair, red = Heavy repair.</i></p>											
© 2021. All rights reserved.	Page 10/17										

Figure 4.26 The standard operating procedure of ERP implementation project Page 10

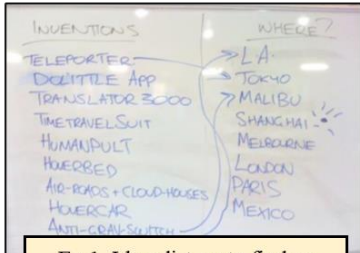
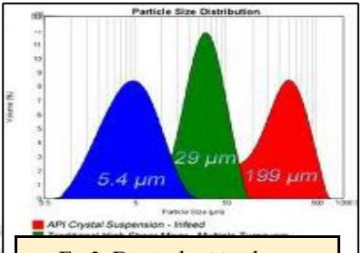
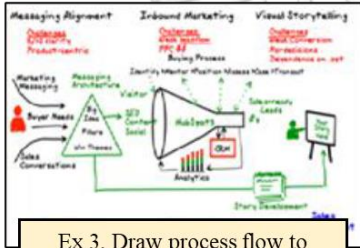
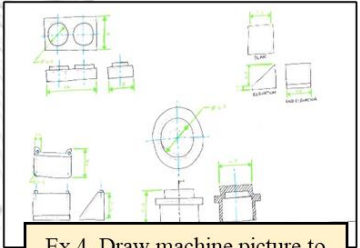
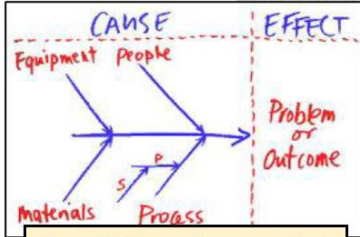

Standard Operating Procedure : ERP/Software Implementation	
Assessment Phase	Prepared by: Piyanat V.
<p>- These figures below show the example of visualization with the purpose that an assessor can adapt the ideas into actual case.</p>	
 <p>INVENTIONS TELEPORTER DIGITILE APP TRANSLATOR 3000 THE TRAVEL SUIT HUMAN PULT HOWERBED HO-ROADS + CLOUD HOUSES HOWERCAR ANTI-COVID SUITS</p> <p>WHERE? LA TOKYO MALIBU SHANGHAI MELBOURNE LONDON PARIS MEXICO</p>	 <p>Particle Size Distribution</p> <p>5.4 μm 29 μm 199 μm</p> <p>API Crystal Suspension - Infrared</p>
Ex 1. Ideas list up to find as many ideas as possible	Ex 2. Draw chart to show pattern of problem
 <p>Messaging Alignment Inbound Marketing Visual Storytelling</p> <p>Marketing Messaging Buyer Needs Sales Conversions</p>	
Ex 3. Draw process flow to understand the current situation	Ex 4. Draw machine picture to understand mechanism
 <p>CAUSE EFFECT</p> <p>Equipment People Materials Process</p> <p>Problem or Outcome</p>	 <p>Why? Why?</p> <p>Poor Sales Low Quality Not Trendy</p> <p>Poor Product Design Small advert budget Small sales force</p> <p>Inadequate Promotion Ineffective Distribution Late in market</p> <p>High Price Can't find right channels High manu' cost Poor economy</p> <p>Fail to identify Target Market</p>
Ex 5. Fishbone diagram to find causes of problem/outcome	Ex 6. Why-why chart to find cause of problem
<p>© 2021. All rights reserved. Page 11/17</p>	

Figure 4.27 The standard operating procedure of ERP implementation project Page 11

Standard Operating Procedure : ERP/Software Implementation																													
Assessment Phase				Prepared by: Piyanat V.																									
<p>6. Design the user's requirements based on the ERP's capabilities aspect. The answers from interview sessions will be developed into user requirements which is the needs of customer in terms of technical wording related to ERP capability.</p> <p>- The table below is the format of user requirement worksheet for an assessor to establish the overall user requirements.</p> <p>- The highlights of this worksheet would be function name and MSCW. The function name is the description of what system function run because it will reflect the solutions that could fix the problems for customer. Another highlight is MSCW, stands for MoSCoW prioritization method, it will help to visual the importance of user requirements. MSCW can be divided into 3 groups which are Must have, Should have and could have. The description of MSCW type is mentioned in Table 4.20.</p>																													
<table border="1"> <thead> <tr> <th>No.</th> <th>Operation group</th> <th>Function name</th> <th>Title</th> <th>User requirement description</th> <th>MSCW</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>						No.	Operation group	Function name	Title	User requirement description	MSCW																		
No.	Operation group	Function name	Title	User requirement description	MSCW																								
<p>- The function name is the description of what system function run because it will reflect the solutions that could fix the problems for customer. Another column is MSCW, stands for MoSCoW prioritization method, it will help to visual the importance of user requirements. MSCW can be divided into 3 groups which are Must have, Should have and could have.</p>																													
<p><i>Note:</i></p> <table border="1"> <thead> <tr> <th>MSCW</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Must have</td> <td>The main function required (strong recommended)</td> </tr> <tr> <td>Should have</td> <td>The support function required, help operate the main function (medium recommended)</td> </tr> <tr> <td>Could have</td> <td>Not necessary for main function (low recommended)</td> </tr> </tbody> </table>						MSCW	Description	Must have	The main function required (strong recommended)	Should have	The support function required, help operate the main function (medium recommended)	Could have	Not necessary for main function (low recommended)																
MSCW	Description																												
Must have	The main function required (strong recommended)																												
Should have	The support function required, help operate the main function (medium recommended)																												
Could have	Not necessary for main function (low recommended)																												
© 2021. All rights reserved.				Page 12/17																									

Figure 4.28 The standard operating procedure of ERP implementation project Page 12

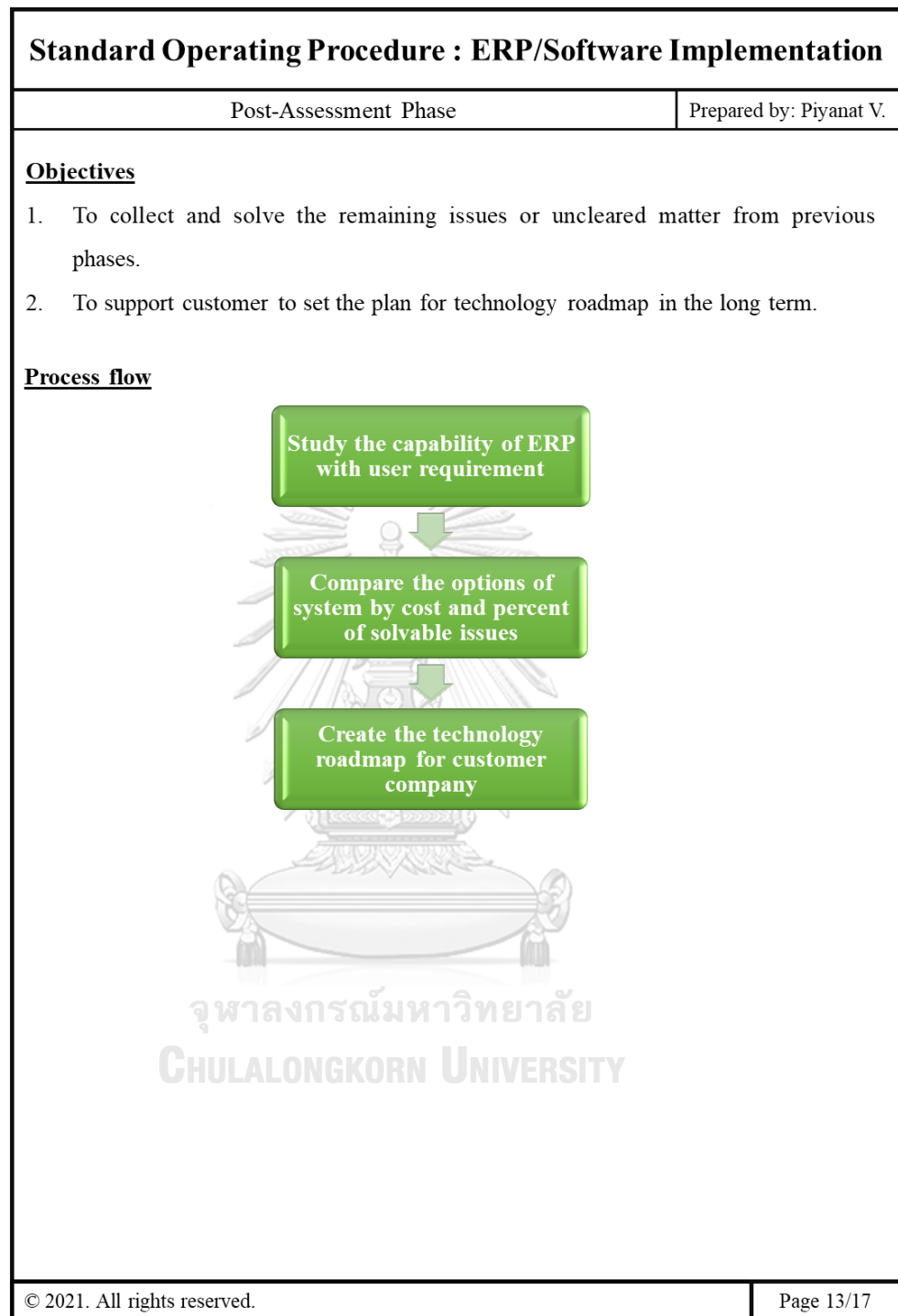


Figure 4.29 The standard operating procedure of ERP implementation project Page 13

Standard Operating Procedure : ERP/Software Implementation								
Post-Assessment Phase						Prepared by: Piyanat V.		
<u>Instruction</u>								
<p>1. Discuss with outsource ERP implementor about system requirement details. The issues of system requirement are the percentages of ERP support based on existing user requirements and the solutions from EPR functions that can solve the problems for customer company.</p> <p>- The table below is the format for ERP implementor to full in the information and feedback to an assessor.</p>								
No.	Operation group	Function name	Title	User requirement description	MSCW	ERP support	Module/System	Comment
<p>- ERP implementors have to fill-in the column EPR support, Module/System and Comment. The ERP support column can be filled the following words, “Fully support”, “Partial support”, “Customization”, “Not recommended” and “Not support”. The wording of Customization means the system can support but need to write the program by custom. Another wording is Not recommended which means the system can support but it is too complicated to put it in the system. All of these wording will be inputted by ERP implementors to estimate the capability of the systems.</p>								
© 2021. All rights reserved.						Page 14/17		

Figure 4.30 The standard operating procedure of ERP implementation project Page 14

Standard Operating Procedure : ERP/Software Implementation			
Post-Assessment Phase			Prepared by: Piyanat V.
<p>2. The comparison of ERP options will be summarized to report to customers. The details of percentages of system support, ability to correct the problems including price should be summarized for doing the decision making from customer's management team.</p> <p>- The table is the format for vendor comparison with several aspects.</p>			
Score/Evaluation	Vendor 1	Vendor 2	Vendor 3
Total (100)			
Technical score (40)			
Tactical score (30)			
Commercial score (25)			
Recommendation			
Strengths			
Weaknesses			
<p>- The aspects of comparison would be Technical, Tactic and Commercial evaluation. The Technical evaluation is associated with technical capability including system functions, user friendly, technology, solutions, industry understanding, etc.</p> <p>- Secondly, the Tactic term is the evaluation regarding tactical capability including project management, approach, methodology, team capability, etc.</p> <p>- The last aspect is Commercial evaluation associated with cost competitiveness, Return of Investment, benefits and so on.</p>			
© 2021. All rights reserved.			Page 15/17

Figure 4.31 The standard operating procedure of ERP implementation project Page 15

Standard Operating Procedure : ERP/Software Implementation				
Post-Assessment Phase			Prepared by: Piyanat V.	
<p>3. Establish the Technology roadmap for customer's system. The objective of this task is to conceptualize the period of implementation the system or ERP in the organization.</p> <p>- The format for technology roadmap is shown in table below.</p>				
Timeline	Year			
	Q1	Q2	Q3	Q4
Information Technology				
Business development				
Strategic management				
Human Resource				
Policy				
Infrastructure				
<p>Note: Activity Meeting/Decision point</p>				
<p>- The technology activities will be planned in the overall activities in the organization. Not only the technology activities will be set in the long-term plan of company, but business aspects including organization, policy and external drivers also need to be considered in the technology roadmap.</p>				
© 2021. All rights reserved.			Page 16/17	

Figure 4.32 The standard operating procedure of ERP implementation project Page 16

Standard Operating Procedure : ERP/Software Implementation		
Check list		Prepared by: Piyanat V.
<u>Check list for ERP implementation project</u>		
This table is used for follow up all activities in the project		
Phase	Activity	Check box
Pre-Assessment	Scope the contents and working areas	
	Set the organization chart and responsibilities	
	Stand by the document and data	
	Schedule the overall timeframe of the project	
Assessment	Compartmentalize into significant departments	
	Clarify the process group in department	
	List the major tasks or business pattern in process group	
	Assign the involved users in each process group to narrate	
	Interview the users	
	Design the user requirements	
Post-Assessment	Study the capability of ERP with user requirement	
	Compare the options of system by cost and percent of solvable issues	
	Create the technology roadmap for customer company	
© 2021. All rights reserved.		Page 17/17

Figure 4.33 The standard operating procedure of ERP implementation project Page 17

Having established the completed standard operating procedure for ERP implementation project, the evaluation from ERP experts is required to confirm that this practice ready to use in actual work. Figure 4.34 shows the format of evaluation for ERP experts. The categories of evaluation are divided into 4 aspects, Contents, Realization, Format/Pattern and Relevant to goals. 3 ERP experts will response this sheet and express their comments about this developed standard operating procedure.

Evaluator:.....

Evaluation table

Aspect	Good	Acceptable	Need to improve
Contents			
Realization			
Format/Pattern			
Relevant to goals			

Comment:

.....

.....

Figure 4.34 The evaluation form for SOP development

Having collected all feedbacks and results from 3 ERP experts, the evaluation result is summarized in Figure 4.35. The result of SOP development for ERP/Software implementation project shows that no aspect needs to improve. Realization and Relevant to goals aspect got the good score from two ERP experts and Content aspect mostly received an acceptable level from all ERP experts. In conclusion, developed standard operating procedure can pass the evaluation from ERP experts without any aspects need to improve.

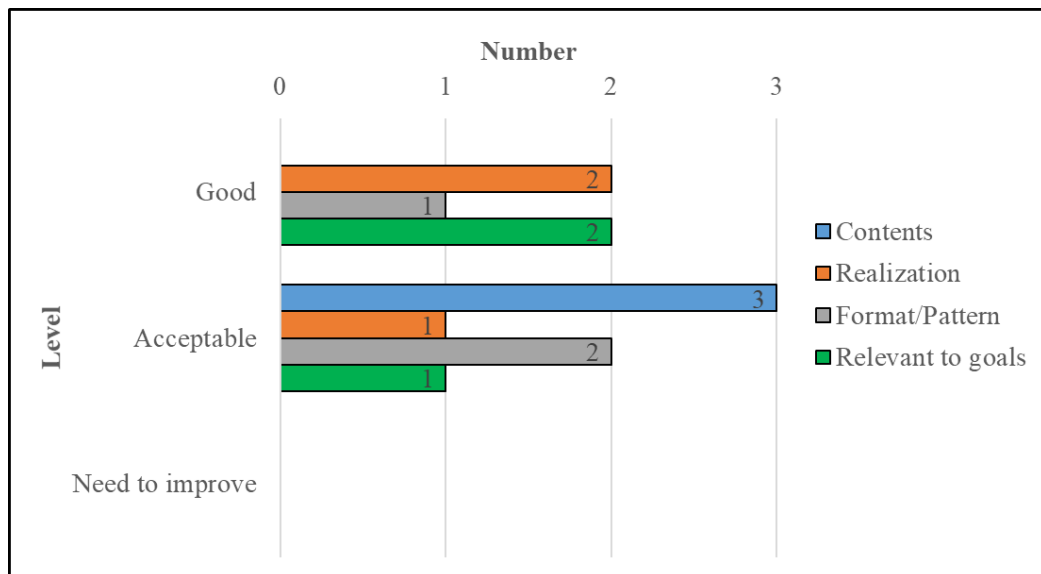


Figure 4.35 The evaluation result of SOP development for ERP/Software implementation project

The evaluation form consists of given comment from ERP experts to express their opinions to new standard. Some ERP experts used to be one of stakeholder in the ERP implementation project and have the experiences in another consulting firms. Therefore, the evaluation and review from ERP experts can prove that new standard operating procedure will be valid for using in the actual situation. The comments from ERP experts have been summarized by person and by phase of project in Table 4.22.

Table 4.22 The comments from ERP experts after evaluation the standard operation procedure

Phase	ERP Expert	Comment
Pre-assessment	A	Hold the Management and Business orientation, this meeting will gain the direction, strategy, long time activity from management's point of view
	B	No comment
	C	Inform the related persons to notice about this change, set the meeting with working team to inform the main activities, question list, document and data requirement before going to next phase for preparation
Assessment	A	Set the Management interview to align the business perspective with actual operation
	B	Create the hearing memo or conversion log to recap all issues that affect to user requirement, it would be note or audio or video recording
	C	Tips for interview, not ask the interviewees to describe all of details but need to ask only points that related to system for effective time usage
Post-assessment	A	It is not the mandatory process, so it requires short time to prepare or execute.
	B	No comment
	C	The sequence in IT roadmap needs to confirm with ERP/software vendors about the relation and connection in several systems

Most of feedbacks are the recommendation in the process, for example, the management interview in Assessment phase from expert A is the add-on activity to acquire the business perspectives from high management and the expectations in this implementation project. Another point is IT roadmap activity comment from expert C which advise to confirm with IT vendors about the connection and correct sequence of

several system implementation in the organization. The effective installation of several system can reduce the cost and time of customer firm and it is the great information that customer needs to know from a consulting company.



Chapter 5: Discussion and Conclusion

5.1 Discussion of Research Results

5.1.1 Developed Processes in ERP/Software Implementation Project

According to the results of research, the concrete processes in ERP/Software implementation project of a consulting company are developed into practice. The project is divided into 3 phases which are Pre-assessment, Assessment and Post-assessment with activities included in each phase.

The preparation activities are included in the first phase of the project called Pre-assessment phase. The main purpose of this phase would be building the contents and core working team to align the business direction from top to bottom of the organization. The study of company profile is proceeded to know the characteristic of the company, for instance, the size of organization, the products, the production type (make to order or make to stock) and so on. Additionally, the trust from customer will be built in this phase by making a rapport. The planning of business processes in ERP implementation project will help in preparing the employees to be in an innovative organization (Hailu, 2012). The successful project will relate to the project sponsor of customer company, the preparation meeting will invite all key persons who are the decision makers in the organization to attend from the beginning. In typical manufacturing industry, the production planning department is the most influencer in business affair from sale to purchase (Strandhagen, 2017). In this phase, these key persons will be invited into process to monitor in overall project and consulting company can manage the expectation in the ERP/Software implementation project.

The crucial Assessment phase in the project, the interview and observation will be executed between users and ERP assessors. The ultimate goal of this project is to gather all requirements and problems from customer company, several techniques are formulated into practice. The question list is prepared for letting the interviewees know what they will be asked in the session. The narration analysis is applied for explanation of ERP system which related to integration of data in the organization. The cultural context and basic troubleshooting will be described by user that is what the ERP assessors require (Alvarez and Urla, 2002). Also, the visualization on the whiteboard or tablet is utilized to make the image that everyone can see in the same story.

The Post-assessment phase is the last step of ERP/Software implementation project, it is a support activity to enhance the system implementation in the organization. The technology roadmap will be produced to long-term plan the technology implementation in the organization, this will help to know the future needs of the business entity related to information technology (Calegari, 2015). Some organizations have the unhappy experience with technology implementation, the unplanned sequence of installation will lead to several problems such as manual work, re-installation and so on. So this phase will eliminate those difficulties and help customer to plan their master plan.

5.1.2 Benefits for a consulting company

The developed standard operating procedure will be beneficial for a consulting company in 3 dimensions as below.

Firstly, standard practice aspect, this standard operating procedure provides the structure of processes in the ERP/Software implementation project. The efficient time and resource will be acquired from this development.

Secondly, self-development for consultant will be gradually increased by utilizing this standard as a primary knowledge and this will also help to enhance the soft skills of consultant.

Finally, the objective of this research is to standardize the procedure in the consulting company. The benefit will be for an organization to have the concrete steps and practical process to execute in the project.

5.2 Conclusion

The main purpose of this research is developing the standard operating procedure for ERP/software implementation project focused on manufacturing industry. The processes of research started by online studying of current procedure or approach from competitors in the market. The interview sessions with ERP experts and focused group execution with colleagues are the next steps in the process of development. The standard operating procedure had been created from the scratch from these activities. Having established the standard operating procedure, the feedbacks and recommendations from ERP experts to evaluate the procedure are required.

The result of outcome which is the standard operating procedure of ERP implementation project shows the 3 phases of the project. The first phase, pre-assessment phase, is the preparation phase for setting the organization chart, scoping the project, and scheduling the overall project. The significant importance in this first phase would help to shape the core of the project. The assessment phase is the second phase of the project which is the user interview session. In this phase, the techniques of interview are applied into use, for instance, question list preparation, narration analysis and whiteboarding techniques. The post-assessment phase is the last phase of the project, it will help increase the customer' appreciation. The comparison of system options and technology roadman or long-term plan are the main activities in this last phase. It is evident that the failure cases also can be solved by using this new practice based on several developed activities. The reviews from ERP experts are added into this standard operating procedure as well, the management alignment meeting, the check list of the processes and the hearing record in the session are the examples of the recommendation. Moreover, the evaluation result from ERP experts who used to be the stakeholder of the ERP implementation project and experienced in another consulting firms shows that this procedure can be valid into actual use.

5.3 Limitations of the study

The main limitation which should be addressed in this study would be the time of demonstration in this standard operating procedure. Normally, the ERP implementation project proceeds around 6-12 months of operation which takes a long period compared with this study. Therefore, the actual result from using this standard operating procedure is not included in this study. However, this development has been reviewed and evaluated by ERP experts who have the several experiences in this field. The overall feedbacks show that this developing procedure can utilize into project management in ERP/software implementation.

5.4 Suggestion for future development

There are further studies for enhancing the process of ERP implementation project in consulting company to increase the quality of information gathering from users, which include:

a) Utilize the developing standard operating procedure in the actual project. The expected outcome from real case would reflect the processes of implementation to visual the obstacles and difficulties in the procedure. This information will be utilized in improvement to the new version of standard operating procedure.

b) Study in another industry implemented the ERP system in their organizations. Each industry has their own characteristic and unique which involved with process, people and product. This study associated with manufacturing industry reveals the typical departments, major tasks and system landscape which is different with other industries. The future study should concentrate to seek the unique points and nature of business of selected industries and applied the procedure as a base model to develop the specific procedure for each industry.



REFERENCES

- 360cloudsolutions (Producer). (2020). Top 6 ERP Implementation Failures (and What They Cost). Retrieved from <https://www.360cloudsolutions.com/resources/top-six-erp-implementation-failures/>
- Ahmad, M. M., and Ruben Pinedo Cuenca. (2013). Critical success factors for ERP implementation. *Robotics and computer-integrated manufacturing*, 29(3), 104-111.
- Allart, H. (2014). ERP implementation and role of consultant. *Asean Journal of Management and Innovation*, 1(2), 15-25.
- Andrews, J., and Eleanor Eade. (2013). Customer journey mapping and its importance. *New Review of Academic Librarianship*, 19(2), 161-177.
- Anyan, F. (2013). interview techniques. *Qualitative Report*, 18(1), 36-39.
- Aubry, M., and Mélanie Lavoie-Tremblay. (2018). the organizational chart and its importance. *International Journal of Project Management*, 36(1), 12-26.
- Auch, A. F., Hans-Peter Klenk, and Markus Göker. (2010). Standard operating procedure. *Standards in genomic sciences*, 2(1), 142-148.
- Ayala, J. E., Varman T. Samuel, Gregory J. Morton, Silvana Obici, Colleen M. Croniger, Gerald I. Shulman, David H. Wasserman, and Owen P. McGuinness. (2010). Standard operating procedures. *Disease models & mechanisms*, 3(9-10), 525-534.
- Balta, D., Vanessa Greger, Petra Wolf, and Helmut Krcmar. (2015). the benefits of project planning. *Springer, Cham*, 1(1), 233-245.
- Beheshti, H. M., and Cyrus M. Beheshti. (2010). Improving productivity and firm performance with enterprise resource planning. *Enterprise Information Systems*, 4(4), 445-472.
- Bornmann, L. (2013). focused group activity. *Journal of the American Society for information science and technology*, 64(2), 217-233.
- Canonico, P., and Jonas Söderlund. (2010). Organizational chart and its importance. *International Journal of Project Management*, 28(8), 796-806.

- Chaveesuk, S., and Sitthiros Hongsuwan. (2017). A structural equation model of ERP implementation success in Thailand. *Review of Integrative Business and Economics Research*, 6(3), 1-11.
- Chompu-inwai, R., Benyaporn Jaimjit, and Papawarin Premsurianunt. (2015). ERP implementation in manufacturing company. *Journal of Cleaner Production*, 108(1), 352-364.
- Danish, R. Q., and Ali Usman. (2010). standard operating procedure. *International journal of business and management*, 5(2), 159-161.
- DeCuir-Gunby, J. T., Patricia L. Marshall, and Allison W. McCulloch. (2011). typical steps of interview session. *Field methods*, 23(2), 136-155.
- Delighted.com (Producer). (2021). Customer journey map: The key to understanding your customer. Retrieved from <https://delighted.com/blog/guide-to-customer-journey-mapping>
- Galens, K., Joshua Orvis, Sean Daugherty, Heather H. Creasy, Sam Angiuoli, Owen White, Jennifer Wortman, Anup Mahurkar, and Michelle Gwinn Giglio. (2011). standard operating procedure. *Standards in genomic sciences*, 4(2), 244-251.
- Giannone, Z. A., Daniel W. Cox, David Kealy, and John S. Ogrodniczuk. (2020). Focused group activity. *North American Journal of Psychology*, 22(1), 41-62.
- Haddara, M., and Ondrej Zach. (2011). ERP systems in SMEs: A literature review. *IEEE*, 1(1), 1-10.
- Hailu, A., and Syed Rahman. (2012). ERP implementation success factors. *IEEE*, 1(1), 88-91.
- Harrin, E. (Producer). (2017). a Project Organization Chart. Retrieved from <https://www.projectmanagement.com/articles/401556/How-to-Create-a-Project-Organization-Chart>
- Haryanti, D. U., Rohmati Nur Indah, and Sri Wahyuni. (2021). typical steps of an interview. *Journal of Languages and Language Teaching*, 9(1), 61-68.
- Hsu, P.-F., HsiuJu Rebecca Yen, and Jung-Ching Chung. (2015). Assessing ERP post-implementation success. *Information & Management*, 52(8), 925-942.
- Insights.sap.com (Producer). (2020). what is ERP. Retrieved from <https://insights.sap.com/what-is-erp/>

- Jacob, S. A., and S. Paige Furgerson. (2012). Interview Techniques for getting more information from the interviewee. *Qualitative Report*, 17(6), 12-23.
- James, J. (Producer). (2020). What Are The Benefits of Planning a Project? Retrieved from <https://www.zandax.com/business-blog/what-are-the-benefits-of-planning-a-project>
- Kanthawongs, P. (2010). ERP systems implementation in a developing country. *In IADIS International Conference e-Society*, 1(1), 173-179.
- Micheaux, A., and Birgit Bosio. (2019). Customer journey mapping and its importance. *Journal of Marketing Education*, 41(2), 127-140.
- Olson, C. K. (2010). Focused Group activity. *Review of general Psychology*, 14(2), 180-187.
- Phaphoom, N., Jian Qu, Adisorn Kheaksong, and Wongduan Saelee. (2018). An Investigation of ERP implementation. *IEEE*, 1(1), 1-6.
- Phaphoom, N., Wongduan Saelee, Tunyawat Somjaitaweeporn, Sumeth Yuenyong, and Jian Qu. (2018). Analysing Critical Success Factors on ERP Implementation. *IEEE*, 1(1), 1-6.
- Productplan.com (Producer). (2020). What is an IT Roadmap? Retrieved from <https://www.productplan.com/learn/what-is-an-it-roadmap/>
- Rotchanakitumnuai, S. (2010). Success factors of large scale ERP implementation in Thailand. *World Academy of Science, Engineering and Technology*, 40(4), 605-608.
- Rotchanakitumnuai, S., Mark Speece, and Fredric William Swierczek. (2019). Assessing Large-Scale ERP Implementation Success. *Thammasat Review*, 22(2), 168-185.
- Saunders, B., Jenny Kitzinger, and Celia Kitzinger. (2015). the typical interview steps. *Qualitative Research*, 15(5), 616-632.
- Stanciu, V., and Andrei Tinca. (2013). ERP systems failure. *Accounting and Management Information Systems*, 12(4), 626-649.
- Strandhagen, J. W., Erlend Alfnes, Jan Ola Strandhagen, and Logan Reed Vallandingham. (2017). Production, planning and controlling department. *Advances in Manufacturing*, 5(4), 344-358.

- Sun, H., Wenbin Ni, and Rocky Lam. (2015). ERP system failure in implementation. *Computers in Industry*, 68(1), 40-52.
- Tallyfy.com (Producer). (2020). What is a Standard Operating Procedure (SOP) and How to Write It. Retrieved from <https://tallyfy.com/standard-operating-procedure-sop/>
- Tarhini, A., Hussain Ammar, Takwa Tarhini, and Ra'ed Masa'deh. (2015). enterprise resource planning implementation. *International Business Research*, 8(4), 25-40.
- Vrij, A., Lorraine Hope, and Ronald P. Fisher. (2014). Interview techniques. *Policy Insights from the Behavioral and Brain Sciences*, 1(1), 129-136.
- Zhong, R. Y., Z. Li, L. Y. Pang, Y. Pan, Ting Qu, and George Q. Huang. (2013). planning and scheduling shell for production decision making. *International Journal of Computer Integrated Manufacturing*, 26(7), 649-662.



APPENDIX

จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY

Appendix A. Ethical Approval Confirmation

wmg-overseas@warwick.ac.uk <wmg-overseas@warwick.ac.uk>

Fri 5/14/2021 12:17 AM

To: VIENGCOME, PIYANAT (PGT) <Piyanat.Viengcome@warwick.ac.uk>

Cc: cuse.chula@gmail.com <cuse.chula@gmail.com>; chujej@gmail.com <chujej@gmail.com>



WARWICK
THE UNIVERSITY OF WARWICK

Ethical Approval Confirmation

Dear Mr Viengcome,

Warwick ID Number: 1839192

Thank you for submitting your Supervisor's Delegated Approval form to the Overseas Programmes Course Office for the project: SOP development for ERP/Software project management of a consulting company.

Your reference number is REGO-2021-WMGOS-0060.

You now have the appropriate approval in place to begin your data collection. It is advisable to note the actual dates of data collection in the final dissertation methodology or results chapter, to evidence that your data was collected after the date of ethical approval (as stated on this email).



You are reminded that you must now adhere to the answers and detail given in the completed WMG SDA ethical approval form (and associated documentation) within your research project. If anything changes in your research such that any of your answers change, then you must contact us to check if you need to reapply for or update your ethical approval before you proceed.

If your data collection strategy, including the detail of any interview/ survey questions that you originally drafted changes substantially prior to or during data collection, then you must reapply for ethical approval before your changes are implemented. Please ensure you insert a copy of this email into the appendices of your project.

Best Wishes

Mengjiao Han
WMG Overseas Programmes Course Office
wmg-overseas@warwick.ac.uk
warwick.ac.uk/fac/sci/wmg/overseas/

Appendix B. Consent form interview template WMG

PROJECT TITLE: SOP DEVELOPMENT FOR ERP/SOFTWARE PROJECT
MANAGEMENT OF A CONSULTING COMPANY

NAME OF RESEARCHER: MR. PIYANAT VIENGCOME

I confirm that I have read and understood the provided Participant Information Leaflet (PIL) for the above project, and that I have had the opportunity to ask any questions about the research that I may have.

Further, I have been given a copy of the PIL which I may keep for my records.

I agree to take part in the above study and am willing to have my involvement in the interview noted.

Further, I have additionally agreed to have the interview electronically recorded.

I understand that my information will be held and processed to be used anonymously for internal publication for an MSc project, to be submitted for assessment for an MSc degree. I also understand that such anonymous data may be used for future research, including that for publication.

I understand that my participation is voluntary and that I am free to withdraw at any time up to the submission of the dissertation without giving any reason and without being penalised or disadvantaged in any way.



[# Item to be deleted if not appropriate or if permission is not granted by the Participant]

Name of participant Date

Signature



Appendix C. Participant Information Leaflet for Interview participant

This sheet seeks to provide information, and advice, with respect to an individual's participation in support of the specified research project:

1. The project is entitled **SOP development for ERP/Software project management of a consulting company**, and will consider the *Business Engineering Management* aspects related to this subject;
2. This research is being conducted by *Mr. Piyanat Viengcome* in support of her studies for an MSc at the University of Warwick, and this research is funded by self-funded by the student;
3. The research is being supervised by Assoc.Prof.Dr. Chuvej Chansa-ngavej and his email is chuvej@gmail.com who is an external supervisor appointed by the University
4. Participation in this research is totally voluntary, and assurances are given to the effect that no negative consequences will arise from refusal to participate, from limiting participation, or from withdrawing (prior to dissertation submission) input that arose from any earlier participation in the research project;
5. Each individual is advised to fully consider, with others if necessary and prior to participation, any disadvantages, side effects, risks and/or discomforts that may arise from participation in this research;
6. Unless specifically agreed otherwise, all information will be carefully made anonymous, and all the data on such original sources will be held as confidential and will not be distributed to others;
7. The resulting dissertation, with anonymous data, will be reviewed by a University teaching staff member and/or a University appointed external assessor, by the University moderators, and by external examiners;
8. Whilst an MSc Dissertation does not pass into the public domain, it is possible that the dissertation (with its data) may be used as a source for future research, including research work for publication;
9. Whilst summarised/ analysed data may be used in future research and/ or publications, your individual data responses will be retained only until the student completes their course and then destroyed.

This research has been favourably reviewed by the University's Biomedical and Scientific Research Ethics Committee, Approval Reference: REGO-2021-WMGOS-0060, dated: 14 May 2021. Dissatisfaction with the conduct of this research may be referred to the person below, who is a senior University of Warwick official entirely independent of this study:
 Head of Research Governance, Research & Impact Services, University House, University of Warwick, Coventry, CV4 8UW; Tel: 024 76 522746; Email: researchgovernance@warwick.ac.uk

Appendix D. Interview ERP experts notes

Participant name: Expert A
Date: 2 Jun 2021

Question list for ERP experts interview

1. What is the key success factor to implement ERP system in manufacturing company in Thailand?

Several Factors.

{	People	→	collaboration, understanding.	} Business Requirement Completed all issues.
{	Process	→	As-is Perfect.	
{	Procedure	→	Correct	
{	Management	→	Support	

2. What are the concerns and important issues during assessment process with customer?

Focused on people information)

{ correct data
completed all dimensions involved with system.

3. What is generic step of assessment process that ERP expert does?

3 Stage.

{	Prep stage.	→	prep people and refer
{	Assessment stage.	→	interview as-is.
{	Support stage.	→	Long term plan.

Participant name..... A
 Date.....

4. Who should be involved in the meeting of the pre-assessment process and during assessment process?

Next Powerful in company
 to make the decision
 and site direction to the project

5. What required document that customer need to prepare before interview session in assessment process?

Actual piece: Computer screen, error bug.
 Document = workload, manual thing.
 = waste time to do

6. Who should be interviewed in the session (operators, leader or manager) to gather the requirements?

3
 Operators → routine, daily operation, bug
 Leader → confirm the problems, process
 Manager → relation between
 horizontal and vertical diversity

Participant name..... A
Date.....

7. How to lead the interview session to gather the requirements from customer? What are the key points or effective steps to run the session?

- Collect all business cases to get all scenarios
- Techniques to Interview (user characteristics),
Tone of session.

8. What is the interview technique that ERP expert apply in the session to gather the requirements from customer?

No exp. → prep the question set for asking

f Depends on Character of Client (exp. needed) → know the operations in department to set the question in that operation

9. Is there any failure case that ERP expert experienced in manufacturing company? What is the root causes of this failure?

Follow everything from user requirements

Root cause

No analysis on requirement and clarify which one need or no need.

high workload to record and keep everyth in system

10. Any recommendation for SOP development?

Project management? Scope the project, resource and expectation
No extra job.

Participant name..... **B**
 Date.....

4. Who should be involved in the meeting of the pre-assessment process and during assessment process?

The player: operators, users, routine users.
 To explain what they did, fix, routine, behaviour.

5. What required document that customer need to prepare before interview session in assessment process?

Everything related to
 Daily job + System.

6. Who should be interviewed in the session (operators, leader or manager) to gather the requirements?

① operators or users. → Explain detail.
 Leader or supervisor → Confirmation + Support.

Participant name..... B
Date.....

7. How to lead the interview session to gather the requirements from customer? What are the key points or effective steps to run the session?

Organize the session, system, sequence
Invite all related person to confirm the issues together

8. What is the interview technique that ERP expert apply in the session to gather the requirements from customer?

Translate to figure → Whiteboard, Flip chart
- To make clear in the detail. When the narration is not enough

9. Is there any failure case that ERP expert experienced in manufacturing company? What is the root causes of this failure?

In completed user requirements. ⇒ In complete functional system
Need to add more Customize.

Root cause

- Some key persons did not join to give the info

10. Any recommendation for SOP development?

Need to set proper meeting to summarize each step. (Manage the expectation, align the direction),

Participant name: Expert C
 Date: 3 Jan '21

Question list for ERP experts interview

1. What is the key success factor to implement ERP system in manufacturing company in Thailand?

Interview session

- To get all requirements from users.
 - To design new system based on information from users.
- ↳ Organization will receive the complete operation & system

2. What are the concerns and important issues during assessment process with customer?

- ↳ Was understanding and perception
- ↳ Explain what we want to know clearly.
- ↳ Mechanism of interview (To formulate the proper session).

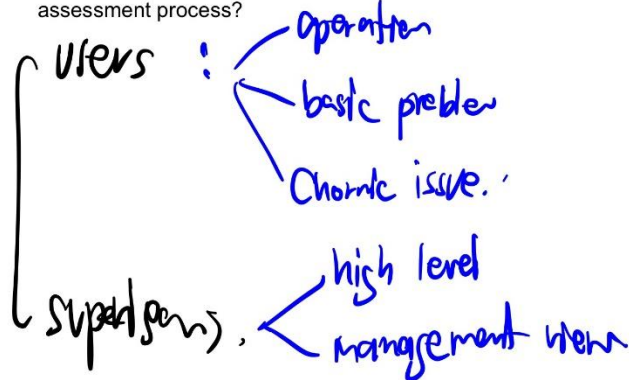
3. What is generic step of assessment process that ERP expert does?

3 steps:

- ↳ prep: kick-off with high level
- ↳ Care: Interview, get requirement.
- ↳ Go-live: Support Q-line, facilitate.

Participant name..... **C**
 Date.....

4. Who should be involved in the meeting of the pre-assessment process and during assessment process?



5. What required document that customer need to prepare before interview session in assessment process?

Report + Document + Mistake. (daily mistake + big mistakes)

6. Who should be interviewed in the session (operators, leader or manager) to gather the requirements?

① operators (users) → Difficulties in job.

leaders → confirmation + explain the detail.

Participant name..... C
Date.....

7. How to lead the interview session to gather the requirements from customer? What are the key points or effective steps to run the session?

Prepare yourself — question list, basic question
+ sup question to ask more detail.
↓
Tips in session, personalities,
to control the meeting

8. What is the interview technique that ERP expert apply in the session to gather the requirements from customer?

User love the flow, process flow, system flow.
easy to explain, to understand the picture
+ it uses few confirmation
The processes in high level

9. Is there any failure case that ERP expert experienced in manufacturing company?
What is the root causes of this failure?

Not complete requirements: → cannot design system.
work properly to users.

Root cause:

Not clear info

Condition not define (alignment)

10. Any recommendation for SOP development?

The knowledge in ERP, functionality, capability.

help in design to be process to know the general
or ideal process and go to that way.

VITA

NAME	Piyanat Viengcome
DATE OF BIRTH	23 October 1990
PLACE OF BIRTH	Bangkok
INSTITUTIONS ATTENDED	Metallurgical Engineering, Bachelor of Engineering (B. Eng), Chulalongkorn University Regional Centre for Manufacturing System Engineering, Faculty of Engineering, Chulalongkorn University
HOME ADDRESS	282/580 Huai Khwang District, Bangkok, Thailand 10310



จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY