

SETTING UP OF COORDINATION AND COMMUNICATION SYSTEMS IN THE
PRODUCTION DEPARTMENT FOR A PLASTIC PACKAGING COMPANY

Miss Siripen Srimandakul

A Thesis Submitted in Partial Fulfillment of the Requirements
for the degree of Master of Engineering in Engineering Management

The Regional Center for Manufacturing Systems Engineering

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วิทยานิพนธ์ฉบับนี้เป็นการวิจัยการจัดทำระบบการประสานงานและการติดต่อสื่อสารในฝ่ายผลิตสำหรับโรงงานผลิตบรรจุภัณฑ์พลาสติก โดยใช้ทฤษฎีของ การประสานงานและการติดต่อสื่อสารภายในองค์กร ในการวิจัยได้มีการจัดทำระบบการประสานงานและการติดต่อสื่อสาร โดยจัดให้มีทั้งระบบที่เป็นทางการและไม่เป็นทางการ การประสานงานและการสื่อสารที่เป็นทางการจะดำเนินการโดยอาศัยแผนภูมิองค์กรเป็นแนวทาง มีการปรับเปลี่ยนโครงสร้างองค์กรให้เหมาะสม มีการจัดทำคำบรรยายลักษณะงาน ปรับเปลี่ยนการไหลของกิจกรรมและเอกสารที่เกี่ยวข้องกับการผลิต ปรับปรุงระบบเอกสารให้เหมาะสม จากการปรับปรุงทั้งหมด จะทำให้ระบบการประสานงานและการติดต่อสื่อสารเป็นระบบมากขึ้น ลดความขัดแย้งและความผิดพลาดในการประสานงานและการติดต่อสื่อสาร พนักงานและหัวหน้าจะสามารถเข้าใจระบบการประสานงานและการติดต่อสื่อสาร เข้าใจบทบาทหน้าที่และความรับผิดชอบที่มีต่อการประสานงานและติดต่อสื่อสาร เข้าใจมาตรฐานการไหลของกิจกรรมและระบบเอกสารและรู้ทิศทางและแนวทางในการประสานงานและการติดต่อสื่อสาร การประสานงานและการติดต่อสื่อสารจะมีแบบแผนมากขึ้น ข้อมูลที่สำคัญและจำเป็นจะได้รับการแจ้ง บันทึกและจัดเก็บอย่างมีระบบ โดยทุกคนจะเข้าใจถึงการประสานงานและการติดต่อสื่อสารที่ถูกต้อง ได้มีการสนับสนุนให้มีการประสานงานและการติดต่อสื่อสารที่ไม่เป็นทางการให้มีประโยชน์มากขึ้น โดยจัดให้มีการประชุมกลุ่มย่อยและกลุ่มใหญ่โดยหัวหน้าแต่ละส่วนในลักษณะที่เป็นทางการและไม่เป็นทางการ โดยผู้จัดการฝ่ายผลิตจะเป็นผู้แนะนำและกระตุ้นให้เกิดการประสานงานและติดต่อสื่อสารที่มีประสิทธิภาพเพื่อช่วยลดปัญหาการผลิตผิดพลาด

จากปัญหาการประสานงานและการติดต่อสื่อสารที่ไม่มีระบบเป็นผลทำให้เกิดปัญหาการผลิตผิดพลาด จากการเปรียบเทียบอัตราการผลิตผิดพลาด พบว่าหลังจากจัดทำและใช้ระบบการประสานงานและการติดต่อสื่อสาร จำนวนการผลิตผิดพลาดในฝ่ายผลิต ลดลงจาก 13.3% เป็น 3.7% ของจำนวนการส่งผลิตทั้งหมด โดยแยกเป็นการผลิตสินค้าเกิน ลดลงเหลือ 3.36% จากเดิม 10.27 % การผลิตสินค้าขาดลด ลงเหลือ 0.09% จากเดิม 0.67 % และการผลิตสินค้าผิดจากมาตรฐาน ลดลงเหลือ 0.27% จากเดิม 2.34 %

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The objective of this thesis is to study in order to obtain the effective coordination and communication systems to reduce the error producing in production department for a sample plastic packaging company.

From the research, the coordination and communication systems are set up. The systems that set up consist of formal and informal coordination and communication. The systems use organization structure as a guideline for coordination and communication process. So the organization structure is changed to be suitable for the effective systems. Job description is created. The standard activity flow and document flow is set up. Document is revised and added up. From all changed the coordination and communication can processes in systematic pattern. It helps to reduce conflict and error in the organization that come from misunderstanding in coordination and communication. The workers can understand their role, duty and responsibility in coordination and communication in the organization. The workers understand and have guideline for process, instruction and direction of coordination and communication systems by using standard activity flow and document flow. The documents can be used as a media to transfer the information in the pattern that everyone can understand.

Production manager encourages and guides the supervisors, leaders and workers to use informal coordination and communication. Small and large group meeting is set and encouraged to set with formal and informal form. With informal coordination and communication, the positive attitude and positive feedback happen. It helps to reduce error producing in production.

Error producing problem comes from poor coordination and communication. After implemented coordination and communication systems the results show that error producing reduces from 13.3% to 3.7%. The details are that excesses producing reduce to 3.36% from 10.27, short producing reduce to 0.09% from 0.67, and incorrect producing reduce to 0.27% from 2.34%.

Department.....Student's signature.....
 Field of study.....Advisor's signature.....
 Academic year.....Co-advisor's signature.....

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Siripen Srimandakul

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Chapter 1

Introduction

1.1 Background of the Business

Plastic or polymer is become more and more useful in daily life. It can consider that people cannot work through their day without touching to plastic component. House, office, school, hospital, department store and everywhere have something that produce from plastic. Especially all of high technology products must have plastic component so plastic forming is one important technology for business.

Focus on household products, for example shampoo, detergent, soap, cream, cosmetic and instant food, there are many companies produce those products. The competition in household products is very high because the market is large. The growing of demand attracts many companies to jump in the market. Due to that there are many suppliers to produce the container for those products. Plastic companies are suppliers of household product companies. So there are many plastic factories in this high competitive business.

In the past, the businesses in Thailand are small businesses and most of them are family businesses. The operation of family business is simple and close control by the owner of the company and his or her family. The organization of the company is small and simple. The problem about managing the business is not complicate and easy to solve by the owner. The information and document system is simple and sometime it is unnecessary because the owner orders directly to the workers and there is close monitoring by the owner.

Now the companies and the businesses grow up and expand so the owner and his or her family cannot handle and close monitoring all operations of the company. The activity and information in the organization are more

complicate and tend to increase day by day. The company must develop the coordination and communication system for effective and efficient of control.

There are many manufacturing and many businesses in the country. Every manufacturing and every business want to make more profit and be succeeded in the business. Especially in the period of economic crisis now, the competition is higher than before. Price, quality and service are examples of factors to justify the performance of the company. The company that have good performance may able to maintain the customers but it may not able to maintain the business in the most efficient and effective operation if that company does not have good coordination and communication systems. Profit is the important factor for survival in the business. With good coordination and communication systems, the company can gain more profit.

The company that can be success in the business is the company that built high quantity of product with low price. The products with low price must be produced from good operation control. All operations operate with high effectiveness and high efficiency will generate low operational cost. Good operational control needs good coordination and communication to support the management system, plan and decision-making. So the coordination and communication system is the important factor to support and create good operational control system.

The company will gain from getting high quantity and quality product from the improvement of coordination and communication systems. The company gains from low operation cost because the effectiveness and efficiency is improved. With coordination and communication systems development, management team will get necessary information that can help to improve efficiency of operation. Because of that the company can make correct number of units in a period of time or improve productivity.

1.2 Statement of the Problem

1. The operation management and decision-making are slow and is lowing efficient. It must wait for top management or the owner of the company. The owner manages all operation in the organization by himself. The founder does not have time to focus on the every problem in the organization.
2. Workers confuse in priority of job due to important people. Jobs of he founder's son are the most important and must do in first priority.
3. The authority in works is not clear. It depends on the connection of that person with the owner and his son.
4. There are many conflicts between worker. The worker does not know their position and does not know the level of their position. The organization structure is not clear.
5. The duty and responsibility of workers are not identified. It causes interference of works, conflict between workers, and bad attitude in responsibility.
6. There is interference in duty, responsibility and authority due to some section is under control of many departments.
7. Loss of control and inefficiency in production due to span of control is too wide.
8. Due to lack of command system, the supervisor does not confident to assign jobs for their subordinate.
9. Due to unclear duty, responsibility and authority, the cooperation in the organization is not effective.
10. Most communication in the company is managing in verbal and informal. There are few documents in communication. It causes error in operation and control of production.

11. Each section creates own documents. Those documents are in different forms. It causes problem about misunderstand and confusing in those documents.
12. Some section can not make a decision or can not efficient operate job due to lack of necessary data in the document causes.
13. The company loss the opportunity to sell product due to error in producing product.
14. There are high inventory and high waste due to error in producing product.

1.3 Purposes of the Research

The objective of the research is to set up coordination and communication systems in the production department for a Sample Company.

1.4 Scope of the Research

- 1) To study on sample plastic packaging company.
- 2) To study, analyze and set up coordination and communication systems in the production department.

1.5 Expected Results

- 1) To set up coordination and communication systems that can improve effectiveness and efficiency of production department.
- 2) To reduce the quantity of excessive and lacking producing in production.
- 3) To reduce the quantity of producing incorrect product.

1.6 Research Procedure

- 1) Study the comment and suggestion that related with thesis topic from literature surveys.
- 2) Study theoretical that related with thesis topic from book and journal.
- 3) Study current status and problem about organization of production department, coordination, communication and documentation flow and information about product specification.
- 4) Set up documentation system.
- 5) Implement the documentation system.
- 6) Compare the quantity of excessive and lacking producing and the quantity of producing incorrect product before and after implementation.
- 7) Write up the thesis.

1.7 Literature Surveys

Nuchsara Rakamnuaykit [1995]

The objective of the research is to study and improve production control system problem for the purpose of the developing system to increase in efficiency.

From the study, the problems are production management and controlling of raw material and inventory. The study aims to develop organising, documentation system, and report.

The result from the research is that the efficiency of each section is improved. The documentation system and report can support the decision-making and plan of the management team. With improved document, production control and investigate are improved to be an effective system.

Mookrin Sutuntaphida [1995]

She researches to propose about production management system for a plastic spare parts factory.

For organization management, she proposes to organize by job function, specify the personnel that are suitable for organization structure, create job description, and activity flow in the organization.

For documentation and production management control, she propose the documentation since receive order from customer until deliver to customer.

Chatchawan Chinvigai [1997]

It is the research for improvement of production management system and information system in sleep-ware industry. The objective of the research is to modify the operational system from family business to effective management and information system. He revises the organization chart, made job description, and improve the activity flow. He revises the documentation flow to be suitable for production management. For information system, he

improves data collection method to use Microsoft Access that can provide effective report for efficient decision making of executive.

Thanut Vithayasintana [1995]

He studies and analyzes the problem about production management system. He develops the suitable production management system for machine shop.

For organizing and management, he proposes new organization structure, propose job description, propose the specific characteristic of employee, and propose suitable proportion of worker in production line.

For production document system, he proposes the activity flow chart of production operation, the documentation pattern and form. He proposes suitable flow for documentation and report.

Songwut Prakaiwichien [1997]

He researches to improve capacity planning system. The problem is late delivery and high work in process. He focuses on develop and control the production planning system. He proposes to create the information system for production and inventory management. He proposes to improve the organisation of planning and production control. He specifies the duty and responsibility of each section. The result of his research is that rate of late deliveries reduce from 70 sets per month to 17 sets per month.

Wutdhichai Anantakul [1997]

He mentions that production-planning system is one factor of effective production management system. He focus on organizing, documentation system for production and production planning. He proposes new organization structure. For documentation system, he proposes to improve current document and proposes to create new document. He proposes document flow chart to improve production-planning system.

Karun Noppakun [1993]

It is the research about production control system for Parawood Furniture Industry. The objective of the research is to improve late delivery by improve production control system. The result is that rate of late deliveries reduce from 28.4 days to 8.02 days.

Opas Aiemsiriwong [2000]

Management Information System is important for the company. It helps to manage the organization. It is one factor that brings the competitive advantage to the company in the competitive world. The company can improve productivity by using information system in the operation.

Suchada Keeranun [2001]

Data is the fact about something. It may be number, word or sentence that describe about something that happen and go on.

Information is come from gathering the data and summary it to get useful result. Good information must be reliable, support user needs and available at the correct time.

Surasvadee Rajkulchai [2000]

Operational control is the process to set the procedure to control and monitor the activity in the internal of the company. It needs the information in short period of time such as day, hour or week to support management level to determine the status of the company.

Information control is the successful of the organization because the decision requires the information to support. Management wants reliable, effective and efficient information at the correct time.

Siriwan Seareerat [1998]

The organizing is important because there are problems in big organization such as the confusion in responsibility on the job and process or operation cycle. Organizing will provide workflow that help to reduce duplicate job and conflict in the duty. It provides boundary of job, communication and cooperation for the worker. So management can make a correct and fast decision.



สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

Chapter 2

Theoretical Consideration

Now there is high competitiveness in all business in Thailand. There are many companies want to survive in this high competitiveness atmosphere. Many companies grow up and expand. Activities in the company are increased and more complicated. The owner of the business cannot handle and close monitoring all operations of the business. So the company must have good coordination and communication system. The coordination and communication system is the important factor to support and create good operational control system.

2.1 Coordination and Communication in the Organization

Coordination and communication in the organization occurs all the time that the organization is operated. It shows that the organization still exist and operate. The coordination in the organization can not occur without communication.

What is organization? According to Gibson [13], page 6, an organization is a coordinated unit consisting of at least two people who function to achieve a common goal or set of goals.

According to Rogers [9], page 9-10, we define organization as a system of individuals who work together to achieve, through a hierarchy of ranks and a division of labor, common goal.

What is coordination? Coordination can be defined as the process by which the workers perform some functions or some activities together to accomplish their task or goal.

What is communication? According to Gibson [13], page, 435, communication is transmission of information and understanding, through the use of verbal or nonverbal symbols.

According to Rogers [9], page 9, we define communication as the process by which an idea is transferred from a source to a receiver with the intention of changing his or her behavior. Such behavior may encompass a change in knowledge or attitude as well as in overt behaviour.

2.1.1. The Importance of Coordination and Communication to the Organization

The coordination and communication is important to the organization because poor coordination and communication lead low efficiency in operation of the organization. According to Taylor [2], page 235, Effective communication at all levels and along all channels, improves productivity and employee satisfaction.

According to Shockley-zalabak [15], page 7, the key to organizational excellence is effective communication. Coordination and communication systems within organizations are responsible for creatively solving increasingly complex problems.

The coordination and communication bind all elements in the organization together. According to Seiler [12], page 6, Communication is essential to organization because it is the primary binder-the variable within organizations that holds them together. In a sense, communication as like the glue used in building model airplanes. The glue holds the wings to the body of the plane and the elevators/rudder mechanisms to the tail end of the plane. Without process of communication, the parts of organizations would not be bound together, and the organizations themselves would not exist. Communication id the binding element of all business and professional organizations.

According to Schermerhorn [11], page 396, communication is a word like “organization.” Everyone knows what it means until asked to formally state its definition. It is useful to think of communication as an interpersonal process of sending and receiving symbols with meaning attached to them.

“Eastman Kodak’s copy products group was in trouble when Chuck Trowbridge came in as general manager. But he and Bob Crandall, head of manufacturing, shared a vision: to make Kodak a world-class manufacturer and create a more decentralized and less bureaucratic organization. But, this vision required the acceptance of employees used to very different ways of operations.

“Communication” was the key to success. Grandall established an intense communication plan involving weekly meetings with his direct reports, monthly forums in which he met with employees from different groups, and quarterly meeting with supervisors to discuss progress and improvements. All managers held quarterly “state of the department” meeting with their personnel. An informative “Copy Product Journal” was sent to employee each month; employees were encouraged to send feedback in anonymous letters to top management; and wall charts throughout the facility reported performance in term of quality, cost, and targets. In three years, productivity doubled.”

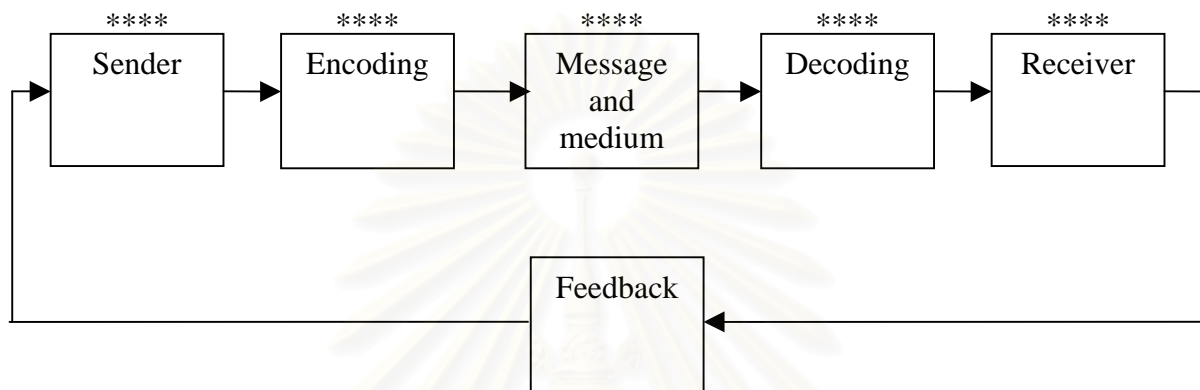
The opening Visions example highlights the importance of this process to managers and the people who work with them. A major challenge for everyone in organizations is handling information exchanges and potential conflicts sometimes associated with them.

The purpose of coordination and communication in the organization may effect to change in activity that influence the security of the operation in the company. The coordination and communication are necessary for many functions in the organization because it link all activities in the operation. It is necessary for the company in the following items:

- 1) Determination and publicity of company’s objective
- 2) Development of plan to success of the company
- 3) Most effectiveness and efficiency of workers and other resources utilization
- 4) Selection, development and performance assessment of employees
- 5) Lead, order, and motivating people to want to coordinate
- 6) Control the operation’s result

2.1.2. The Communication Process

The process of communication contains basic elements: a sender, an encoder, a message, a medium, a decoder, a receiver, feedback, and noise as show in Figure 2.1 as following:



**** = Noise

Figure 2.1: A Communication Model

- Sender

The sender is an employee with ideas, intentions, information, and a purpose for communicating.

- Encoding

An encoding process must take place that translates the sender's ideas into a systematic set of symbols. The major form of encoding is language. The function of encoding is to provide a form in which ideas and purposes can be expressed as a message.

- Message

The result of the encoding process is the message either verbal or nonverbal.

- Medium

The medium is the carrier of the message such as face to face communication, telephone conversation, group meeting, fax messages, memos, policy statements, reward systems, production schedule, and video teleconferences. According to Gibson [13], page 415, selecting the appropriate medium can have a major impact on communication effectiveness and even managerial performance.

- Decoding

A decoding process takes place that interprets the message by using receiver's previous experience and frames of reference.

- Receiver

The receiver is an employee who receives the message and decodes the message in light of his or her own previous experience and frames of reference.

- Feedback

A feedback provides a channel for receiver response that enables the sender to determine whether the message has been received and has produced the intended response.

One-way communication that does not allow receiver to sender feedback increases the potential for distortion between the intended message and the received message. Two-way communication provides receiver to sender feedback. The feedback may be in direct or indirect means. Direct feedback may be verbal exchanges. Indirect feedback may be declines in productivity, poor production quality, increased absenteeism or turnover, and poor coordination and/or conflict between units. It may indicate communication breakdown.

- Noise

Noise can be any factors that distort the intend message. Noise may occur in each of elements of the communication.

2.1.3. Nonverbal Messages

The message send out from sender can be verbal or nonverbal. Nonverbal message is the information that a sender sends which is unrelated to verbal information. Nonverbal message or nonverbal communication refers to the message sent with body posture, facial expression, voice intonation, hand and eyes movement, physical distance, and even silence. It is as important as verbal communication.

Nonverbal communication differs from verbal communication in two things. First, it is normal to know words that says or writes, where as nonverbal is typically automatic and unconscious. Second, distinction is that nonverbal communication is less rule bound than verbal communication. Nonverbal is more ambiguous and more susceptible to misinterpretation.

2.1.4. Communication Channels

1. Direction of Communication

The design of an organization provides for communication in four distinct directions: downward, upward, horizontal, and diagonal.

Downward and upward communication can be considered as vertical communication. According to Taylor [2], page 231, vertical communication channels are important in the formal organization structure. Messages move upward and downward along vertical channels.

1) Downward communication moves messages that originate higher in the organization to lower levels. It usually serves specific functions:

- To give instructions or orders
- To give rationale for jobs or relationships within the organization
- To give information about procedures and practices
- To give feedback on job performance
- To give explanations of organizational goals

Downward communication is usually not direct from the top to the bottom of an organization unless in writing. The most common forms of downward communication are job instructions, office memos, policy statements, procedures, manuals, and company publications.

According to Gibson [13], page 419, in many organizations, downward communication often is both inadequate and inaccurate. Absence of job-related information can create unnecessary constraint among workers.

Using four methods as follows can transmit the downward communication: (1) oral, (2) written, (3) pictorial, (4) oral-written-pictorial combination.

The effectiveness of communication is considered by the most effective communication methods that use. From the survey in United State of America found that there was assessment about the effectiveness of different combination methods for different types of communication situations. The four different combination methods were (1) written only, (2) oral only, (3) written followed by oral, (4) oral followed by written.

The conclusions was that the oral followed by written methods was rate most effective in six of the ten situations and was never rates as inappropriate for any situation. The situations that required immediate action and need some follow up later, which generally require document and generally involve positive interpersonal relations seemed best handled with the oral followed by written method.

The following Table shows the methods those used in 10 different situations.

Table 2.1: Most Effective versus Least Effective Methods for Communicating with Employees in Ten Different Situations (Pace [10], page 101)

Situations	Most Effective	Least Effective
1. Communicating information requiring immediate employee action	Oral followed by written	Written only
2. Communicating information requiring future employee action	Written only	Oral only
3. Communicating information of a general nature	Written only	Oral only
4. Communicating a company directive or order	Oral followed by written	Oral only
5. Communicating information on an important company policy change	Oral followed by written	Oral only
6. Communicating with your immediate supervisor about work progress	Oral followed by written	Oral only
7. Promoting a safety campaign	Oral followed by written	Oral only
8. Commending an employee for noteworthy work	Oral followed by written	Written only
9. Reprimanding an employee for work deficiency	Oral only	Written only
10. Setting a dispute among employees about a work problem	Oral only	Written only

2) Upward communication starts at lower levels and moves up along the chain of command. According to Taylor [2], page 232, in the formal channels, upward communication, whether written or oral, does not usually cross more than one level.

According to Gibson [13], page 419, an effective organization needs upward communication as much as it needs downward communication. However, achieving effective upward communication-getting open and honest messages from employees to management-is an especially difficult task, particularly in larger organizations. Some studies suggest that of the four formal communication channel, upward communication is the most ineffective.

Some of the most common upward communication devices are suggestion boxes, group meeting, and appeal or grievance procedure.

3) Horizontal communication is direct communications among peers or between members of departments with equal status in the organization. Horizontal communication is the communication that flow across functions in an organization. It is necessary for coordinating and integrating diverse organizational function. Horizontal channels provide relationships among people that are necessary for the total system to function.

Horizontal communication is proposed due to the following issues:

- Coordinating and delegating the jobs
- Informing plans and activities
- Problem solving
- Constructing the understanding about change

4) Diagonal communication or cross-channel communication is the communication that cuts across functions and levels in an organization. It is important when members cannot communicate through upward, downward, or horizontal channels. It is probably least used channel of communication in organization.

2. Communication and Technology

With in recent year, there are several high-technology innovations. They have contributed to an explosion of communication tools used by business today. With these innovations, they have made communication faster, easier, and in some case less expensive. Some of these major innovations in communication technology can be described as follows:

- The Internet and World Wide Web. The Internet is a global network of integrated computers that provides computer users with information and documents. World Wide Web is subset of the Internet. According to Gibson [13], page 420, World Wide Web is a retrieval system for a vast amount of information and documents that are found on individual websites, or home pages.
- Intranet. A private Internet-based network developed and maintained by an organization.

- Voice Mail. It is the way in which employees communicate internally and leaving a recorded message.
- Conferencing. With recent decline in business travel and cost saving pressure, many companies turn to conferencing technology. According to Gibson [13], page 420, though such high-tech communication tools are helpful for exchanging factual information and working out minor problems, these approaches cannot adequately replace the high-touch contact that is necessary when negotiations, client cultivation, and other trust-dependent activities need to be carried out.
- Electronic Mail. E-mail allows user to send messages to anyone who is connected to the Internet. The users can attach files to the messages such as text-based document, digital photographs, video, sound, and executable files.

2.1.5. Formal and Informal Communication

1. Formal Communication

Formal communication follow the chain of command established by an organization's hierarchy of authority. An organization chart indicates the proper routing for official messages passing from one level or part of the hierarchy to another. Because formal communication are considered as official and authoritative, it is typical for written in form of letters, memos, policy statements, and other announcements.

Although formal communication is necessary and important for managers, it is only one part of overall communication responsibilities of them. They also need informal communication.

2. Informal Communication

Informal communication does not adhere to the organization's hierarchy of authority. It coexists with the formal communication but frequently diverge from it by skipping levels in the hierarchy and/or cutting across vertical chain of command.

According to Schermerhorn [11], page 399, the importance of informal communication in organizations is highlighted in best selling book “In Search of Excellence” Thomas J. Peter and Robert H. Waterman, Jr., the book’s authors, report that, “The excellent companies are a vast network of informal, open communications. The patterns and intensity cultivate the right people’s getting into contact with each other.”

The grapevine is another informal communication. The grapevine is a powerful means of communication that cuts across formal channels of communication.

The advantages of grapevine are their abilities to transmit information quickly and efficiently. It often happen that grapevine can travel faster and have greater impact than the same messages pass through formal channel. According to Schermerhorn [11], page 399, grapevines also help to fulfill the needs of people involved in them. Being part of grapevine can lead to a sense of security from “being in the know” when important things are going on. It is also provides social support through the variety of interpersonal contacts involved in the give and take of communication.

The disadvantage of grapevine occurs when they transmit incorrect or untimely information. Rumors and prematurely released information can be dysfunctional. Rumor is an unverified belief that is general circulation inside the organization or outside the organization. The best ways to avoid incorrect rumor is to make sure that key people in a grapevine get the right information to being with.

2.1.6. Effective and Efficient Communication

1. Effective Communication

Effective communication occurs when intended meaning of the source and the perceived meaning of the receiver are one and the same. This should be the goal of all communication attempts. It is not always achieved. Adding up the opportunity to have feedback and ask question is one way to increase the effectiveness of communication.

2. Efficient Communication

Efficient communication occurs at the minimum cost in terms of resources expended such as time. Time is an important resource in the communication process. It often plays a role in how we communicate with others. Managers often choose not to visit employees personally to communicate messages because it would be very costly in terms of time. Instead, managers rely on the efficiency of written memos, posted bulletins, e-mail, and voice-mail.

Efficient communications are not always effective. A low-cost communication such as a computer memo may save time for the sender, but it does not always achieve the desired results in terms of the receiver's perceived meaning. And it is the same that effective communication may not be efficient. For example, manager may visit each employee and explain new change in procedures may guarantee that everyone truly understands the change. But it may be expensive in terms of the required time expenditure.

2.1.7. Barriers to Effective Communication

Noise is anything that interferes with the effectiveness of communication attempt. There are several sources of noises. They can be described as follows:

1. Frame of Reference

Different people can interpret the same communication differently. It depends on the previous experiences that result in variations in encoding and decoding processes.

Distortion occurs because the participants have different frame of reference. People in various organization functions can interpret the same situation differently. Different levels in the organization also have different frame of reference. The different of needs, values, attitudes, and expectations, causes unintentional distortion of communication.

According to Gibson [13], page 427, effective managerial problem solving depends on the manager adopting the appropriate frame of reference to guide the search for solution. If the problem is mislabeled or the wrong frame of reference is used, chances for success are lowered.

2. Selective Listening

For selective perception, the individual tends to block out new information, especially if it conflicts with existing beliefs.

3. Value Judgments

According to Gibson [13], page 428, in every communication situation, the receiver makes value judgments. This basically involves assigning an overall worth to a message prior to receiving the entire communication. Value judgments may be based on the receiver's evaluation of the sender, previous experiences with the sender, or on the message's anticipated meaning.

4. Source Credibility

Source credibility is the trust, confidence, and faith that the receiver has in the words and action of the sender. The level of credibility that the receiver assigns to the sender in turn directly affects how the receiver views and reacts to the sender's, words ideas, and actions.

5. Semantic Problems

Communication can be defined as the transmission of information and understanding through the use of common symbols. But the understanding cannot be transmitted. Only the information is transmitted in the form of words that are the common symbols. Unfortunately, the same words may mean different things to different people. The understanding depend on the receiver, not the words.

The different groups use different words. So the communication can often be impeded. This is especially true with technical terms or phrases. For example, "Cost-benefit study", would have the meaning to those involved in the administration of the company but might mean very little to some staff in production line. So it shows that the sender may speak the same language as a receiver but still not transmit understanding.

6. Filtering

Filtering is a common occurrence in upward communication in organization. Filtering refers to the manipulation of information so that the receiver perceives it as positive. For example, subordinates cover up unfavorable information in messages to their superiors. The management makes merit evaluations, grants salary increases, and promotes individuals based on what it received from upward channel. It is the reason that why filtering occurs. The temptation to filter is likely to be strong at every level in the organization.

7. In-group Language

Occupational, professional, and social groups often develop words or phrases that have meaning only to members in each groups. Special language or in-group language can serve many useful purposes. It can provide members with feelings of belonging, cohesive, and self-esteem. It can also facilitate effective communication within the group. However the in-group language may causes communication breakdown when outsider or other groups are involved. In this case management should provide communication skill training to affected individuals to facilitate effective communication between involved parties.

8. Status Differences

The hierarchy of authority in organizations can create barrier to effective communication. Communication is frequently biased when flowing upward in organization hierarchies. Persons that lower in the hierarchy can perceive status differences as treats. This can prevent or distort communication. According to Schermerhorn [11], page 404, status differentials create special barriers between managers and their subordinates. Given the authority of their positions, managers may be inclined to do a lot of “telling” but not much “listening.” Subordinates, on the other hand, may tell their superiors only what they expect the boss want to hear. Whether the reason is a fear of retribution for bringing bad news, an unwillingness to identify personal mistakes, or just a

general desire to please, the result is the same. The manager ends up making poor decisions because of biased and inaccurate information base.

To avoid the problem, the management must develop trust in his or her working relationships with subordinates and take advantage of all opportunities for face to face communication.

Some organizations are de-emphasizing status and power differences by encouraging open superior and subordinate communication. For example, according to Gibson [13], page 429, at Honda Motors in Marysville, Ohio, visible differences in status and power have been intentionally avoided. The plant has no executive cafeteria or washroom and no special parking spaces, and executives work in open offices with not frills. Management believes that these actions reduce communication barriers between managers of all levels and their subordinates.

9. Proxemic Behavior

Proxemic defined as individual's use of distance when interpersonal communicating with others. Proxemics creates a significant communication barrier when the proxemic behaviors of the sender and receiver differ.

10. Time Pressure

Time pressure is important barrier to effective communication. Managers do not have time to communicate frequently with subordinate. Time pressure can often lead to far more serious problem than this. For example, salesperson needs a rush order for an important customer and goes directly to the production manager with the request. The production manager owes the salesperson a favor. Other members of the sales force who get word of this become upset over this preferential treatment.

Sometime going through formal channel is extremely costly or even impossible from a practical standpoint.

11. Communication Overload

The vital task performed by a manager is decision-making. The necessary factor for effective decisions is information. But people can not absorb or adequately respond to all of the messages directed to them. They

screen out the majority of messages, which in effect means that these messages are never decoded. So in the area of organizational communication, more is not always better.

According to Gibson [13], page 430, examining the barriers indicates that they are either within individual (e.g., frame of reference, value judgments) or within organizations (e.g., in-group language, filtering). This point is important because attempts to improve communication must necessarily focus on changing people and/or changing the organization structure.

2.1.8. Improving communication in Organizations

According to Gibson [13], page 431, managers striving to become better senders must accomplish two separate tasks. First, they must improve their messages: the information they wish to transmit. Second, they must seek to improve their own understanding of what other people try to communicate to them. In other words, they must become better encoders and decoders. They must strive not only to be understood but also to understand.

The following lists are some techniques that can help to improve communication in organization.

1. Following up

This technique involves assuming that the messages that send out may be misunderstood and whenever possible, attempting to determine whether intended meaning be actually received.

2. Regulating Information Flow

Regulating communication can ensure an optimum flow of information to managers and eliminate the barrier of communication overload. Communication can be regulated in both quality and quantity. The idea is that only significant deviation from policies and procedures should be brought to the attention of superiors. In formal communication, superior should be communicated with only on matters of importance and not for the sake of communication.

3. Utilizing Feedback

Feedback is important element in effective two-way communication. It provides a channel for receiver response that enables the sender to determine whether the message has been received and has produced the intended response.

Feedback is the process of telling someone else how you feel about something they did or said or about the situation in general.

4. Empathy

Empathy is the ability to put oneself in the other person's role and to assume that individual's viewpoints and emotions. This involves being receiver-oriented rather than sender-oriented. The form of communication should depend on what is known about the receiver. Empathy requires senders to place themselves in the shoes of the receiver to anticipate how the message is likely to be decoded.

5. Repetition

Repetition is an accepted principle of learning. Implementing repetition or redundancy into communication ensures that if one part of the message is not understood, other parts carry the same message. For example, new employees are often provided with the same basic information in several different forms.

6. Encouraging Mutual Trust

Due to time pressure can cause that managers cannot follow up communication and encourage feedback or upward communication every time they communicate. Under that circumstance, an atmosphere of mutual confidence and trust between managers and their subordinates can facilitate communication.

7. Effective Timing

There is a lot of message that individual receive in daily. It is impossible to take care on all messages and many are never decoded and received.

On an everyday basis, effective communication can be facilitated by properly timing major announcements. The barriers discussed earlier often arise from poor timing that results in distortion and value judgments.

8. Simplifying Language

Complex language has been identified as major barrier to effective communication. So senders must encode messages in words, appeals, and symbols that are meaningful to the receiver.

9. Effective Listening

One method that encourages someone to express true feeling, desires, and emotions is to listen. Just listening is not enough, it must be the listening with understanding.

According to Gibson [13], page 435, communication effectiveness is enhanced when both the sender and receiver utilize feedback and exposure. Balanced use of both is the most effective approach.

2.1.9. Communication of Roles

According to Schermerhorn [11], page 407-417, one of the most important communications in which managers become involved is the sending and receiving of role expectations. A role is a set of activities expected of a person holding a particular office or position in a group or organization. The various people who have these expectations regarding the behavior of someone in a role are considered members of the role set. Managers are part of the role sets of their subordinates. For subordinate, the role expectations communicated by the manager are that likely to include instructions about desired behavior and behavior to be avoided, intentions regarding the allocation of rewards, and evaluation about past performance. At the organizational level, a key issue in establishing a unified sense of mission and culture is the communication of a shared role orientation for all members.

Role ambiguity occurs when the person in a role is uncertain about the role expectations of one or more members of the role set. To do their jobs well, people need to know what is expected of them. Sometimes these expectations

may be unclear because the manager has not tried to communicate them to the subordinate or has done so inadequately. Or it may be a failure of the subordinate to listen that creates the lack of understanding. In either case, the resulting role ambiguity can be stressful for the individual. Research indicates that it may cause a loss of confidence in the role sender, lowered self-confidence, and/or decreased job satisfaction.

Role conflict occurs when the person in a role is unable to respond to the expectations of one or more members of the role set. The role expectations are understood, but for one reason or another, they cannot be complied with. Role conflict is another source of potential tension that may result in a loss of job satisfaction, decreased confidence in one's boss, and/or a tendency to avoid the unpleasant work situation.

A common form of conflict is role overload. This is a situation in which there are simply too many role expectations being communicated to a person at a given time.

Role conflicts also occur when the expectations of one or more members of the role set are incompatible. There are four basic types. The definition and example of each follows:

- 1) **Intrasender Role Conflict:** The same role-set member sends conflicting expectations. Example- A purchasing agent is asked by the boss to buy materials unavailable through normal channels; the boss also says company procedures should not be violated.
- 2) **Intersender Role Conflict:** Different role-set members send conflicting expectations. Example- A manager's boss expects her to be very direct and to exercise close control over subordinates; the subordinates want more freedom in their work.
- 3) **Person-Role Conflict:** The values and needs of the individual conflict with the expectations of the members of the role set. Example- There is growing pressure on a senior executive to agree secretly to fix prices with competing firms; this violets the personal ethics of the executive.

- 4) Interrole Conflict: The expectations of two or more roles held by the same individual become incompatible. Example- As work load increases, a manager spends evenings and weekends at work; the family is upset because they feel home obligations are not being met.

2.1.10. Conflict

Conflict occurs whenever disagreements exist in a social situation over issues of substance and/or emotional antagonisms. Substantive conflicts are natural in organization and center on disagreements over ends and means. Emotional conflicts involve feelings of anger, mistrust, dislike, fear, resentment, and personality clashes.

There are four types of conflict situations. They can be listed as follows:

- 1) Vertical conflict: Occurs between levels in an organization's hierarchy of authority. A common example is conflict between a supervisor and subordinate over such things as task goals, deadlines, and performance accomplishments.
- 2) Horizontal conflict: Occurs between persons or groups operating at the same level in the hierarchy. It may trace to such things as goal incompatibilities, resource scarcities, or purely interpersonal factors.
- 3) Line-staff conflict: Occurs when line and staff representatives disagree over issues of substance in their working relationships. Because staff personnel often have the potential for major impact on certain areas of line operations, line-staff conflict can and does appear with some frequency in organization.
- 4) Role conflict: Occurs when the communication of task expectations from role-set members proves inadequate or incompatible for the role holder.

2.1.11. Conflict management

Indirect conflict management techniques are quite common and potential useful. They are appeals to common goal, hierarchy referral, organizational redesign, and the use of mythology and scripts.

- 1) Appeal to Common Goals: It can focus the attention of potentially conflicting parties on one mutually desirable conclusion. By elevating the potential dispute to a common framework where the parties recognize their mutual interdependence, petty disputes can be put in perspective. Conflict resolution begins by making sure the parties take personal responsibility that the situation will improve.
- 2) Hierarchy Referral: It makes use of the chain of command for conflict resolution. Problems are simply referred up the hierarchy for higher level manager to deal with.
- 3) Organizational Redesign: Where the organizational design allows groups, units, and departments to operate in relative from one another, conflict tends to be muted. At points where work needs to be coordinated and units share resources, however, conflict often arise. Managers have a number of options to reduce conflicts by adjusting the organizational design at the points of friction.
- 4) Mythology and Scripts: They are most likely to hide conflict in organization when managers have a limited capability for managing conflict, managing conflict is perceived as time-consuming and expensive, and there are irreconcilable differences among individuals, units, and organizational stakeholders.

Direct conflict management techniques are the techniques that develop true conflict resolution. The true conflict resolution can occur when the underlying substantive and emotional reason are identified and a solution that allows both conflicting parties to win is developed. From the perspective of the individual participants, the conflict can be examined from the perspective of who wins.

- 1) Lose-Lose Conflict: Occurs when nobody really gets what they want. This is often a result of managing conflict by avoidance, smoothing, and/or compromise. No one achieves his or her true desires, and the underlying reasons for the conflict remain unaffected. Future conflict of a similar nature is likely to occur.

- 2) Win-Lose Conflict: One party achieves its desires at the expense and to exclusion of the other party's desires.
- 3) Win-Win Conflict: It is achieved by confrontation of the issues and the use of problem solving to reconcile differences. When success is achieved in problem solving, true conflict resolution has occurred.

2.2 Organization Structure

2.2.1 Understanding the organization

The organization is complex systems that purposely coordinate the actions of their members to accomplish business purposes. The interrelated of the organization is important. Each parts of the organization must fit together to form the whole, they directly effect each other. The organization cannot reach its goal if each part does not perform correct function.

According to Taylor [2], page 229, Organizations usually try to accomplish their goal by dividing tasks and functions. People who perform these tasks are supervised through a structure of authority and responsibility. The structure aims to coordinate behaviors of employees towards achieving organization goals. System and individual goals often differ, and the differences commonly create communication problems. If the organization is to continue to exist, however, members must work toward the system's goals. The formal organization coordinates individuals' behaviors with the system's goal; the informal organization manages interpersonal relationships.

According to Gomez-Mejia [3], page 51, Organization structure refers to the formal and informal relationships between people in an organization.

According to Taylor [2], page 229-230, The formal organization is a structure for accomplishing organizational goals. The formal structure of authority and responsibility is hierarchical. At the "top" are those who have ultimate responsibility for managing the organization. From there levels of subordination range to the "bottom," where workers have no authority over

anyone else and responsibility only for their specific tasks. Titles reflect levels of authority and responsibility.

Organizations consist of many subgroups. Departments, units, divisions, or company are subsystems within the total.

Groups within organizations are interrelated and interdependent. Production cannot accomplish a task without the aid of engineering, and both depend on purchasing. The need for coordination among the subsystems creates a special need for effective communication to accomplish organization goals, especially because of the complexity of subsystem relationships.

2.2.2 Designing the Organization

Designing the organization is important because it assist to manage and to utilize limited resource of the company to be the most advantages. It assist the company achieve its goals in most effectively.

The organizational design means that the single manager or the team of managers must make some decision. According to Gibson [13], page 379-380, however the actual decisions come about, and the content of the decisions is always the same. The first decision focuses on individual jobs, the next two decisions focus on departments or groups of jobs, and the fourth decision considers the issue of delegation of authority throughout the structure.

1. Managers decide how to divide the overall task into successively smaller jobs. Managers divide the total activities of the task into smaller sets of related activities. The effect of this decision is to define jobs in terms of specialized activities and responsibilities. Although jobs have many characteristics, the most important one is their degree of specialization.

2. Managers decide the bases by which to group the individual jobs. This decision is much like another classification decision and it can result in-groups containing jobs that are relatively homogenous (alike) or heterogeneous (different).
3. Managers decide the appropriate size of the group reporting to each supervisor. This decision involves determining whether spans of control are relatively narrow or wide.
4. Managers distribute authority among jobs. Authority is the right to make decisions without approval by a higher manager and to exact obedience from designated other people. All jobs contain some degree of the right to make decisions within prescribed limits. But not all jobs contain the right to exact obedience from others. The latter aspect of authority distinguished managerial jobs from non-managerial jobs. Managers can exact obedience; non-managers cannot.

There are many types in designing organization. It depends on business strategy, requirement of the organization, and organization management's experiences. The organizing rely on old or current pattern. It is difficult to change or reorganizing because it may effect to authority or benefit of the management team.

Designing the organization can be separated into 2 groups:

1. Focus on chain of command can be separated into 3 types.

1.1 Tall organization

The characteristics of this type are top-down, many levels of management, and centralize management The following Figure 2.2 shows tall organization structure.

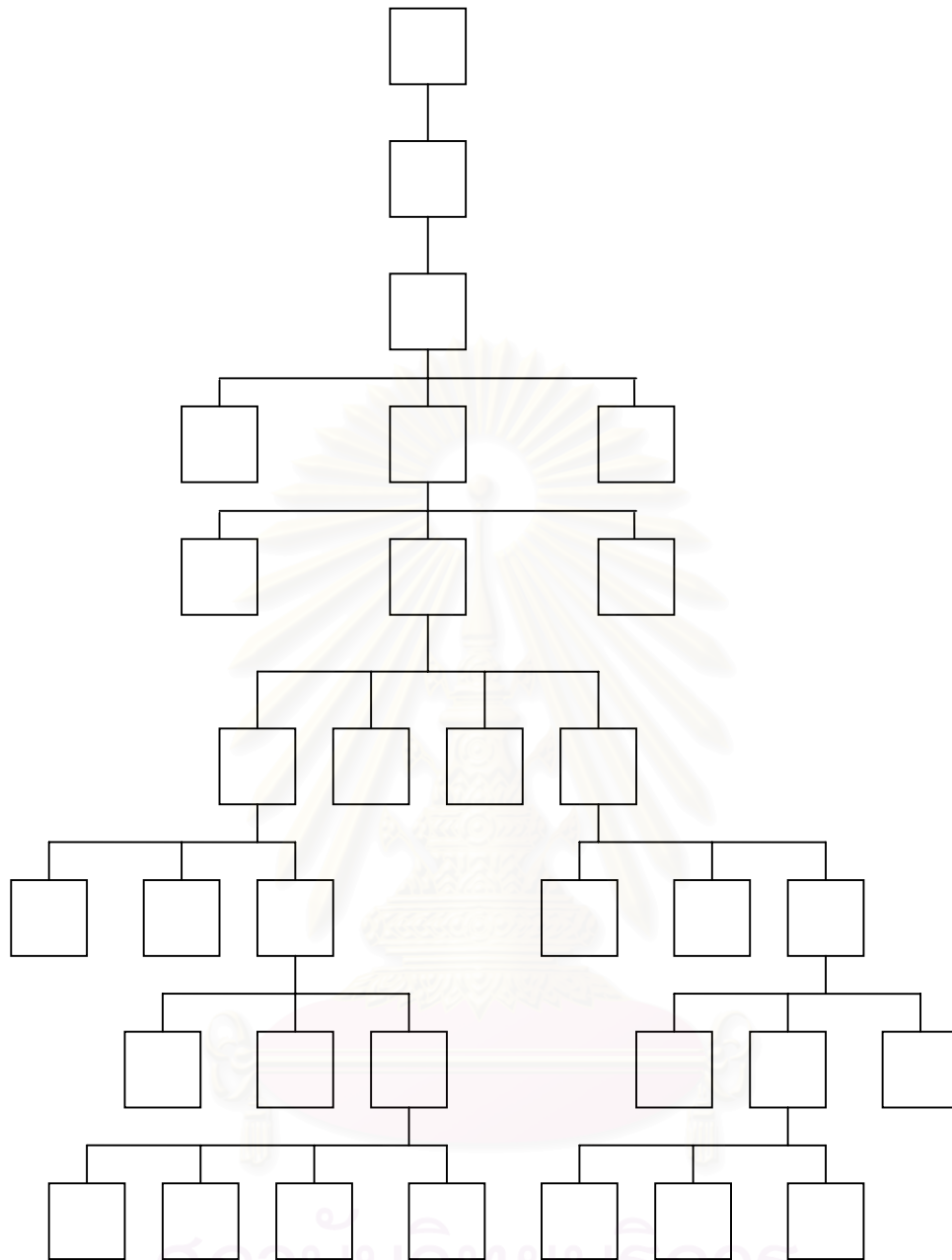


Figure 2.2: Tall Organization

1.2 Flat organization

The characteristics of this type are short process, few level of management. The following Figure 2.3 shows flat organization structure.

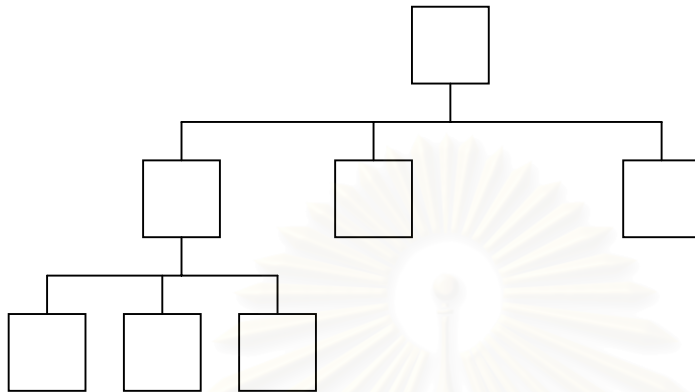


Figure 2.3: Flat Organization

1.3 Moderate Organization

The characteristics of this type are middle in between tall and flat organization. The following Figure 2.4 shows moderate organization structure.

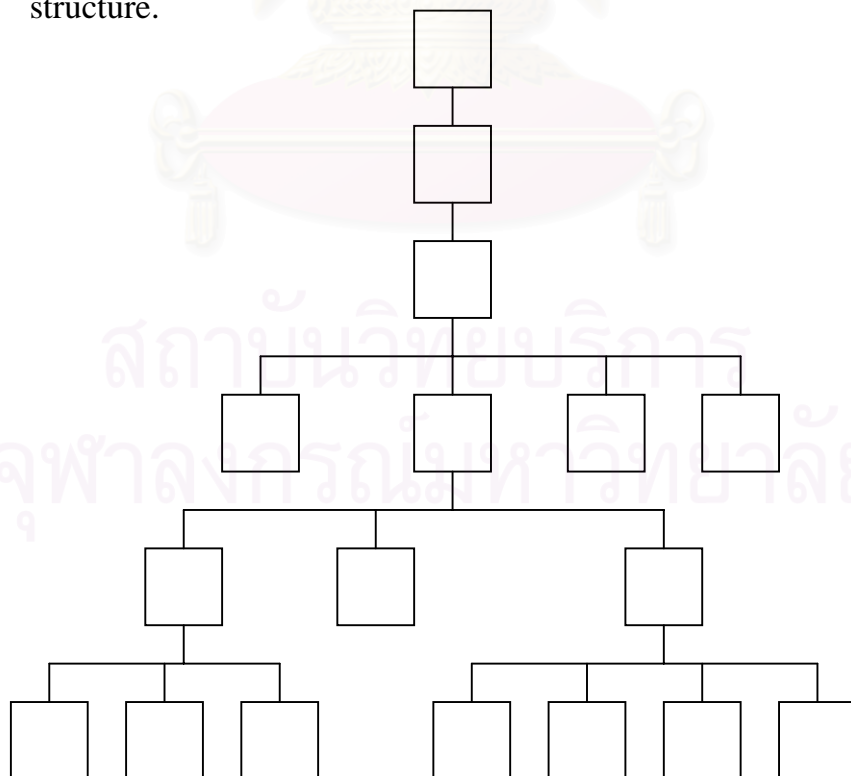


Figure 2.4: Moderate Organization

2. Focus on duty can be separated into 3 types.

2.1 Functional organization

The organization is the organization that separates department, division, and section by considering job function. The following Figure 2.5 shows functional organization structure.

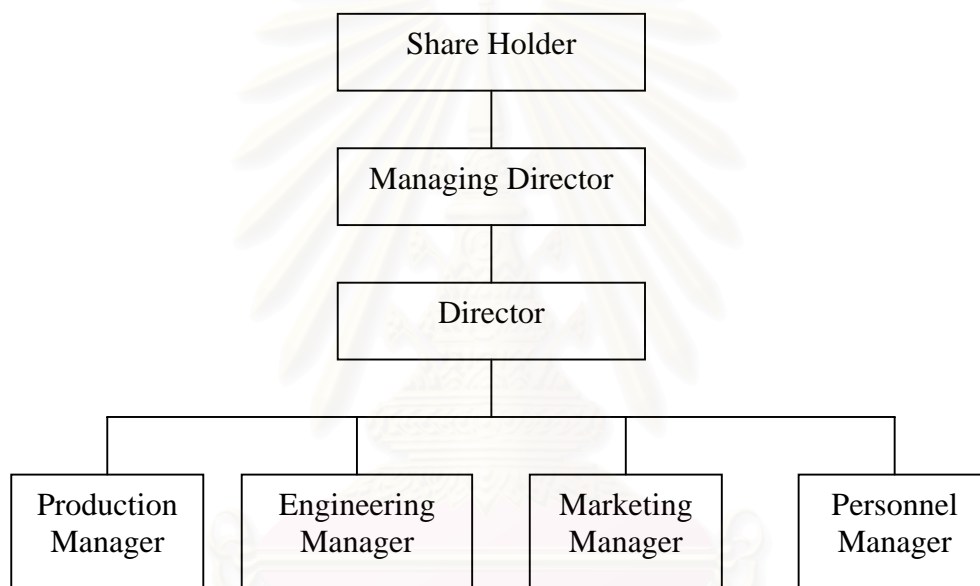


Figure 2.5: Functional Organization

2.2 Project organization

It is the organization that concentrates on project job. The job will be performing in one period. There is start time and stop time. The objective of the job is the goal of the project. The following Figure 2.6 shows project organization structure.

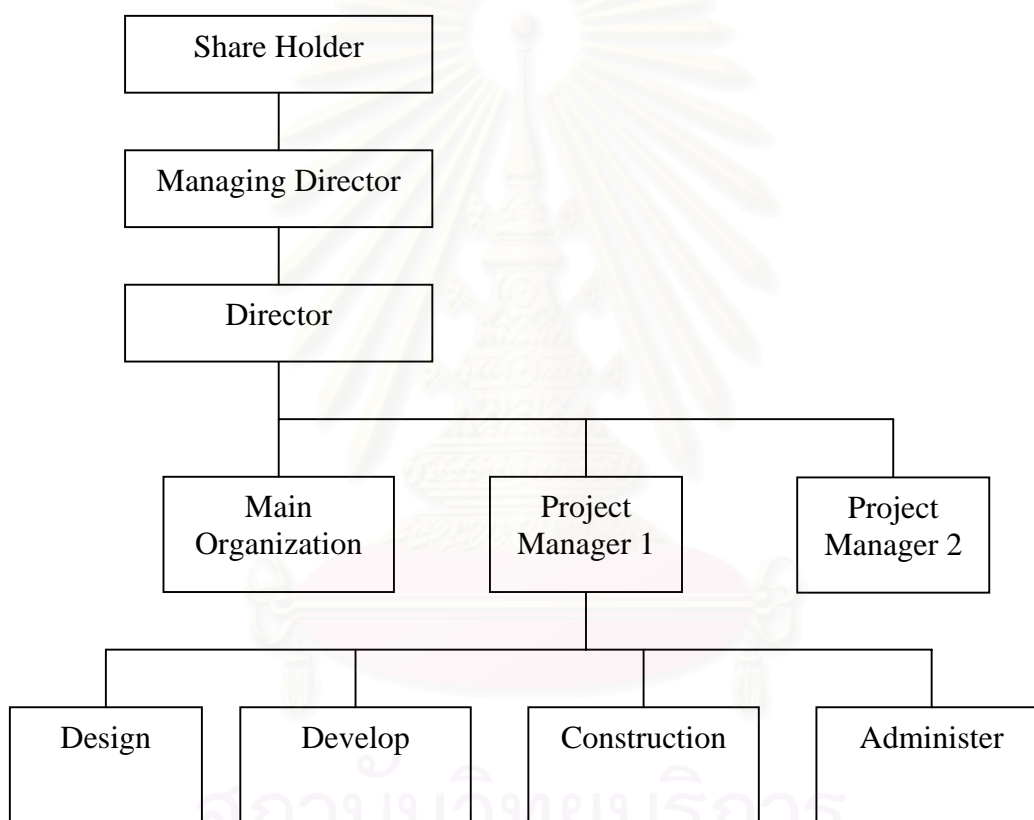


Figure 2.6: Project Organization

2.3 Matrix organization

It is the organization that in between functional and project organization. It balances the job objective, plan, authority, and coordination of administration. The following Figure 2.7 shows matrix organization structure.

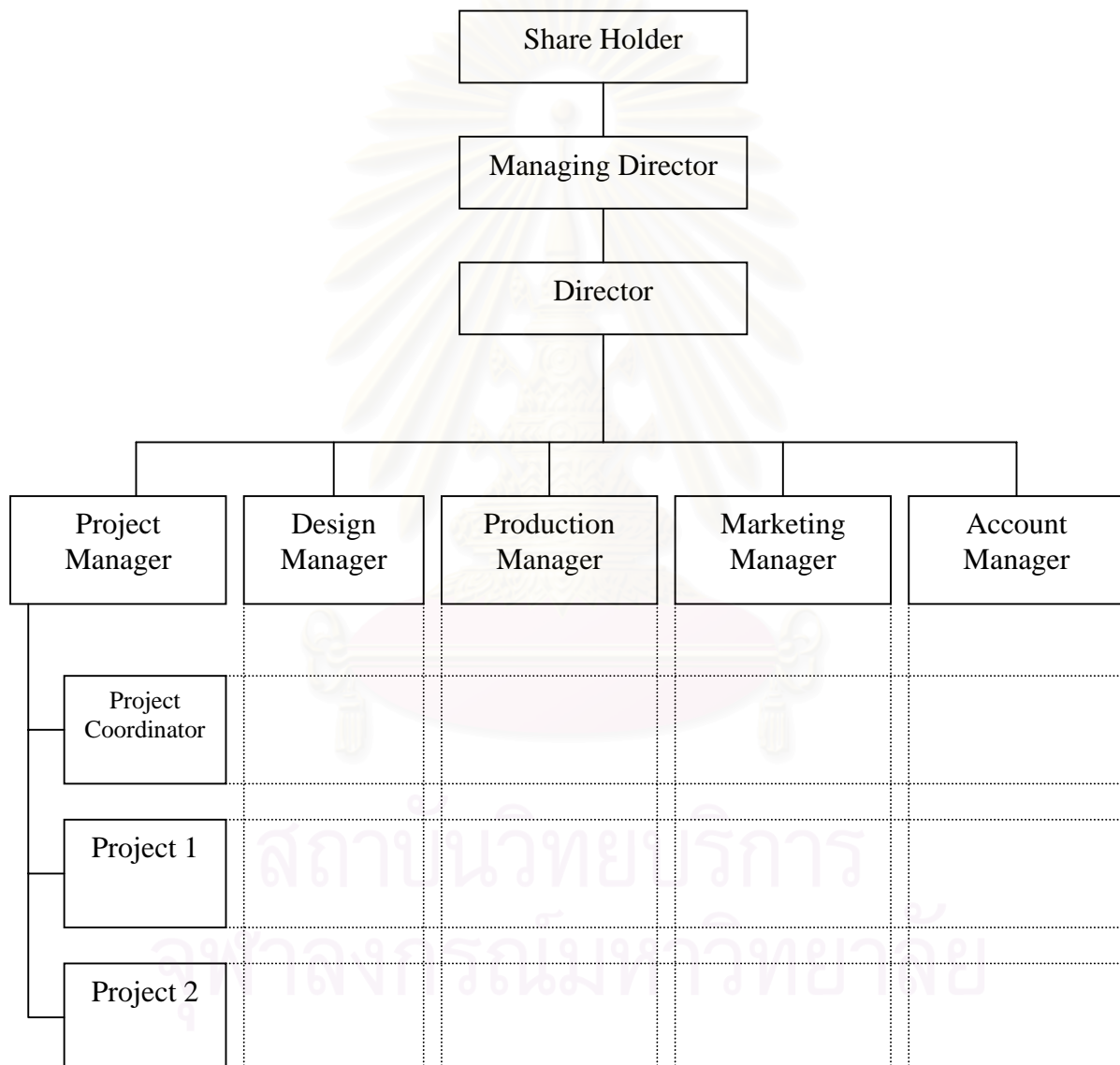


Figure 2.7: Matrix Organization

2.2.3 Organizational Division

The organization division can be arranged by department disposition. There are many ways to dispose department such as below:

1. Dispose by considers the same characteristic of product, service or market.
2. Dispose by considers the same of job process.
3. Dispose by considers the area of work.

2.2.4 Span of Management

Span of management or span of control refers to the number of subordinates whose under control of one supervisor. In organizing, span of control must be considered and select suitable one that appropriates for the company.

2.2.5 Organization Chart

Organization chart shows the organization structure about chain of command, department division, and the formal relationship of each position.

Organization chart assists workers to understand the operation in the organization. It shows the detail in department, division and section in the organization. It shows the relationship between each level and chain of command, communication and coordination.

The advantages of organization chart can be described as following:

1. It makes the workers to know their position in the company and know their function.
2. It makes the workers to know about chain of command and communication.
3. It makes the workers to know about function level in the organization.

2.3 Job Description

According to Gomez-Mejia [3], page 71, Job description is a written document that identifies, defines, and describes a job in terms of its duties, responsibilities, working condition, and specifications.

According to Taylor [2], page 235, the major problem about coordination may come from unclear role definition. An unclear role definition may mean that job limits are not clear. In these situations, employees may be expected to do things they do not believe they were hired to do. A written job description is a solution to eliminate unclear role definitions. Written job descriptions can solve another problem: inconsistent expectations. Employee may be expected to do one thing one time and at other times be reprimanded for doing exactly the same thing. Inconsistency may be more frustrating than excessive demands. With specified job limits, inconsistent expectations can usually be identified and eliminated.

2.3.1 Types of job description

According to Gomez-Mejia [3], page 71, There are two types of job descriptions. They can be described as following:

1. Specific job descriptions

Specific job description is a detailed summary of a job's task, duties, and responsibilities. This type of job description is associated with work flow strategies that emphasize efficiency, control, and detailed work planning.

2. General job descriptions

General job description, which is fairly new on the scene, is associated with workflow strategies that emphasize innovation, flexibility and loose work planning. Only most generic duties and responsibilities for a position are documented in the general job description.

2.3.2 Elements of job description

There are four key elements in job description. They are identification information, job summary, job duties and responsibilities, and minimum qualifications.

1. Identification information identifies the job title, location, and place in the organization structure.
2. Job summary is a short statement that summarizes the job's duties and responsibilities.
3. Job duties and responsibilities are the statements that explain in detail about duties and responsibilities.
4. Minimum qualifications are the basic standards a job applicant must have achieved to be considered for the job.

2.4 Work flow

According to Koulopoulos [4], page 52, A profound effect of workflow has to do with the fact that it will significantly change the nature of communication.

According to Poysick [5], page 12, The main reason to improve workflow is to enhance profitability. An increase in efficiency means nothing unless it is tied to such enhancement. Even increase customer satisfaction, the purported goal of many service industries, is useless if you satisfy your clients and still go out of business.

Workflow enhances profitability by making you more productive. If you can improve specific workflows within your organization, you will see your profit rise. For instance, minimizing rework is worthwhile because it has a direct impact on profit. Identifying the workflows that are profitable and those that are not can help focus sales efforts. Tracking equipment workflow will help you decide if future purchases will actually improve your bottom line. Inefficient process can be analyzed and revamped depending on profitability. And all employees in the company, especially if management structures things right, can begin to think of improving profitability by improving workflow.

Chapter 3

Analysis of the Sample Company

3.1 Company Profile

3.1.1 Background of the Company

The company that is selected for this thesis is plastic packaging company. The detail about background of the company comes from interview with the owner of the company. The company specialises in the manufacturing of small injection molding and blow molding for plastic products.

The company was established in Bangkok since 1981. At that time, founder and his wife managed the company with less than 5 workers. After that company continuous expands and moved to Nakornprathom since 1990.

Now the company still manages as family-owned business even there are more than 400 workers work in the company. The operational management is more difficult. The organization structure is more complicate. The information management is more difficult and more complex. So the company has problem about coordination and communication.

3.1.2 The Operation of the Company

The operational of the company is to do all process of plastic packaging except designing the packaging. In Figure 3.1, It shows that operational of company. It starts from draw the detail of product in paper, design the detail of dimension of mold in paper and produce mold. Then forming shape of product by using blowing machine or injection machine. And pass to decoration section to decorate product such as screen color, hot stamp, and assembly. Then go to pack and ship to customer in latest.

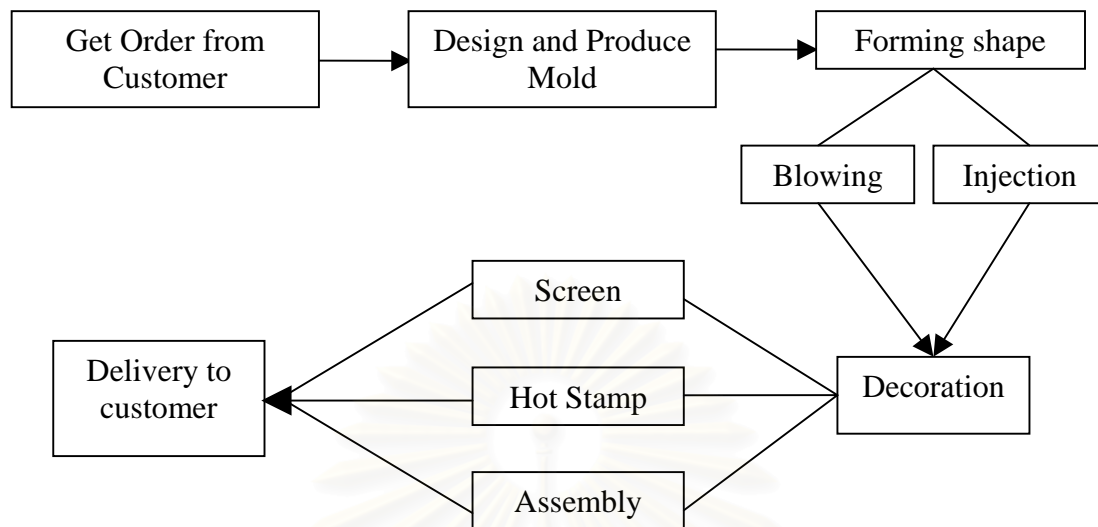


Figure 3.1: The Operation of the Company

The company managed as a family-owned business since established. At that time, company ran with 3-shift work: 24 hours a day. Now the company runs with 2-shift work, 8 hours per shift. There are 4 hours overtime for each shift.

Company must run 24 hours a day because cost and time for machine set up and shut down is high. Machine must continuous run to reduce cost for loss of raw material during set up and shut down. The processes that the company use to transform plastic granule to product are blowing and injection. It is the nature of 2 types of processes that company use to transform plastic granule to product that it must have loss of raw material during set up and shut down.

The company has blow molding machines and injection molding machine with various sizes for various purposes. The company can produce various kind of plastic packaging. The main work of the company is making to order products. All of products are order from customer with specific specification such as size, shape, capacity, color, printing format and etc.

Products of the company are plastic packaging. The company produces bottle and cap for milk, powder, shampoo, liquid soup, and other liquid containers. The company can produce some food containers for example bowl, cap and lid for instant noodle. The company can produce cosmetic packaging for example bottle and cap for mascara, jar and cap for skin cream and packaging for make-up set.

The customer of the company is the company that filling milk, food or other material into the bottle. The customers will order the company to produce plastic packaging, as they want. They will specify the specification of the product such as type of material, dimension, weight, shape, and decoration of the product for the company. It can say that product of the company is made to order product.

Order quantity of each product will vary product by product. The quantity can vary from 3,000 sets per one time order to 2 million sets or more per one time order. Jobs of the company are medium to large volume depend on order from customer.

3.1.3 The Organization of the Company

The company operates as a family-owned business so that the official organization chart is not available. The detail about organization structure of the company comes from interview with the owner of the company.

The current organization structure can be shown in organization chart in Figure 3.2.

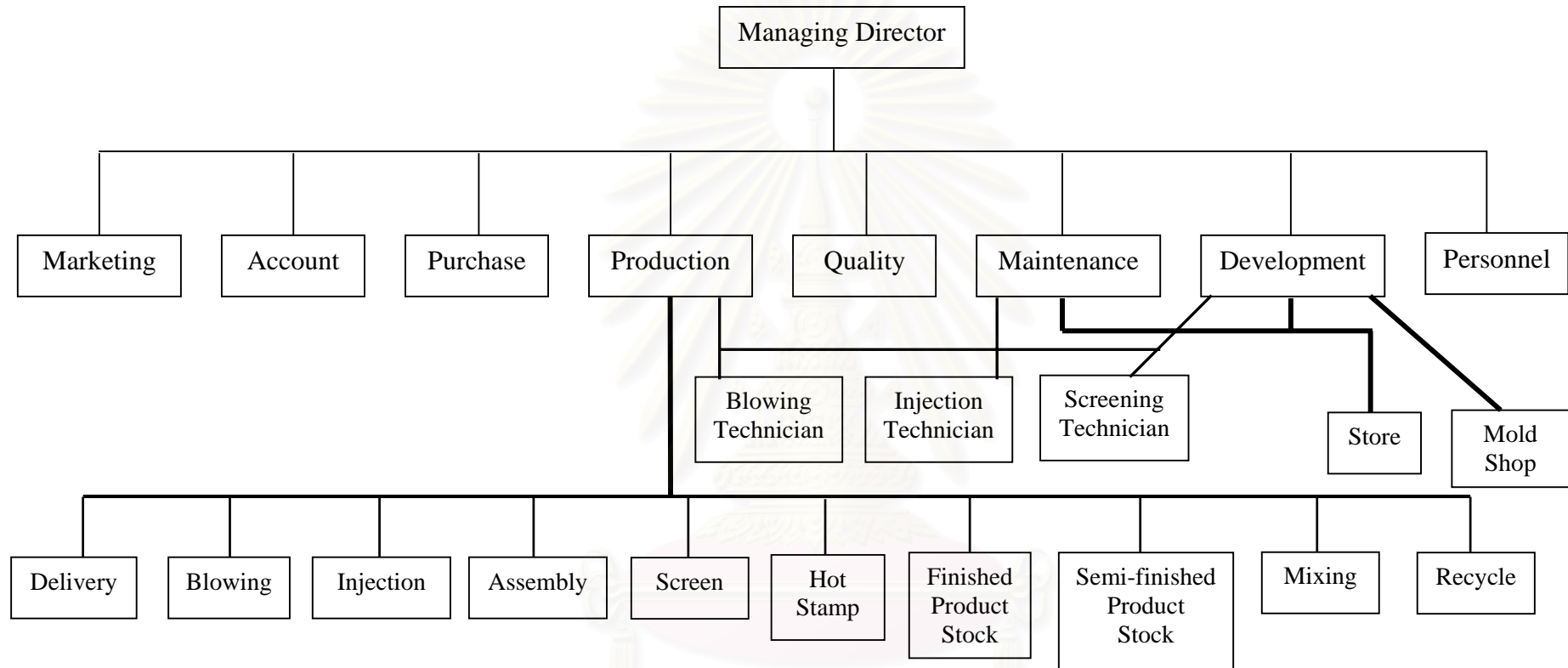


Figure 3.2: Current Organization Structure of the Company

From Figure 3.2, There are 8 departments under Managing Director.

The responsibility of each department can be draft explain below.

1. Account and financing take care on account and financing of the company.
2. Purchasing take care on purchasing every things that use in the company.
3. Personnel take care on salary calculation and payment.
4. Quality takes care on quality control of product.
5. Marketing takes care on purchase order from customer, customer relationship and customers complain.
6. Production takes care on producing product, transfer and keeping product in warehouse and delivery product to customer.
7. Development takes care on design mold, producing mold, test mold repair mold and maintenance mold.
8. Maintenance take care on all machines in production and take care all utilities in the company. The responsibilities is included setting up the machine for production start, adjust the machine during production and repair the machine when it breakdown.

Figure 3.2 shows that production department is the biggest department.

There are 10 sections under production department.

There are more than 400 workers in the company. The most workers are under control of production. There are about 370 workers or more under control of production.

About 80 workers work in remaining departments. Some department has only a few workers. Such as Purchasing has only one worker. Personnel have 2 workers.

The number of employee in the company is not accurate because the intention of the founder is not stable. It causes the turnover rate of employees of the company to be about 50%.

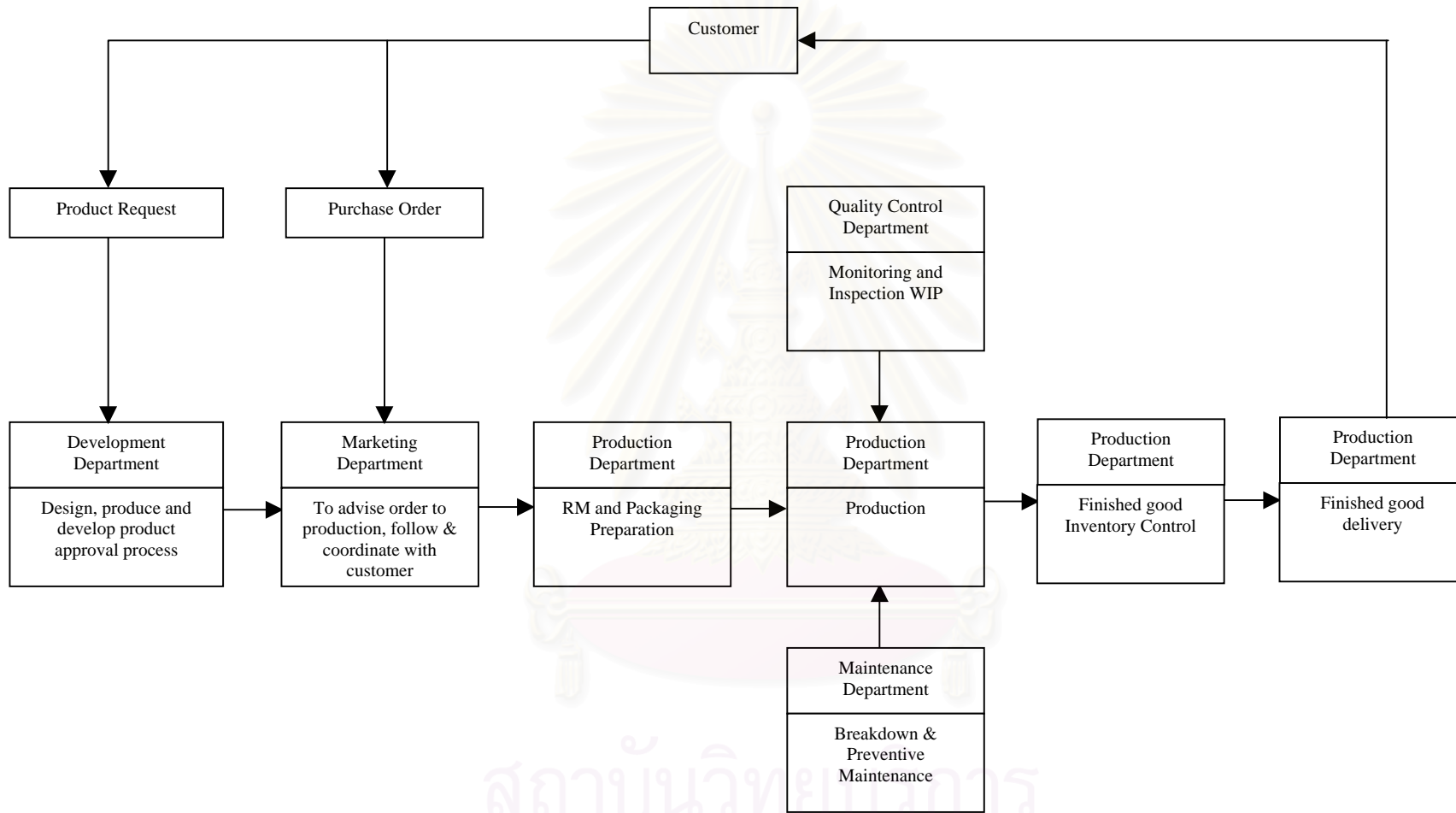


Figure 3.3: Business Process of the Company

3.1.4 Business Process of the Company

From Figure 3.3, the business process of the company can be explain as follow:

When the customer contact with the company about new product. The development department will take response. First development must discuss about product detail such as shape, dimension, wall thickness, capacity, weight, and type of material used. Then the customer must estimate the order quantity. So the company cans advice about the mold. If the order quantity is high in short period of time of production, the company will advise more quantity of mold cavity. Then the company can estimate mold's cost. Mold's cost will depend on size and the quantity of cavity per mold. Big mold and more cavities cause more cost.

Second development will design; producing and test run the mold. The company will send sample of product from test run to customer for approval. After customer approved, the product is ready for production.

At the same time, customer can send the purchase order to marketing department. Marketing will pass that order to production.

After product is approved, production can prepare raw material for production. Then production can start producing product. The maintenance should support for effective production.

During production process, products are audited by quality control. When products are finished, the products will be sending to warehouse and wait for delivery schedule. And then product is shipped to the customer in the latest.

3.2 Production Department

3.2.1 The Organization of Production Department

Figure 3.4 shows current organization structure of production section.

All employees, who work in production department, are daily rate payment except production manager. The supervisors are medium to low education. The workers are low education. Some of them work at 8.00 to 17.00. Some of them are 2 shifts work.

Working schedule of production department can be divided into three parts as follow:

- 1) Normal work :
 - Office hour : 8.00-17.00
 - Overtime : unlimited, depend on the amount of job
- 2) Shift work :
 - Day shift :
 - Work hour : 8.00-17.00
 - Overtime : 17.00-20.00
 - Night shift :
 - Work hour : 20.00-5.00
 - Overtime : 5.00-8.00
- 3) 24 Hours work : there are 2-shift works but work hours are flexible.

The workers must available for 24 hours work.

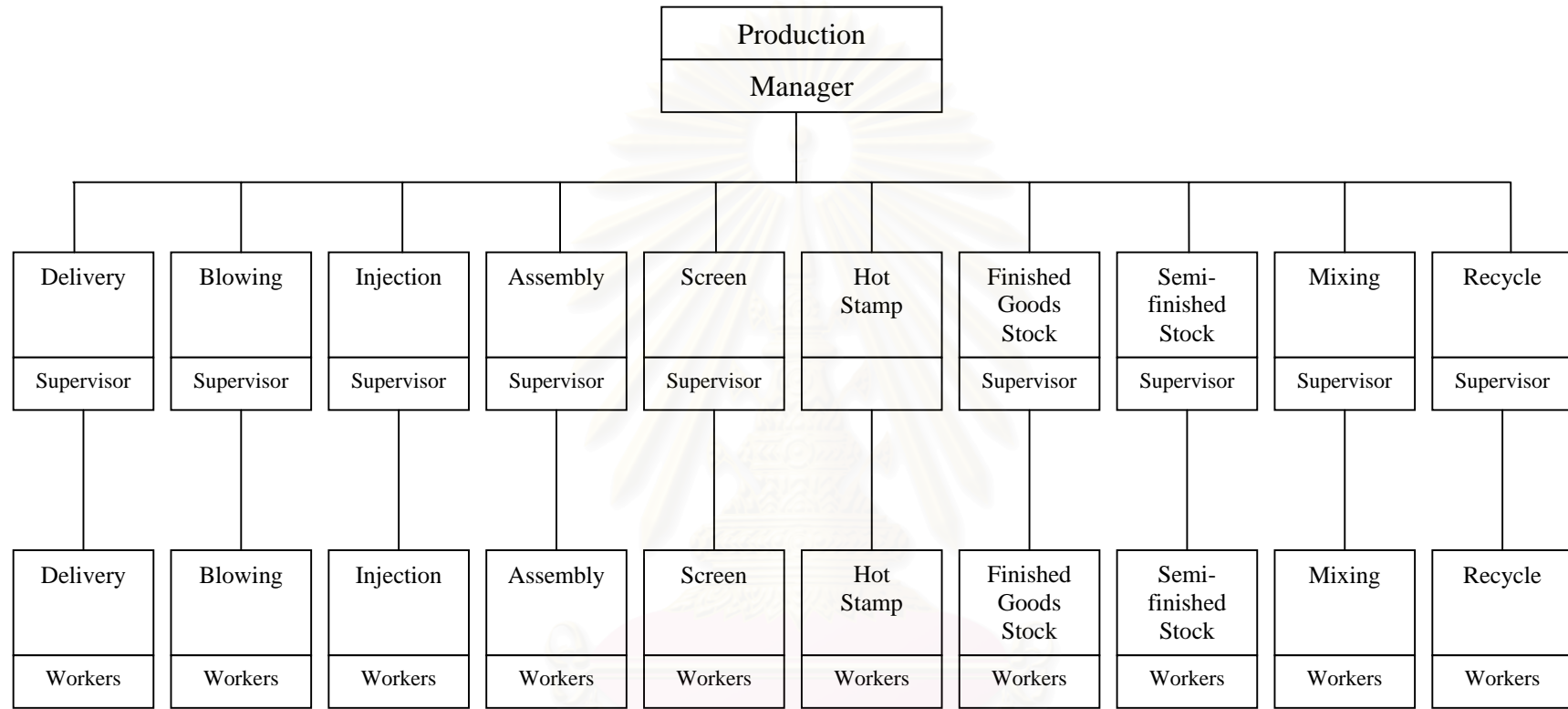


Figure 3.4: Current Organization Chart of Production Department

From Figure 3.4, it shows that there are 10 sections under control of production manager. Every section has supervisor to command workers except hot stamp section. The draft information of workers in each section can be described as follow:

1) Delivery

The employees of this section are about 21 employees. There is one supervisor who take care on delivery planning and scheduling, assign and manage job for each driver and workers. The supervisor works at 8.00 to 17.00. There are 10 drivers who take care on driving truck. There are 10 workers who assist driver to transfer products. The drivers and workers are 2 shifts-work and available for 24 hours delivery.

2) Blowing

The employees of this section are about 96 employees. There are six supervisors who control production process and assign job for each worker. There are 90 workers who work with blow-molding machine to produce products. The supervisors and workers work in 2 shifts. Half of them work in day shift from 8.00 to 17.00 with 3 hours of overtime. Another half work in night shift from 20.00 to 5.00 with 3 hours of overtime.

3) Injection

The employees of this section are about 64 employees. There are two supervisors who control production process and assign job for each worker. There are 62 workers who work with injection-molding machine to produce products. The supervisors and workers work in 2 shifts. Half of them work in day shift from 8.00 to 17.00 with 3 hours of overtime. Another half work in night shift from 20.00 to 5.00 with 3 hours of overtime.

4) Assembly

The employees of this section are about 62 employees. There are two supervisors who control production process and assign job for each worker. There are 60 workers who take care on assembling and labeling products. The supervisors and workers work only 1 shift: day shift. They work from 8.00 to 17.00 with 2 to 3 hours of overtime.

5) Screen

The employees of this section are about 92 employees. There are two supervisors who control production process and assign job for each worker. There are 90 workers who take care on screen and shrink products. The supervisors and workers work in 2 shifts. Half of them work in day shift from 8.00 to 17.00 with 3 hours of overtime. Another half work in night shift from 20.00 to 5.00 with 3 hours of overtime.

6) Hot Stamp

The employees of this section are about 10 employees. There is no supervisor to control production process and assign job for each worker. There are 10 workers who take care on hot stamping products. The workers work only 1 shift: day shift. They work from 8.00 to 17.00 with 2 to 3 hours of overtime.

7) Finished Goods Stock

The employees of this section are about 11 employees. There is one supervisor to take care on finished goods inventory and assign job for each worker. There are 10 workers who take care on transferring products from end of production process to warehouse. The supervisor and workers work only 1 shift: day shift. They work from 8.00 to 17.00 with 2 to 3 hours of overtime.

8) Semi-finished Product Stock

The employees of this section are about 5 employees. There is one supervisor to take care on semi-finished product inventory and assign job for each worker. There are 4 workers who take care on transferring semi-finished products to and from end of each production process. The supervisor and workers work only 1 shift: day shift. They work from 8.00 to 17.00 with 2 to 3 hours of overtime.

9) Mixing Raw Material

The employees of this section are about 5 employees. There is one supervisor to take care on preparing raw material per standard ratio and assign job for each worker. There are 4 workers who take care on mixing raw material per standard ratio for forming process. The supervisor and workers work only 1 shift: day shift. They work from 8.00 to 17.00 with 2 to 3 hours of overtime.

10) Recycle

The employees of this section are about 5 employees. There is one supervisor to take care on recycle stock and assign job for each worker. There are 4 workers who take care on grinding excess of products or damage products to become reusable material. The supervisor and workers work only 1 shift: day shift. They work from 8.00 to 17.00 with 2 to 3 hours of overtime.

3.2.2 Production Process

The current production process start from receiving copy of purchase order from marketing department. Then production manager will plan the production schedule for forming shape process and decoration process. Production manager must plan for the machine that required for each part of product and also plan for start date and time of each machine.

At the same time, production manager should check about the quantity of raw material that is enough or not. If it is not enough, order raw material to purchasing.

Then production manager can distribute the job order to forming shape process that is required and pass the daily raw material requirement to mixing section. So mixing section can prepare mixed raw material for right forming shape process.

After forming process is finished, the products that need the decoration are transferred to next process by semi-finished staff. Then the products are decorated by screening, shrink, hot stamping, labeling and assembling process.

Some product does not need any decoration process so it will be transferred to finished goods stock by finished goods stock staff. Some products need only one-decoration process, some products need more than one decoration process.

During each production process, the partial finished product will be kept and transferred to next process by semi-finished product stock staff. The finished products that come out from any process will be kept and transferred to warehouse by finished goods stock staff.

The excess of product or damaged products from each process will pass to recycle section directly.

The delivery section will plan for delivery and assign the driver to send the products to the customers per plan.

The quality control staffs audit the partial finished product during each production process.

The following figure shows the current production process.



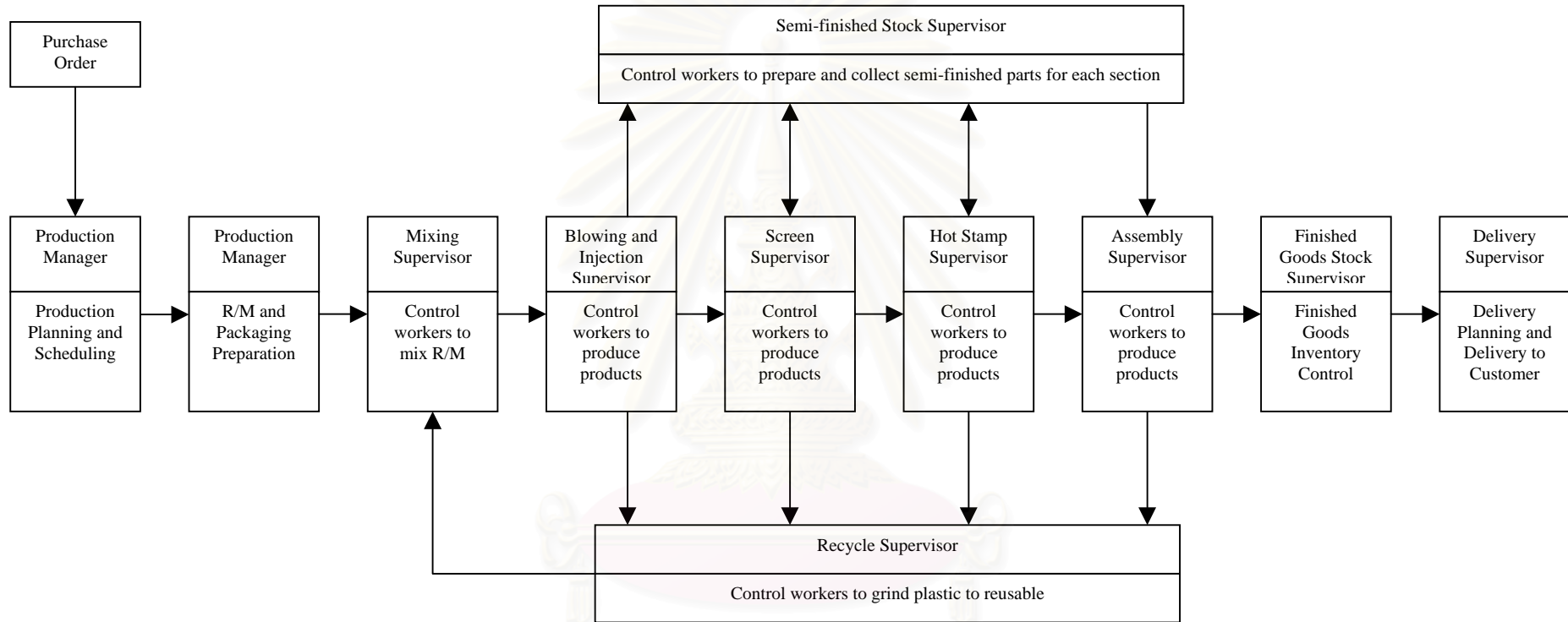


Figure 3.5: Current Production Process

3.2.3 The Operation of Production

The operation of production can be explained by divided into 3 sections as their function.

- 1) Forming Shape Section
- 2) Decoration Section
- 3) Supporting Section

1) Forming Shape Section

The function of this section is to use machine to transform plastic granule into desire shape of product. There are many types of machine, which can be used to transform plastic granule to product. The company has only 2 types of forming process, which can be separated, by 2 types of machine. They are described below:

a) Blow Molding Process

Blow Molding Process is the process that transforms plastic granule into desire shape by using blow-molding machine. The company has 35 blow-molding machines with various sizes from 100 cc. To 5000 cc. Size of the machines indicate the capability of the machine in capacity of product. The big machine such as 5000 cc. can produce small to large bottle depends on the number of cavity.

For example, If mold is one cavity mold, the biggest bottle that 5000 cc. machine can produce is about 5000 cc bottle. If mold is two cavities mold, the biggest bottle that 5000 cc. machine can produce is about 2500 cc.

The operation of blow-molding machine shows in Figure 3.6 as follow:

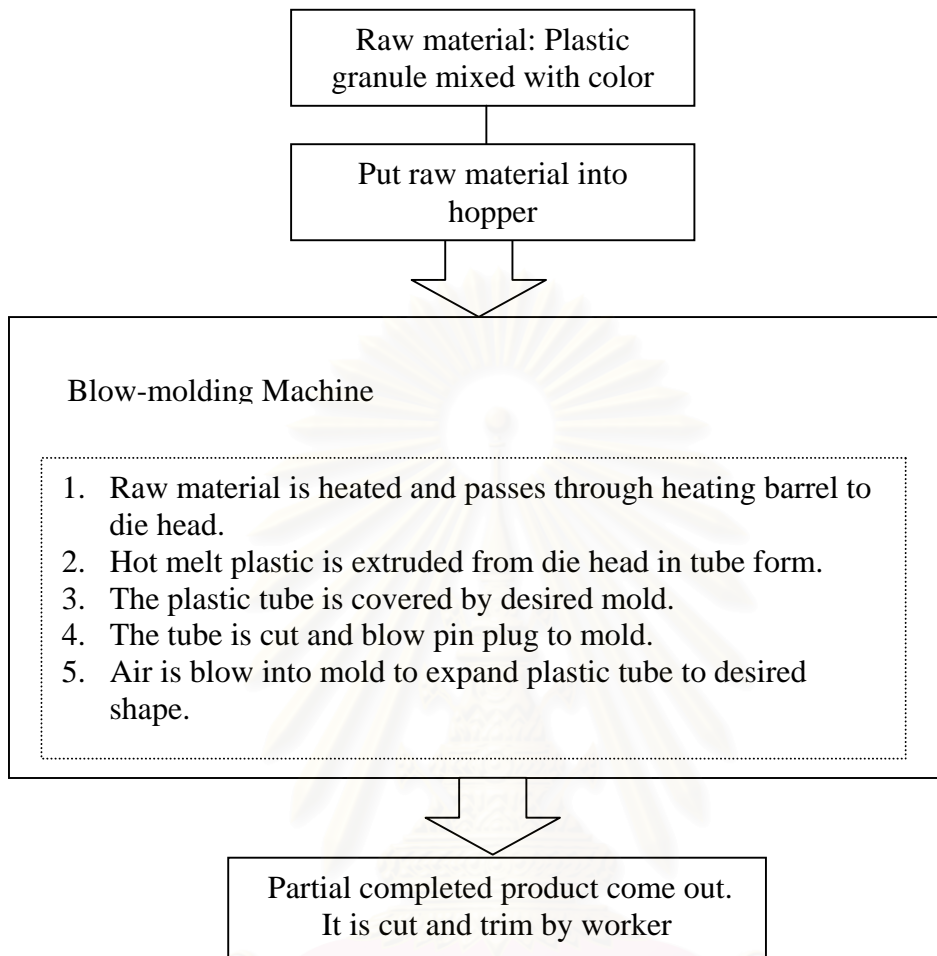


Figure 3.6: The Operation of Blow-molding Machine

b) Injection Molding Process

Injection molding process is the process that transforms plastic granule into desire shape by using injection-molding machine. The company has 24 injection molding machines with various sizes from 60 tons to 300 tons. Size of the machines indicates the clamp force of the machine. High clamp force can afford high injection pressure. With high injection pressure, the product can be complicated and it can be used for many cavities mold.

For example, 100 tons machine can use with 16 cavities mold but weight and size of the product must be light and small. With the same condition, 300 tons machine can use with 16 cavities mold and weight and size of the product can be heavier and bigger than product that is produced by 100 tons machine.

The operation of injection molding machine shows in Figure 3.7 as follow:

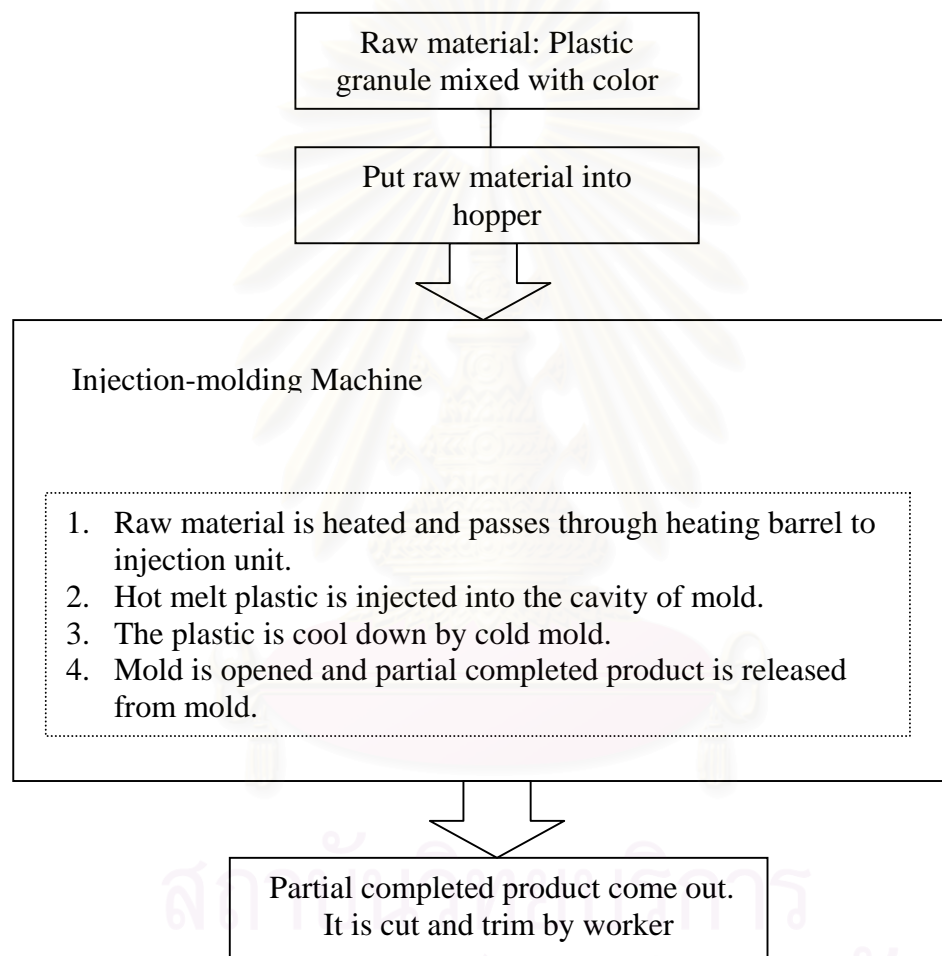


Figure 3.7: The Operation of Injection-molding Machine

2) Decoration Section

In the market, some plastic packaging is printed with color, some is printed with foil, and some is covered with shrink film. There are several kinds of decoration on plastic packaging.

Sometime product is completed and shipped out when pass converting operation section because customer does not want the decoration. But most of company's product must be sent to decoration section to do the decoration and assembly before ship out. And Sometime product has many components and they must be composed together after decoration. So the function of decoration section is not only decorate product but also assembly product.

The function of this section can be separated as below:

1. Color printing:

There are 2 types of printing process.

1) Pad printing. The function of pad printing is to transfer color from plate to surface of product. The plate is edged into desire frame: it can be wording or picture. There are 10 pad-printing machines.

2) Silks screen-printing. The function of this process is to transfer color through pattern cloth to plastic surface. The cloth was covered with water resist material and was formed in to desire frame. The pattern on the cloth comes from photo-resist technique. There are 2 types of silks screen-printing machine. One is semi-automatic. Another is automatic. There are 4 semi-automatic machines. And there are 8 automatic machines.

2. Hot stamping:

The function of this process is to transfer gold or silver foil to plastic surface by heating the desire frame on the foil on plastic surface. So foil is stuck on surface.

3. Shrink film:

The function of this process is to cover plastic bottle with the plastic film that shrinkable when passing through heating oven.

4. Labeling:

The function of this process is to put the label on plastic bottle by hand or labeling machine.

5. Assembly:

Product's components are composed together with ultrasonic welding machine or locked together with their own lock socket.

3) Supporting Section

There are five working units in supporting section. They are delivery, mixing raw material, recycle, finished goods stock and semi-finished product stock.

Recycle takes care on recycling excess plastic and damaged product from each production process to become recycle material.

Mixing raw material and semi-finished product stock are the working units that support production process by preparing the material. The different of two working units is that mixing prepare plastic granule for forming shape process but semi-finished prepare component of product or partial completed product for decoration process. Semi-finished stock also takes care on partial completed product component inventory for production.

Finished goods stock takes care on transferring finished goods from end of each production process to warehouse and finished goods inventory control. Delivery takes care on delivering completed products to customers. Recycle takes care on grinding the damaged products or the excess plastic from forming shape process to become reusable material.

3.3 Problem Analysis of the Sample Company

The Sample Company managed as a family-owned business since established until now. At the beginning, the founder and his wife managed the company with less than 5 workers. The founder and his wife responded in many job functions and operated all of the operations of company by themselves. The operation of the company was simple so the founder and his wife can operate the company by themselves. Because of small business, it was easy to operate the company.

After that the company growth up and continuous expands. There are more workers, more products and more functions. So the old operation method that the founder directly orders to all workers is not effective and causes many problems. The company has many problems in the coordination and communication.

After study problems in the Sample Company, found that error-producing problem is the important problem in production. There is a lot of inventory that keeps in warehouse that comes from excessive producing. The company loss the chance to sell many of products due to short producing. The company also loss a lot of money for incorrect-producing. The error-producing problem is come from poor coordination and communication.

From the study of current operational of the Sample Company, the status of problems is considered to find out problem solving and to get the method of problem solving.

Figure 3.8 shows causes of poor coordination and communication.

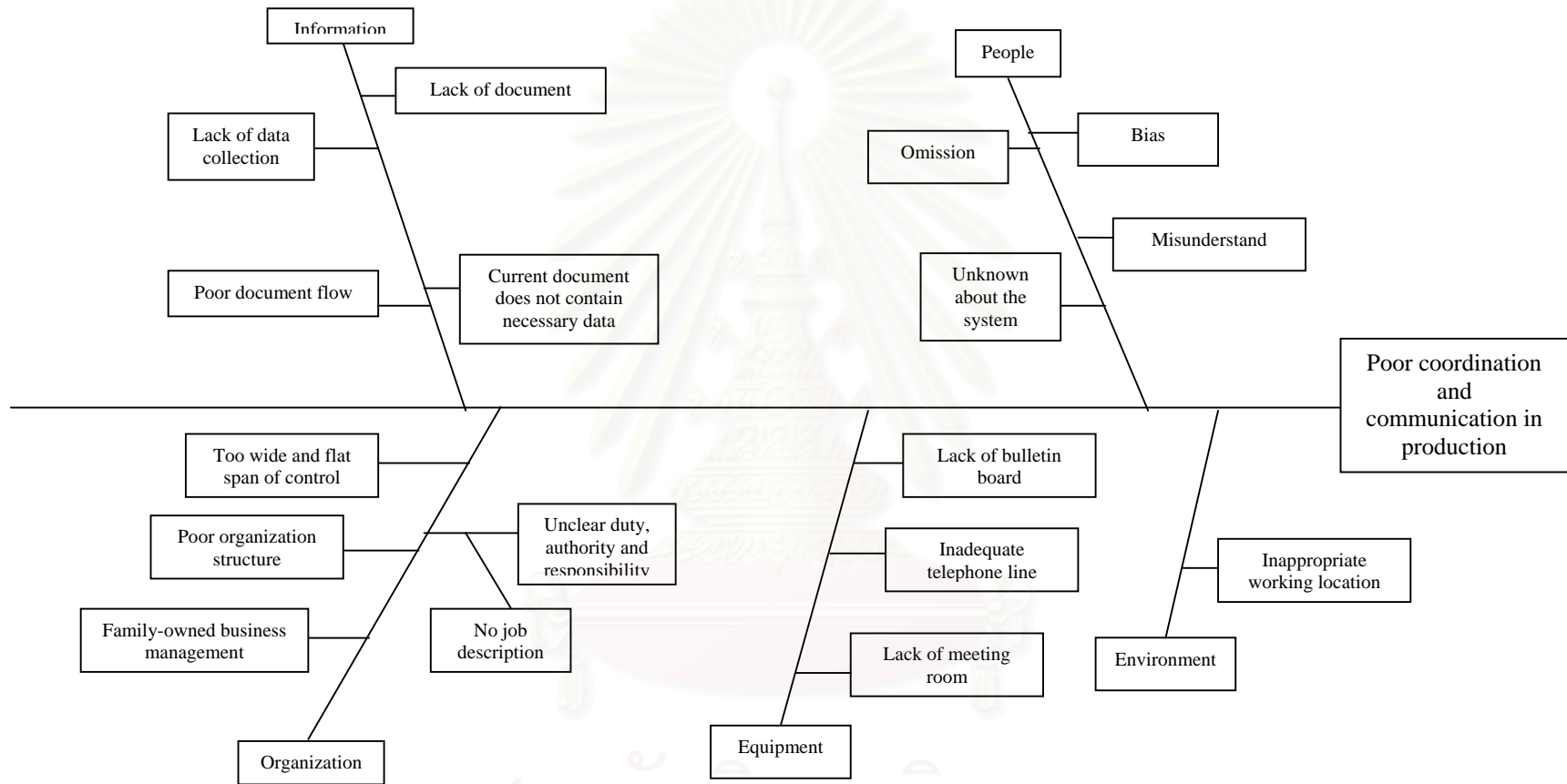


Figure 3.8: Cause and effect diagram for poor coordination and communication in production

From Figure 3.8, there are many causes that cause poor coordination and communication in production.

Those causes can be separated into five groups.

- 1) Problem about organizing the organization
- 2) Problem about information management in production
- 3) Problem about people
- 4) Problem about equipment
- 5) Problem about environment

1) Problem about Organizing the Organization

The formal coordination and communication in the organization follow the chain of command established by an organization's hierarchy of authority. So problem about organizing the organization can cause poor coordination and communication.

1. Problem about family-owned business management

The Sample Company managed as a family-owned business. It causes many problems those can be described in detail as follow:

- There is a delay in operation management and decision making because the final decision must come from the founder. There are many problems that waiting for decision making from the founder. At the same time, the founder works only half day. So the founder can not solve all problems in limited time. Some problem is abandoned and some problems that occur in the afternoon must wait for the decision making until tomorrow morning.

For example, on Thursday, one of customer orders 1,000,000 pieces of noodle-cups in the afternoon. And the customer wants all of products within 25 days. The company must run 3 injection machines non-stop for 25 days. And must start the production on Friday. But raw material in the company is not enough for the whole purchase order of customer. On that day, purchaser of the

company inform that raw material's price is increasing and continue to increase everyday. Purchaser wants to know the decision for raw material order. In that day, raw material's cost is about the same with cost of product that company sells to customer. Purchaser can not make a decision and wait for the decision from the founder in the next day.

On Friday morning, the founder makes a decision that the company should order the whole lot of raw material for the whole order. But purchaser can order only half of raw material that requires for this order on Saturday afternoon. And the price is higher than Thursday. On Monday purchaser can order remain of raw material but the price is very high. The price is too high for the company to have profit for this order. So for this order company does not have profit. And the company also loss a chance to sell more of products because the company cannot finish the order within 25 days. The company short produces 60,000 pieces due to delay start from material shortage.

- The efficiency of operational management of the founder is low because he takes care on every section. He does not have enough time to concentrate on the critical problems in each section.

For example, there are 3 production line stop at the same time. One of production line stops because mold breakdown, another line stop because machine breakdown and another one stop because raw material shortage. The problems are come from 3 sections. They are development, maintenance and purchasing. All sections have problems in their sections. But the founder does not have enough time to search for critical problems in each section and solve those problems for each section.

- There are problems about important people and priority of work.

Due to family-owned business, the people who work in top management are the founder's sons. They think that his work order must be the first priority in every case. So the workers have problem about priority of job order. If the workers can not completed work in time. Those workers will be considered as low performance workers. The salary of those workers will be maintained.

Many workers who face this kind of problem give up and resign from the company. The turn over rate of the company is about 50%. It is very high.

For example, the founder's son asks the worker in marketing section to prepare the quotation letter for him immediately. At that time, the worker in marketing section must answer the customer request. Because of important people, the worker in marketing must let the customer wait and do the job for important people first.

- There are problems about connection.

Due to top management are the founder's sons. The workers who work for the founder's sons think that they work for important people. So they should have power over the others. They have good connection with the founder's sons. The others must consent to their priority.

For example, one worker in development section has good connection with the founder's son. She has a privilege that she can come to work and go back at any time. She comes to work late and go back early. When there is a problem about mold breakdown at 8.00 A.M., production line must stop and wait until she come. Production line ever stop from 8.00 A.M. until 12.00 A.M. because waiting for her.

- There is a conflict in the coordination within the organization. Top management peoples (the founder's sons) think that they are the owners of the company so they can control every section.

Example of the problem that comes from this opinion is that the driver in delivery section must send urgent shipment of product to the customer before 12 AM. But the founder's son, who takes care on development department, orders the driver to send the mold to mold shop outside the company immediately. So head of delivery sections blames head of mold shop section that the delivery of products is in the delivery schedule but mold is not in the delivery schedule. There is the conflict between 2 sections.

2. Problem about organization structure

The Sample Company does not have the formal organization chart. The organization structure is not clear. The organization structure is in unofficial form. The worker does not know about the relationship of each position, the authority and responsibility of each position and the control level of each position in the organization.

In the past, the founder said that the company has 14 sections under his responsibility as shown in Figure 3.9. There are Blowing, Injection, Assembly, Development, Maintenance, Technician, Quality, Administration, Delivery, Finished good stock, Semi-finished product stock, Mixing raw material, Recycle scrap, and Account. Some sections are small and have only one employee. The founder separates section by considers the characteristic of job and job category.

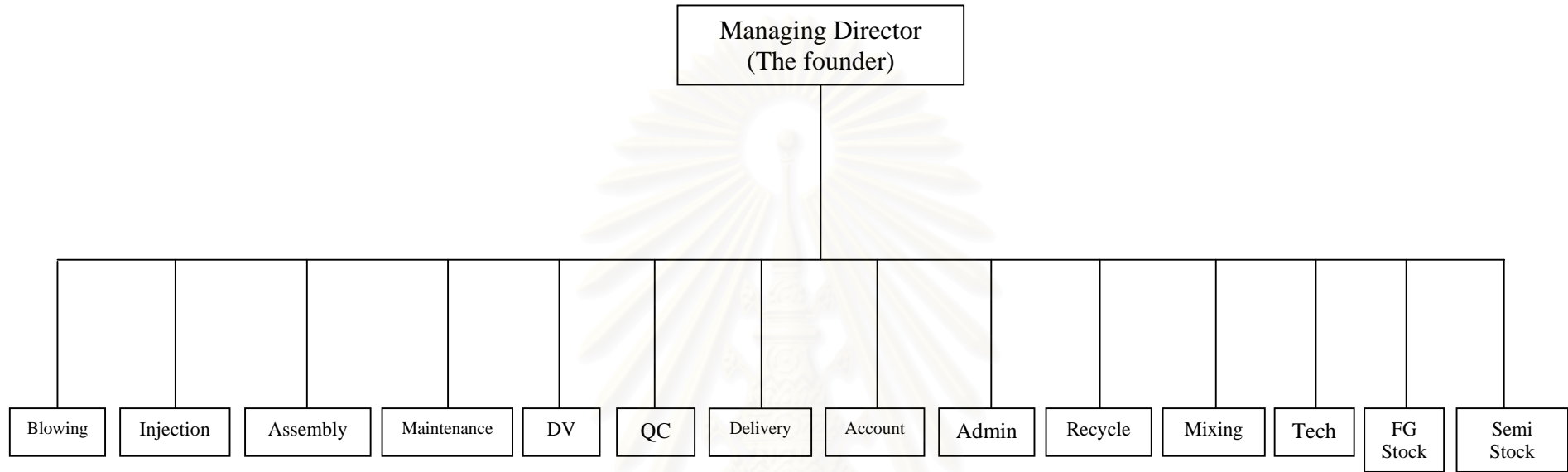


Figure 3.9: Responsibility of the Founder (First Revision)

From Figure 3.9, the duty, responsibility and characteristic of job in each section in the past is described in Table 3.1 as follows:

Table 3.1: Duty and Responsibility of Each Section in the Past

Section	Duty and Responsibility
Blowing	Forming shape of product by using blow-molding machine
Injection	Forming shape of product by using injection machine
Assembly	Screening, hot stamping, and assembling product
Maintenance	Repair and maintenance all machines in production line and take care electrical system, air pressure system, water system, cooling system, and gas system in the company
Development	New product development, design, produce and repair mold
Quality	Investigate quality of product during processing
Delivery	Delivery product to customer
Account and Financing	Take care on Account and finance of the company
Administration	Purchasing raw material, office supply, and others equipment use in the company. Take care on receives purchase order from customer
Recycle	Recycle scrap to become reusable material
Mixing	Mixing plastic granules with color and with recycle scrap
Technician	Set up, adjust, and operate the machines in blowing, injection, screen, hot stamping and assembly section
Finished good stock	Take care on transferring finished product from end of production line to warehouse. Take care on the quantity of finished product in warehouse
Semi-finished product stock	Take care on transferring semi-finished product from end of each process to next process

After that the founder had a problem about operating and controlling each section in detail. He changed his mind and said that the company has 8 sections under his responsibility. He assigned development section to under control of his son. He hired one person to take care the department that he called production department. The founder said that Blowing, Injection, Assembly, Mixing raw material and Recycle scrap are under responsibility of head production. The responsibilities of the founder, his son and head of production show in Figure 3.10 as follow:

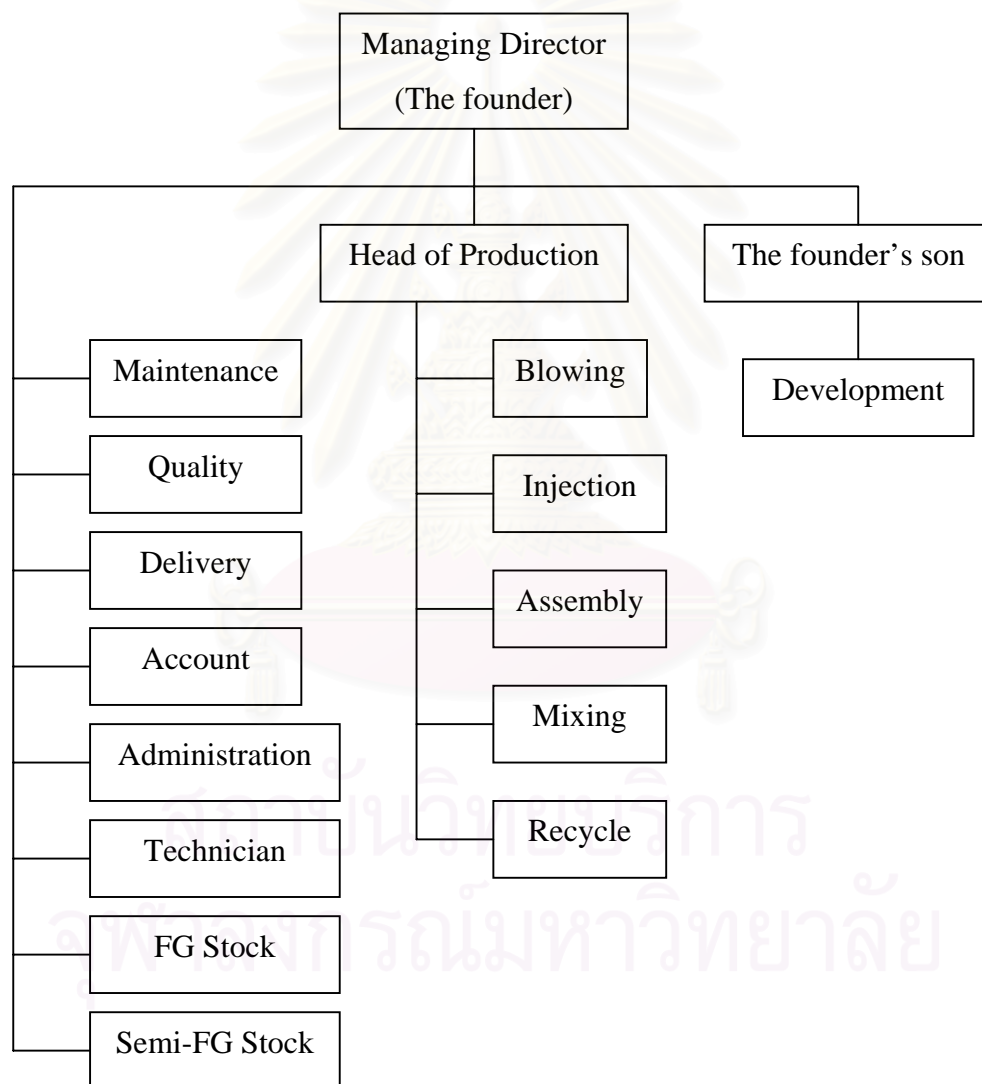


Figure 3.10: Responsibility Chart (Second Revision)

From Figure 3.10, the duty and responsibility of each section does not changed much. It is the same as described in Table 3.1. The founder just moves some sections to under control of production. The founder hires new worker to take care production section for him. The founder assigns his son to take care development section for him.

After that the founder still had problem about controlling and operating the sections under his responsibility. He decided to set up new section to take care on special job such as purchasing, marketing and personnel (see Figure 3.11). Even though the founder set up new section to take care on purchasing, marketing and personnel. He still has problems because he does not identify the duty, responsibility and authority of each section. The founder always changes the duty, responsibility and authority of each section.

Most workers in each section are low education but work for the founder for a long time. The founder used to hired worker to take care on production. But that worker can not work for a long time. There are problems in coordination and communication. The responsibility of head of production section is always changed by the founder depend on the status of the problem at that time.

The turn over rate of people who take care in each section is very high. Because the duty and responsibility of each section is not clear and always change. The founder changes head of production many times. The founder also changes Head of other sections many times.

Just before the analysis the current responsibility chart can be written as shown in Figure 3.11.

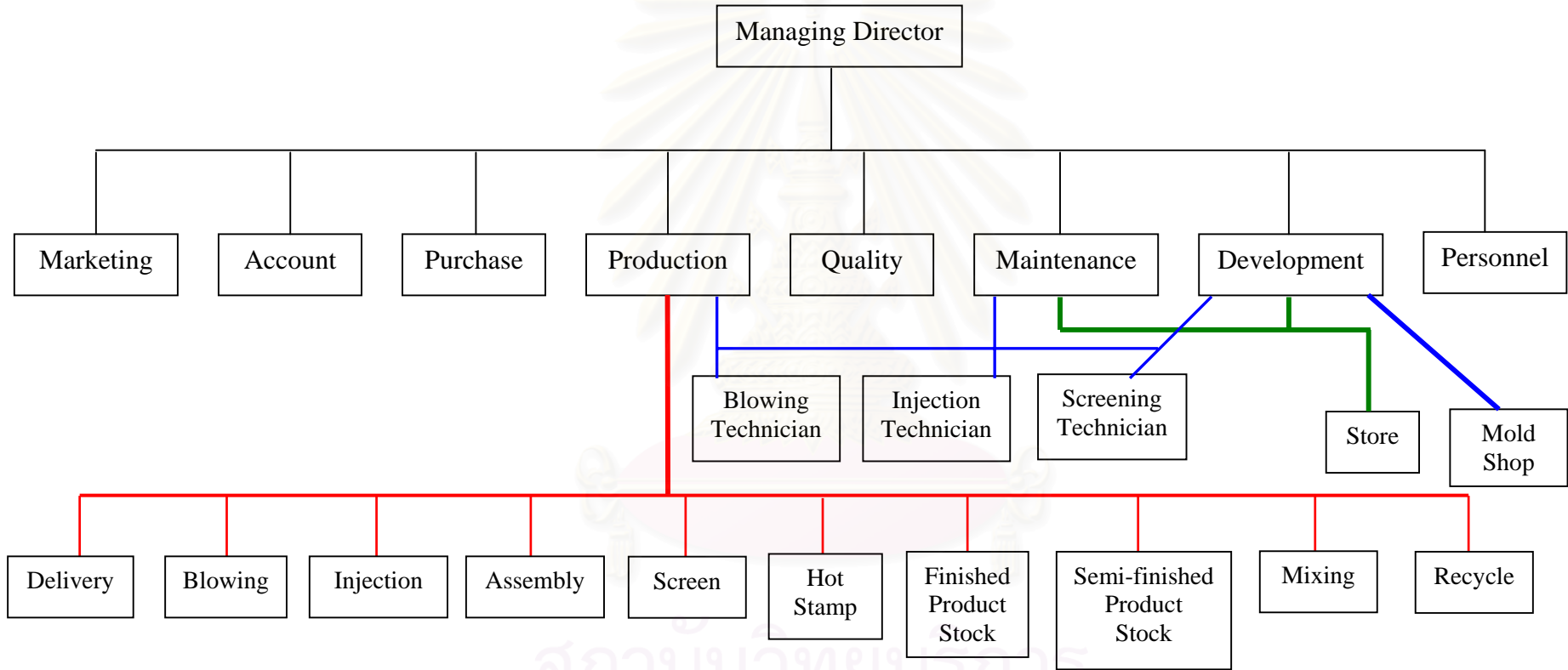


Figure 3.11: Current Responsibility Chart

From Figure 3.11, after changed many times, the duty, responsibility, and characteristic of job in each department is described in Table 3.2 as follows:

Table 3.2: Current Duty and Responsibility of Each Department

Department	Duty and Responsibility
Marketing	Take care on receives purchase order from customer. Coordinate with customer for request and complain. Find out new customers
Account and Financing	Take care on Account and finance of the company
Purchase	Take care on purchasing raw material, office supply, and others equipment use in the company
Production	Take care on all production processes includes stock and delivery
Quality	Take care on quality of product during processing
Maintenance	Take care on telephone system, electrical system, air pressure system, water system, cooling system, and gas system in the company. Repair and maintenance all machines in production line and all utility in the company
Development	Take care on new product development, design, produce and repair mold
Personnel	Take care on salary payment, employees relationship and welfare of the workers

The founder moves 3 sections under his responsibility to under control of production department. They are delivery, finished good stock and semi-finished product stock. He separates administration section to be marketing department and purchasing department. He set up personnel department. He moves technician section to under control of 3 departments. They are production, maintenance and development.

From Figure 3.11, the duty and responsibility of each section is described in Table 3.3 as follows:

Table 3.3: Current Duty and Responsibility of Each Section

Section	Duty and Responsibility
Blowing	Forming shape of product by using blow-molding machine
Injection	Forming shape of product by using injection machine
Screen	Screening product
Hot stamp	Hot stamping product
Assembly	Assembling product
Delivery	Delivery product to customer
Finished good stock	Take care on transferring finished product from end of production line to warehouse. Take care on the quantity of finished product in warehouse
Semi-finished stock	Take care on transferring semi-finished product from end of each process to next process
Mixing	Mixing plastic granule with color and with recycle scrap
Recycle	Recycle scrap to become reusable material
Technician	Set up, adjust, and operate the machines in blowing, injection, screen, hot stamping and assembly section
Mold shop	Take care on mold design, mold making and mold repairing
Store	Take care on stock of equipment, tool and spare part of machine and mold.

From Figure 3.11, the founder divided assembly section into 3 sections. They are assembly, screen and hot stamp. There are 2 new sections under control of development. They are mold shop and store.

Problems from poor organization structure are described as follow:

- Confuse in organization level.

The workers that the founder of the company assigns to take care one job do not know the position of their section in the organization so they can not report the daily problems. Only thing that they can do is solving that problem by themselves, which sometime cause others problems. Most of the time, problems are not solved but problems are ignored by the workers and the founder never know about its.

For example, there is the old worker who works in recycle section. He works in the company for a long time. He has a problem. The founder assigns this worker to be supervisor to response in recycling scrap. He has problem about no space to keep scrap. He reports this problem to the founder.

With unofficial organization structure, this supervisor seems to report to production manager because the founder used to say that this supervisor is under control of production manager. But he used to report this kind of problem to the founder for a long time so he reports to the founder. Then the founder assume that production manager can not solve this problem and blame production manager.

After that production manager let that supervisor know that he should report this kind of problem to her not the founder.

Later the founder calls the supervisor to ask that there is any problems in recycle scrap. Supervisor reports that no space to keep the scrap again. The founder blames the supervisor immediately that he must report this problem to the founder. This kind of problem confuses the worker about the organization structure.

- The problem is that the workers do not know the organization of the company. Problem about unclear department, no one knows how many departments in the company. The workers do not have the same picture of organization structure in their mind. Due to several changes in verbal of organization structure, the workers are more and more confused for their responsibilities.

For example, the delivery section want to send the goods but it is not available in warehouse. After checking with production, the information shows that products were produced and available somewhere in the factory. After find out, products were place at the end of production line and waiting for transferring to warehouse.

This kind of problem happens because the workers of semi-finished product stock section and finished stock section confuse about their duty. Sometime in the past, the workers, who work in semi-finished stock section, must transfer some of finished products to warehouse.

After responsibility changed, only the workers, who work in finished stock section, have an authority to transfer finished goods to warehouse. The switching of responsibility of these two sections is happen several times. So the workers are confused.

- It causes problem about interference of work.

For example, store is under control of 2 departments: maintenance and development. When the requirement of head of two sections, maintenance and development, are different, it causes the problem. Such as development design one form of stock card that used to monitoring stock of spare part in store and maintenance design another one. And both departments ask store people to use their form. Store people do not know how to do so he ignores to fill the stock card. It causes shortage of spare parts. When store people make mistake, head of two departments confuse about the authority to warning. In the opposite, when store workers done good job, two department confuse about the authority to promote them.

- It causes interference about duty and responsibility.

Others 3 sections, Blowing, Injection and Screening technician, are under control of production, maintenance and development. The workers in 3 sections confuse about the order from 3 departments. Production, maintenance and development have interference problem when order 3 sections under them.

The sample problem is that production asks blowing technicians to set up the machine and at the same time development ask them to test new mold

and at the same time maintenance ask them to report about breakdown machine. They can not do 3 jobs at the same time so they confuse about the priority of the job.

Another example is that when production machine stop because the injection machine breakdown, production asks injection technician to correct the problem immediately but at the same time development ask injection technician to test new product with new mold. Injection technician may confuse about the order because production want to run the machine but development wants to test new mold.

- It is easily to have conflict in work. No one knows their duty and responsibility so the workers will blame each other's for irresponsibility.

For example, when there are rejects from customer, the founder will ask the production to rework and take corrective action. Production workers blame that quality worker must take responsibility for the rejects too. But quality worker said that it is not responsibility of quality because production makes mistake not quality control. Production and quality control blame each other's for irresponsibility.

- From previous example, it also causes a bad attitude in responsibility. The workers refuse to response about mistake and blame that it is not their responsibility. So the problem is not fixed and it will happen again and again.

3. Problem about span of control

The span of control of the Sample Company is too wide and flat because the company is managed as a family-owned business since established until now.

- All management is depended on the founder. The founder tries to control every section in detail. In the facts, the founder can not get every detail in every section. It causes low effectiveness and efficiency of management control.

- In production department, there are too many sections. It causes loss of control and inefficiency of management.

For example, head of production does not have enough time to do all production plans and production schedule for each section. The plan and schedule of each section are subject to change when customer's requirements change. It may be changed everyday or many times in one day. Such as, one customer wants to delay their product shipment from next week to next month. At the same time another customer send urgent order to the company and want to receive their product next week. So production schedule must be changed. This kind of problem happens often.

- Lack of system to command workers.

For example, There is no supervisor in hot stamp section. Sometime head of production direct order front line worker to do the job. When front line workers have problem, they had to direct report to head of production. There is no supervisor to command the workers and the workers wait for the command from head of production. So head of production does not have enough time to concentrate on overall operation of production department.

- The supervisor in some section can not make a decision. The workers must make a decision by themselves. The workers work without target.

The sample of problem is that the workers in assembly section just do the job same as the day before because the supervisor can not makes a decision and tell them what they should have to do today. The workers just do the job but do not know how to do the best.

- Lack of cooperation between section. The workers in different sections think that they must solve their problem first and does not care about the problem in other sections.

For example, Blowing machine is stop due to machine breakdown. The workers in blowing section do not have job to do. At the same time, the workers in screen section are absent. With good cooperation, the workers in blowing section should work in screen section but it is not. The workers in blowing section go home and screening machine are stopping due to lacking of workers.

- Information tracking is slowed due to the information is in different sections.

For example, if the customer want to know the work in process inventory for the product that pass screening process, hot stamp process and assembly process. It takes more than 2 days to gather the information because the information must come from 3 sections. Each section takes one day to gather the data and send the data to head of production. Head of production takes one day to summarize data then informs to customer.

4. Problem about unclear duty, authority and responsibility

Due to the sample company does not have official organization chart and the organization structure is not clear so there is no pattern about role, job and authority relationship. There is no pattern about interrelates in the organization. The responsibility of each position is not identified. There is no job description. It depends on the founder that what he wants the workers do.

Examples of problem from unclear duty, authority and responsibility are described as follow:

- The supervisors can not make a decision so their workers loss the confidential about doing the job.

For example, the supervisor in blowing section is not sure about her authority. The case is that the plastic bags (size 45"x50") that use for packing milk bottle are shortage. There is bigger size 47"x50" that can be used. But the supervisor can not make a decision so the workers in blowing line can not process their job.

- The workers do not understand about their authority.

For example, the worker who takes care about purchasing is old worker. She works in the company for many years and she has a very good relationship with the founder. She acts as a secretary of the founder. She thinks that she has an authority to order every thing in the company. So she order welding machine for maintenance department without permission of head of maintenance.

The fact is that welding machine is not necessary at this time. And the founder used to say that head of maintenance must approve the purchase requisition, for the equipment those use in maintenance department, before purchasing can orders. The purchaser misunderstands about her authority.

- The worker does not know about authority and responsibility.

For example, the size of plastic bag that is used to pack milk bottle is 45"x50". When stock people receives the plastic bag from supplier, he does not know that he must inform quality section to send quality control people to inspect the plastic bag. So the plastic bag that he receives is out of specification. It is too thin and production can not use. It must be throw away in the latest.

- The worker does not have responsibility and does not know her authority. It causes a bad attitude in responsibility. The worker refuses the mistake.

For example, The purchaser received the purchase request for plastic bag for two months but she does not pay much attention for delivery date from supplier. Stock people who responsible in plastic bag stock remind purchaser that stock level of plastic bag is lower than 1 weeks. But purchaser still not pays attention about delivery date. At the end, plastic bag is shortage, production line stop for two days. 80 workers in production line must stop working for two days. The company loss the income due to short producing for two days.

- It causes problem about interference of work. And it is easily to have conflict in work.

For example, new product development is the responsibility of development section. Sometime customer calls Managing Director and asks for product development. MD passes the detail of product development to production and let production develop product. Head of Development does not know about this development. When he knows, he angry and he do not trust the result. Then he develops product again.

- The problem is that the founder sets the authority and responsibility of each position in verbal and he changes it all the times. There are many problems about inconsistent expectation from the founder. There is no written job description so job responsibility always changing.

There are duplicated works in the same and different sections. There is cross work in some function and that causes the contradiction. The coordination between or in the same section is not smooth.



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2) Problem about Information Management in Production

From the study of information management in production department, found that the coordination and communication in production is generally done in verbal. It is no documentation for some process control.

In some process the data is not available. Some process data is available but missing some important data. The flow of document is poor. Document flow always mystifies the workers. The workers do not know how to process the document and what is the suitable document that they should used.

The problem about information management in production can be described as follows:

1. Lack of document

- It causes poor production control. Company never controls the output of production.

For example, there is no report about productivity in production. Production people do not know how many they must produce and how long they can finished their job. The problem is that no one knows about the complete date of order. Production people just produce until the customer response that it is over order. And return the excess products, those are delivered to customer, back to the company. So it causes high inventory for over produce product.

-There is no document to control production process so it is difficult to tracking about work in process and finished good inventory.

For example, one customer want to make a change for printing pattern, they will want to know the inventory of their product in each process. They want to know how many of old pattern that will come out and when the new pattern will comes out. Production workers do not know about production process for this product. So it takes a long time to tracking this issue.

Production people try to find the product in every production process and count from every production process. With this process, it often causes mistake.

- There is no approval report for new product. New product that never produces before must be approved from customer before first lot in production start. Customer will approved product and inform to development department.

Current approval method for new product is development's staff informs production people by phone and writes the detail of material and color in small piece of paper. There is no official approval form. It causes the problem that development never inform all of necessary information to production. So the product that produce often varying from specification.

The sample of problem that comes from this issue is that production produces 10,000 bottles with wrong raw material. Production does not receive the approval report and think that it should be the same product as last order. But the fact is that the customer wants new product with new material but using old mold.

2. Lack of data collection

- The important document such as the product specification is not fully kept and collected. The information about product specification is not available. It causes incorrect producing. Products that produced are out of specification.

For example, In October 2001, one customer complained that products that delivered to them were out of specification. The capacity of bottle was higher than specification about 1 millilitre so they must fill more milk into bottle to keep the filling level to be in the specification. The customer charged the money for excess milk that need to be filled in every bottle.

There were 200,000 bottles produced with incorrect specification. The customer charged cost to the company about 200,000 Baths. This problem comes from no data of product specification for reference. So production does not knows about specification. Head of quality control knows about specification but she does not note or tell other about the specification.

- There is no reference about product data. The specification of product is important and necessary for front line people.

Due to there be no official information for product specification, so front line people write up their note about product specification for their reference. This causes high opportunity of error because each people have his or her note and each people can make a mistake.

For example, one customer specifies that the product must be packed in black plastic bag. The worker does not know about that because there is no official product specification. So the worker use clear plastic bag to pack the product. The worker in delivery section also does not know and send the product to customer. The customer returns and complains a lot for the mistake.

3. Missing necessary information in current document

- It causes loss time. Current document does not have standard pattern. In each section and department, they create his or her form for data collection and information management. It is no standard for data collection. Some data that use in many section and department is written many times and many place so it causes high risk of mistake.

For example, the data of machine setting of the product is important for technician. But the machine data is not available in job order form so technician take long time to set up the machine. Production cannot finish order within the time limit so short producing occurs. Figure 3.12 show job order form that does not have machine setting data.

Number.....	
Job Order	
Date.....	15 Dec 2001
Machine Number.....	I 12
Product Name.....	U Mee Cup
Type of Plastic Granule.....	PP
Color.....	White
Remarks.....	Use 1 worker
	Use U Mee Cup box
	300 cups per pack

Figure 3.12: The sample of Job Order Form

- Missing necessary information in the document causes problem about lack of product to sell.

For example, production receives purchase order from marketing to produce 10,000 bottles. With confusing in coordination and communication, production produces less than the purchase order for 2,000 bottles because there are 2,000 bottles in finished good stock and there is no identification about number of purchase orders of those finished good. See sample of product identification tag card in Figure 3.13.

So production assumes those finished good were excess produced from last order. In fact, those stocks were produced for last order and wait for delivery date. It causes the company has less quantity of product to sell. Sometime the customers want the exact quantity as written in purchase order so the company must set up the machine again and produce those products in small amount.

Product Name.....	U Mee Cup	Color.....	White
Date.....	15 Dec 2001	Shift.....	A
Worker Name.....	Manee		
Quantity/Pack.....	300	QC.....	Kai

Figure 3.13: The sample of Product Identification Tag Card

- Missing necessary information in the document causes problem about excess inventory of products

For excess inventory, it happen from over produced. With poor coordination and communication, the inventory in finished good stock that production prepare for next order does not count before start new production so it cause over stock.

For example, customer orders 7,000 units. But in last order production already produces 5,000 units stock for next order. So this time company must produces only 2,000 units. With problem about there is no identification of purchase order number, production produces 7,000 units so it has 5,000 units that excess from order.

4. No pattern of document flow

- Some document is ignoring from daily use because there is no pattern of document flow.

For example, the worker does not know that the document for semi-finished tag is necessary. He or she does not fill up the form. Supervisor also does not know the semi-finished tag form is important the worker brings the work in process to next process without any document to control. So there is no information about semi-finished transfers so that work in process does not count for the inventory.

- It causes loss of important data. The documentation control is not efficient because there is no pattern of document flow. The data is loss in some where in production process so some necessary information is not gathered.

For example, the supervisor in blowing section does not know that finished good transfer form is necessary for inventory control. She must write and make a copy for stock worker. She just write the quantity of finished good in a piece of paper and send it to stock worker. So there is no evidence to prove that how many finished good those stock receives from production.

3) Problem about People

The problem is that people in the organization have bias and bad attitude when communicate with others. They feel that other does not know anything. Sometime they think that other is irresponsibility. With bias and bad attitude to peer, subordinate, and superior, it causes that there are barriers for effective coordination and communication.

Next problem from people is omission. Sometime people receive information but forget or ignore to transmit that information to specific people.

Next problem from people is misunderstanding. The workers may not clearly understand the instruction or job procedure and they fear to ask question. This also causes problem in coordination and communication.

Another problem is unknown about the system. The workers do not know about coordination and communication system in the organization. They

do not know how to process the coordination and communication through the organization, among peer, and diagonal in the organization.

4) Problem about equipment

In the company, the equipment that uses in coordination and communication is not adequacy. The telephone line is not sufficiency. And it often broken down. The company does not have the meeting room or suitable place for meeting. So the purpose of meeting is not fully covered and low effectiveness in meeting.

5) Problem about environment

Problem about environment refers to the work place. For example, the work place for different operation such as production and marketing is not suitable for coordination and communication. This two function must have closely coordination and communication but the work place is far from each other.

Another example is that semi-finished warehouse and finished goods warehouse is not suitable. The spaces are small and locate around the company. There is no specific warehouse for any goods. There is no specific area for warehouse. And the location is not named so it causes confusing in coordination and communication when refer to the location. It causes conflict about responsibility and authority in the location and products in that location.

3.4 Problem of Production

The problem of production is error producing. Poor coordination and communication has effect to error producing. The errors that occur can be separated into three groups. They are excessive, short and incorrect producing.

The excessive producing refers to the quantity of products that are produced is more than requirement.

The short producing refers to the quantity of products that are produced is less than requirement.

The incorrect producing refers to the quantity of incorrect products that are produced. Incorrect products refer to the products that are produced without request from customer and the products that are produced with incorrect specification.

Most error producing occurs due to poor coordination and communication. The causes of error producing should be analyzed to get the root causes of problem to find out corrective action to solve the problem.

The causes of error producing are showed in Figure 3.14 as follows:



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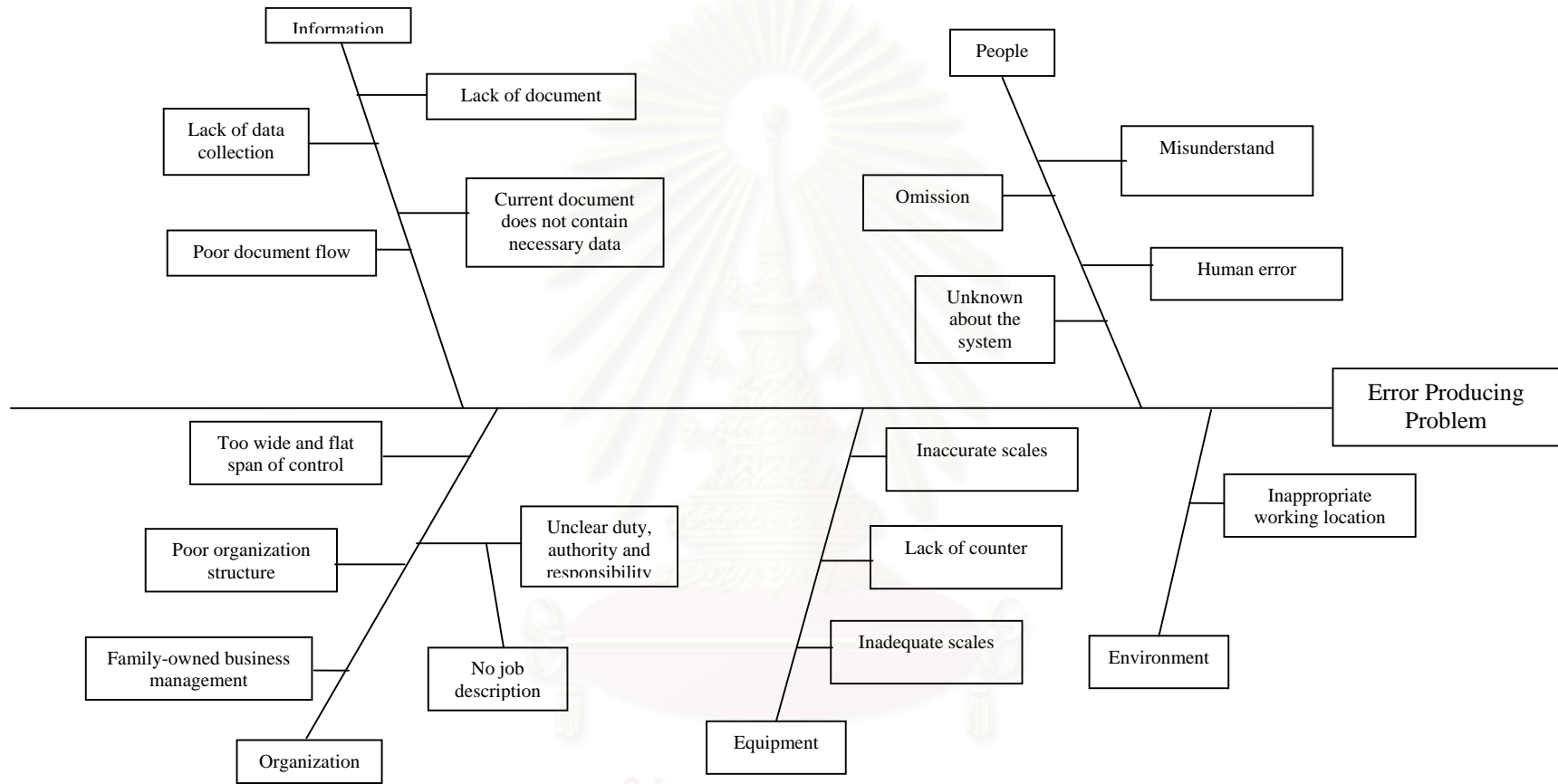


Figure 3.14: Causes and effect diagram for Error Producing Problem

From Figure 3.14, The causes of problem can be separated into five groups as follows:

- 1) Problem about organizing the organization
- 2) Problem about information management in production
- 3) Problem about people
- 4) Problem about equipment
- 5) Problem about environment

From the problem analyses that are described before, show that cause of problem for error producing is consistence with causes of poor coordination and communication. It only differences in some detail about equipment. Error producing come from inaccurate and inadequate scales, and lack of counter.

From the study and the analysis show that the quantity of error producing comes from many causes.

The detail of causes for excessive producing during September to December 2001 is showed in Table 3.4 below.

Table 3.4: The causes for excessive producing during September to December 2001

Causes of excessive producing	Quantity
Incorrect inventory checking	633,560
Counting error	1,880,679

Incorrect inventory checking refers to the error in checking the quantity of inventory in production process and finished goods warehouse.

Counting error refers to the error in counting and summation of product in production process such as the error from no record about productivity so the information about the quantity of products were produced is not available. Production estimate that it is not completed.

The detail of causes for short producing during September to December 2001 is showed in Table 3.5 below.

Table 3.5: The causes for short producing during September to December 2001

Causes of short producing	Quantity
Incorrect inventory checking	31,204
Counting error	103,612
Forget to produce some part of product	30,000

Incorrect inventory checking and counting error are the same with excessive producing.

Forget to produce some part of product refers that some products have many components and some component is forgot producing.

The detail of causes for incorrect producing during September to December 2001 is showed in Table 3.6 below.

Table 3.6: The causes for incorrect producing during September to December 2001

Causes of incorrect producing	Quantity
Lack of information about specification from development	310,000
Lack of information for front line workers	261,460

Lack of information about specification from development occurs from that development does not have approval form that contain all important information about product such as specification. Development informs product detail to production by using verbal or a piece of paper that does not have all information.

Lack of information for front line workers refers to lack of necessary information in current document and lack of document that contain necessary information.

The quantity of error producing by month (from September 2001 to December 2001) shows in Table 3.7 below.

Table 3.7: The Quantity of Error Producing from September to December 2001

Month	Total Orders (pieces)	Excessive Producing	Short Producing	Incorrect Producing
September	5,320,200	377,252	66,208	0
October	7,185,360	674,095	17,547	200,000
November	6,804,885	791,250	18,441	250,000
December	5,162,472	671,642	62,620	121,460

From Table 3.7, it shows that from September 2001 to December 2001, Total orders are 24,472,917 pieces. The excessive producing are 2,514,239 pieces. The short producing are 164,816 pieces. The problem about excessive and lacking producing is 10.95 percent of total orders. Incorrect producing from September to December 2001 is 571,460 pieces. It is 2.34 percent of total orders.

The quantity of error producing is very high, so it is necessary to solve the problems. So it easily for the company to gain the profit from solving the problems. It is able to reduce the quantity of error producing by solving the problems about poor coordination and communication.

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3.5 Current Production Activity and Document Flow

From the study of information management in production department, found that the communication in production is generally done in verbal.

The study and the analysis of the activity and document flow in production are necessary to understand about current production process. The flow starts from receive purchase order through transfer products to customer. The flow shows related document and information that flow through the process.

The production activity and document flow shows in Figure 3.15 as follow:

The problems of activity and document flow are that the flows that show in Figure 3.15 are not a formal and standard flow. It subject to be changed very often depend the obstacle at that time. So the problems can be described as follows.

1. The workers do not have the reference for workflow.
2. The workers process same work with different process.
3. The workers confuse about necessary documents that require.
4. Some activity does not have the document to control.
5. Some necessary activity is ignored.
6. Some document flow too short and does not give the information for related people.

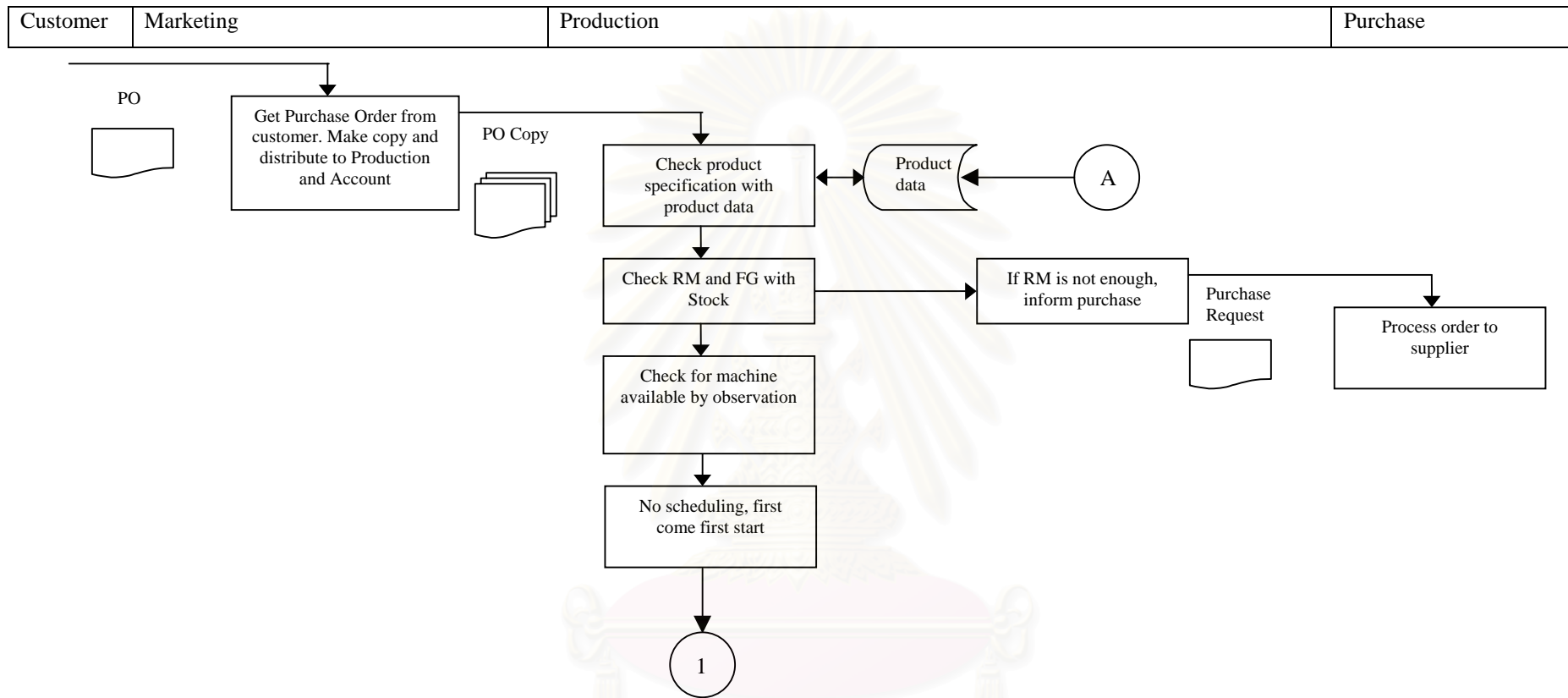


Figure 3.15: Production Activity and Document Flow

Development	Maintenance	Production	Marketing
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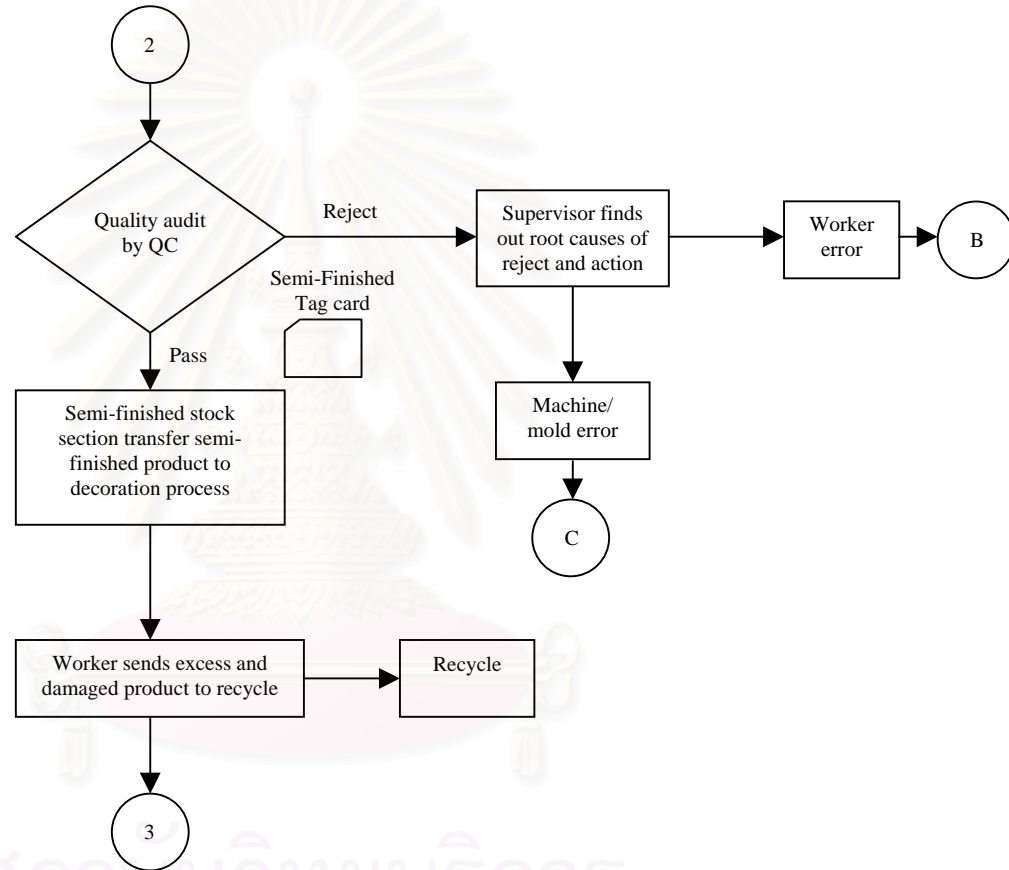


Figure 3.15: Production Activity and Document Flow (continued)

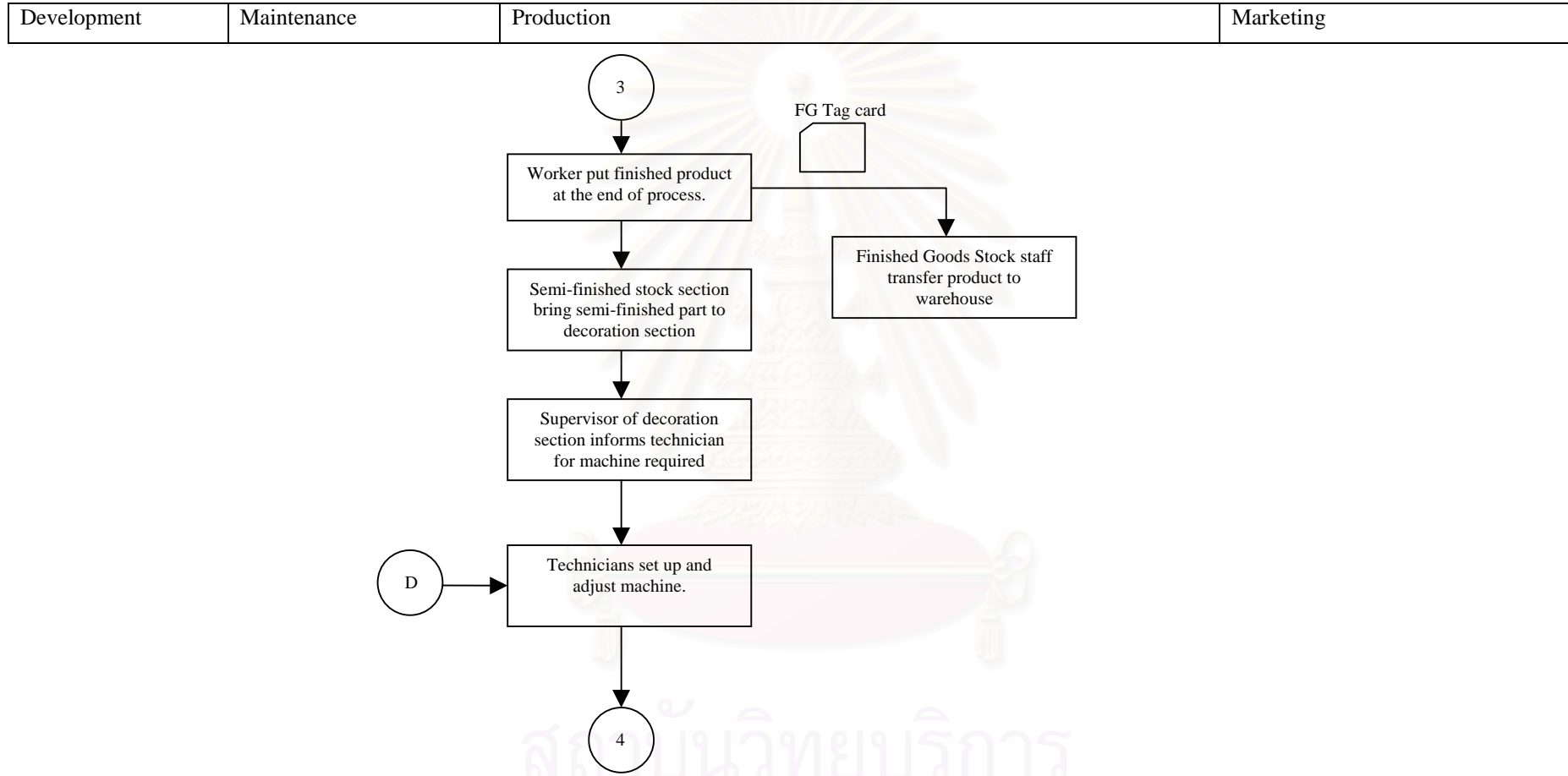


Figure 3.15: Production Activity and Document Flow (continued)

Development	Maintenance	Production	Marketing
-------------	-------------	------------	-----------

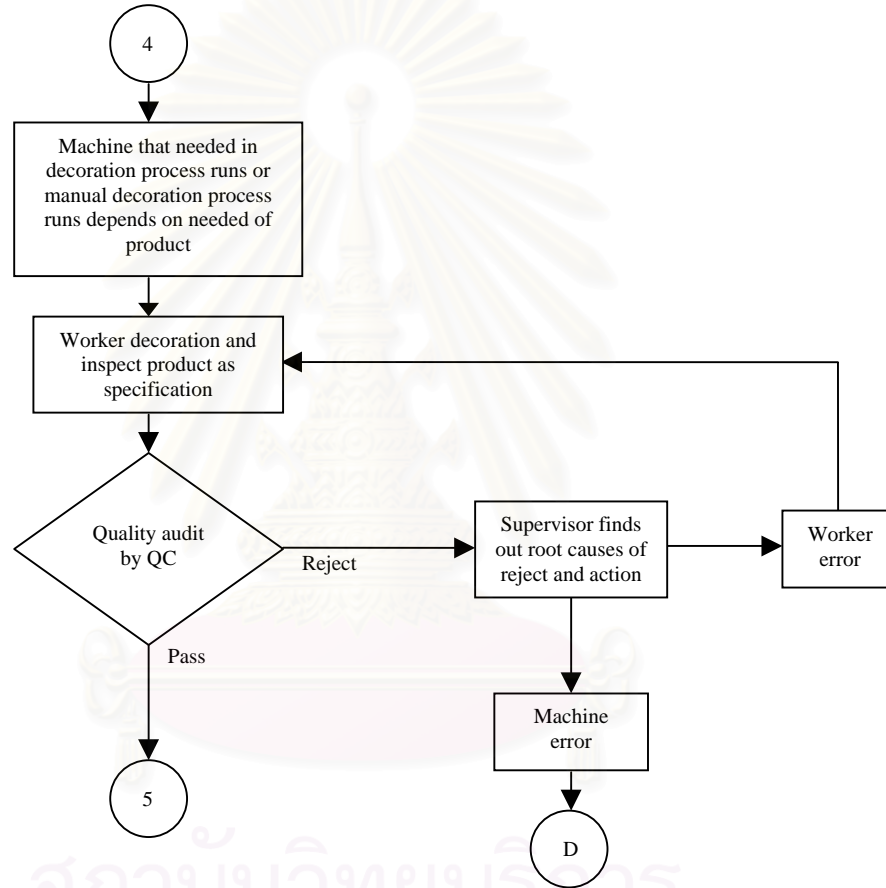


Figure 3.15: Production Activity and Document Flow (continued)

Development	Maintenance	Production	Marketing
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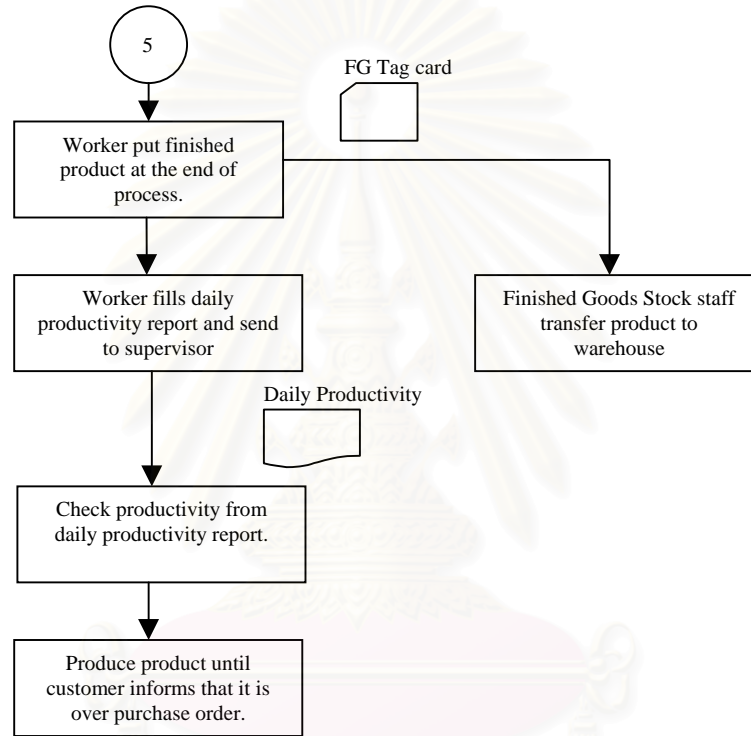


Figure 3.15: Production Activity and Document Flow (continued)

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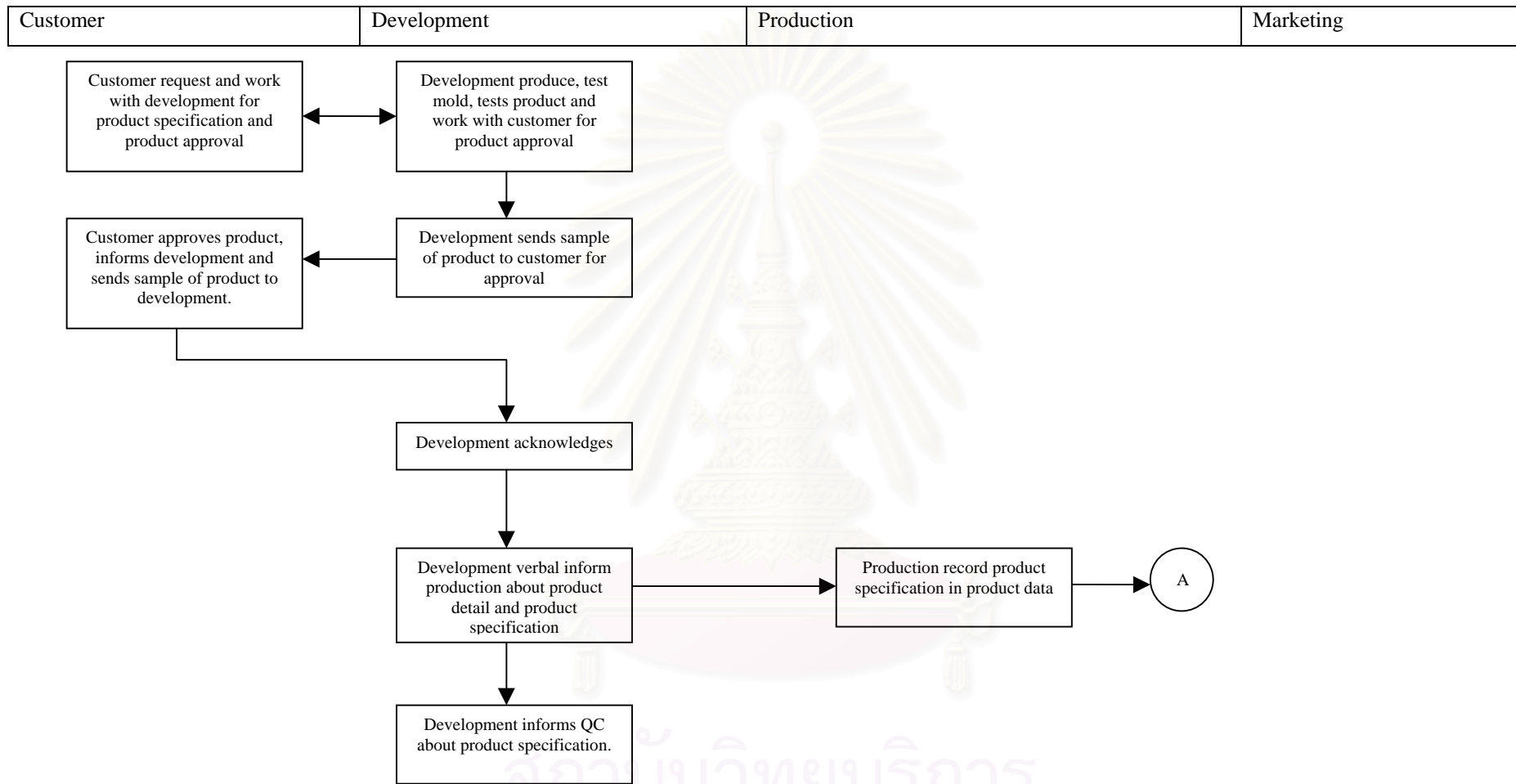


Figure 3.15: Production Activity and Document Flow (continued)

3.6 Current Production Document

From the study of document and information system in production, it shows that current document is not sufficient and effective. Most of workers records and write the data in books or in papers and use those books or paper as the reference or evidence in the process, between the process and between section. The most data is not clear and not correct. The necessary data is not completed and sometime it is not recorded. The information is not correct and can not be trusted.

Current documents that use in production can be described as follow:

1. Purchase Order

1.1 Application of Document:

It is used as a reference for purchase order from customer. Marketing will make a photos copied and sends to production manager and account.

1.2 Quantity: 3 copies

1.3 Document Flow:

Original	Keep at marketing
Copy	Marketing —→ Production, Account

1.4 Detail:

It is depend to purchase order form of each customer. Generally it contains the detail such as product name, color, order quantity, issue date of this purchase, product price and the requirement date.

1.5 Faults of Document:

It is good. It is no need to be changed.

2. Job Order Form

2.1 Application of Document:

It is used as an order for forming shape supervisor to prepare worker. It is used to inform Development to prepare mold. It is used to inform technician to prepare machine; set up and start run the machine.

2.2 Quantity: Not sure depends on number of job order.

2.3 Document Flow:

Production ———▶ Forming Shape Supervisor, DV, Technician

2.4 Important Detail:

- Number: Refer to job order number
- Date: Issue Date
- Machine Number: Machine that will be used
- Product Name: Name of product
- Type of Plastic granule: Type of plastic granule that will be used
- Color: Color of product
- Remarks: The number of worker that needed and packing.

2.5 Faults of Document:

- a) Lack of necessary detail.
 - order quantity
 - standard output per shift
 - reference for machine setting
- b) Lack of an opening for necessary data.
 - The number of worker that need in the machine is written in remarks as well as the packing detail.
- c) Some opening is not used as necessary.
 - The opening for job order number is never used because production never keeps record about the job.

3. Daily Productivity Form

3.1 Application of Document:

It is used as productivity report of worker. It shows how many of outputs that worker can do per shift.

3.2 Quantity: Not sure depends on number of operating machine.

3.3 Document Flow:

Worker —→ Production Manager

3.4 Important Detail:

- Worker Name: Name of worker who does the job
- Date and shift: Production Date and shift
- Standard/shift: Standard output that must be produced in one shift
- Machine Number: Machine that used to produce the product
- Product Name: Name of product
- Color: Color of product
- Scrap weight: Total weight of excess of product and damaged product
- Hour: The hour that product is produced
- Output: The output in one hour.
- Scrap: The scrap weight in one hour.
- Cause: Cause of loss of product in that hour.
- Recorder: The people who find out and fix root cause of problem.
- Total of output /shift: Total of product that can produce in that shift.
- Technician: Name of technician who investigates that machine in that shift.
- Production: Name of production supervisor who takes care on that machine.

3.5 Faults of Document:

- a) Some opening is repeated
 - Recorder, technician, and supervisor
- b) Some opening is not used. The worker ignores to fill the form every hour and no one takes care on checking the detail.
 - The opening for output, scrap, cause and recorder per hour is never used.

Productivity Report				
Worker Name.....Standard...../shift				
Machine Number.....Date.....Shift.....				
Product Name.....Color.....				
Scrap weight.....				
Hour	Output	Scrap	Cause	Recorder
1
2
3
4
5
6
7
8
9
10
Total output...../shift				
Remarks.....				
Technician.....Production.....				

Figure 3.17: Daily Productivity Form

4. Purchase Request Form

4.1 Application of Document:

It is used when production wants to request purchasing to purchase material. It is used to reference that production really requests purchasing to purchase. It is an evidence for checking the request date, the quantity and requirement date.

4.2 Quantity: 1 sheet

4.3 Document Flow:

Production —→ Purchasing

4.4 Important Detail:

- Purchase Number: Number of purchase request.
- Section: The section's name that issues the request.
- Purpose: The purpose of the required material
- Urgent: The requirement status. It is in urgent case or normal request.
- Due date: The requirement date
- Issue Date: The date that the request is issued.
- Code: The code of material
- Quantity: The required quantity of material
- Detail: The name of material and others information that is necessary for material identification such as color, size.
- Approve by: The name of authority people.
- Issue by: The head of request section.
- Received date: The date that material is received.

4.5 Faults of Document:

- a) Lack of copy.

It can not be used as evidence because it does not have copy for production. It used to have a problem of lacking of plastic granule. Purchasing confirm that she does not receive the

purchase request. But production confirm that purchase request is already issued. The fact is that purchasing loss the form.

b) Some opening space is never used.

- The opening for purchase request number is never used. This number is unnecessary because the purchase request form does not use for reference.
- The opening for code is never used because the company does not set the code for the material.
- The opening for receive date is never used because different material in the same request may be received in different date.

c) Some opening is ignored.

- The opening for purpose is ignored because the material in the list that request is used in different purpose.
- The opening for due date is ignores because the worker who issues the request always urgent.

Purchase Request		Number
Section.....	<input type="checkbox"/> Urgent	Issue Date
Purpose.....	<input type="checkbox"/> Due date...../...../.....
Code	Quantity Request	Deatil
Approved by	Issue by	Received date

Figure 3.18: Purchase Request Form

5. Mixing Order Form

5.1 Application of Document:

It is used to order mixing section to mix raw material at the correct ratio. It is used to inform mixing section about material requirement for each machine.

5.2 Quantity: Not sure depends on number of operating machine

5.3 Document Flow:

Production —→ Mixing

5.4 Important Detail:

- Machine Number: Number of machine
- Product Name: Name of product
- Customer: Name of customer
- Color ratio: Standard ratio of color and total weight of color per bucket.
- Raw material: Type of raw material
- Ratio of material: Standard ratio of raw material
- Quantity required/day: Total quantity that need in one day.

5.5 Faults of Document:

- a) Some opening space is never used due to it is not necessary.
 - The opening for customer.
- b) The document must be written many times.
 - It wastes paper.
 - It wastes time.
 - It is difficult for keeping and tracking.
- c) Some opening space is repeated.
 - Color ratio. Color ratio is standard ratio and there is a reference in product data. Writing in the form is repeated.
 - Raw material ratio. Raw material ratio is standard ratio and there is a reference in product data. Writing in the form is repeated.

Mixing Order		
1. Machine Number.....	Product name.....	Customer.....
2. Color Ratio		
1.1.....	g/Kg.....	g/bucket
1.2.....	g/Kg.....	g/bucket
1.3.....	g/Kg.....	g/bucket
1.4.....	g/Kg.....	g/bucket
1.5.....	g/Kg.....	g/bucket
3.Raw material 3.1.....	3.2.....	3.3.....
Ratio of raw material.....		
.....		
.....		
4. Quantity required/day.....		Kg.

Figure 3.19: Mixing Order Form

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6. Draw Material Form

6.1 Application of Document:

It is used to draw plastic granule from raw material stock.

6.2 Quantity: 1 sheet

6.3 Document Flow:

Production —→ raw material stock

6.4 Important Detail:

- Date: Issue date.
- Type: Type of plastic granule
- Bag: The unit of plastic granule
- Kg: The unit of plastic granule
- Inspector: The person who checks the correction of the draw
- Request By: The person who wants to draw the plastic.
- Stock: The person who provides plastic for requester.

6.5 Faults of Document:

- a) Some opening spaces are never used or not correctly use.
 - Inspector. No one inspect the draw.
 - Remarks. There are a lot of spaces for remarks but it is useless.
- b) Some opening space is repeated.
 - Kg and bag. They are the unit of plastic granule. It is the same meaning.
- c) Lack of copy.

It can not be used as evidence because it does not have copy. There are many opening spaces so it is easy to add up at anytime without notice.

7. Draw Recycle Form

7.1 Application of Document:

It is used to draw recycle from recycle section.

7.2 Quantity: Not sure depends on number of product produces.

7.3 Document Flow:

Production —→ Recycle

7.4 Important Detail:

- Machine: Number of machine
- Date: Request date
- Product name: Name of product that was recycled
- Color: Color of recycle
- Type of plastic: Type of plastic that was recycled
- Quantity: The requested quantity
- Request by: The person who requests for recycle

7.5 Faults of Document:

- a) Some opening space is never used due to it is not necessary.
 - The machine number. It is not necessary for recycle section to know the machine number.
- b) The document must be written many times.
 - It wastes paper.
 - It wastes time.
 - It is difficult for keeping and tracking.
- c) Lack of important data.
 - No identification for completes work. It does not show that requester receive recycle as request or not.

Draw recycle	
Machine.....	Date.....
Product Name	Color.....
Type of plastic.....	Quantity.....
Request by.....	

Figure 3.21: Draw Recycle Form

8. Semi-finished Tag Card

8.1 Application of Document:

It is used for tracking semi-finished product in production process. It contains detail of product during process. When there are problems in next process about the parts of product it is traceable.

8.2 Quantity: Not sure depends on number of product produces

8.3 Document Flow:

Production —→ Production

8.4 Important Detail:

- Machine: Refer to machine number
- Date: Production date
- Shift: Production shift
- Product Name: Name of product or part
- Color: Color of product
- Worker name: Name of worker
- Number: There are two numbers. First is Worker's number. Second is number of box.
- Quantity/pack: Refer to quantity of product or part per pack.

8.5 Faults of Document:

- a) Some opening space is not necessary.
 - Worker's number.
- b) Lack of important data.
 - Result of quality audit.
 - Purchase order number or other reference number
 - Name of inspector.

Machine.....	Date.....	Shift.....
Product Name	Color.....	
Worker Name.....	Number.....	
Quantity/Pack.....	Number...../.....	

Figure 3.22: Semi-finished Tag card

9. Finished Good Tag card

9.1 Application of Document:

It is used for tracking finished goods in finished goods stock. It contains detail of product. When there are problems about the products it is traceable.

9.2 Quantity: Not sure depends on number of product produces.

9.3 Document Flow:

Production —→ Finished good stock

9.4 Important Detail:

- Product Name: Name of product
- Color: Color of product
- Date: Date that production finished
- Shift: Shift that production finished
- Worker Name: Name of worker who produces product
- Quantity/pack: Refer to quantity of product per pack.
- QC: Name of QC who response in auditing product at that time.

9.5 Faults of Document:

- a) Lack of important data.
 - Purchase order number
 - Inspector

Product Name..... U Mee Cup	Color..... White
Date..... 15 Dec 2001	Shift..... A
Worker Name..... Manee	
Quantity/Pack..... 300	QC..... Kai

Figure 3.23: Finished Good Tag card (Product Identification Tag card)

Chapter 4

Setting up of Coordination and Communication Systems

4.1 Setting up of Coordination and Communication Systems

To set up good coordination and communication systems, the fundamentals of coordination and communication must be considered.

- 1) Communication process
- 2) Formal and informal communication
- 3) Nonverbal messages
- 4) Communication channels
- 5) Barriers to effective communication
- 6) Improving communication

From all fundamentals above, the systems that provide the organization about effectiveness and efficiency in coordination and communication must well balance for formal and informal communication, communicate to right communication channel, reduce the barriers and satisfy all members in the organization.

The systems that are set up will provide the systematic coordination and communication for the Sample Company. The systems that are suitable for the Sample Company are the systems that consist of formal and informal communication. And the coordination and communication flow through suitable communication channel.

The Sample Company has problem about organization structure and span of control. So the coordination and communication in the company is poor. For better in formal coordination and communication, the organization of the company must be changed. Changing in organization structure also effect to the coordination and communication in each communication directions: upward, downward, horizontal, and cross-channel.

With better organization structure, the coordination and communication in the organization will follow through the suitable hierarchy of authority. The

workers will know how to coordinate and communicate through the hierarchy. Before changing the organization, the workers confuse with the hierarchy, chain of command, and relationship of the workers in the organization because they are changed many times and there is no formal organization chart in the Sample Company.

The systems must have informal communication. Informal communication can be managed as an open system. This informal communication happen because intention of management. The information that pass through informal communication provide the necessary information such as feeling of workers about shift changed, the intention of management to improve benefit of workers in the future.

The workers are encouraged to communicate with others by leading of production manager. Production manager provides the important information to supervisors and encourages them to pass the information to their friends. The information that comes from informal communication will use for some decision making. It helps manager to know opinion of workers. And if it is positive in feedback, the formal communication will follow to prove that the information in informal communication is correct.

The Sample Company has problem about unclear responsibility, duty and authority because the Sample Company does not have job description. Without job description, the coordination and communication in the company is poor because the workers confuse that who response the job, who have authority in ordering, and what are their duty. So the workers does not have the confidence in coordination and communication with each other. So job description will help to improve formal coordination and communication in the organization.

The Sample Company has problem about unclear activity flow and document flow so the coordination and communication happen without pattern and direction. The coordination and communication systems that are set up provide clear activity flow and document flow. The activity flow and document

flow is changed to generate the formal flow of information through the production organization.

The coordination and communication systems that are set up can provide the necessary information through the changing of document.

The systems are designed by considering elements in the fundamental of coordination and communication that described before.

- 1) The important information that management want to pass through all levels in the organization will reach all workers in formal form by using verbal communication and then follow with written document. It can pass through improved organization structure to desired workers.
- 2) The information from workers will upward passes to superior by using informal communication or fill up the document.
- 3) Using document can do the coordination and communication among peer or workers in same level.
- 4) The workers can coordinate and communicate with each other by reference to the activity flow and document flow.
- 5) Leaders, supervisors and manager will be encouraged to set up the meeting in each level. So the messages and information can effectively go to receiver. And this also encourages workers to send the feedback to superior. The coordination and communication will be improved due to more understanding in each other.

From previous description, it can conclude that there are four parts that must be changed or created to support the effective coordination and communication systems. They are listed as follows:

1. Changing organization structure and span of control
2. Create job description
3. Changing activity flow and document flow
4. Changing document

4.2 Changing Organization Structure and Span of Control

From the problems that described in Chapter 3 about organization structure and span of control of the Sample Company, the organization structure and span of control should be changed to be suitable for current status of the company. The changing must correspond with organization management theory. The culture of people, internal and external environment of the company should be considered before changing the organization.

For the tendency of organization restructuring, the criteria that will be considered are as follows:

1. New organization structure must be able to cope with a situation that company is continuous expand.
2. New organization structure must clearly show the hierarchical relationship, organization levels, span of management, authority, and responsibility of each position.
3. New organization structure must combine similar job together and separate different job apart for better in the coordination and communication.

For overall improvement about coordination in the company, the formal organization chart can be created as show in Figure 4.1.

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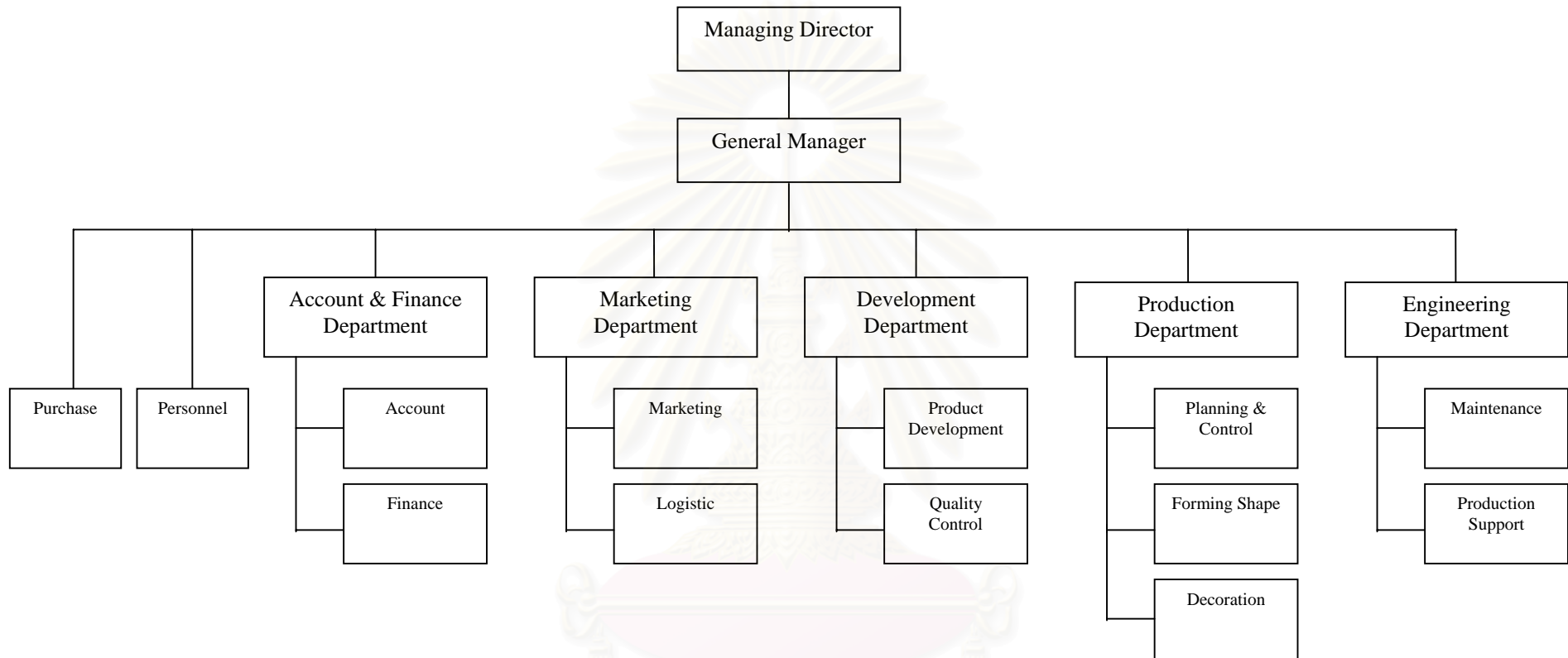


Figure 4.1: Formal Organization Chart of the Company

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From the organization chart in Figure 4.1, the position of the founder is the same. The position of founder is Managing Director. New position under MD is general manager. The person who response in this position is the founder's son.

There are five departments and two divisions under responsibility of GM. The responsibility of each department under control of General Manger are described as follow:

1. Department. There are five departments

- 1.1 Account and Finance Department

This department consists of two divisions. They are account and finance. Account division consists of three sections. They are account receivable, account payable and general ledgers. Finance division consists of three sections. They are billing, collector and leasing.

- 1.2 Marketing Department

This department consists of two divisions. They are marketing and logistic. Marketing division consists of two sections. They are sale and customer service. Logistic division consists of three sections. They are raw material stock, finished goods stock and delivery.

- 1.3 Development Department

This department consists of two divisions. They are quality control and product development. Quality control division consists of two sections. They are QA and QC. Product development division consists of two sections. They are mold shop and product testing. There is one section that direct report to department manager. It is store section.

- 1.4 Engineering Department

This department consists of 2 divisions. They are maintenance and production support. Maintenance division consists of 2 sections. They are machine maintenance and factory utility maintenance.

Production support division consists of three sections. They are blowing technician, injection technician and decoration technician.

1.5 Production Department

This department consists of three divisions. They are production planning, forming shape, and decoration. Production planning division consists of five sections. They are plan, WIP, document, mixing and recycle. Forming shape division consists of two sections. They are blowing and injection. Decoration division consists of three sections. They are decoration 1 and decoration 2.

2. Division. There are two divisions.

1.1 Purchase

1.2 Personnel

These two divisions are not grouped in any department but they directly report to GM due to the responsibility and authority of these two sections relates to the benefit of all employees and the company. It is difficult and complicate for workers who work in purchasing division to make a decision about purchasing things. And it is difficult and complicate for workers who work in personnel division to make a decision about the compensation and benefit of workers.

From new organization structure, the responsibilities are changed and can be described as follows:

1. Purchase division

This division takes care about direct material purchasing, indirect material purchasing, tool and equipment for mold shop and maintenance purchasing and miscellaneous thing that use in the company. The job of this division starts from receive the purchase request from each department and issue purchase order to supplier then coordinate with supplier for delivery date until the purchased things reach and are received by the company.

2. Personnel division

This division takes care about the compensation of employee, the employment, and the benefit of employee. The jobs of this division are salary and wages calculation for employees, employ new worker and coordinate with department of labor for advantage of workers.

3. Account division

This division takes care about all accountability of the company.

4. Finance division

This division takes care about finance of the company.

5. Marketing division

This division takes care about customer relationship and sale of product. The jobs of this division start from receiving the purchase order from customer and then pass the order through production and account. Next step is coordinating with production and customer for delivery date and coordinate with delivery section to send the products to customer. After that if there is customer complain, this division will acknowledged and passed the information about customer complain to related people.

6. Logistic division

This division takes care on raw material and finished goods inventory control and delivery system of the company. The job of this division is to transfer products from end of production process to warehouse and to transfer products from warehouse to customers.

7. Quality control division

This division takes care on quality control for incoming material, work in process, and finished goods.

8. Product development division

This division takes care on new product development. The job of this division is coordinating with customer for new product development. It starts from design and producing molds then testing mold and then send sample of product to customer for approval.

9. Maintenance division

This division takes care on all machine maintenance and maintenance for all utility of the company.

10. Production support division

This division takes care on supporting production for the best productivity. The jobs of this division are to set up and to adjust the machines to get good products and good productivity.

11. Production planning division

This division takes care on production planning and control. The jobs of this division are to plan and to control production process, work in process and all material used in production. The job also includes the document control for production.

12. Forming shape division

This division takes care on producing products by using blow-molding machine and injection-molding machine.

13. Decoration division

This division takes care on all decoration for products such as screening, hot stamping, shrink, labeling and assembling.

The main organization structure that supposes to be changed is the organization structure of production department. New organization structure of production department after changing shows in Figure 4.6.

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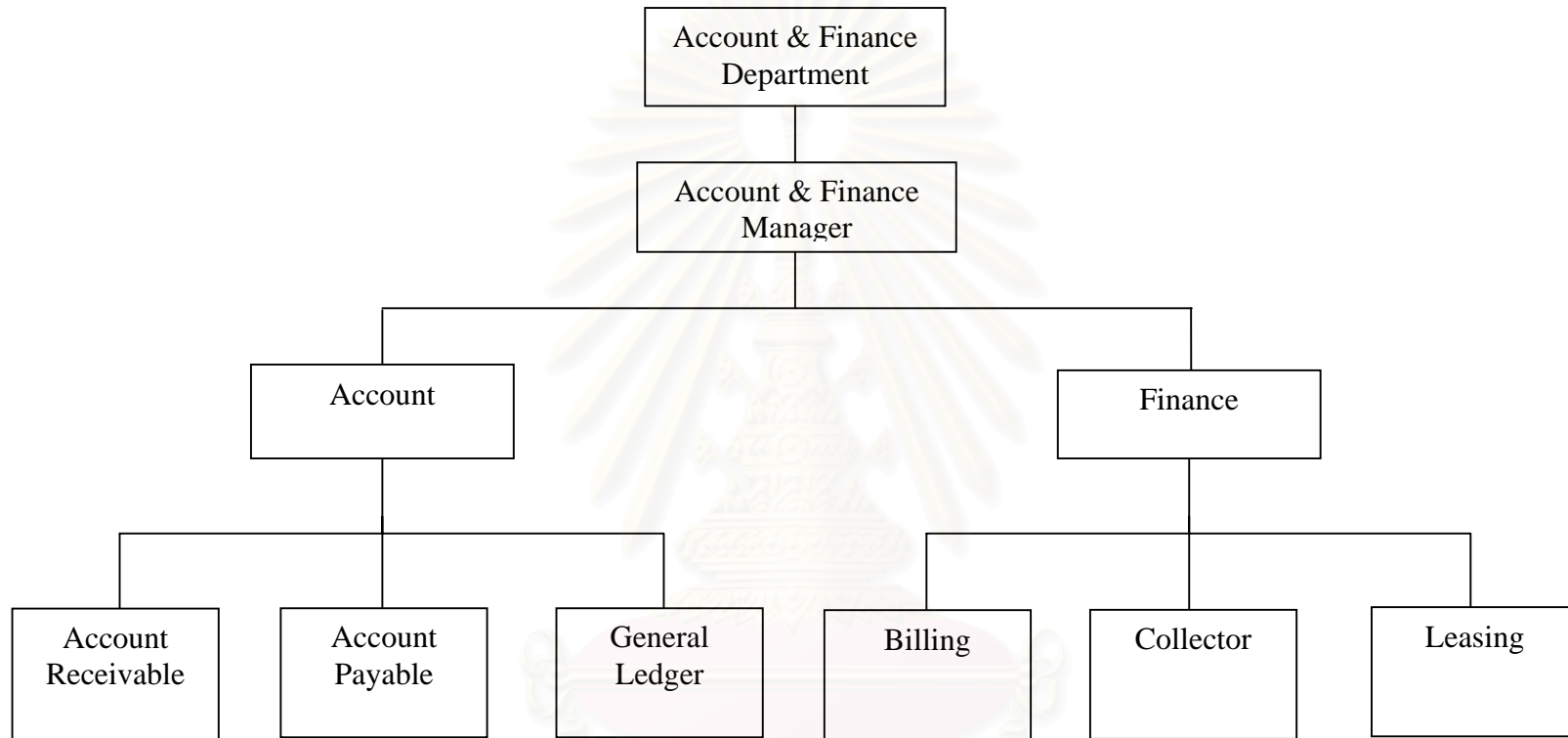


Figure 4.2: Formal Organization Chart of Account and Finance Department

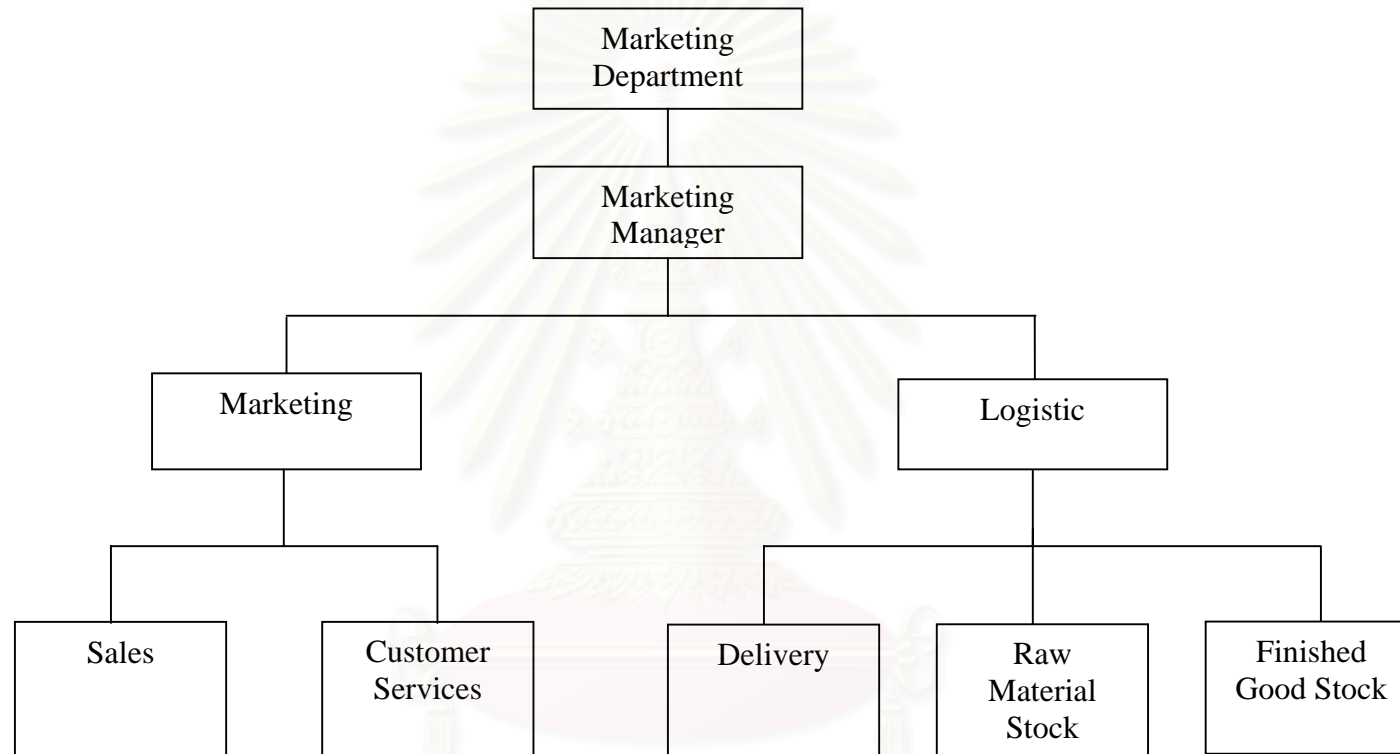


Figure 4.3: Formal Organization Chart of Marketing Department

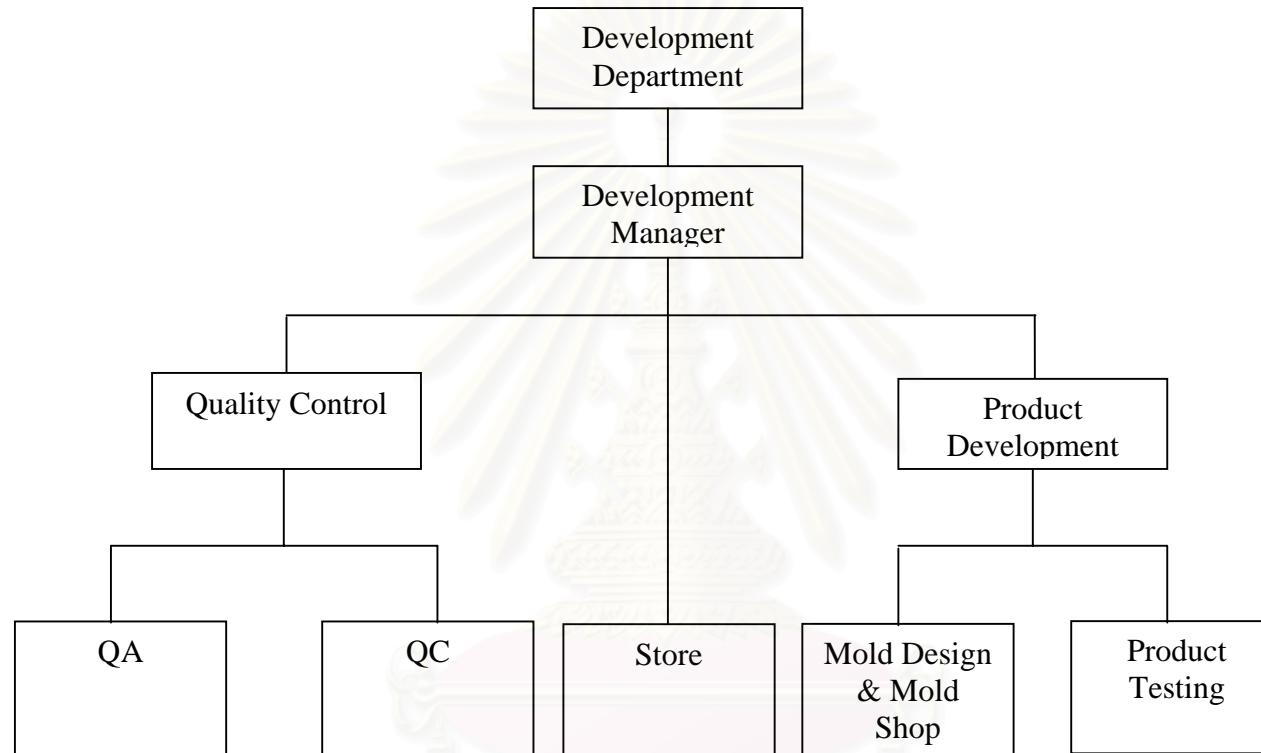


Figure 4.4: Formal Organization Chart of Development Department

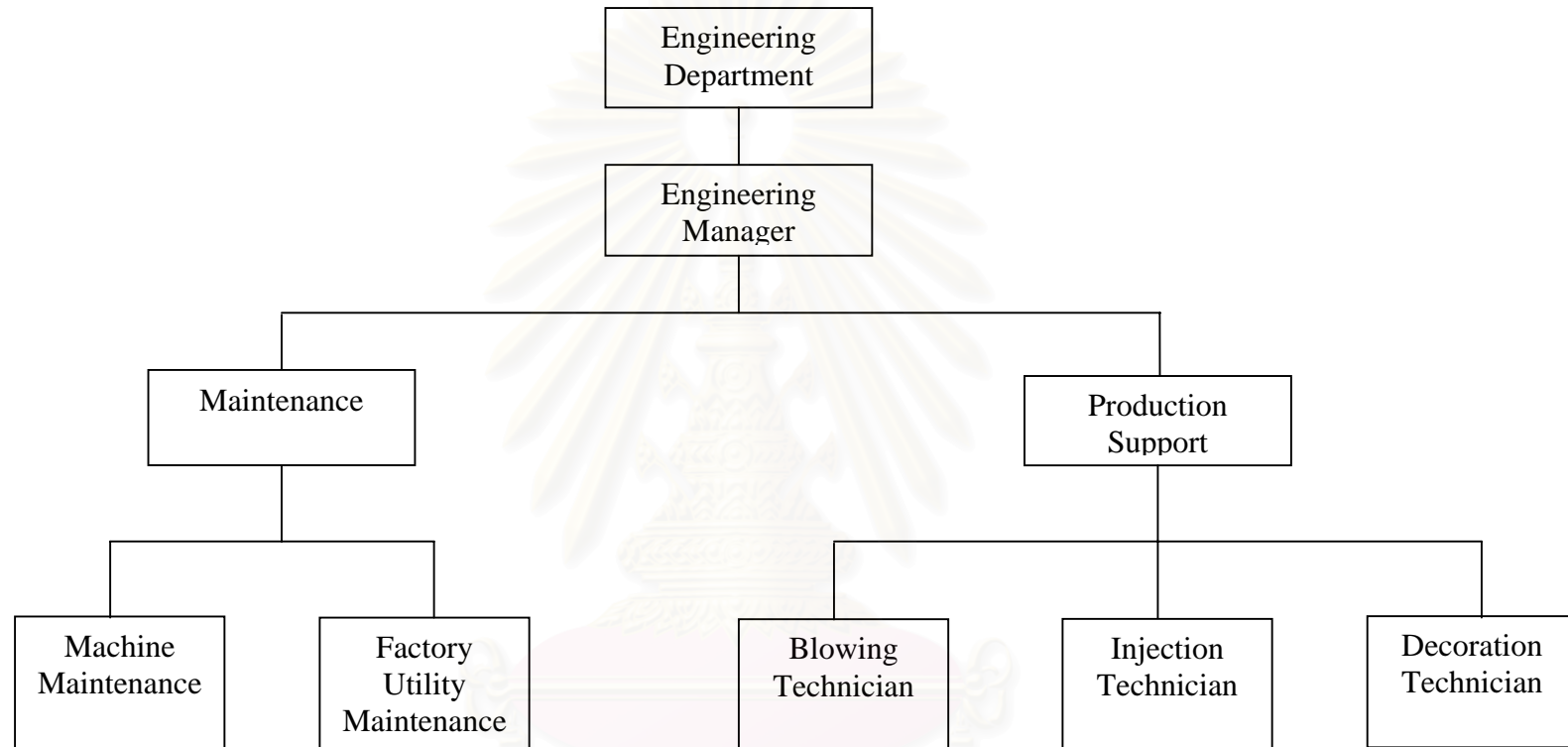


Figure 4.5: Formal Organization Chart of Engineering Department

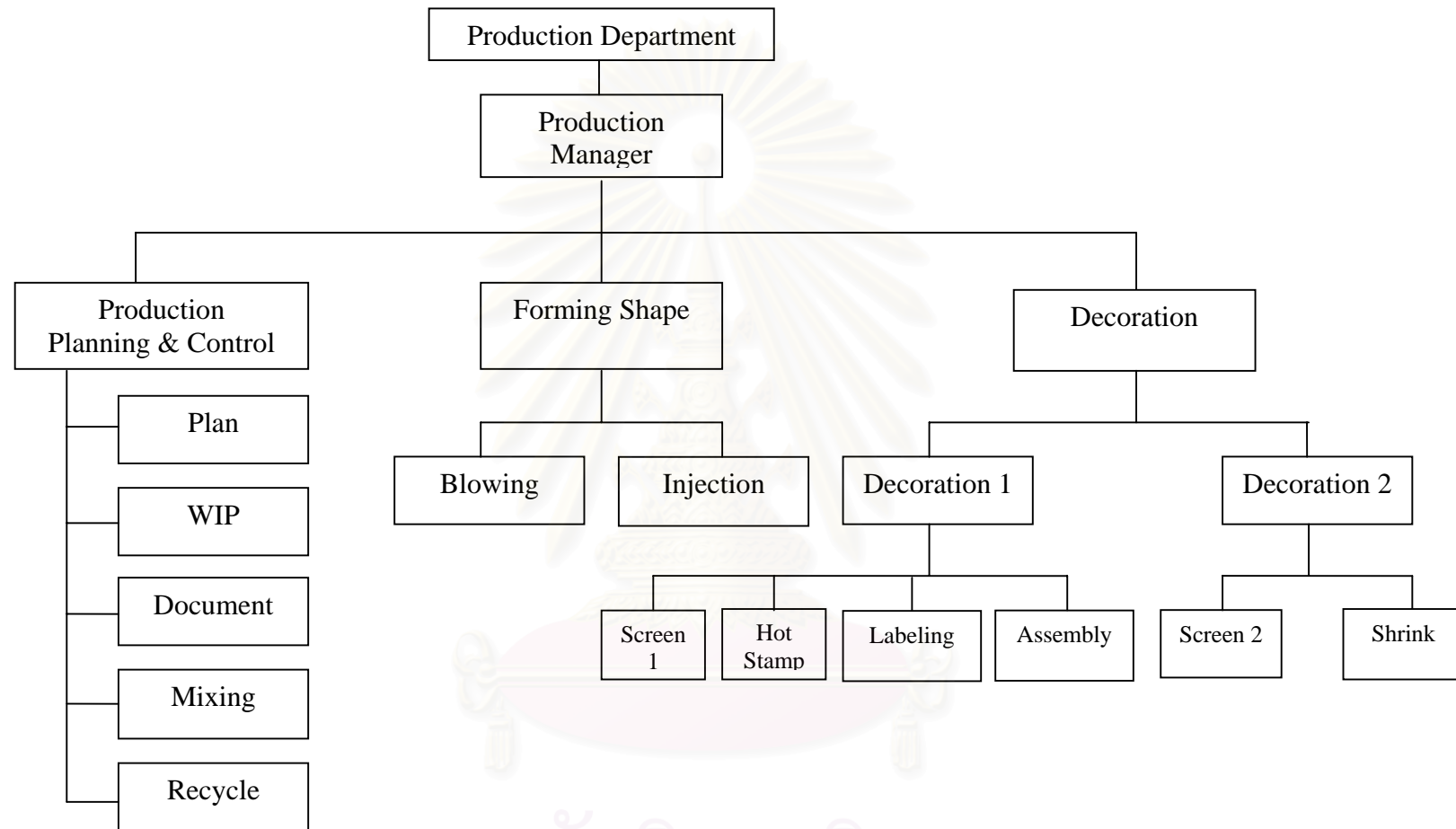


Figure 4.6: Formal Organization Chart of Production Department

From Figure 4.6, Four contents of the decision are considered before making a decision for new organization chart. They are division of labor, departmentalization, span of control and delegation of authority.

- 1) Division of labor is the process of dividing work into relatively specialized jobs to achieve advantages of specialization. For the Sample Company, production department can be divided into different activities necessitated by the natural sequence of the work the production department does. The example are blowing, injection, and etc.
- 2) Departmentalization is the process that grouping the individual jobs. For the production department, it refers to the section in the organization is grouped together by consider the same job functions together.
- 3) Span of control is the decision about the number of individuals who report to a specific manager, supervisor or leader. For this case, the workers in each division are about 150 workers. Except planning and control division, there are 25 workers. The workers in each section are about 75 workers. Except sections under control of planning and control division has workers about 5 per each section because the job function is not directly to produce product.
- 4) Delegation of authority is the process of distributing authority downward in the organization. For production, the authority is delegated through the hierarchy of organization. New organization structure provides decentralize in authority to encourage development of supervisors and leaders.

From Figure 4.6, the organization structure of production is changed a lot. It shows that there are 3 divisions under control of production manager. The jobs are grouped together by considering the similarity and different of work until get 3 divisions. They are planning and control division, forming shape division and decoration division.

1. Planning and control division.

The duties of this division are to prepare, support and control overall operations of production. It consists of five sections. They are plan, WIP, document, mixing and recycle.

- Plan takes care on prepare and planning production schedule.
- WIP takes care on work in process inventory control and transfer.
- Document takes care on data collection and summation, information record and keep.
- Mixing takes care on mixing raw material.
- Recycle takes care on recycle the scrap.

2. Forming Shape division.

The duties of this division are to perform the forming shape operations. It consists of two sections. They are blowing and Injection section.

- Blowing takes care on forming shape the product by using blow-molding machine.
- Injection takes care on forming shape the product by using injection-molding machine.

3. Decoration division.

The duties of this division are to perform all decoration operations. It consists of two sections. They are decoration 1 and decoration 2.

- Decoration 1 takes care on screening all products except milk bottle, hot stamping, labeling the product, and assembling the product.
- Decoration 2 takes care on screening milk bottle and shrinking the product.

The screening processes are in decoration 1 and decoration 2 because working environment and process control are different. Milk bottle requires special process control due to it is food container and sensitive for germ.

The advantages of new formal organization can be described as follows:

1. In new organization structure, the founder's son is moved from development department to general manager position. This will solve the problem about connection and important person.
2. With new organization structure, there is middle management to take care on each department.
3. New organization structure is designed to support the expansion of the company.
4. With new organization structure, the people in top management and middle management level can change their duty from perform routine work to pay attention in management planing and control.
5. The arrangement of division and section in new organization structure is more suitable. The workload in each department is more suitable.
6. With new organization structure, the operation management will not related with person. It assists and supports the systematic operation.
7. The span of control is changed to be suitable in new organization structure. The responsibility and authority of each position are clearly determined. The job description is created.

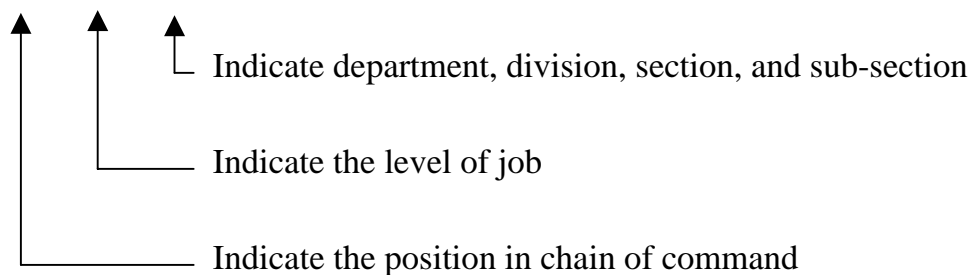
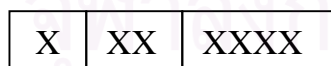
4.3 Create job description of production department

Job description provides clearly understands for employees about their job, responsibility, duty and authority. Job description consists of the following details:

1. Job Code
2. Position Name
3. Department
4. Division
5. Section
6. Report to (Immediate Supervisor)
7. Job Summary
8. Responsibilities and Duties
9. Authorities
10. Minimum Qualifications

To set up job code, the standard regulations is set and it can be described as follow:

1. Code for each job position consists of three parts.
 - First part has one character. It indicates the position in chain of command.
 - Second part consists of two digits that indicate the level of job.
 - Third part consists of four digits that indicate the department, division, section, and sub-section that employee belong to.



2. Meaning of job code.

- a) First character indicates the position in chain of command. Each character has its meaning. The lists below show the meaning of each character.

M	means Manager
S	means Supervisor
L	means Leader
W	means Worker
E	means Engineer
T	means Technician

- b) Second and third digit indicates the level of job.

The pay grade must be different for each job level due to the different in job specification. Job knowledge, complexity of work, interaction with others, training time, practice time, risk, working environment, responsibility and physical effort are the factors that use for considering the pay grade.

Job level is set up for establishing the pay grade. Job level is separated to 10 levels to support the expansion of the company.

Level 1 is the lowest one. Level 10 is the highest one. The pay grade start from the minimum standard wage that setting by department of labor to the maximum salary that the founder satisfy to pay.

The list below shows the meaning of each number.

01-03 means assistance of any position

04-06 means the normal of that position

07-09 means senior of any position

For example, M01, M02, and M03 means assistance manager but the different is the highest salary rate of M01 is lower than the lowest salary rate of M02.

c) Forth, fifth, sixth, and seventh digit indicates the department, division, section, and sub-section that employee belong to.

- Forth digit indicates department.

The list below shows the meaning of each number.

- 0 : Not belong to any department
- 1 : Account and Finance Department
- 2 : Marketing Department
- 3 : Development Department
- 4 : Engineering Department
- 5 : Production Department

- Fifth digit indicates division.

The list below shows the meaning of each number for Production department.

- 0 : Not belong to any division
- 1 : Production Planning and Control Division
- 2 : Forming Shape Division
- 3 : Decoration Division

- Sixth digit indicates section.

The list below shows the meaning of each number in production planning and control division.

- 0 : Not belong to and section
- 1 : Planning Section
- 2 : WIP section
- 3 : Document Control Section
- 4 : Mixing Section
- 5 : Recycle Section

The list below shows the meaning of each number in forming shape division.

- 1 : Blowing Section
- 2 : Injection Section

The list below shows the meaning of each number in decoration division.

- 1 : Decoration 1 Section
- 2 : Decoration 2 Section

The list below shows the meaning of each number in decoration 1 section.

- 0 : Not belong to any sub-section
- 1 : Screen 1 Sub-section
- 2 : Hot Stamp Sub-section
- 3 : Labeling Sub-section
- 4 : Assembly Sub-section

The list below shows the meaning of each number in decoration 2 section.

- 1 : Screen 2 Sub-section
- 2 : Shrink Sub-section

The samples below show the meaning of job code.

- M025000 : Assistance Manager of production department.
- S055100 : Supervisor of planing and control division.
- L075110 : Senior Leader of planning section in planning and control division.

Job Description		Code: M045000
Position	: Production Manager	
Department	: Production	
Division	:	
Section	:	
Report to	: General Manager	
<u>Job summary</u>		
<p>To perform the duty in all production management. Such as Plan goal, supervises the work of subordinates, develops improvement in operation, maintains the performance of subordinate, and coordinate with other related department for effectiveness and efficiency of production operation.</p>		
<u>Responsibilities and duties</u>		
<ol style="list-style-type: none"> 1. To set policy, objective and target for production operation. 2. To coordinate with other related department for the information that related with production. 3. To follow and control output of production, quality, waste, cost of production and usage of raw material. 4. To follow, control and assess the performance of subordinate. 5. To afford, applaud and gloat over for work of chief of division and chief of section. 6. To promote and develop the activity that effect to the improvement of department operation. 7. To suggest and consult subordinate about technical and procedure of operation. 8. To improve working environment to be safe and effective. 		
<u>Authority</u>		
<ol style="list-style-type: none"> 1. To manage received budget. 2. To approve purchase request for materials use in production. 3. To consider and make a decision for performance assessment and punishment for subordinate. 		
<u>Minimum Qualifications</u>		
Bachelor Degree and 3 years working experience		

Figure 4.7: Job Description of Production Manager

Job Description		Code: S045100
Position	: Planning & Control Supervisor	
Department	: Production	
Division	: Planning & Control	
Section	:	
Report to	: Production Manager	
<p><u>Job summary</u></p> <p>To perform the duty in Planning and controlling for forming shape and decoration process to achieve the objective. Such as plan for production schedule, delegate subordinate, control usage of raw material for fully utilization, take care about performance assessment of subordinate, and coordinate with other related department for effectiveness and efficiency of planning and control operation.</p> <p><u>Responsibilities and duties</u></p> <ol style="list-style-type: none"> 1. To take care and control the operation of division to achieve the objective. 2. To summarize the efficiency of division and report to manager. 3. To coordinate with other related people for the information that related with division. 4. To plan, follow and control output of production, waste and usage of raw material to be in reasonable level. 5. To follow, control and assess the performance of subordinate. 6. To afford, applaud and gloat over for work of chief of section. 7. To promote and develop the activity that effect to the improvement of division operation. 8. To suggest and consult subordinate about technical and procedure of operation. 9. To improve working environment to be safe and effective. <p><u>Authority</u></p> <ol style="list-style-type: none"> 1. To approve purchase request for materials use in production. 2. To consider and make a decision for performance assessment and punishment of subordinate. <p><u>Minimum Qualifications</u></p> <p>Bachelor Degree and 0-1 years working experience</p>		

Figure 4.8: Job Description of Planning & Control Supervisor

4.4 Changing activity flow and flow of document in production

From the analysis about activity and document flow system in production that does in Chapter 3, shows that no standard in activity and document flow, can causes that the workers do not have the reference for workflow, the workers process same work with different process and the workers confuse about necessary documents that require. There is some activity that does not have the document to control. There is some necessary activity that is ignored. And some document flow too short and does not give the information for related people.

So the formal standard activity and document flow in production must be set up. New flow comes from add up some process and some document to the current flow, cut off some process and some document from the current flow, and changing some process and some document in the current flow.

Figure 4.9 shows the formal activity and document flow in production.



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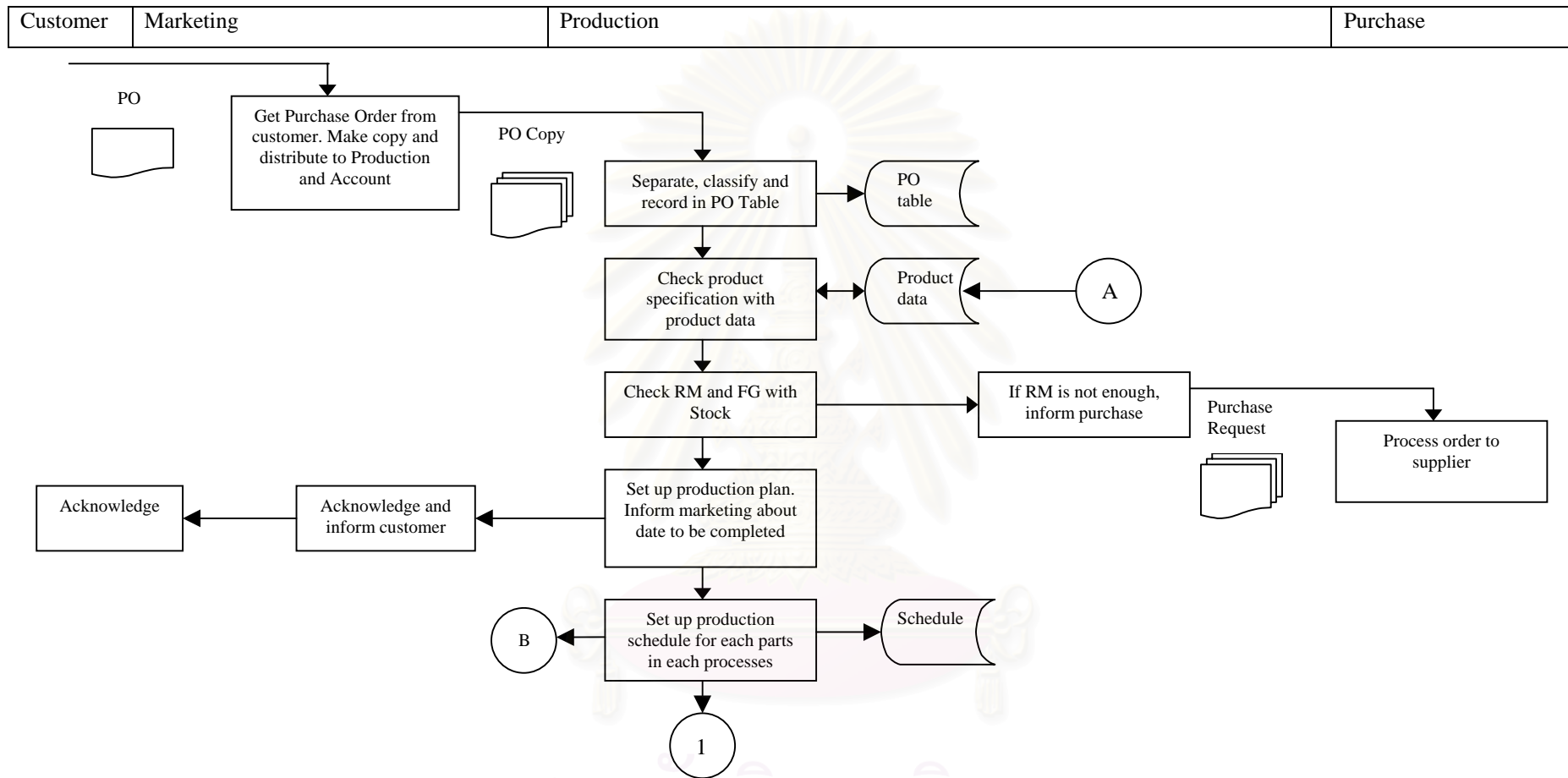


Figure 4.9: The Formal Activity and Document Flow of Production

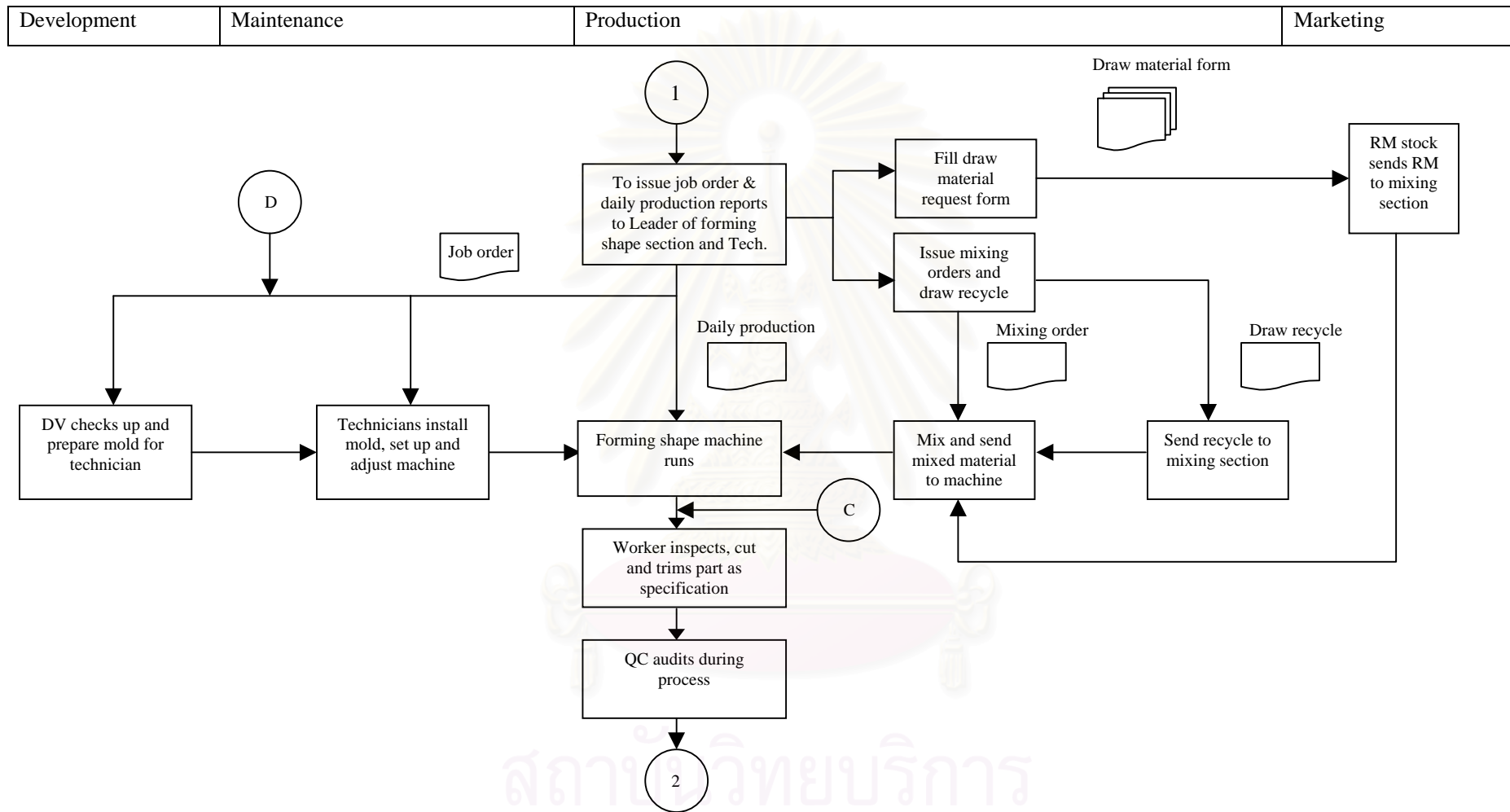


Figure 4.9: The Formal Activity and Document Flow of Production (continued)

Development	Maintenance	Production	Marketing
-------------	-------------	------------	-----------

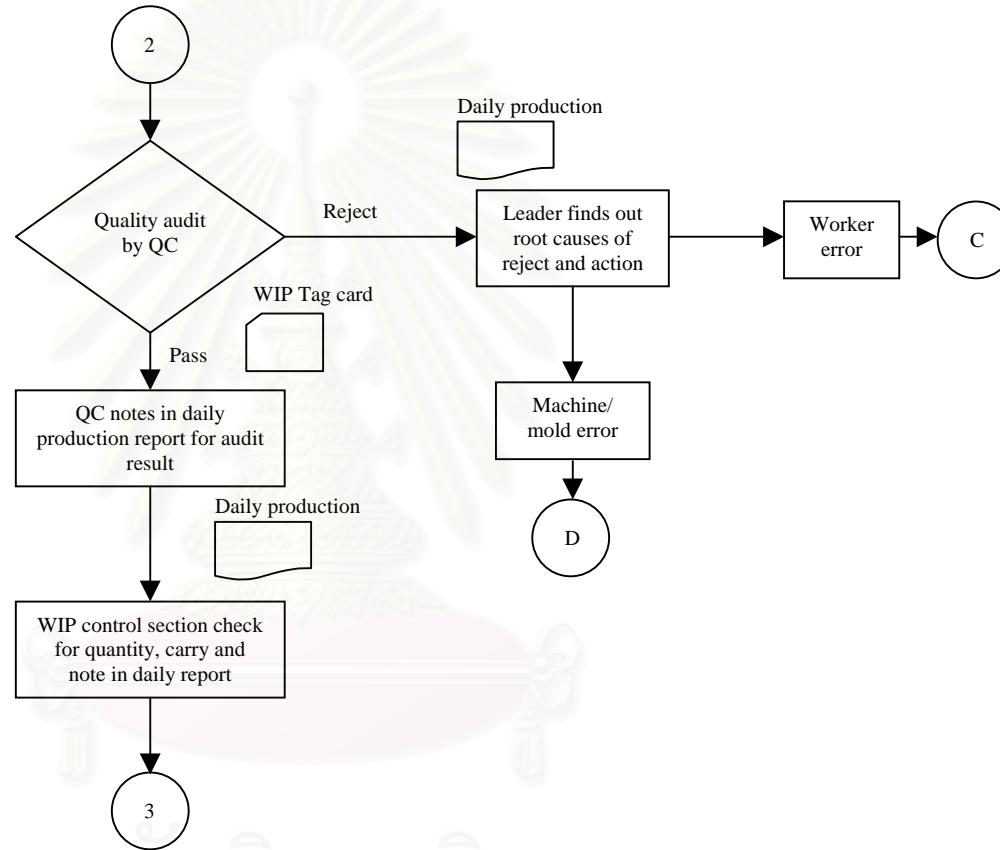


Figure 4.9: The Formal Activity and Document Flow of Production (continued)

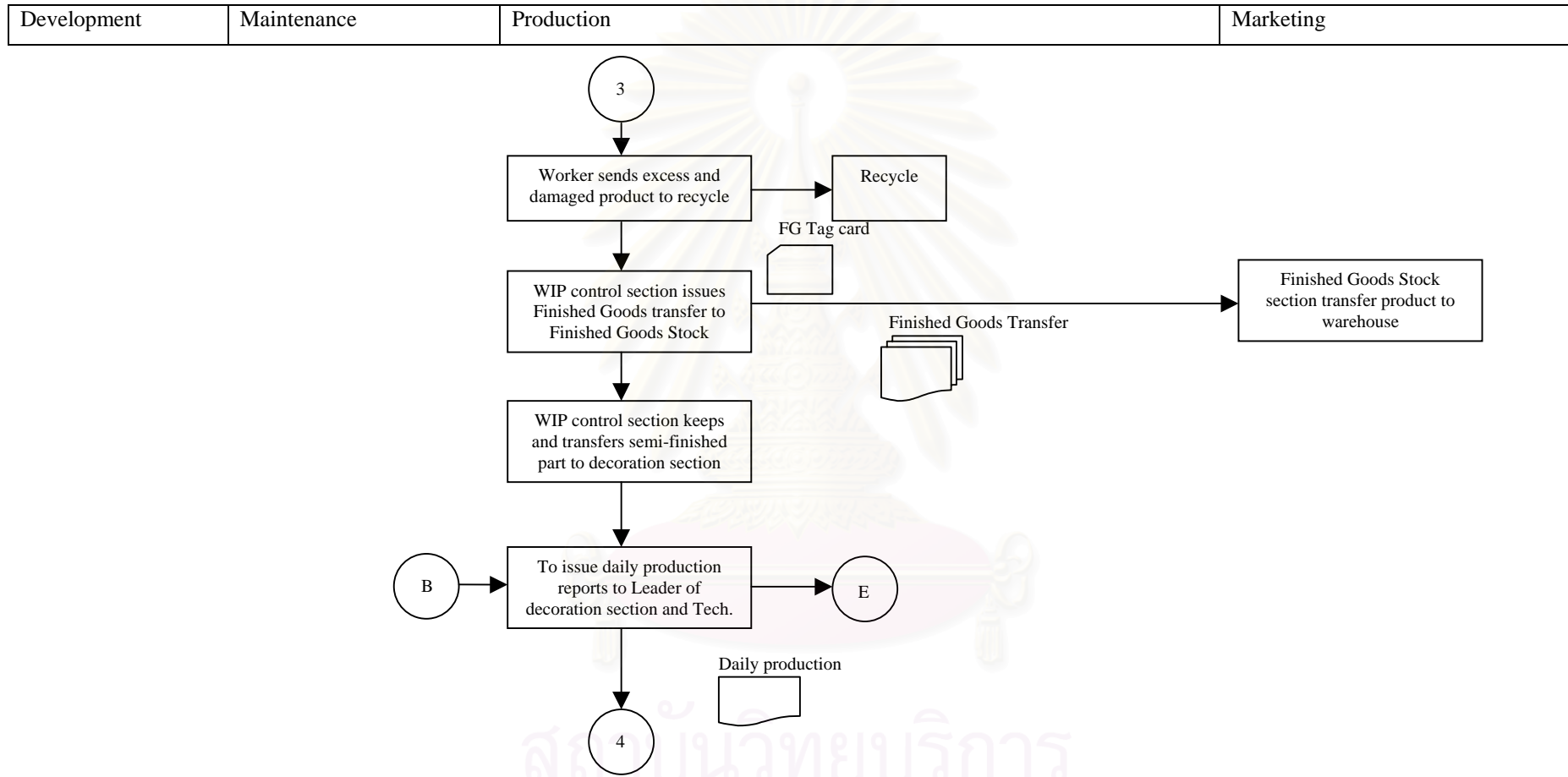


Figure 4.9: The Formal Activity and Document Flow of Production (continued)

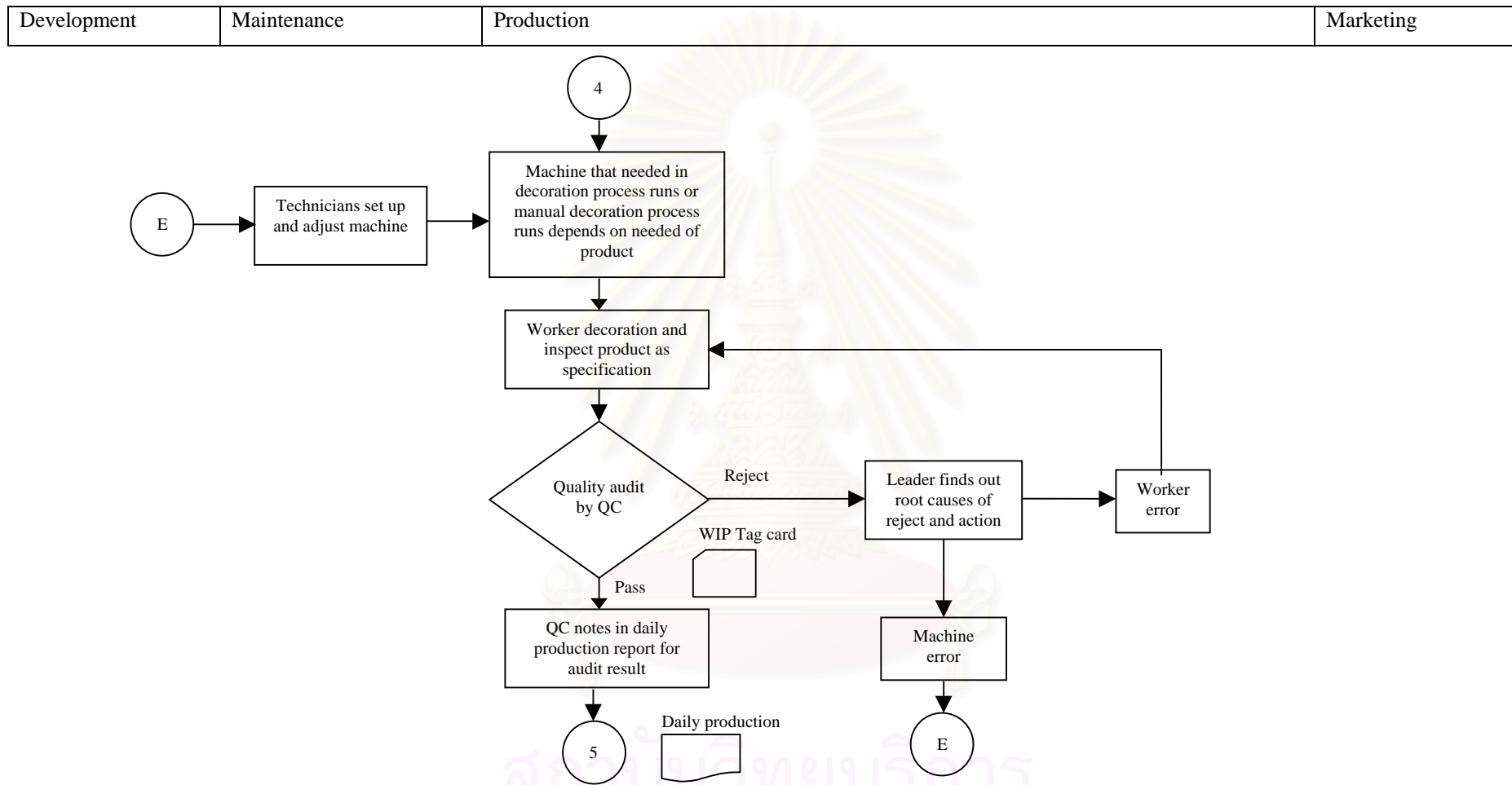


Figure 4.9: The Formal Activity and Document Flow of Production (continued)

Development	Maintenance	Production	Marketing
-------------	-------------	------------	-----------

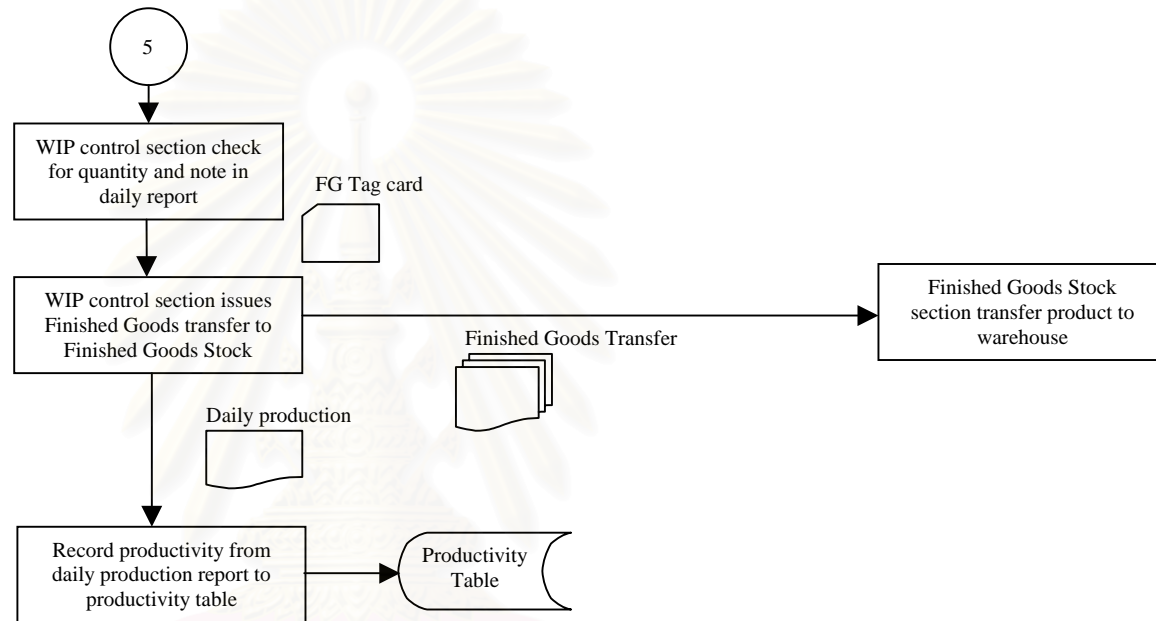


Figure 4.9: The Formal Activity and Document Flow of Production (continued)

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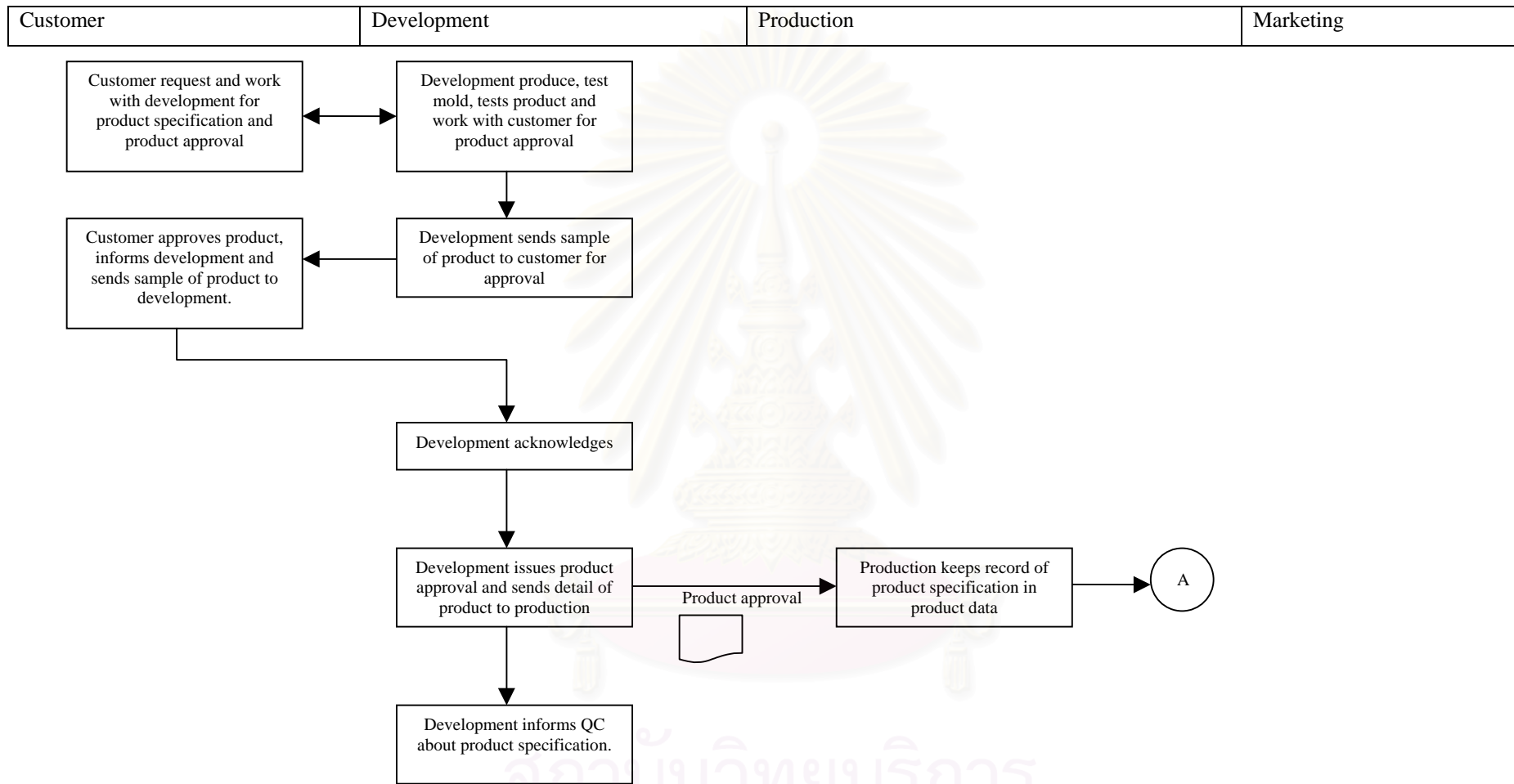


Figure 4.9: The Formal Activity and Document Flow of Production (continued)

The details of alteration on the flow in Figure 4.9 can be described as follows.

1. PO table is added up to collect the data about detail of product order. The data will show in the detail on each component of products. This can prevent the problem about short producing due to forget to produce some components.
2. Set up production plan and inform customer about completed date is the new process that is added up to the flow. It is set up to prevent uncertainty of intervention that cause error producing.
3. Schedule table is added up to present the information about production plan. The table shows planning of start date and finish date of each products and machines. It is used to remind every related people about utilization of production.
4. Purchase Request form is changed and makes more copy. The purpose of changing is to cut off unnecessary information that never used and add up others necessary information. With more copy, it can use as an evidence for the requester to reference the detail of purchase request.
5. Job order form is a little bit changed in some detail and only use to inform related people to prepare for job order.
6. Daily production is created to use instead of Daily productivity. There is all necessary information that related people need to know. It is used to collect data about productivity, which is more accurate with reliability method. This reduces error producing.
7. Draw material form is changed and makes more copy. The purpose of changing is to cut off unnecessary information that never used. With more copy, it can use as an evidence for the requester to reference the detail of draw request. Raw material stock can use a copy to cut off inventory.

8. Mixing order and draw recycle form are changed to reduce number of copies and eliminate unnecessary detail.
9. Finished good tag card and WIP tag cards are the forms that are used at most quantity. It is necessary to use tag card on every box. Two forms are changed to be the same format. It can save the expense due to large order quantity. Many formats of form cause that the company must order each format in small volume. The cost of small order quantity is higher than large order quantity. Important information such as purchase order number is added to the form to identify the lot of product too it reduce error producing.
10. The acknowledgment of QC and WIP control section is the processes that add up to improve reliability in quality and quantity of product and to improve reliability about information in daily production. It reduces error-producing problem.
11. Leader finds out root cause of problem, take corrective action and write down in daily production is the process that adds up to prevent error producing.
12. Finished good transfer form is added up to use as transference document for the transferor to reference about product transfer. And finished good stock can use a copy to add up inventory.
13. Productivity Table is added up to record total productivity for each order. It uses to control the produced quantity and to prevent error producing.
14. Product approval form is added up to prevent incorrect producing. It uses to identify product specification in document form.

4.5 Changing document system in production

From the study of document and information system in production, it shows that current document is not sufficient and is not effective. The document system of production must be changed to improve the efficiency of coordination and communication. Changing document system in production proceed by add up necessary document, cut off poor document and changing current document that is not perfect to be perfection document.

The detail of document that use in production which add up in, remove from or changing about detail can be described as follow:

1. Purchase Order Table

1.1 Application of the Document:

It is used to collect the data about product order. The table will show the list of detail on each components of product. It is used to remind related people about the components that waiting for production planning.

1.2 Quantity: Not sure depends on number of component.

1.3 Document Flow:

Use in planning & control division.

1.4 Important Detail:

- Customer: Name of customer
- PO received date: The date that PO is received
- PO Number: Purchase Order number (use as customer)
- Product name: Name of components of product or product.
- Color: Color of components of product or product.
- Order Quantity: Quantity that customer writes in PO

- Finished good stock: The inventory of these products in company's warehouse
- WIP: Work in process inventory in production line.
- Quantity to produce
 - Remain from order: The quantities that remain to produce after deduct FG stock and WIP inventory.
 - Keep stocks: The quantities that want to produce for stock.
- Production Plan
 - Machine: Machine that wants to use
 - Start: Start date
 - Finish: Finished date
 - Due date: The requirement date of customer

This table is added up to record the job order in production. It uses remind planning and control supervisor about total job orders. It can prevent error producing that occur because forget to produce product or forget to produce some component of product that can cause delay delivery.

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2. Job Order Form

2.1 Application of Document:

It is used to inform forming shape leader to prepare worker. It is used to inform Development to prepare mold. It is used to inform technician to prepare machine.

2.2 Quantity: Not sure depends on number of job order

2.3 Document Flow:

Planning ———▶ Forming Shape Leader, DV, Technician

2.4 Important Detail:

- Date: Issue Date
- Machine Number: Machine that will be used
- Product Name: Name of product
- Type of Plastic granule: Type of plastic granule that will be used
- Color: Color of product
- Quantity: The order quantity.
- Worker: The number of worker that need in producing product.
- Approve by: Name of person who acknowledges the job order. Authority people usually are production manager or supervisor of planing and control division.

The application of this form is changed from ordering to informing related people. The job number is eliminated. Add up order quantity, quantity of worker and approve by. This form consists of all necessary information that needs for worker, mold, and machine preparation.

Job Order	
Date.....	
Machine Number.....	
Product Name.....	
Type of Plastic Granule.....	
Color.....	
Order Quantity.....	
Worker.....	
Approve by.....	
Remarks.....	
.....	
.....	

Figure 4.11: Job Order Form

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3. Daily Production Form

3.1 Application of Document:

It is created and use instead of job order and daily productivity form. It is used as a reference for machine setting, product specification and daily productivity. This form is designed for one-day data collect. There are 3 forms that are a little bit different in machine detail. Three forms are form for blowing section, injection section and decoration section.

3.2 Quantity: Not sure depends on number of product produces.

3.3 Document Flow:

Planning ———▶ Supervisor of related section ———▶ Planing

3.4 Important Detail:

- Machine data: There are all necessary details for machine set up such as blowing time, cycle time, temperature, and screw rotation speed.
- Mold data: There are details of mold such as number of cavity and mold number
- Product specification: There are details for specification of product such as weight and packing
- PO: There are details of purchase order such as PO number and order quantity
- Worker: Name of worker who does the job
- Leader: Name of leader who takes care the job
- Date: Production Date
- Productivity: There are details of standard productivity such as standard output/hour, cycle time and actual productivity such as actual output.
- Output/hour: Standard output that must be produced in one hour
- Machine Number: Machine that used to produce the product
- Product Name: Name of product

- Color: Color of product
- Detail/hour: There are details per hour for material usage, output, quality audit, scrap, and quantity checking.
- Cause of problem: Identify causes of problem. It comes from worker (W) or machine (MC).
- Total A/B: Total of product that can produce in that shift
- Total/day: Total of product that can produce in that day.

Daily production provides many detail that important for related people such as worker, leader of forming and decoration section, technician, QC, and WIP control section.

Daily production also collecting many details from production line that is necessary for problem analysis about low productivity.

Daily production is used to insist about the responsibility of people who related with problem in productivity and quality.

QC can tick or write the audit result in daily production to confirm that output is passed quality audit process. WIP can do the same thing to confirm that output quantity is correct.

Daily production will return to planning section to record the actual output into productivity table. With correct data in daily production, it reduces the opportunity of error producing.

Blowing Daily Production											Spec. Limit for weight				
											Lowest	g.	Highest	g.	
Machine No.	Number of Cavity		Mold No.		Production date		PO. No.								
Product	Color		Standard weight		(+/-)		Excess g.								
Std. cycle time	Output/hour		Carry over		Std. Packing										
Order quantity			Remain produce												
Blowing time		Temperature			1.Entering										
2. Middle		3. Front		4. Die Head			5. Nozzle								
Screw rotation/min															
Time	Raw material usage		Weight/piece		Actual output		Scrap		Total excess	Quality		WIP Qty	cause of problem		
	Lot	Qty.	Part	Excess	piece	pack	Kg.	Pack		Result	Auditor		W	Mc.	
8.00-9.00															
9.00-10.00															
10.00-11.00															
11.00-12.00															
12.00-13.00															
13.00-14.00															
14.00-15.00															
15.00-16.00															
16.00-17.00															
17.00-18.00															
18.00-19.00															
19.00-20.00															
Total A															
Worker						Leader									
Remarks:															
20.00-21.00															
21.00-22.00															
22.00-23.00															
23.00-24.00															
24.00-01.00															
01.00-02.00															
02.00-03.00															
03.00-04.00															
04.00-05.00															
05.00-06.00															
06.00-07.00															
07.00-08.00															
Total B															
Worker						Leader									
Remarks:															
Total/day															

Figure 4.12: Daily Production Form

4. Purchase Request Form

4.1 Application of Document:

It is used when production wants to request purchasing to purchase material. It is used to inform purchasing. It is used as a reference that production really requests purchasing to purchase. It is an evidence for checking the request date, the quantity and requirement date.

4.2 Quantity: 1 set with 3 copies

4.3 Document Flow:

White Production → Purchaser
 Pink Production → Purchasing division
 Brown Keep at production

4.4 Important Detail:

- Purchase Number: Number of purchase request is printed from the press. They are Book Number and Set Number.
- From: The requester's name that issues the request.
- Require date: The date that needs to receive the product.
- Objective/Purpose: The purpose of the required material
- Quantity: The required quantity of material
- Detail: The name of material and others information that is necessary for material identification such as color, size.
- Approve by: The name of authority people.
- Purchaser: The people who acknowledge the request.

The form is changed and more copies are made. Unnecessary information is cut off such as code and received date. The purchase request number is run from a press and it never repeats for sure. The opening space for purpose of request is changed to be in suitable place. There are spaces for purpose of request in each line so one set of purchase request can be used to order more than one item.

There are three copies of document so it can be used as a reference for every concerned person. In the request form, it indicates that who keeps which copy of the document so workers can easily know how to process the document.

Purchase Request Form			
Book Number 008		Set Number 0396	
To: Purchase Division		Date.....	
From:.....		Require Date.....	
Item	Detail	Qty Request	Objective/Purpose
White: Purchaser		Pink: Purchasing	
Brown: Originator			
Request by.....		Approve by..... Purchaser.....	
Department.....		Approve date..... Date..... Time.....	
Division/section.....			

Figure 4.13: Purchase Request Form

5. Mixing Order Form

5.1 Application of Document:

It is used to order mixing section to mix raw material at the correct ratio. It is used to inform mixing section about material requirement for each machine.

5.2 Quantity: 2 sheet: 1 for blowing, 1 for injection

5.3 Document Flow:

Planning —→ Mixing

5.4 Important Detail:

- Machine Number: Number of machine
- Product Name: Name of product
- Color: Color of product
- Type of plastic: Type of raw material
- Quantity: Total quantity that need in one day.
- Ratio: Ratio of raw material

The form is changed to reduce the number of paper. With old form, every operating machine requires 1 sheet of mixing order. With new form, the number of paper is reduced to 2 sheets. One sheet is for blow-molding machines. Another sheet is for injection-molding machines. It is fixed to use only two sheets even all of forming shape machines operates.

Unnecessary details that are contained in old form are eliminated such as customer's name and color ratio. Color ratio is the standard ratio that available in product specification is unnecessary to repeat writing in the form every times.

In new form, there is the opening space for raw material ratio because the type of raw material used and raw material usage must be concluded to draw raw material from stock.

Mixing Order for Blowing						Date.....	
Machine Number	Product Name	Color	Type of Plastic	Quantity	Ratio		Remarks
					M1	M2	
B 1							
B 2							
B 3							
B 4							
B 5							
B 6							
B 7							
B 8							
B 9							
B 10							
B 11							
B 12							
B 13							
B 14							
B 15							
B 16							
B 17							
B 18							
B 19							
B 20							
B 21							
B 22							
B 23							
B 24							
B 25							
B 26							
B 27							
B 28							
B 29							
B 30							
B 31							
B 32							
B 33							
B 34							
B 35							

Figure 4.15: Mixing Order for Blowing

6. Draw Material Form

6.1 Application of Document:

It is used to draw plastic granule from raw material stock.

6.2 Quantity: 1 sheet

6.3 Document Flow:

White Production —→ Account

Pink Keep at production

Brown Production —→ Raw material stock

6.4 Important Detail:

- Date: Issue date.
- Number: Number of raw material request is printed from the press. They are Book Number and Set Number.
- Type of material: Type of raw material that wants to draw
- Detail: The detail of raw material that wants to draw.
- Quantity Request: The quantity of raw material that wants to draw.
- Actual pay out: The actual quantities that pay out from stock
- Request by: The person who wants to draw the material.
- Pay out by: The person who provides the material for requester.

Draw material form is changed and makes more copy. Unnecessary information is cut off such as inspector and units of material that repeated: kg and bag.

The draw material number is run from a press and it never repeats for sure. There is three copy of document so it can use as a reference for every concern people. And it indicates in the form that who will keep which copies of form so it is easier for worker to process documents correctly.

7. Draw Recycle Form

7.1 Application of Document:

It is used to draw recycle from recycle section.

7.2 Quantity: 1 sheet

7.3 Document Flow:

Planning → Recycle → Mixing

7.4 Important Detail:

- Date: Request date
- Product name: Name of product that was recycled
- Color: Color of recycle
- Type of plastic: Type of plastic that was recycled
- Quantity: The requested quantity
- Request by: The person who requests for recycle
- Pay out by: Name of Leader of recycle
- Receive by: Name of Leader of mixing

The form is changed to reduce the number of paper. With old form, every operating machine requires 1 sheet of draw recycle. With new form, the number of paper is reduced. It requires only one sheet to draw recycle.

Unnecessary details that are contained in old form are eliminated such as machine number.

In new form, there are three spaces for three people to sign in the form. With three signatures, it shows the requirement of requester, and it shows that the recycle is paid out as request or not.

8. Tag card or Product identification card

8.1 Application of Document:

It is used for tracking semi-finished product in production process and finished product. It still contains detail of product during process. When there are problems in next process or at customer from the product, it is traceable.

8.2 Quantity: Not sure depend on the number of product produce

8.3 Document Flow:

Production → Production → Finished good stock

8.4 Important Detail:

- PO No.: Purchase order number
- Machine: Refer to machine number
- Date: Production date
- Shift: Production shift
- Product Name: Name of product or part
- Color: Color of product
- Worker name: Name of worker
- QC: Name of QC that does the quality audit
- Pack No.: The sequence of box.
- Quantity/pack: Refer to quantity of product or part per pack.

This form is used instead of semi-finished good tag card and finished good tag card. Two forms are changed to use the same format because order quantity of the form will be large enough to negotiate for printing price reduction. The reason for changing to use the same format for both forms is that the details in two forms are nearly the same and both require almost the same data. Both forms require purchase order number.

Product Name..... U Mee Cup.....	PO No..... 4540084.....
Color..... White.....	Machine No..... I 1.....
Date..... 13 Feb 2002.....	Shift..... A.....
Worker Name..... Nuna.....	Pack No..... 7.....
Quantity / Pack..... 300.....	QC..... Jeab.....

Figure 4.18: Tag card (Product Identification card)

9. Finished Good Transfer form

9.1 Application of Document:

It is used as transference document for the transferor to refer about product transfer. It is used as an evidence for production to proof that product is transferred to warehouse in correct condition.

9.2 Quantity: 1 set

9.3 Document Flow:

White Production → Account

Pink Keep at production

Brown Production → finished good stock

9.4 Important Detail:

- Document Number: Number of product transfer form is printed from the press. They are Book Number and Set Number.
- Receive from: The requester's name that issues the form.
- Date: The date that issues the form.

10. Productivity Table

10.1 Application of Document:

It is used to record the productivity of production for each component of product in each order. It is used as an evidence for production to prove that product is completing produced at correct quantity.

10.2 Quantity: 1 sheet per 1 component

10.3 Document Flow:

Use in planning & control division

10.4 Important Detail:

- Machine: Number of machine that uses to produce product.
- Product Name: Name of product or component
- Color: Color of product or component.
- Customer: Name of customer.
- Order Qty: The quantity of product that order from customer.
- Due date: The date that customer requests for delivery.
- PO No.: Purchase Order number.
- Start: The date that expects to start.
- Finish: The date that expects to finish.
- Remain produce: The quantities that remain to produce after subtract order quantity with stock.

The form is created to record productivity for each order. It is uses to control the quantity of product produce to prevent error producing.

Productivity Table				
Machine.....				
Product Name.....Color.....Customer.....				
Order Qty.....Due date.....PO No.....				
Start.....Finish.....Remain produce.....				
dd/mm/yy	A	B	Total	Remarks

Figure 4.20: Productivity Table

11. Product Approval Form

11.1 Application of Document:

It is used to inform production about approval of new product. It consists of product specification and reference for machine set up.

11.2 Quantity:

- a) Product Specification: 1 sheet per 1 product
- b) Mold and Machine data: 1 sheet per 1 component

11.3 Document Flow:

Development → Production

11.4 Important Detail:

- a) Product Specification:
 - Approve by: Name of approval (authority of DV Manager)
 - Date: Approval date
 - Product Detail: There are all necessary detail such as Customer's name, Product's name, component's name, and Number of component
 - Process detail: There is information about all processes that require for the component.
 - Material detail: There is data for type and ratio of plastic granule. Color code and ratio.
 - Specification: There are details for specification of product such as weight and packing

b) Mold and Machine data:

- Product: Name of product or component
- Mold data: There are details of mold such as number of cavity, mold number, and number of cavity per mold
- Machine Detail:
 - T: Type of machine
 - Cyc. T: Cycle time
 - B/I T: Blowing or injection time
 - S: Screw Speed
 - Co. T: Cooling time
 - NT: Nozzle temperature
 - E: Entering Zone temperature
 - M: Middle Zone temperature
 - F: Front Zone temperature
 - D: Die head temperature
 - P: Injection pressure

The product approval form consists of two parts. They are product specification part and mold and machine data part. With product approval form, production has evidence and one reference on specification. There is a reference information for related people about product detail. And it is approved by DV manager so it confirms that customer agree with the specification. QC also uses the same reference so there is no conflict for product specification. For mold and machine data, it as a reference data too.

Product Specification							Approve by				
							Date				
Customer		Product					No. of component				
	Component Name	Process Require						Detail			
		Forming	Screen	Hot stamp	Labeling	Shrink	Assembly				
1											
2											
3											
4											
5											
6											
7											
8											
Component		1	2	3	4	5	6	7	8	9	10
Color											
Type of material	M1										
	M2										
Ratio of material	M1										
	M2										
Color code	C1										
	C2										
Ratio of color	C1										
	C2										
Forming machine											
G.W.											
N.W.(Std.)											
Excess/Runner W											
Min. W											
Max. W											
Packing											
Remarks:											

Figure 4.21: Product specification part in product approval form

Mold and Machine data											
Product											
Mold detail	Machine deatail										
No. of mold	T	Cyc.T	B/I T	S	Co. T	NT	E	M	F	D	P
Mold No./No. of cav.											
Remarks:											

Figure 4.22: Mold and Machine data part in product approval form

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12. Schedule Table

12.1 Application of Document:

It is used to present the information about production plan.

12.2 Quantity: 1 sheet per 1 month

12.3 Document Flow:

Use in Production

12.4 Important Detail:

It consists of name of month, date in that month and machine number.

Schedule table shows planning for start date and finish date of each component. It shows the utilization of machines.



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Month																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
B 1																															
B 2																															
B 3																															
B 4																															
B 5																															
B 6																															
B 7																															
B 8																															
B 9																															
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B 15																															
B 16																															
B 17																															
B 18																															
B 19																															
B 20																															

Figure 4.23: Schedule Table

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Chapter 5

Results of Implemented Coordination and Communication Systems

The summary of the results of implemented coordination and communication systems can be separated into two parts as show below:

- 1) The comparison of error producing.
- 2) The comparison of operation in production.

5.1 The Comparison of Error Producing

From the study and the problem analysis that describe in Chapter 3, show that there are problem in coordination and communication.

The summary of error producing before setting up coordination and communication systems in production can be concluded as follows:

1. Excessive Producing

The analyses of excessive producing from September 2001 to December 2001 show that it is the big problem in error producing. There are 2,514,239 pieces that are exceeding produce as show in Table 5.1.

The percentage is the highest when compared with short producing and incorrect producing as show in Table 5.2. But the degree of intense is not the highest one. Most of excessive producing can deliver to customer but it must wait for next order. If that product is best sell, time for waiting is not exceed 1 month. But if that product is worst sell, time for waiting may be longer than that product life. That product will deteriorate until it can not use.

2. Short Producing

The analyses of short producing from September 2001 to December 2001 show that its percentage is the lowest one as show in Table 5.2. It is about 0.67 %. But it is a serious problem because it causes loss for sure. One it causes loss in opportunity for selling. And another one is that the company must restart the production line for small amount of product. And even the percentage is low but its cost is not low. For example, from Table 5.1, the quantity of short producing is 164,816 pieces. If the price of each piece is 1 Baht, the cost of short producing is 164,816 Baht. It is high loss so it is a serious problem.

3. Incorrect Producing

The analyses of short producing from September 2001 to December 2001 show that the percentage of incorrect producing is 2.34 as show in Table 5.2.

It is the most serious problem. The company must restart the production line to produce product to compensate the incorrect one. And the company also loss the respectability. The customers will loss their confidence in quality of company's products and they will doubt about company's production control. It is an important factor for loosing customer.

Table 5.1: The Quantity (Pieces) of Error Producing by month (Before)

Error Producing	September 2001	October 2001	November 2001	December 2001	Total Error
Excessive Producing	377,252	674,095	791,250	671,642	2,514,239
Short Producing	66,208	17,547	18,441	62,620	164,816
Incorrect Producing	-	200,000	250,000	121,460	571,460
Total Producing	5,320,200	7,185,360	6,804,885	5,162,472	24,472,917

Table 5.2: The Percentage of Error Producing by Month (Before)

Error Producing	September 2001	October 2001	November 2001	December 2001	Total Error
Excessive Producing	7.09	9.38	11.63	13.01	10.27
Short Producing	1.24	0.24	0.27	1.21	0.67
Incorrect Producing	0.00	2.78	3.67	2.35	2.34

The summary of causes of error producing before setting up coordination and communication systems in production can be concluded as follows:

1. For excessive producing, it comes from two causes. They are incorrect inventory checking and counting error. Incorrect inventory checking refers to error from work in process inventory checking and finished good inventory checking. Counting error refers to error when counting product during production process.
2. For short producing, it comes from three causes. They are incorrect inventory checking, counting error, and forget to produce some part of product. Two causes are the same with excessive producing. Forget to produce some part of product refers to the part of product that forgets to produce and causes that product to be incomplete produces.
3. For incorrect producing, it comes from two causes. They are lack of information about specification from development and lack of information for front line workers. Lack of information about specification from development refers as inadequate in product information that passes from development to production. Lack of information for front line workers refers as inadequate in product information that passes from production manager to front line workers and supervisors.

The causes of error producing during September to December 2001 are showed in Table 5.3 to Table 5.5 as follows:

Table 5.3: The causes for excessive producing (before)

Causes of excessive producing	Quantity
Incorrect inventory checking	633,560
Counting error	1,880,679

Table 5.4: The causes for short producing (before)

Causes of short producing	Quantity
Incorrect inventory checking	31,204
Counting error	103,612
Forget to produce some part of product	30,000

Table 5.5: The causes for incorrect producing (before)

Causes of incorrect producing	Quantity
Lack of information about specification from development	310,000
Lack of information for front line workers	261,460

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The summary of error producing after applies coordination and communication systems to production show in Table 5.6 and Table 5.7. It can describe as follow:

1. Excessive Producing

The analyses of excessive producing from January 2002 to July 2002 show that the quantity of excessive producing is 1,581,482 pieces during 7 months. The percentage of excessive producing is 3.36.

2. Short Producing

The analyses of short producing from January 2002 to July 2002 show that the quantity of short producing is 44,162 pieces during 7 months. The percentage of excessive producing is 0.09.

3. Incorrect Producing

The analyses of incorrect producing from January 2002 to July 2002 show that the quantity of incorrect producing is 127,000 pieces during 7 months. The percentage of excessive producing is 0.27.

Table 5.6: The Quantity (Pieces) of Error Producing by month (After)

Error Producing	January 2002	February 2002	March 2002	April 2002	May 2002	June 2002	July 2002	Total Error
Excessive Producing	543,375	353,851	393,094	157,090	51,080	47,865	35,127	1,581,482
Short Producing	7,820	25,562	8,641	2,115	-	-	24	44,162
Incorrect Producing	20,000	35,000	-	-	-	-	72,000	127,000
Total Producing	6,297,098	5,577,500	9,077,660	7,708,360	7,889,240	5,577,420	4,925,920	47,053,198

Table 5.7: The Percentage of Error Producing by Month (After)

Error Producing	January 2002	February 2002	March 2002	April 2002	May 2002	June 2002	July 2002	Total Error
Excessive Producing	8.63	6.34	4.33	2.04	0.65	0.86	0.71	3.36
Short Producing	0.12	0.46	0.10	0.03	0.00	0.00	0.00	0.09
Incorrect Producing	0.32	0.63	0.00	0.00	0.00	0.00	1.46	0.27

The summary of causes of error producing during January 2002 to July 2002 after applies coordination and communication systems to production are showed in Table 5.8 to Table 5.10 as follows:

Table 5.8: The causes for excessive producing (after)

Causes of excessive producing	Quantity
Incorrect inventory checking	980,512
Counting error	600,970

Table 5.9: The causes for short producing (after)

Causes of short producing	Quantity
Incorrect inventory checking	32,564
Counting error	11,598
Forget to produce some part of product	0

Table 5.10: The causes for incorrect producing (after)

Causes of incorrect producing	Quantity
Lack of information about specification from development	97,000
Lack of information for front line workers	30,000

As a result of implementing the coordination and communication systems in production department as describe in Chapter 4, The comparison on excessive producing, short producing and incorrect producing before and after implementing the coordination and communication systems show in Table 5.11. It can be concluded as follows:

1. Excessive Producing

The analyses of the comparison on excessive producing show that it decreases in quantity and percentage as show in Table 5.5. The average quantity per month of excessive producing reduces about 402,634 pieces. The percentage reduces about 6.91% from 10.27% to 3.36%. The percentage of improvement is about 64%.

2. Short Producing

The analyses of the comparison on short producing show that it decreases in quantity and percentage as show in Table 5.5. It shows that is not a lot difference. But the improvement is high. The average quantity per month of short producing reduces about 34,895 pieces. The percentage reduces only 0.58% from 0.67% to 0.09%. The percentage of improvement is about 84%.

3. Incorrect Producing

The analyses of the comparison on incorrect producing show that it decreases both in quantity and percentage as show in Table 5.5. The average quantity per month of incorrect producing reduces about 124,722 pieces. The percentage reduces only 2.07% from 2.34% to 0.27%. The percentage of improvement is about 87%.

The quantity of incorrect producing in July is 72,000. This incorrect producing occur after not occur for 4 months. The problem comes from customer revise the specification of new product after producing starts. The customer requests the company to keep those products for next order. It is not a fault of the company. If it is excluded, the average of incorrect producing after implementing the systems will be 7,857 pieces per month. The percentage will be 0.12%. The improvement will be 94%

Table 5.11: The Comparison of Error Producing

Error Producing	Before Implementing the Systems (Sep. 2001 - Dec. 2001)		After Implementing the Systems (Jan. 2002 - July. 2002)		The Difference		Percentage of Improvement
	Average quantity per month	Percentage	Average quantity per month	Percentage	Average quantity per month	Percentage	
Excessive Producing	628,560	10.27	225,926	3.36	(402,634)	-6.91	64.06
Short Producing	41,204	0.67	6,309	0.09	(34,895)	-0.58	84.69
Incorrect Producing	142,865	2.34	18,143	0.27	(124,722)	-2.07	87.30

As a result of implementing the coordination and communication systems in production department as describe in Chapter 4, The comparison on the average quantity of excessive producing, short producing and incorrect producing before and after implementing the coordination and communication systems categorize by causes of problem show in Table 5.12. It can be concluded as follows:

1. For Excessive Producing and short producing, the average quantity per month of error producing that come from incorrect inventory checking before and after are not much different because at the beginning of the implementation the workers still not familiar with the systems so they still make error in checking. And the inventory in production line and warehouse are high and need times to decline. The error reduces because there are WIP and finished good tag card that identify purchase order number of the products so the workers can note and know that the inventory is built for which purchase order or making stock. But the error still occurs because the warehouse and WIP area is not enough. So the inventory of products are placed in many areas. It causes error and difficulty when checking inventory because the workers may miss to check and to count some inventory.
2. For Excessive producing and short producing, the average quantity per month of error producing that come from counting error before and after are many different because there are systems to control the counting process. The coordination and communication is better because there are activity flow and document flow. There is schedule table to control production plan, daily production to control and to check the actual producing quantity per hour, per shift and per day. There is productivity table to control and to check about the quantity that produced per one purchase order. As the result of those the reduction of error producing occurs. After implemented the systems, the error producing still occur but in low rate because there are error

from lack and inaccurate of scales used in production line. And there is some human error in filling the number in the forms.

3. For the error producing that comes from forget to produce some part, is never happened because there is PO table to control. With PO table every parts those need to produce are listed in the table and check for production plan.
4. For incorrect producing that comes from lack of information from development is decreased because all necessary information are written in product approval form and send to production with acknowledge confirm. From Table 5.6 and Table 5.7, the incorrect producing occurs in first two months after systems implementing after that it never happen except in July. In July all of incorrect producing comes from the requirement of customer change after production run the products that it is not the fault of the company. The customer cancels those products and accepts the cost that comes from the error.
5. For incorrect producing that comes from lack of information for front line workers is decreased because all necessary information for front line workers contain in daily production and job order. From Table 5.6 and Table 5.7, incorrect producing happen only in the first two month. There was incorrect producing in the first two months because the workers still not accurate in using the data in daily production and job order.
6. From Table 5.6 and Table 5.7, at the first 3 months after implement the systems, the error rate still high but the trend of error tend to reduce correspond with the time. In July, there is only 0.71% of excessive producing and 0% of short producing.

Table 5.12: Summary of Average Error producing before and after Systems Implementation category by causes

Causes of Error Producing	Average Excessive Producing Per Month		Average Short Producing Per Month		Average Incorrect Producing Per Month	
	Before	After	Before	After	Before	After
Incorrect inventory checking	158,390	140,073	7,801	4,652	-	-
Counting error	470,170	85,853	25,903	1,657	-	-
Forget to produce some parts	-	-	7,500	-	-	-
Lack of information from DV	-	-	-	-	77,500	13,857
Lack of information for front line	-	-	-	-	65,365	4,286

5.2 The Comparison of Operation in Production

As a consequence of applying the coordination and communication systems in production department as described in Chapter 4, the comparison of operation in production before and after setting up coordination and communication systems can describe in two parts as follow:

1. Operation in the organization
2. Information management

1. Operation in the Organization

a) Family-owned business management

Table 5.13: The comparison of operation in the organization # 1

Before Setting Up the System	After Setting Up the System
<ul style="list-style-type: none"> - Delay in operation management and decision making - Low efficiency in operation management - Unclear priority of work due to importance of people and connection - Conflict in the organization 	<ul style="list-style-type: none"> - The owner and his family move to top management level. - Top management takes care on organization planning and control. - Appoint middle management to takes care on operational of each department

b) No formal organization chart

Table 5.14: The comparison of operation in the organization # 2

Before Setting Up the System	After Setting Up the System
<ul style="list-style-type: none"> - Confuse in organization level - Confuse in responsibility, duty and authority on each section - Interference of work - Conflict in the organization - Bad attitude in responsibility 	<ul style="list-style-type: none"> - Review and analyze old organization and create new formal organization chart - Create job description - Workers understand their position and responsibility

c) Too wide and flat span of control

Table 5.15: The comparison of operation in the organization # 3

Before Setting Up the System	After Setting Up the System
<ul style="list-style-type: none"> - Low efficiency in management control - Lack of system of command - Poor cooperation between sections - Slow and unreliable in gathering information 	<ul style="list-style-type: none"> - Narrow down the span of control - Middle management level work with more efficiency due to less subordinate - System of command form.

d) Unclear duty, responsibility and authority

Table 5.16: The comparison of operation in the organization # 4

Before Setting Up the System	After Setting Up the System
<ul style="list-style-type: none"> - Unconfident to make a decision - No responsibility in work - Overstep in authority - Unconfident about authority - Interference of work 	<ul style="list-style-type: none"> - Create job description

2. Information management

a) Lack of document

Table 5.17: The comparison of information management # 1

Before Setting Up the System	After Setting Up the System
<ul style="list-style-type: none"> - No production plan - No product approval - No data about productivity 	<ul style="list-style-type: none"> - Set up production plan - Set up product approval form - Set up productivity table

b) Lack of data collection

Table 5.18: The comparison of information management # 2

Before Setting Up the System	After Setting Up the System
<ul style="list-style-type: none"> - No data collection in product specification - No reference for machine set up 	<ul style="list-style-type: none"> - Set up product specification form and keep in product data file - Set up machine set up form.

c) Poor document and information flow

Table 5.19: The comparison of information management # 3

Before Setting Up the System	After Setting Up the System
<ul style="list-style-type: none"> - Loss of data - Confuse about work process 	<ul style="list-style-type: none"> - Setup formal standard activity and document flow

d) Poor document

Table 5.20: The comparison of information management # 4

Before Setting Up the System	After Setting Up the System
<ul style="list-style-type: none"> - No standard pattern - Missing necessary information - Contain unnecessary information 	<ul style="list-style-type: none"> - Set up standard pattern - Create necessary document - Eliminate unnecessary - Change unsuitable form

The advantages of changing in operation in production may be described as follows:

1. The owner and his family are moved to top management level. The problem about connection and important person is solved because the owner and his son do not take care on specific operation in small section. They are moved up to take care on management planning and control for big scale. They can pay more attention on improvement of the company, they do not only criticize in each section.
2. Middle management is appointed to takes care on operational of each department to support new organization structure.
3. With new organization structure, production manager needs not to perform routine work. She can spend her time in production management improvement.
4. The same job functions are grouped together. The arrangement of division and section in new organization structure is more suitable and easy to control. There is systematic of chain of command.
5. The span of control is narrowed, so middle management level work with more efficiency due to less subordinate.
6. Job description is created so the duties, responsibilities and authorities of each position are clearly determined. The workers understand their role.
7. Workers know about work process due to there is formal and clear activity and document flow, It assists and supports the systematic operation.
8. With new document system, the important information such as productivity is gathered.
9. By crating new document and changing current document, there are necessary data available for reference in production.

10. The coordination and communication is better because there are formal coordination and communication through new organization structure. The problem about importance of people and connection that barrier for effective coordination and communication is eliminated by moving top management. The feedback and forward coordination and communication of workers is generated with more confidence by using formal and informal meeting, small group and large group meeting and the message from top management will pass through the workers by using middle management to carry.
11. The cost of new coordination and communication systems that increases from adding up of middle management is not much compare to the income gain from reduction of error producing. From Table 5.11, If the company still have error producing about 10% as before implementation, the cost of error producing will be about 600,000 Bahts per month (when the price is 1 Baht per piece). But after implementation, the cost of error producing reduces to 200,000 Bahts per month. The income gain from reducing of error producing is about 400,000 Bahts per month. The cost of adding up of middle management is about 70,00 Bahts per month. So the Company still gain a lot.

Chapter 6

Conclusion and Recommendation

6.1 Conclusion

Today the operation in the organization needs more and accurate information than before. The short stop of fast production process causes many losses in costs and opportunity to produce. So fast and effective coordination and communication is important for the organization. Good in coordination and communication systems provide the company about necessary and accurate information for related people. The problem about information is that there is much information that must be transmitted and received. The important is that how to manage those information. The relevant information must be transmitted and received with correct meaning and in specific time. The coordination of all employees is necessary for company's success. So good coordination and communication is important.

6.1.1 The Objective of the Research

The objective of the research is to study, analyze and set up coordination and communication systems in the production department for a Sample Plastic Packaging Company.

The analysis of the Sample Company focus on the following subjects:

- 1) Operational of the company
- 2) Management for the organization
- 3) Organization of production
- 4) Operation and process in production
- 5) Production information management

The analysis focus on the following problems:

- 1) Problem about error producing in production
- 2) Problem about coordination and communication in production

From the analysis it was found that there are two main factors those must be changed to solve the above problems. Two main factors are as follows:

- 1) Inappropriate operation in the organization
- 2) Inappropriate information management in production

Changing the organization and changing information management assist to solve the problem in coordination and communication because with appropriate organization the coordination and communication will occur accurately and correctly. The systems assist to solve the problem by provides the clear picture of how to coordinate and communicate through the organization with effectiveness and efficiency. With new systems, informal coordination and communication will generate with positive attitude. The conflict between workers will decrease due to clear duty and purpose of job.

There are two main things that are changed in the operation of organization. They are changing in organization structure and span of control and creation of job description of production department

The organization structure and span of control are changed to be suitable for current status of the company. The organization structure is changed by classify and group department by job function. The span of control is changed by narrowing the wide and expands the level of command.

There are 5 main departments in the company. They are account and finance department, marketing department, development department, engineering department, and production department. There are two job functions that do not be grouped in those five departments but direct report to general manger. They are purchase and personnel.

For emphasis on production department, the organization is changed to only take care in production operation. The delivery and finished good stock section are moved to under control of marketing department. This can narrow span of control of production. It balances the responsibility of each department. And grouping the same job functions together can narrow the span of control of production too.

The organization of production department consists of 3 divisions. They are planning and control division, forming shape division and decoration division. Each section that has same job function is grouped together. Blowing and injection is grouped to under control of forming shape division. All decoration processes such as screen, hot stamp, labeling, shrink, and assembly are grouped to under control of decoration division. And plan, WIP, document, mixing and recycle are grouped to under control of planning and control division.

Job description is created to provide clearly understands for employees about their job, responsibility, duty and authority.

There are two main things that are changed in information management. They are changing in activity and document flow in production and changing document system in production.

The changing in activity and document flow is done by eliminate unnecessary activity and document, add up necessary activity and document, and set up formal flow for the suitable activity and document.

The changing in document system is done by eliminate poor document, revise inappropriate document, and create new document.

6.1.2 Results of Implemented coordination and communication systems

As a result of setting up coordination and communication systems, the changing on operation in production and reduction of error producing can describe as follow:

1. Changing on operation in production

- 1) There is formal organization structure. It helps to make workers to understand about their level and their position in the organization. It helps to form a system of command.
- 2) There is job description. It helps to guide workers about their duty, responsibility and authority.
- 3) There is formal and clear activity and document flow. It helps workers to understand process of work in production.
- 4) There is suitable document. It helps workers to have information that is necessary for efficiently and effective of their coordination of work.

The advantages of changing on operation in production can be described as follows:

1. The coordination and communication pass through new organization with clear understanding in purpose of the company and responsibility of workers. The formal coordination and communication happen with clear pattern.
2. The problem about connection and important person is solved because the founder and his son do not take care on specific operation in section. They are moved up to take care on management planning and control for big scale. They can pay their attention on improvement of the company, they do not only criticize in each section.

3. With new organization structure, production manager needs not to perform routine work such as production plan but she can use her time to improve production department.
4. The arrangement of division and section in new organization structure is more suitable. The same job functions are grouped together. It is more suitable and easy to control.
5. The duty, responsibility and authority of each position are clearly determined by using job description. The workers understand their role.
6. With formal and clear activity and document flow, It assists and supports the systematic operation.
7. With new document system, the important information is gathered and used to prevent error producing.

2. Reduction of error producing.

As a result of implementing the coordination and communication systems in production department as describe in Chapter 4, The comparison on excessive producing, short producing and incorrect producing before and after implementing the coordination and communication systems show in Table 6.1.

Table 6.1: The result of system Implementation

Error Producing	Before Implementing the Systems (Sep. 2001 - Dec. 2001)		After Implementing the Systems (Jan. 2002 - July. 2002)		% Change
	Average quantity per month	%	Average quantity per month	%	
Excessive Producing	628,560	10.27	225,926	3.36	64.06
Short Producing	41,204	0.67	6,309	0.09	84.69
Incorrect Producing	142,865	2.34	18,143	0.27	87.30

From Table 6.1, the comparison on error producing before and after systems implementation can be concluded as follows:

1. Excessive Producing

Before implementing coordination and communication systems excessive producing is 10.27%. After implementing the systems, excessive producing reduces to 3.36%. The average of excessive producing before implementing the systems is 628,560 pieces per month. But the average of excessive producing after implementing the systems is 225,926 pieces per month. It reduces about 64%. It reduces because there are many tracking and controlling for information pass forward and backward to and from workers that help to produce product with accurate quantity.

2. Short Producing

Short producing before implementing the systems is 0.67%. Short producing after implementing the systems is 0.09%. The average of short producing before implementing the systems is 41,204 pieces per month. But the average of short producing after implementing the systems is 6,309 pieces per month. It reduces about 84%. It reduces because there are many checking and controlling for information pass forward and backward to and from workers that help to produce product with accurate quantity.

3. Incorrect Producing

Before implementing the systems incorrect producing is 2.34%. After implementing the systems, excessive producing reduces to 0.27%. The average of incorrect producing before implementing the systems is 142,865 pieces per month. But the average of incorrect producing after implementing the systems is 18,143 pieces per month. It reduces about 87%.

The average of incorrect producing after implementing the system should less than 18,143 pieces per month if not include the incorrect producing in July. Incorrect producing in July is not the fault of the company. The customer revises the specification of new product after production started. If incorrect producing in July is excluded, the average of incorrect producing will be 7,857 pieces per month. The improvement will be 94%.

The incorrect producing suppose to be 0% because good coordination and communication can prevent the error producing from lacking of necessary information.

6.2 Problems and Limitations

Problems and limitation during doing the research can be described as follows:

Low educated workers. The workers who work as operators in production line are low educated workers. Most of them have only primary school education or lower than that. The leader and supervisor are the workers whose is promoted from operators. So they are slowly in learning about documentation system. But they have willing to learn. Some of supervisors are higher in education about high school. They learn faster than others do. With their help, others can learn from them. With low educated workers, the result of error producing still not good because the workers still make mistake from human error such as write down incorrect number, forget to count some pieces, or count but incorrect.

Top management is interested in improvement but they are accustomed with old operation. They need time to habituate with the coordination and communication systems that propose.

Error producing still have because the other factors that cause error producing still not be solved such as inadequate scales, inaccurate scale, inappropriate space for inventory keeping and control and human error.

6.3 Recommendation

From the study, the coordination and communication systems satisfy and are accepted by the workers but there are some recommendations as the following:

1. Further study for high-technology coordination and communication systems is suggested. The computer helps for easy and fast coordinate and communicates in the organization but cost of implementation must be considered.
2. The information that gathering from new documents such as daily production should be considered, reviewed, studied, analyzed and developed to be a summary report for production productivity improvement.
3. Schedule table should be studied and analyzed for maximum of machine utilization. And it should be used as an information for the decision making before buying new machine.
4. The meeting should be set up and be held as periodic to assure that the systems still be the same as start and all documents still are used.
5. The manager should audit and check the use of documents that the worker that does not understand the systems does not ignore it.
6. Periodic training is necessary for workers to assure that they understand about the important of coordination and communication systems.

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Appendices

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย



Appendix A

Job Description

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

Job Description		Code: M045000
Position	: Production Manager	
Department	: Production	
Division	:	
Section	:	
Report to	: General Manager	
<u>Job summary</u>		
<p>To perform the duty in all production management. Such as Plan goal, supervises the work of subordinates, develops improvement in operation, maintains the performance of subordinate, and coordinate with other related department for effectiveness and efficiency of production operation.</p>		
<u>Responsibilities and duties</u>		
<ol style="list-style-type: none"> 1. To set policy, objective and target for production operation. 2. To coordinate with other related department for the information that related with production. 3. To follow and control output of production, quality, waste, cost of production and usage of raw material. 4. To follow, control and assess the performance of subordinate. 5. To afford, applaud and gloat over for work of chief of division and chief of section. 6. To promote and develop the activity that effect to the improvement of department operation. 7. To suggest and consult subordinate about technical and procedure of operation. 8. To improve working environment to be safe and effective. 		
<u>Authority</u>		
<ol style="list-style-type: none"> 1. To manage received budget. 2. To approve purchase request for materials use in production. 3. To consider and make a decision for performance assessment and punishment for subordinate. 		
<u>Minimum Qualifications</u>		
Bachelor Degree and 3 years working experience		

Job Description		Code: S045100
Position	: Planning & Control Supervisor	
Department	: Production	
Division	: Planning & Control	
Section	:	
Report to	: Production Manager	
<u>Job summary</u>		
<p>To perform the duty in Planning and controlling for forming shape and decoration process to achieve the objective. Such as plan for production schedule, delegate subordinate, control usage of raw material for fully utilization, take care about performance assessment of subordinate, and coordinate with other related department for effectiveness and efficiency of planning and control operation.</p>		
<u>Responsibilities and duties</u>		
<ol style="list-style-type: none"> 1. To take care and control the operation of division to achieve the objective. 2. To summarize the efficiency of division and report to manager. 3. To coordinate with other related people for the information that related with division. 4. To plan, follow and control output of production, waste and usage of raw material to be in reasonable level. 5. To follow, control and assess the performance of subordinate. 6. To afford, applaud and gloat over for work of chief of section. 7. To promote and develop the activity that effect to the improvement of division operation. 8. To suggest and consult subordinate about technical and procedure of operation. 9. To improve working environment to be safe and effective. 		
<u>Authority</u>		
<ol style="list-style-type: none"> 1. To approve purchase request for materials use in production. 2. To consider and make a decision for performance assessment and punishment of subordinate. 		
<u>Minimum Qualifications</u>		
Bachelor Degree and 0-1 years working experience		

Job Description		Code: S045200
Position	: Forming Shape Supervisor	
Department	: Production	
Division	: Forming shape	
Section	:	
Report to	: Production Manager	
<u>Job summary</u>		
<p>To perform the duties in controlling the forming shape processes to achieve the objective. Delegate subordinates, control worker for fully utilization, take care about performance assessment of subordinate and coordinate with other related people for effectiveness and efficiency of forming shape operation.</p>		
<u>Responsibilities and duties</u>		
<ol style="list-style-type: none"> 1. To take care and control the operation of division to achieve the objective. 2. To summarize the efficiency of division and report to manager. 3. To coordinate with other related people for the information that related with division. 4. To plan, follow and control output of forming shape, waste and usage of raw material to be in reasonable level. 5. To follow, control and assess the performance of subordinate. 6. To afford, applaud and gloat over for work of chief of section. 7. To promote and develop the activity that effect to the improvement of division operation. 8. To suggest and consult subordinate about technical and procedure of operation. 9. To improve working environment to be safe and effective. 		
<u>Authority</u>		
<p>To consider and make a decision for performance assessment and punishment for subordinate.</p>		
<u>Minimum Qualifications</u>		
<p>Bachelor Degree and 0-1 years working experience</p>		

Job Description		Code: S045300
Position	: Decoration Supervisor	
Department	: Production	
Division	: Decoration	
Section	:	
Report to	: Production Manager	
<u>Job summary</u>		
<p>To perform the duty in controlling the decoration processes to achieve the objective. Delegate subordinates, control worker for fully utilization, take care about performance assessment of subordinate and coordinate with other related people for effectiveness and efficiency of decoration operation.</p>		
<u>Responsibilities and duties</u>		
<ol style="list-style-type: none"> 1. To take care and control the operation of division to achieve the objective. 2. To summarize the efficiency of division and report to manager. 3. To coordinate with other related people for the information that related with division. 4. To plan, follow and control output of forming decoration, waste and usage of raw material to be in reasonable level. 5. To follow, control and assess the performance of subordinate. 6. To afford, applaud and gloat over for work of chief of section. 7. To promote and develop the activity that effect to the improvement of division operation. 8. To suggest and consult subordinate about technical and procedure of operation. 9. To improve working environment to be safe and effective. 		
<u>Authority</u>		
<p>To consider and make a decision for performance assessment and punishment for subordinate.</p>		
<u>Minimum Qualifications</u>		
<p>Bachelor Degree and 0-1 years working experience</p>		

Job Description		Code: L045110
Position	: Plan Leader	
Department	: Production	
Division	: Planning and Control	
Section	: Plan	
Report to	: Planning and Control Supervisor	
<u>Job summary</u>		
<p>To perform the duty in planning production schedule to achieve the objective. Delegate subordinates, control worker for fully utilization, and take care about performance assessment of subordinate and coordinate with other related people for effectiveness and efficiency of planning operation.</p>		
<u>Responsibilities and duties</u>		
<ol style="list-style-type: none"> 1. To take care and control the operation of section to achieve the objective. 2. To summarize plan and report to supervisor. 3. To summarize raw material usage and report to supervisor. 4. To coordinate with other related people for the information that related with section. 5. To follow, control and assess the performance of subordinate. 6. To afford, applaud and gloat over for work of workers in the section. 7. To promote and develop the activity that effect to the improvement of section operation. 8. To suggest and consult subordinate about technical and procedure of operation. 9. To improve working environment to be safe and effective. 		
<u>Authority</u>		
To consider and make a decision for performance assessment and punishment for subordinate.		
<u>Minimum Qualifications</u>		
High School up and 2 years working experience		

Job Description		Code: L045120
Position	: WIP Leader	
Department	: Production	
Division	: Planning and Control	
Section	: WIP	
Report to	: Planning and Control Supervisor	
<u>Job summary</u>		
<p>To perform the duty in controlling WIP to achieve the objective. And to record and to summarize the inventory of WIP. Delegate subordinates, control worker for fully utilization, and take care about performance assessment of subordinate and coordinate with other related people for effectiveness and efficiency of WIP control operation.</p>		
<u>Responsibilities and duties</u>		
<ol style="list-style-type: none"> 1. To take care and control the operation of section to achieve the objective. 2. To report inventory of work in process to supervisor. 3. To coordinate with other related people for the information that related with section. 4. To follow, control and assess the performance of subordinate. 5. To afford, applaud and gloat over for work of workers in the section. 6. To promote and develop the activity that effect to the improvement of section operation. 7. To suggest and consult subordinate about technical and procedure of operation. 8. To improve working environment to be safe and effective. 		
<u>Authority</u>		
<p>To consider and make a decision for performance assessment and punishment for subordinate.</p>		
<u>Minimum Qualifications</u>		
<p>High School up and 0-2 years working experience</p>		

Job Description		Code: L045130
Position	: Document Leader	
Department	: Production	
Division	: Planning and Control	
Section	: Document	
Report to	: Planning and Control Supervisor	
<u>Job summary</u>		
<p>To perform the duty in controlling data collection and filing to achieve the objective. Delegate subordinates, control worker for fully utilization, and take care about performance assessment of subordinate and coordinate with other related people for effectiveness and efficiency of documentation operation.</p>		
<u>Responsibilities and duties</u>		
<ol style="list-style-type: none"> 1. To take care and control the operation of section to achieve the objective. 2. To coordinate with other related people for the information that related with section. 3. To follow, control and assess the performance of subordinate. 4. To afford, applaud and gloat over for work of workers in the section. 5. To promote and develop the activity that effect to the improvement of section operation. 6. To suggest and consult subordinate about technical and procedure of operation. 7. To improve working environment to be safe and effective. 		
<u>Authority</u>		
<p>To consider and make a decision for performance assessment and punishment for subordinate.</p>		
<u>Minimum Qualifications</u>		
<p>High School up and 0-2 years working experience</p>		

Job Description		Code: L045140
Position	: Mixing Leader	
Department	: Production	
Division	: Planning and Control	
Section	: Mixing	
Report to	: Planning and Control Supervisor	
<u>Job summary</u>		
<p>To perform the duty in planning and control mixing process to achieve the objective. Delegate subordinates, control worker for fully utilization, and take care about performance assessment of subordinate and coordinate with other related people for effectiveness and efficiency of mixing operation.</p>		
<u>Responsibilities and duties</u>		
<ol style="list-style-type: none"> 1. To take care and control the operation of section to achieve the objective. 2. To coordinate with other related people for the information that related with section. 3. To follow, control and assess the performance of subordinate. 4. To afford, applaud and gloat over for work of workers in the section. 5. To promote and develop the activity that effect to the improvement of section operation. 6. To suggest and consult subordinate about technical and procedure of operation. 7. To improve working environment to be safe and effective. 		
<u>Authority</u>		
<p>To consider and make a decision for performance assessment and punishment for subordinate.</p>		
<u>Minimum Qualifications</u>		
<p>High School up and 0-2 years working experience</p>		

Job Description		Code: L045150
Position	: Recycle Leader	
Department	: Production	
Division	: Planning and Control	
Section	: Recycle	
Report to	: Planning and Control Supervisor	
<u>Job summary</u>		
<p>To perform the duty in planning and control in recycle process to achieve the objective. Delegate subordinates, control worker for fully utilization, and take care about performance assessment of subordinate and coordinate with other related people for effectiveness and efficiency of recycle operation.</p>		
<u>Responsibilities and duties</u>		
<ol style="list-style-type: none"> 1. To take care and control the operation of section to achieve the objective. 2. To coordinate with other related people for the information that related with section. 3. To follow, control and assess the performance of subordinate. 4. To afford, applaud and gloat over for work of workers in the section. 5. To promote and develop the activity that effect to the improvement of section operation. 6. To suggest and consult subordinate about technical and procedure of operation. 7. To improve working environment to be safe and effective. 		
<u>Authority</u>		
<p>To consider and make a decision for performance assessment and punishment for subordinate.</p>		
<u>Minimum Qualifications</u>		
<p>High School up and 0-2 years working experience</p>		

Job Description		Code: L045210
Position	: Blowing Leader	
Department	: Production	
Division	: Forming shape	
Section	: Blowing	
Report to	: Forming shape Supervisor	
<u>Job summary</u>		
<p>To perform the duty in planning and control in blowing process to achieve the objective. Delegate subordinates, control worker for fully utilization, and take care about performance assessment of subordinate and coordinate with other related people for effectiveness and efficiency of blowing operation.</p>		
<u>Responsibilities and duties</u>		
<ol style="list-style-type: none"> 1. To take care and control the operation of section to achieve the objective. 2. To coordinate with other related people for the information that related with section. 3. To follow, control and assess the performance of subordinate. 4. To afford, applaud and gloat over for work of workers in the section. 5. To promote and develop the activity that effect to the improvement of section operation. 6. To suggest and consult subordinate about technical and procedure of operation. 7. To improve working environment to be safe and effective. 		
<u>Authority</u>		
<p>To consider and make a decision for performance assessment and punishment for subordinate.</p>		
<u>Minimum Qualifications</u>		
<p>High School up and 0-2 years working experience</p>		

Job Description		Code: L045220
Position	: Injection Leader	
Department	: Production	
Division	: Form shape	
Section	: Injection	
Report to	: Forming shape Supervisor	
<u>Job summary</u>		
<p>To perform the duty in control in injection process to achieve the objective. Delegate subordinates, control worker for fully utilization, and take care about performance assessment of subordinate and coordinate with other related people for effectiveness and efficiency of injection operation.</p>		
<u>Responsibilities and duties</u>		
<ol style="list-style-type: none"> 1. To take care and control the operation of section to achieve the objective. 2. To coordinate with other related people for the information that related with section. 3. To follow, control and assess the performance of subordinate. 4. To afford, applaud and gloat over for work of workers in the section. 5. To promote and develop the activity that effect to the improvement of section operation. 6. To suggest and consult subordinate about technical and procedure of operation. 7. To improve working environment to be safe and effective. 		
<u>Authority</u>		
<p>To consider and make a decision for performance assessment and punishment for subordinate.</p>		
<u>Minimum Qualifications</u>		
<p>High School up and 0-2 years working experience</p>		

Job Description		Code: L045310
Position	: Decoration 1 Leader	
Department	: Production	
Division	: Decoration	
Section	: Decoration 1	
Report to	: Decoration Supervisor	
<u>Job summary</u>		
<p>To perform the duty in controlling screening process for every products except milk bottle to achieve the objective. And to perform the duty in controlling hot stamping, labeling and assembling process to achieve the objective. Delegate subordinates, control worker for fully utilization, and take care about performance assessment of subordinate and coordinate with other related people for effectiveness and efficiency of decoration 1 operation.</p>		
<u>Responsibilities and duties</u>		
<ol style="list-style-type: none"> 1. To take care and control the operation of section to achieve the objective. 2. To coordinate with other related people for the information that related with section. 3. To follow, control and assess the performance of subordinate. 4. To afford, applaud and gloat over for work of workers in the section. 5. To promote and develop the activity that effect to the improvement of section operation. 6. To suggest and consult subordinate about technical and procedure of operation. 7. To improve working environment to be safe and effective. 		
<u>Authority</u>		
To consider and make a decision for performance assessment and punishment for subordinate.		
<u>Minimum Qualifications</u>		
High School up and 0-2 years working experience		

Job Description		Code: L045320
Position	: Decoration 2 Leader	
Department	: Production	
Division	: Decoration	
Section	: Decoration 2	
Report to	: Decoration Supervisor	
<u>Job summary</u>		
<p>To perform the duty in controlling screening process for milk bottle and shrinking process to achieve the objective. Delegate subordinates, control worker for fully utilization, and take care about performance assessment of subordinate and coordinate with other related people for effectiveness and efficiency of decoration 2 operation.</p>		
<u>Responsibilities and duties</u>		
<ol style="list-style-type: none"> 1. To take care and control the operation of section to achieve the objective. 2. To coordinate with other related people for the information that related with section. 3. To follow, control and assess the performance of subordinate. 4. To afford, applaud and gloat over for work of workers in the section. 5. To promote and develop the activity that effect to the improvement of section operation. 6. To suggest and consult subordinate about technical and procedure of operation. 7. To improve working environment to be safe and effective. 		
<u>Authority</u>		
<p>To consider and make a decision for performance assessment and punishment for subordinate.</p>		
<u>Minimum Qualifications</u>		
<p>High School up and 0-2 years working experience</p>		

Job Description		Code: W045110
Position	: Plan Worker	
Department	: Production	
Division	: Planning & Control	
Section	: Plan	
Report to	: Plan Leader	
<p><u>Job summary</u></p> <p>To take care on planning and preparing process.</p> <p><u>Responsibilities and duties</u></p> <ol style="list-style-type: none"> 1. To record production plan in schedule table. 2. To take care on planning to corresponds with customer's requirement. 3. To calculate raw material requirement. 4. To prepare raw material order for forming shape process. 5. To report plan and raw material requirement to leader. 6. To improve working environment to be safe and effective. <p><u>Minimum Qualifications</u></p> <p>Primary School up and 0-1 year working experience</p>		

Job Description		Code: W045120
Position	: WIP Worker	
Department	: Production	
Division	: Planning & Control	
Section	: WIP	
Report to	: WIP Leader	
<p><u>Job summary</u></p> <p>To take care on keeping, preparing and transferring product during process.</p> <p><u>Responsibilities and duties</u></p> <ol style="list-style-type: none"> 1. To take care on correctly keeping product in WIP stock. 2. To take care on correctly preparing WIP for related production process. 3. To transferring WIP for related production process. 4. To report progress of work to leader. 5. To improve working environment to be safe and effective. <p><u>Minimum Qualifications</u></p> <p>Primary School up and 0-1 year working experience</p>		

Job Description		Code: W045130
Position	: Document Worker	
Department	: Production	
Division	: Planning & Control	
Section	: Document	
Report to	: Document Leader	
<p><u>Job summary</u></p> <p>To take care on collecting and keeping data. To record and filing data.</p> <p><u>Responsibilities and duties</u></p> <ol style="list-style-type: none"> 1. To take care on keeping data such as product specification and machine data. 2. To record daily production in productivity table. 3. To filing product specification and machine data for easy tractability. 4. To report productivity table to leader. 5. To improve working environment to be safe and effective. <p><u>Minimum Qualifications</u></p> <p>Primary School up and 0-1 year working experience</p>		

Job Description		Code: W045140
Position	: Mixing Worker	
Department	: Production	
Division	: Planning & Control	
Section	: Mixing	
Report to	: Mixing Leader	
<p><u>Job summary</u></p> <p>To take care on mixing process. To mix material as specification.</p> <p><u>Responsibilities and duties</u></p> <ol style="list-style-type: none"> 1. To take care on mixing material as specification. 2. To work as standard productivity. 3. To pack material as specification. 4. To report productivity to leader. 5. To improve working environment to be safe and effective. <p><u>Minimum Qualifications</u></p> <p>Primary School up and 0-1 year working experience</p>		

Job Description		Code: W045150
Position	: Recycle Worker	
Department	: Production	
Division	: Planning & Control	
Section	: Recycle	
Report to	: Recycle Leader	
<p><u>Job summary</u></p> <p>To take care on recycling process.</p> <p><u>Responsibilities and duties</u></p> <ol style="list-style-type: none"> 1. To take care on recycling. 2. To work as standard. 3. To pack scrap as specification. 4. To separate scrap correctly. 5. To report productivity to leader. 6. To improve working environment to be safe and effective. <p><u>Minimum Qualifications</u></p> <p>Primary School up and 0-1 year working experience</p>		

Job Description		Code: W045210
Position	: Blowing Worker	
Department	: Production	
Division	: Forming shape	
Section	: Blowing	
Report to	: Blowing Leader	
<u>Job summary</u>		
<p>To take care on forming shape process on blowing machine. To produce product as specification.</p>		
<u>Responsibilities and duties</u>		
<ol style="list-style-type: none"> 1. To take care on forming shape process on blowing machine. 2. To produce product as specification by trims and cut off excess part. 3. To work as standard productivity. 4. To pack product as specification. 5. To separate scrap correctly. 6. To record productivity in daily production and report to leader. 7. To improve working environment to be safe and effective. 		
<u>Minimum Qualifications</u>		
Primary School up and 0-1 year working experience		

Job Description		Code: W045220
Position	: Injection Worker	
Department	: Production	
Division	: Forming shape	
Section	: Injection	
Report to	: Injection Leader	
<p><u>Job summary</u></p> <p>To take care on forming shape process on injection machine. To produce product as specification.</p> <p><u>Responsibilities and duties</u></p> <ol style="list-style-type: none"> 1. To take care on forming shape process on injection machine. 2. To produce product as specification by trims and cut off excess part. 3. To work as standard productivity. 4. To pack product as specification. 5. To separate scrap correctly. 6. To record productivity in daily production and report to leader. 7. To improve working environment to be safe and effective. <p><u>Minimum Qualifications</u></p> <p>Primary School up and 0-1 year working experience</p>		

Job Description		Code: W045311
Position	: Screen 1 Worker	
Department	: Production	
Division	: Decoration	
Section	: Decoration 1	
Report to	: Decoration 1 Leader	
<p><u>Job summary</u></p> <p>To take care on non-milk bottle screening process. To produce product as specification.</p> <p><u>Responsibilities and duties</u></p> <ol style="list-style-type: none"> 1. To take care on screening product as specification. 2. To work as standard productivity. 3. To pack product as specification. 4. To separate scrap correctly. 5. To record productivity in daily production and report to leader. 6. To improve working environment to be safe and effective. <p><u>Minimum Qualifications</u></p> <p>Primary School up and 0-1 year working experience</p>		

Job Description		Code: W045312
Position	: Hot stamp Worker	
Department	: Production	
Division	: Decoration	
Section	: Decoration 1	
Report to	: Decoration 1 Leader	
<p><u>Job summary</u></p> <p>To take care on hot stamping process. To produce product as specification.</p> <p><u>Responsibilities and duties</u></p> <ol style="list-style-type: none"> 1. To take care on hot stamping product as specification. 2. To work as standard productivity. 3. To pack product as specification. 4. To separate scrap correctly. 5. To record productivity in daily production and report to leader. 6. To improve working environment to be safe and effective. <p><u>Minimum Qualifications</u></p> <p>Primary School up and 0-1 year working experience</p>		

Job Description		Code: W045313
Position	: Labeling Worker	
Department	: Production	
Division	: Decoration	
Section	: Decoration 1	
Report to	: Decoration 1 Leader	
<p><u>Job summary</u></p> <p>To take care on labeling process. To produce product as specification.</p> <p><u>Responsibilities and duties</u></p> <ol style="list-style-type: none"> 1. To take care on labeling product as specification. 2. To work as standard productivity. 3. To pack product as specification. 4. To separate scrap correctly. 5. To record productivity in daily production and report to leader. 6. To improve working environment to be safe and effective. <p><u>Minimum Qualifications</u></p> <p>Primary School up and 0-1 year working experience</p>		

Job Description		Code: W045314
Position	: Assembly Worker	
Department	: Production	
Division	: Decoration	
Section	: Decoration 1	
Report to	: Decoration 1 Leader	
<p><u>Job summary</u></p> <p>To take care on assembling process. To produce product as specification.</p> <p><u>Responsibilities and duties</u></p> <ol style="list-style-type: none"> 1. To take care on assembling product as specification. 2. To work as standard productivity. 3. To pack product as specification. 4. To separate scrap correctly. 5. To record productivity in daily production and report to leader. 6. To improve working environment to be safe and effective. <p><u>Minimum Qualifications</u></p> <p>Primary School up and 0-1 year working experience</p>		

Job Description		Code: W045321
Position	: Screen 2 Worker	
Department	: Production	
Division	: Decoration	
Section	: Decoration 2	
Report to	: Decoration 2 Leader	
<p><u>Job summary</u></p> <p>To take care on milk bottle screening process. To produce product as specification.</p> <p><u>Responsibilities and duties</u></p> <ol style="list-style-type: none"> 1. To take care on screening product as specification. 2. To work as standard productivity. 3. To pack product as specification. 4. To separate scrap correctly. 5. To record productivity in daily production and report to leader. 6. To improve working environment to be safe and effective. <p><u>Minimum Qualifications</u></p> <p>Primary School up and 0-1 year working experience</p>		

Job Description		Code: W045322
Position	: Shrink Worker	
Department	: Production	
Division	: Decoration	
Section	: Decoration 2	
Report to	: Decoration 2 Leader	
<p><u>Job summary</u></p> <p>To take care on shrinking process. To produce product as specification.</p> <p><u>Responsibilities and duties</u></p> <ol style="list-style-type: none"> 1. To take care on shrinking product as specification. 2. To work as standard productivity. 3. To pack product as specification. 4. To separate scrap correctly. 5. To record productivity in daily production and report to leader. 6. To improve working environment to be safe and effective. <p><u>Minimum Qualifications</u></p> <p>Primary School up and 0-1 year working experience</p>		



Appendix B

Samples of Document in Production (Old)

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

Number.....

Job Order

Date..... 15 Dec 2001

Machine Number..... I 12

Product Name..... U Mee Cup

Type of Plastic Granule..... PP

Color..... White

Remarks..... Use 1 worker

Use U Mee Cup box

300 cups per pack

.....

.....

.....

.....

.....

.....

.....

.....

Job Order

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

Productivity Report

Worker Name.....Yupin.....Standard... 3085...../shift

Machine Number..... I 4.....Date 15 Dec 01..Shift..B.....

Product Name.....Cap Hydro 15.....Color..... White.....

Scrap weight..... 8.5 Kg.....

Hour	Output	Scrap	Cause	Recorder
1
2
3
4
5
6
7
8
9
10
Total output.....		2585	/shift	
Remarks.....				
Technician.....		Arkorn	Production..... Jai	

Daily Productivity

Purchase Request		Number
Section.....Production....	<input checked="" type="checkbox"/> Urgent	Issue Date
Purpose.....Producing.	<input type="checkbox"/> Due date.....	..10./...12./...01..
Code	Quantity Request	Deatil
	3	Note Book
	3 Kg	Color powder Red 2267 Central pigment
Approved by	Jew	Issue by Jew
		Received date

Purchase Request

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

Mixing Order			
1. Machine Number.	B. 8	Product name	Micro Shell
		Customer	Thai.poly
2. Color Ratio			
1.1	10	g/Kg	450
1.2		g/Kg	
1.3		g/Kg	
1.4		g/Kg	
1.5		g/Kg	
3. Raw material	3.1	PSH	3.2
			3.3
Ratio of raw material			
.....			
.....			
.....			
4. Quantity required/day	50		Kg.

Mixing Order

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

List of plastic granule			Date
			12-Dec-01
Type	Quantity		Remarks
	Bag	Kg	
PE 6240	100	2500	
PP 1100 NK	18	450	Add PP1100 1 bag 25 Kg 12.00 AM
SSS 1018	10	250	
PVC 0401	15	375	
D2022	1	25	
2J4324	8	200	
PVC 5502	7	175	Return PVC 5502 2 bag 50 Kg
			Inspector.....
			Request by..... Jew
			Stock..... Lek
Total	159	3975	

Draw Material

<p style="text-align: center;">Draw recycle</p> <p>Machine.....I.1..... Date...12. Dec. 01...</p> <p>Product name U mee cup....Color...white</p> <p>Type of Plastic..PP.... Quantity 2 bag = 30kg</p> <p>Request by.....Jew.....</p>	<p style="text-align: center;">Draw recycle</p> <p>Machine.....I.2..... Date...12. Dec. 01...</p> <p>Product name Resona Tube....Color...Pink...</p> <p>Type of Plastic..PP.... Quantity 4 bag = 60kg</p> <p>Request by.....Jew.....</p>
<p style="text-align: center;">Draw recycle</p> <p>Machine.....I.3..... Date...12. Dec. 01...</p> <p>Product name Cap Hydro 50....Color pearly white</p> <p>Type of Plastic..PP.... Quantity 1 bag = 15kg</p> <p>Request by.....Jew.....</p>	<p style="text-align: center;">Draw recycle</p> <p>Machine.....I.4..... Date...12. Dec. 01...</p> <p>Product name Cap Hydro 15....Color...white..</p> <p>Type of Plastic..PP.... Quantity 1 bag = 15kg</p> <p>Request by.....Jew.....</p>

Draw Recycle

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

Machine..... I 1	Date. 13 Dec 2001.	Shift..... A
Product name..... U Mee Cup	Color..... White	
Worker Name..... Vipa	Number..... 23	
Quantity / Pack..... 300	Number..... 2	/.....

Semi-finished Tag card

Product Name..... U Mee Cup	Color..... White
Date..... 15 Dec 2001	Shift..... A
Worker Name..... Manee	
Quantity/Pack..... 300	QC..... Kai

Product Identification Tag Card

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย



Appendix C

Samples of Document in Production (New)

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

Customer	PO		Product	Color	Order Quantity	Finished Good Stock	WIP	Quantity to produce			Production Plan			Due Date	Remarks
	Received Date	Number						Remain from order	Keep Stock	Total	Machine	Start	Finish		
PS	18/3/02	14	Home Bottle	white	4500	2000	0	2500	2500	5000	B20	20/3/02	21/3/02	23/3/02	
Top	19/3/02	0637	Top Tube	white	5000	0	0	5000	0	5000	B8	25/3/02	27/3/02	1/4/02	
AF	19/3/02	4540243	U Mee Bowl	white	60000	0	0	60000	0	60000	I 24	25/3/02	30/3/02	25/3/02	
Thai poly	19/3/02	024/02	Can shell 199	red	65000	0	0	65000	0	65000	B2	20/3/02	4/4/02	-	urgent
MMK	19/3/02	P02/432	Shampoo Bottle 200 BC	white	3000	0	2400	600	0	600	B30	21/3/02	21/3/02	26/3/02	
			Shampoo Bottle 200 ST	white	5000	200	0	4800	1000	5800	B30	21/3/02	23/3/02	26/3/02	
		P02/433	Shampoo Bottle 400 BC	white	3000	0	0	3000	300	3300	B1	21/3/02	22/3/02	30/3/02	
			Shampoo Bottle 400 MF	white	3000	0	3360	-360	0	0	-	-	-	-	
			Shampoo Bottle 400 ST	white	3000	0	0	3000	300	3300		22/3/02	23/3/02	30/3/02	
CS	19/3/02	**wait	ILSWC Bottle 150	white	30000	0	0	30000	0	30000	B18	20/3/02	4/4/02	1/4/02	*inform mkt. for late
			Hook for ILSWC bottle	white	30000	0	0	30000	0	30000	I 21	24/3/02	31/3/02	1/4/02	**Advise for PO 08817
			Cap ILSWC	pink	25000	0	0	25000	0	25000	I 14	27/3/02	11/4/02	1/4/02	*inform mkt. for late
KVJ	20/3/02	K000027	Gel Jar big	clear	20000	0	0	20000	0	20000	B29	21/3/02	23/3/02	-	as soon as possible
		K000028	PE Bottle 60 No. 20	white	14600	0	0	14600	0	14600	B9	26/3/02	31/3/02	-	as soon as possible
Neo	20/3/02	14-2-092	Exit Gel Jar 200 G	clear	10000	0	0	10000	0	10000	B11	27/3/02	14/4/02	1/4/02	*inform mkt. for late
			Exit Gel Cap 200 G	black	10000	0	0	10000	0	10000	I 17	2/4/02	4/4/02	1/4/02	*inform mkt. for late

Purchase Order Table

Job Order

Date..... 9 Feb 02

Machine Number..... I 1

Product Name..... U Mee Cup

Type of Plastic Granule..... PP 1100

Color..... White

Order Quantity..... 50,000

Worker..... 1

Approve by..... Gib

Remarks.....

Job Order

สถาบันวิทยบริการ
 จุฬาลงกรณ์มหาวิทยาลัย

Blowing											Spec. Limit		Lowest 11 g.	
Daily Production											for weight		Highest 12 g.	
Machine No. BB1		Number of Cavity 10			Mold No. V1-10			Date 16/5/02		PO. No. 835/41730				
Product Cornmilk bottle		Color clear			Standard weight 11.5 g.			(+/-) 0.5		Excess 5 g.				
Std. cycle time 12.1		Output/hour 2975			Std. Packing clear bag 45"x45" 350 pieces/bag									
Order quantity 100000				Carry over 5600				Remain produce 94400						
Blowing time 8.3				Temperature				I.Entering 169						
2. Middle 176		3. Front 176		4. Die Head 4.1=172 4.2=180 4.3=172		5. Nozzle 192								
Screw rotation/min 36 rpm				4.4=171		4.5=172								
Time	Raw material usage		Weight/piece		Actual output		Scrap		Total excess	Quality		WIP Qty	cause of problem	
	Lot	Qty.	Part	Excess	piece	pack	Kg.	Pack		Result	Auditor		W	Mc.
8.00-9.00	19/3	50 kg	12	4.8	3150	9			16.5			9		
9.00-10.00	19/3	50 kg	12	4.8	3150	9			16.4	P	Peak	9		
10.00-11.00	19/3	50 kg	12	4.8	2800	8			14			8		
11.00-12.00	19/3	25 kg	12	4.8	2800	8	3.7	1	14.1	P	Peak	8		
12.00-13.00	19/3	50 kg	12	4.8	2800	8			11.7			8		
13.00-14.00	19/3	50 kg	12	4.8	2800	8			15.8			8		
14.00-15.00	19/3	50 kg	12	4.8	2800	8	4.7	1	14.6	P	Peak	8		
15.00-16.00	19/3	25 kg	12	4.8	3150	9			10.3			9		
16.00-17.00	19/3	50 kg	12	4.8	2800	8			14.8			8		
17.00-18.00	19/3	50 kg	12	4.8	2800	8	4.7	1	15.5	P	Peak	8		
18.00-19.00	19/3	50 kg	12	4.8	2800	8			15.7			8		
19.00-20.00	19/3	25 kg	12	4.8	2800	8			12.8	P	Peak	8		
Total A		525 kg			34650	99	13	3	172.2			99		
Worker Somporn, Surin						Leader Karjana								
Remarks:														
20.00-21.00	19/3	75 kg	12	4.8	2800	8			12.4			8		
21.00-22.00	19/3	50 kg	12	4.8	2800	8			13.3	P	Nong	8		
22.00-23.00	19/3	25 kg	12	4.8	2800	8	4.5	1	13.5			8		
23.00-24.00	19/3	50 kg	12	4.8	2800	8			13.6	P	Nun	8		
24.00-01.00	19/3	50 kg	12	4.8	2800	8			11.5			8		
01.00-02.00	19/3	50 kg	12	4.8	2800	8			12			8		
02.00-03.00	19/3	25 kg	12	4.8	1750	5			11.3			5		/
03.00-04.00	19/3	50 kg	12	4.8	2800	8			10	P	Nun	8		
04.00-05.00	19/3	50 kg	12	4.8	2800	8			11			8		
05.00-06.00	19/3	50 kg	12	4.8	2800	8			11.5			8		
06.00-07.00	19/3	25 kg	12	4.8	2800	8	4.9	1	14.2	P	Nong	8		
07.00-08.00	19/3	50 kg	12	4.8	2800	8			14			8		
Total B		550 kg			32550	93	9.4	2	148.3			93		
Worker Pramuk, Sangjan						Leader Lek								
Remarks:														
Total/day					67200	192	23	5	320.5			192		

Daily Production for blowing

Purchase Request			
Book Number 008		Set Number 0396	
To: Purchase Division		Date.....11.Mar.02.....	
From:.....Production.....		Require Date..14.Mar.02.....	
Item	Detail	Qty Request	Objective/Purpose
1	Color powder Violet 51757 world	3 kg	produce jar Hydro 50
2	Color powder Red 2267 Central pigment	3 kg	produce Cap Accolate
White: Purchaser Pink: Purchasing Brown: Originator Request by.....Saiphon..... Approve by....Gib..... Purchaser...Tuk..... Department....Production..... Approve date..11.Mar.02 Date11.Mar.02 Time..11.AM Division/section.....Plan.....			

Purchase Request

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

Mixing Order for Injection					Date..6.May.02...		
Machine Number	Product Name	Color	Type of Plastic	Quantity	Ratio		Remarks
					M1	M2	
I 1	Cap PT white 15	silver	PP1100NK	75	75		
I 2	Microwave middle	pearl	PP750J	300	300		
I 3	Middle Eye per 15	pearl	PP1100NK	50	50		
I 4	Scoop 45	blue	PP1100NK	300	300		
I 5	Ageblock 50 outer cap	pearl	PP1100NK	175	175		
I 6	Milk inner cap	clear	SSS1018	150	150		
I 7	Wax cap	black	PP1100NK	90	90		scrap
I 8	Breaz cap	yellow	D2022	85	85		scrap
I 9	Milk outer cap	pink	2J4324+2208J	200	150	50	
I 10	Powder cap	white	2J4324	75	75		
I 11	Milk inner cap	clear	SSS1018	200	200		
I 12	Spoon	blue	PP1100NK	105	105		scrap
I 13	Milk inner cap	clear	SSS1018	100	100		
I 14	ILSWC cap	pink	PP1102H	50	50		
I 15	Connector grip	blue	PSH350	50	50		
I 16							
I 17	Mascara cap	blue	PP840J	45	45		scrap
I 18							
I 19	Baby hanger	yellow	PP1100NK	50	50		
I 20	Wax plug	black	D2022	50	50		
I 21	Dish wash 100	green	2J4324+PE6240	160	100	60	
I 22							
I 23	Cap Eye per 15	pearl	PP1100NK	75	75		

Mixing Order for Injection

Mixing Order for Blowing					Date.....6.May.02		
Machine Number	Product Name	Color	Type of Plastic	Quantity	Ratio		Remarks
					M1	M2	
B 1							
B 2							
B 3	Breaz bottle	red	PE6240	180	180		scrap
B 4							
B 5	Bottle 120 paigen	clear	PE6240	400	400		
B 6	Bottle 120 paigen	clear	PE6240	400	400		
B 7	Bottle 120 paigen	clear	PE6240	400	400		
B 8	Ele shell	clear	K-rasin+PS77	100	10	90	
B 9							
B 10	Milk bottle 450	clear	PE6240	550	550		
B 11	Wax bottle 135	black	PVC0401	200	200		scrap
B 12							
B 13							
B 14	Bottle 120 paigen	clear	PE6240	400	400		
B 15	Bottle 120 paigen	clear	PE6240	400	400		
B 16	Milk bottle 200	clear	PE6240	550	550		
B 17							
B 18	ILSWC bottle 300	white	PE6240	200	200		
B 19							
B 20	Kodomo 100	clear	PVC0401	100	100		
B 21							
B 22	Shampoo CS 50	clear	PVC5502	125	125		
B 23							
B 24	Milk bottle 450	clear	PE6240	550	550		
B 25	Milk bottle 830	clear	PE6240	625	625		
B 26							
B 27	Milk bottle 450	clear	PE6240	550	550		
B 28	Powder bottle 500	white	PE6240	585	585		scrap
B 29	Mascara bottle	blue	PVC0401	75	75		
B 30	Powder bottle 50	white	PE6240	90	90		
B 31	Milk bottle 830	clear	PE6240	625	625		
B 32							
B 33	Milk bottle 830	clear	PE6240	625	625		
BB1	Cornmilk bottle	clear	PE6240	1075	1075		
BB2							

Mixing Order for Blowing

Draw Material Request					
Book Number 044		Set Number 2183			
		Date..5.May.02.....			
Type of material					
<input checked="" type="radio"/>	plastic granule	<input type="radio"/>	silver/gold foil	<input type="radio"/>	plastic bag
<input type="radio"/>	powder color	<input type="radio"/>	shrink film	<input type="radio"/>	box
<input type="radio"/>	screen color	<input type="radio"/>	sticker label	<input type="radio"/>	other.....
Item	Detail	Qty Request	Actual pay out	Remarks	
1	PP1100NK	725 kg	725 kg		
2	PP750J	300 kg	300 kg		
3	SSS1018	450 kg	450 kg		
4	D2022	50 kg	50 kg		
5	2J4324	325 kg	325 kg		
6	PP1102H	50 kg	50 kg		
7	PSH350	50 kg	50 kg		
8	2208J	50 kg	50 kg		
9	PVC0401	175 kg	175 kg		
White: Account		Pink: Originator		Brown: Stock	
Request by....Saiphon.....		Request time...15.00.....		Pay out by...Promma.....	
Department.....Production.....		Require date...6.May.02		Date..... Time.8.00..	
Division/section....Plan.....		Require time....8.00.....		Receive by... Amnaj.....	

Draw Material Request

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

Product Name..... U Mee Cup.....	PO No..... 4540084.....
Color..... White.....	Machine No..... I 1.....
Date..... 13 Feb 2002.....	Shift..... A.....
Worker Name..... Nuna.....	Pack No..... 7.....
Quantity / Pack..... 300.....	QC..... Jeab.....

Tag card (Product Identification card)

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

Product Transfer				
Book Number 052		Set Number 2596		
		Date... 7 May 02.....		
Receive product from:..... Production.....				
Item	Detail	Ref. Doc. No.	Qty	Remarks
1	PT white cap 15	PC206736	5040	
2	Scoop	430	43200	
3	Spoon	392667	38000	
4	Baby hanger	J008767	9100	
5	Dish wash 100	P02/987	64000	
6	Kodomo 100	P2100515	8000	
7	ILSWC cap	09099	4800	
8	Wax bottle 135	0041	3360	
9	Shampoo CS 50	09237	7200	
White: Account Pink: Purchase/Production Brown: Stock Purchase/Production..... Production..... Stock..... Ning..... Company/Department..... Production..... Date..... 7 May 02..... Division/section..... Forming shape.....				

Finished Good Transfer

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

Product Specification							Approve by Aui				
							Date 8/1/02				
Customer LFD			Product Eye Perfector 15				No. of component 3				
	Component Name	Process Require						Detail			
		Forming	Screen	Hot stamp	Labeling	Shrink	Assembly				
1	Jar Eye per 15	I	/				/	blue = j70741, grey = j70195			
2	Middle Eye per 15	I		/			/	gold = G-04			
3	Cap Eye per 15	I									
4											
5											
6											
7											
8											
9											
10											
Component		1	2	3	4	5	6	7	8	9	10
Color		pearl	white	pearl							
Type of material	M1	PP1100NK	PP1100NK	PP1100NK							
	M2										
Ratio of material	M1	100%	100%	100%							
	M2										
Color code	C1	S-1117	1634	S-1117							
	C2										
Ratio of color	C1	2g/kg	10g/kg	2g/kg							
	C2										
G.W.		8.5	9.8	10.9							
N.W.(Std.)		6.9	8.4	8.2							
Excess/Runner W		1.6	1.4	2.7							
Min. W		6.7	8.2	8							
Max. W		7.1	8.6	8.4							
Packing: WIP : component 1= small box, 450 pieces/box : component 2= small box, 480 pieces/box FG : component 3= small box, 560 pieces/box : Component 1+2=medium box, 280 pieces/box											
Remarks: screen pattern attached											

Product Approval Part 1: Product specification

Month	June 2002																																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31									
B 1	←											Milk bottle 830											→																	
B 2																																								
B 3	←											Breaz bottle											→																	
B 4																																								
B 5	←											Bottle 120 paigen											→																	
B 6	←											Bottle 120 paigen											→																	
B 7	←											Bottle 120 paigen											→																	
B 8	← Milk bottle 200					→					← Dy Bottle 200					→					← Lil shell					→														
B 9																																								
B 10	←											Milk bottle 450											→																	
B 11	← Powder bottle CS 50					→					← Kodomo 100					→					← Micky 250					→					← Kodomo 200					→				
B 12																																								
B 13	←											Dy bottle 120											→																	
B 14	←											Bottle 120 paigen											→																	
B 15	←											Bottle 120 paigen											→																	

Schedule Table

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

VITA

Siripen Srimandakul was born on November 13, 1970 in Bangkok. She graduated from Satrievithaya high school and obtained her Bachelor's degree in Electronics Engineering from Assumption University in 1994. After graduated, she worked as Process Engineer at Seagate Technology for four years. Then she has worked in a plastic packaging company as Production Manager since 1998.



สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย