

CHAPTER V: DEVELOPMENT OF A PRACTICAL-USE MODEL

Introduction

The purpose of the interviews was to determine how women's clothing retail decide the first order quantity through the assortment-planning process. A practical-use assortment-planning model was developed from the interviews. An instrument including a questionnaire and activity cards assisted this researcher to control the interviews, which were taped and transcribed into written format. The transcription was decontextualized and recontextualized for drawing an IDEF0 model of the practical-use assortment-planning process.

Sample

Sample Characteristics

To select the sample for the interviews, this study used a judgment sampling technique that was a non-probability sampling technique. In the judgment sample, a researcher selects the sample based upon judgment criteria (Zikmund, 1994). Qualitative research often faces the limitation of sampling validity due to a purposively selected small sample size. To achieve qualitative sampling validity, the researcher should establish judgment criteria to set sampling borders in terms of research questions (Miles & Huberman, 1994; Zikmund, 1994). This researcher set the qualitative judgment sampling criteria from the interviewee selection criteria of Regan (1997). Regan and Kincade (1998) and Vass (1995) used these criteria for case study work in the apparel industry. The criteria helped define the sampling frame more precisely to focus the applicability of the resulting model and improve validity and reliability. The judgment sampling criteria was selected as follows: (a) product type, (b) company type, (c) company size and location, (d) subject's responsibility in assortment planning, and (e) subject's job experience.

Product type

One product classification was selected because the literature suggested that assortment planning varied across classifications (Glock & Kunz, 1995; Kunz, 1987). The single product focus allowed the researcher to examine variables within the planning process without the variability of products. For this research, the product type for which a retailer forecasts, was selected as women's dresses. Women's dresses were considered as a fashion-sensitive item

regarding design, color, and fabric (WWD, May 8, 1996), variables shown in the secondary data analysis as significant. Fashion change was a major complication in assortment planning (Bhat, 1985; Hunter & Valentino, 1995); therefore, the purpose of this research was to reduce the complication of a fashion-sensitive product assortment-plan. Dress size was also considered as a fashion-sensitive variable; for example, body-conscious dresses may need more size variation than not-body-conscious dresses. Colors and sizes were additional product factors to be considered in the breadth and depth of a dress style assortment-plan (Rabolt & Miller, 1997).

Company type

Company SIC. The company type classification followed the Standard Industrial Classification (SIC), established and maintained by the U.S. Office of Management and Budget (Dickerson, 1995). The SIC code was the primary indication of a company type because most business file management systems used the SIC data classification. For example, the General Business File ASAP (Infotrac, 1997) used the SIC. The company files used in this research were obtained from General Business File ASAP. Company type was also important because different company types sold different assortments of product (Jarnow & Dickerson, 1997)

The company type for which subjects work was selected as women's clothing stores (SIC 5621) or department stores (SIC 5311). These two store types are the most important retail channels of dresses (WWD, May 8, 1986). A total of 459 women's clothing stores and 362 department stores were identified in the General Business File ASAP (Infotrac, 1997). According to Market Share Reporter (Lazich, 1998), department stores (SIC 5311) and women's clothing stores (SIC 5621) account for 55 % of the women's clothing market. These categories were found to be significant in previous clothing industry research (Fiorito, 1990; Ko, 1995).

Company location and size. The company location was determined as a retail buyer's work place (*e.g.*, corporate headquarters or buying offices) in Kentucky, Maryland, North Carolina, New Jersey, New York, Pennsylvania, Tennessee, Virginia, and West Virginia. The company address was listed in General Business File ASAP (Infotrac, 1997). Based on the General Business File ASAP, about 20% of all women's clothing company headquarters and 20% of all department store company headquarters were located in these states (Infotrac, 1997). Compared to the numbers of states, the headquarters density in these states is high. This geographic location is historically the origin of women's clothing stores and department stores in the United States.

The company's gross sales determined the company size because gross sales were used as a company size indicator in most industry reports and in the General Business File ASAP. The gross sales of department stores in General Business File ASAP ranged from about \$105,000.0 million to about \$ 0.1 million (Infotrac, 1997). The gross sales of women's clothing stores in General Business File ASAP ranged from about \$8,000.0 million to about \$ 0.1 million. The sales gross was purposively classified into five clusters for comparison: largest, large-medium, medium, medium-small and smallest (see Table 5). Criteria for company size classification is a common technique used by previous industry researchers (Fiorito & Fairhurst, 1989; Shim & Drake, 1991; Shim & Kotsiopoulos, 1991; Stone & Cassill, 1989) Current annual gross sales of department stores and retail stores in Kentucky, Maryland, North Carolina, New Jersey, New York, Pennsylvania, Tennessee, Virginia, and West Virginia are clustered and illustrated in Table 6.

Subject responsibility and job experience

The subjects or interviewees in this research were part of a focused and homogeneous group to reduce the external factors affecting clothing retailers' assortment planning. Research was examined to determine personal factors affecting retail buyers' work before selecting interviewees. Limited research was available on personal characteristics affecting retail management. Shim and Drake (1991) found that the store manager's characteristics had no significant effect on profit of store management. Also, gender, marital status, educational level, academic major, and salary level had no significant influence in organizational commitment, job responsibility, and decision management in study of relationships with job characteristics and demographic factors (Jordan & Sisler, 1988). Wagner, Ettenson, and Best (1987) found that education affected the retail buying decision.

The criteria of judgment sampling was bound by the possible external factors affecting clothing retailers' buying decision-making, such as: (a) education level of decision maker (Wagner, Ettenson, & Best, 1987), (b) job experience (Regan, 1997), (c) job position, and (d) willingness (Regan, 1997). The interviewees in this research were determined as individuals who: (a) had responsibility in assortment planning for women's dresses in the selected companies, (b) had job experience of assortment planning more than three years, (c) were recommended by management executives of the selected companies, (d) were willing to participate in this research, and (e) had attended any training program regarding retail buying.

The questions regarding these criteria were answered by demographic questions and an approval form in the interview-request letter (see Appendix B-1). Satisfying judgment criteria enhanced the validity of the sampling.

Table 6. Sales Gross of Companies in Sampling Location

Annual Sales Gross	Department Stores (SIC 5311)	Annual Sales Gross	Women's Clothing Stores (SIC 5621)
More than \$ 1,001.0 million	R.H. Macy and Company Inc. Macy's East Inc. Lord and Taylor/ Hecht's A & S/Jordan Marsh Kaufmann's Macy's Northeast Inc. Bloomindale's Inc. Stawbridge and Clothier	More than \$ 501.0 million	Petrie Stores Corp. Learner New York Inc. Charming Shoppes Inc. Ann Taylor Inc. Dress Barn Inc.
\$ 1,000.0 million to \$ 301.0 million	Stern's Inc. Jamesway Corp. Bon-Ton Department Stores Inc. Boscov's Hess's John Wanamaker Inc. Laneco Inc.	\$ 500.0 million to \$ 201.0 million	Cato Corp/ Loehmann's Inc. Loehmann's Inc. Brooks Fashion Stores Inc. United Retail Group Inc. Laura Ashley Inc. American Eagle Outfitters Inc. Mothers Work Inc. Bergdorf Goodman Inc.
\$ 300.0 million to \$ 101.0 million	Sage-Dey Inc. Adam, Meldrum and Anderson Peebles Inc. Joseph Horne Co. Belk-Hudson-Leggett Co. McCurdy and Company Inc. Crown American Associate Stone and Thomas Inc.	\$ 200.0 million to \$ 51.0 million	Ormond Shops Inc. Loehmann's Holdings Inc. Deb Shops Inc./ Conston Corp. Urban Outfitters Inc. Joyce Leslie Inc. Virginia Specialty Stores Inc. Ailee Inc./ Barney's Inc. B. Forman Co. Babara Moss Stores/ Lady Rose Div.
\$100.0 million to \$ 21.0 million	Century 21 Inc. GB Stores B.C. Moore and Sons Inc. Lloyd's Shopping Centers Inc. C.E. Chappell and Sons Inc. Reynolds Brothers Inc. S.P. Dunham and Co. Hochschild Value City Corp. Gee Bee Department Stores Meyer Brothers Inc. Wertheimer Stores Corp. M. Epstein Inc. Swezey and Newins Inc. May Merchandising Corp. Watt and Shand Inc.	\$50.0 million to \$ 21.0 million	Carroll Reed Inc. Plymouth Lamston Stores Corp. Episode Norstan Apparel Shops Inc. Escada Inc. T.H. Mandy Forgotten Woman Honeybee Inc. Paul Stuart Inc. B.Bowman Co. CSVA Inc. Cohoes Fashion Corp. Charles Jourdan U.S.A Inc. Sealfons Inc. Nan Duskin Inc.
\$ 20.0 million to \$ 0.1 million	Goldenberg Caplan Pierce Inc. Smith and Welton Inc. Sulivan's of Liberty Inc. George Schweser's Inc. Belk-Beck Company Inc. Belk-Yates Company Inc. H.S. Stainton Company inc. Sayer Brothers Annie Sez Henry Bendel Co.	\$ 20.0 million to \$ 0.1 million	Roots Inc./ White House Inc. Reading Dress Co. Betsey Johnson Inc. D.A. Kelly's Inc. R.P McCoy Apparel Ltd. MacHugh Inc. Nohos Unique Clothing Warehouse Inc. Hornes Inc./ J. McLaughlin Stylish Women Ltd. Lazarus Inc.

Source: General Business File ASAP (Infotrac, 1997)

Contact Subjects

This researcher sent an interview-request letter with a brief research proposal to all 150 retail companies placed in the selected states according to company list in General Business File ASAP (see Appendix B-1). The management executives of the selected companies were contacted. The contacted management executives were asked to recommend a women's dress buyer from their company. In the first contact by letter, only two companies returned a positive answer for interview; therefore, this researcher directly contacted the women's dress buyers in the companies by phone. Names, phone numbers, and addresses of about 100 women's clothing buyers were collected from Women and Children Wear Fashion Accessory Buyers and categorized based on product type and store type.

The phone contact was made in the morning or around 5:00 p.m. when retail buyers were in their office. Most retail buyers hesitated to participate in this research because of (a) long interview time, (b) company policy of no outside research participation, (c) secrecy matter, and (d) time away from office due to business travel. This researcher obtained ten participants for interviews after several contacts by assuring confidentiality and benefits from this research. Following the contact of each retail buyer, the subjects were asked to fill in a research approval form, asked demographic questions regarding job experience, job position, address, and educational program attended (see Appendix B-2). The subjects arranged the time and place for their convenience.

Participating Subject Characteristics

Annual gross sale. Because of the limited participants in this research, the gross sales cluster of participants was not evenly distributed, but an assortment of company sizes were represented. Ten retail buyers in four department store companies and six specialty store companies participated in this research. Among the participants, Company 3 (C3) had gross sales over 501.0 million dollars, and C1, C4, and C8 had gross sales between \$ 301.0 million and \$ 500.0 million: these five companies were considered large. C6 had gross sales between \$101 million and \$300.0 million, and C9 had gross sales between \$21.0 million and \$100.0 million; these companies were considered as medium. The last four companies (C2, C5, C7, C10) were local specialty stores having gross sales under \$20.0 million.

Although the cluster was not evenly distributed, the samples were collected from all five

clusters in Table 6, and the cluster of gross sales was categorized as similar in Table 6, which enhanced the generality and validity of samples in this research. From all ten companies, one women's dress buyer in each company was interviewed. When a retail buyer had limits in job application related to assortment planning, one more necessary person was asked to answer all questions in the interview.

Company location. The headquarters of participating companies were placed in Pennsylvania, North Carolina, New York, and Virginia. The locations of subject company headquarters were satisfied with sampling judgement criteria.

Job experience. Among the interviewees, two retail buyers had more than twenty years clothing buying experience. One retail buyer had more than fifteen years but less than nineteen years experience, and three retail buyers had more than ten years but less than fourteen years experience. Two retail buyers had more than five years but less than nine years experience, and one retail buyer had less than five years experience in women's retail buying. Most interviewees had spent more than eight years in women's clothing buying, especially in assortment planning. Eight interviewees graduated with college majors in retail management or clothing and textiles. Two interviewees did not answer the question related to education. From the above demographic information, the selection criteria of their job involvement and expertise in assortment planning were validated in this research.

Table 7. Participated Company Characteristics

Co No.	Annual Sales	Store Type	Distribution	Job experience	Education	Sex
C1	Over 301.0 M	Department	National	8 years	BA	Male
C2	Under 5.0 M	Specialty	NY & NJ	15 years	Not answered	Male
C3	Over 501.0 M	Department	National	22 years	BA	Female
C4	Over 301.0 M	Specialty	National	3 years	BA	Female
C5	Under 5.0 M	Specialty	NY	10 years	Not answered	Female
C6	Over 301.0 M	Department	National	12 years	BA	Female
C7	Under 1.0 M	Specialty	VA	5 years	BA	Female
C8	Over 401.0 M	Department	National	8 years	BA	Female
C9	Over 20.0 M	Specialty	National	9 years	BA	Female
C10	2.0 - 5.0 M	Specialty	New York	23 years	BA	Female

Data Collection Process

Data collection was a two-step procedure. The first step was the initial interview with women's clothing buyers. At this time, data were collected to develop the practical-use model. The second step was the validation survey of the practical-use model. The initial interview procedure took about two hours; the validation interview took about thirty minutes. The time and place were arranged with subjects or interviewees. The data collection process was done from July 1998 to October 1998, when retail buyers prepare their product plan for the winter season or the next spring season. The initial interview contained three phases: flexible interview, Q-sorting, and specific questions. An interview script and other material were developed to assist and to increase the reliability of the interview-process (McCracken, 1988). Pilot interviews were conducted to increase the reliability of the questionnaire and the validity of the interview script. Two experts, who fit the criteria for experts regarding teaching experience, graduate courses, and publishing experience (see Chapter 4), and one retail buyer tested the interview process and the interview script. The pilot interviews indicated that the interview process was easily followed, and the terms used were understandable and accurate for the retail industry.

Initial Interview

Flexible Interview

At the beginning stage of the initial interview, this researcher conducted a flexible interview based on a flow-chart of the overall clothing buying process. A flow-chart helped the interviewer to focus on the interview questioning (Malhotra, 1993). The flexible interview contained very general and open-ended questions (Patton, 1980). The flexible interview provided the following benefits: (a) the interviewee could gain insights into the background of this research, (b) the conceptual assortment-planning could be compared with the interviewee's planning process, (c) objectives could be emphasized, and (d) the objective of this research could be focused and summarized on a flow chart.

Conceptual areas for the open-ended questions were the following: (a) how an interviewee defines assortment planning, (b) how long the assortment planning process takes, (c) how frequently an assortment planning process is done, and (d) what are the difficult aspects of

assortment planning. The flexible interview questions and procedure are described in the interview script (see Appendix C). The flexible interview took about 20 minutes and was recorded on audio tapes. An audio tape recorder, audio tapes, an interview script, a simple flow-chart (Figure 2), a red pen, pencil, and an empty note card were prepared for the flexible interview.

Q-Sorting

After the opening questions of the flexible interview, this researcher gave a set of activity cards developed from the conceptual assortment-planning model to each interviewee. The interviewee was asked to sort the activity process. Q-sorting was a useful technique for subjects to determine rank order among a large number of objects quickly (Malhotra, 1993). Each activity card contained a name of the activity in the center box and blank lines for number identification of a functional activity (see Figure 7). The inputs, outputs, constraints, mechanism, and connection were not illustrated on activity cards but were identified using the specific questions following the Q-sorting.

The interviewees categorized and ordered the activity cards on a construct-consistency board. A construct-consistency table increased the consistency of displaying the ordered activity cards (Regan, 1997). The construct-consistency board was a 1 meter-square hard paperboard. The 1 meter-square represented a phase (*i.e.*, one chart covering one page) of the IDEF0 model. When the interviewee needed more activity cards to explain the interviewee's assortment-planning activity or wanted to change the name of a functional activity, an empty card was given to interviewees for writing the name of the new activity. The pencil usage, for writing a function name, identified if the card was newly inserted. When an interviewee wanted to discard an activity card, the card was not placed on the table. The discarded card was noted on the card as '*Discarded*'. All cards not used and/or newly inserted in Q-sorting were discussed in the specific question phase. After the ordering process, this researcher numbered the cards.

The detailed Q-Sorting procedure was explained in the interview script prior to the sorting activity (see Appendix C). The Q-sorting took about 20 to 25 minutes. The equipment for Q-Sorting was as follows: an interview script, activity cards, empty activity cards, construct-consistency board, a pencil for numbering and writing, and a band for binding cards.

Specific Questions

Open-ended questions were developed for assisting with the specific questions phase of the initial interview and used as a question guide for the interviewer. Patton (1990) suggested that a structured interview guide and questions could help interviewers by providing an interview consistency checklist. The open-ended questions were included in the interview script (Appendix C). The reliability of the specific questions was enhanced by the pilot interview.

After card ordering, this researcher asked specific questions regarding each activity card, which the interviewee had placed on the table. The conceptual areas for the questions were as follows: (a) which inputs were used for the activity, (b) what kinds of constraints, if any, existed for the activity, (c) what rules or methods were used for the activity, (d) why the activity was connected with the following activity, (e) why cards were discarded or added, (f) what were the outputs of the activity, and (g) how the results of the activity affected the other activities. These questions provided data for the validity of the assortment-planning model set by the Q-sorting and for detailing each functional activity. The conceptual areas related to the IDEF0 syntax and the conceptual model based on the secondary data analysis (see Figures 6, 1 to 13).

After asking questions relevant to each card, this researcher asked more open-ended questions based on the questionnaire. The questionnaire contained the open-ended questions regarding how to solve problems of conceptual assortment-planning model. The problems of the assortment-planning model were defined as any kind of disconnection and constraint from the IDEF0 conceptual assortment-planning model.

The specific-question interview took about 60 to 70 minutes. An audio-tape recorder, audio-tapes, interview script, and finished activity cards were used for specific question interview. The total interview took about 120 minutes.

Data Analysis

Transcribing. The tape recording of interviews was transcribed into a document file of QSR NUD*IST®. The QSR NUD*IST® is a qualitative research software for the development, support, and management of qualitative data analysis (QDA) projects. The software is appropriate for projects involved with the analysis of deconstructed data such as text from interviews and historical or legal documents. Many qualitative researchers (Miles & Huberman, 1994; Richards & Richards, 1993; Tesch, 1990; Weitzman & Miles, 1995) recommend the QSR

NUD*IST® as a reliable qualitative data-management software. The transcribed data was decontextualized and recontextualized by using the QSR NUD*IST®.

Decontextualization. To code data into QSR NUD*IST®, simple abbreviations of variables were required, these abbreviations are illustrated in the contextualization table (see Appendix A-I). The simple abbreviations (*e.g.*, QE for qualitative evaluation) were coded at the side of the relevant text of transcripts. The coding process was done by this researcher who collected the data, established the variables, and had a training course for using QSR NUD*IST®. The decontextualization was completed by using QSR NUD*IST®. The transcription was rearranged by the order of codes. The QSR NUD*IST® can assist the categorization process of themes and ordering of activities because it has capability of word counting and simple descriptive statistics. Based on the frequency, the card representing an activity was placed in a table and arranged into the IDEF0 flow-chart format. The numbers on each activity card determined the order of the practical-use, assortment-planning process. The variable determination and explanation of each card was analyzed by recontextualization process of the interview transcript with themes, and illustrated in IDEF0 diagram.

The transcription of each interview was summarized into a table tagged by research variables, input, functional activity name, mechanism, constraints, and outputs. The summary of the interview transcript and the simple figure of the activities were sent to each interviewee to obtain approval of the interview content. Interview kits (*e.g.*, transcript, figure) are important tools for validation of the model (Tesch, 1990). After getting approval of the transcript from interviewees, this researcher began combining the ten transcriptions for recontextualization.

Recontextualization. Ten transcription summaries were rearranged with each functional activity and each variable. Ten explanations of assortment planning procedure were combined into a table. To determine the order of activities, the card numbers written by retailers were analyzed with descriptive statistics. The most frequently identified number of an activity card was considered as the number of the activity diagram. To identify the name of each activity, the numbers of answered names in each stage were counted, and the most frequently answered name was identified as the name of the activity. Ten transcription summaries were combined into a table named by each activity (*e.g.*, problem recognition). The combined table was summarized regarding inputs, function name, mechanisms, constraints, and outputs (see Appendix A-II).

Regarding word selection in the summarization process, all opinions were included in practical-use model to avoid subjective judgement. Regarding input identification, when repeated similar words (*e.g.*, sales history, sales data, and last sales) in one operational activity were found, the words were counted within the activity and named by the most frequently used word. Although a word (*e.g.*, socioeconomic situation) was used by only one interviewee, the word was included in input without subjective judgement, because the importance of each word related to input was not identified in the interview process. The input mentioned by one interviewee could be validated by other interviewees following validation survey in this research, because the other interviewees could forget to mention the word in the interview process but agree on the input. Regarding mechanism identification, a similar process of input selection was used. The highest operational level activity (*e.g.*, recognize problem) was first determined by following a summary table name. After determining the highest operational activity, all operational activities to complete the highest operational activity were determined as mechanisms of the activity. The operational activities were categorized by similar nouns (*e.g.*, customer needs, customer wants, and customer requests) used in sentences explaining the activity. Based on the categorization of mechanisms, operational levels of activity (*e.g.*, A1, A11, A111, and A1111) were determined. Regarding constraint identification, all constraints mentioned by ten interviewees were included in this research. Repeated words were counted, and a representative word was selected based on frequency. In word selection for the summary, unique words (*e.g.*, style-out) used by a specific interviewee were considered for rename. When rename was required, this researcher selected words after consideration of the meaning of the word, and two additional people validated the words.

Because of time limits, interviewees were not asked to specify inputs, constraints, and outputs for each operational level mechanism. To label inputs and constraints for the lowest operational activity, a word-match process was used. For example, if problem recognition had '*Compare the sales of last years*' as one of the operational mechanisms and '*sales history*' as one of the inputs, the input for '*Compare the sales of last years*' was identified as '*sales history*.' All inputs were specifically attached to lowest operational activities (*e.g.*, A1111). Inputs and constraints were summarized by every operational level.

To build the practical-use IDEF0 model, this researcher and two additional persons, who knew the terms of assortment planning, validated the summarization process and compared the

activity flow-chart (see Figure 2) with the recontextualization results. The recontextualized document was adjusted into an IDEF0 model by the process modeling software, VISIO® (See Figure 8, 1 to 79).

Results: A Practical-Use Model

Clothing Buying Process

At the beginning of the interview, this researcher asked flexible questions regarding the overall buying process to define the assortment-planning placement in the clothing buying process. A flow chart of the clothing buying process was shown to communicate easily (See Figure A1). This researcher asked each interviewee to number the order of stages in the figure. Six interviewees validated the order of stages as shown in Figure A1 (See Appendix A-II). Among the four remaining interviewees, the interviewee from C 6 said that a retail buyer could not answer this question related to clothing buying process, because retail buyers in C6 were not involved in whole process of clothing buying process. The interviewee from C3 ordered assortment-planning and actual-buying activities before planning inventory control and stock. The interviewee from C3 said that the inventory control department did stock and inventory control planning after finishing assortment-planning and actual buying by retail buyers. The interviewee from C10 said that, due to small company size, retail buyers do every activity in the clothing buying process except plan the sales goal. The interviewee from C10 suggested that, for C10, the order should be information search, assortment-planning activity, planning stock, planning order schedule, and finally actual buying and rearrangement. In big companies (*e.g.*, C3, C6), clothing retail buyers usually had limited job responsibility for assortment planning and actual-buying activity, and other activities in clothing buying process were done by the Inventory-Control Department or the Financial Department in their companies. In small companies (*e.g.*, C10), retail buyers had responsibility for all activities in the clothing buying process except the sales goal, which was planned by company managers. From interviews, the clothing buying process from conceptual model was validated (see Appendix A-II).

Assortment Planning

Process of Assortment Planning

Most interviewees agreed with the conceptual clothing buying process. For the assortment-planning process, however, several different opinions contrary to the conceptual assortment-planning model appeared throughout the interviews. Only four interviewees agreed with the entire conceptual assortment-planning process. An interviewee from C2 suggested that problem recognition activities be done after the information search, because the problems in the past assortment plan could be recognized after knowing past and new trends. The interviewee from C2 agreed to a reorder of the processes in the conceptual model. Interviewees from C5 and C10 agreed to the stages that followed the process of the conceptual model; however, whole stage activities were repeated regarding style, size, and then color. The interviewees from C5 and C10 ordered assortment-planning as following: (a) problem recognition, (b) information search, (c) fashion forecasting, (d) style qualitative evaluation, (e) style quantitative evaluation, (f) style selection, (g) size quantitative evaluation, (h) size selection, (i) color qualitative evaluation, (j) color quantitative evaluation, and (k) color selection. C5 and C10 were both small specialty stores in New York City with annual gross sales under \$5.0 M. Interviewees from these two companies reported doing the entire assortment plan by themselves. Buying activities and planning were done simultaneously whenever new products were introduced in their market. An interviewee from C8 agreed to the processes in the conceptual model but disagreed with the term, '*Problem-recognition.*' The interviewee from C8 suggested that '*Determine repeatable products*' was a more suitable name for the activities in the first stage.

An interviewee from C6 had a very different point of view from the other interviewees. The interviewee said that retail buyers in her company focused more on financial data than on a qualitative evaluation process, because she bought big volumes and could not spend time on detailed processes like qualitative evaluation. The most important part of her role as retail buyer, therefore, was distributing and balancing open-to-buy dollars into each vendor based on the Inventory Control Department report. The interviewee from C6 illustrated the assortment-planning process in the following way: (a) first, determine the season, (b) second, determine sales for the beginning of the month, (c) vendor evaluation, (d) sales plan regarding vendors, and (e) sales plan regarding styles. Although her method was unique to a big companies' system,

other big company participants in this research (C1, C3, C4, C8) agreed on following conceptual assortment-planning except for size-related activities. Most aspects of size-related activities in big companies were done with past sales data analysis by inventory control. Interviewees from C1, C3, C4, and C8 said that retail buyers in big companies usually confirmed or rearranged the size plan from the Inventory Control Department or the Financial Department. The assortment-planning process of C6 could not be generalized as a system unique to big companies. Because its assortment planning process was very different from both the conceptual model and other companies' processes, C6 was considered separately when establishing a practical-use assortment-planning model.

Functional Name of Activity

To create a representative practical-use model from several different opinions, this researcher counted the numbers of answers of each stage, and identified the most frequent answers as the functional name of each stage (see Appendix A-II). An agreement of 60% or higher was found for most activities.

Functional activity A1

Seven of ten interviewees responded positively to '*Problem-recognition*' as the first functional activity of the assortment-planning process. Other answers were '*Information search*,' '*Determination of sales*,' and '*Determination of repeatable products*.' For the practical-use assortment-planning model, the functional activity of the first stage was identified as '*Recognize problem*' (A1) (see Figure 8-2).

Functional activity A2 and A3

For the second and third stage of assortment planning process, six of ten interviewees validated '*Information search*' and '*Fashion forecasting*' as appropriate terms for the next stages. The six interviewees said that information search and fashion forecasting could not be differentiated in time order, because information search sometimes included fashion forecasting activities, or fashion forecasting activity was usually done by other people in the fashion forecasting service or by vendors at the same time.

Among the six interviewees, three interviewees agreed that they followed style, color, and size as an information search process if it had to be in order. One of the six interviewees (C8) explained that for the buyers in her company, a color information search would be followed

by a style information search. She said that first, the color concept defined the image of the whole product concept in her company, and after establishing the color concept, retail buyers in her company looked for a proper style concept that matched the color concept for the next season. The interviewees (C6, C7) answered that they searched size information before style information, because style choices could be different by size ranges. For example, styles for junior size ranges could be different from styles for missy size range. Other answers for the second stage were as follows: '*Problem recognition*' (N=1), '*Style related processes*' (N=1), and '*Determine BOM*' (N=1). The functional activity of the second and third stages were determined as '*Forecast new fashion*' (A2) and '*Search information*' (A3) (see Figure 8-2). The difference in A0 numbers of fashion forecasting and information search did not indicate a time order difference. The A0 diagram numbers, A2 and A3, were used to identify the difference in functional activity. Simultaneous occurrence is not possible in IDEF0 modeling and is a limitation. IDEF0 diagrams can not show simultaneous occurrence of events. The functional activities of information search were classified as style information search (A31), color information search (A32), and size information search (A33) (see Figure 8-11).

Functional activity A4

Six of ten interviewees validated qualitative evaluation as the fourth stage of the assortment planning process. Only three interviewees agreed that they would follow the order of style, color, and size. The other three interviewees indicated that style, color, and size qualitative evaluation could be done unconsciously and simultaneously or in different order. Other answers were as follows: (a) '*Product selection,*' (b) '*Size related processes,*' (c) '*Vendor evaluation,*' and (d) '*Style related processes.*' Among the other answers, the activities of vendor evaluation could be considered as one of the operational activities for qualitative evaluation. In specific questions regarding qualitative evaluation, other interviewees, who agreed on the term, '*Qualitative evaluation,*' mentioned vendor performance evaluation as one functional activity of the qualitative evaluation. After considering conceptual similarity between vendor evaluation and qualitative evaluation, this researcher considered that seven interviewees agreed on qualitative evaluation as the fourth stage of assortment planning process. Therefore, the functional activity of the fourth stage of practical-use model was identified as '*Evaluate qualitative aspects of product*' (A4) (see Figure 8-2).

Regarding operational activities for qualitative evaluation, seven interviewees responded

that style, color, and size evaluation activities were operational levels of qualitative evaluation activities. Interviewees from C1 and C9 asked if brand evaluation and style evaluation would be considered as separate categories or one category. When C1 and C9 selected brands for assortment, styles would be characterized by the selected brands but also could be considered as one independent aspect of evaluation. C3 suggested that price-range evaluation could be one operational level of qualitative evaluation. In the practical-use assortment-planning model, brand evaluation was included in vendor performance evaluation under style qualitative evaluation, because the brand evaluation activities explained by interviewees from C1 and C9 were the same as vendor performance evaluation explained by other interviewees. Price evaluation was also considered as one operational activity of style evaluation, because other interviewees mentioned the price aspect in style evaluation. Therefore, the functional activities of qualitative evaluation were categorized as style qualitative evaluation (A41), color qualitative evaluation (A42), and size qualitative evaluation (A43) without order (see Figure 8-32).

Functional activity A5

The fifth stage of assortment planning was identified as quantitative evaluation by six of ten interviewees. Other answers for the fifth stage were as follows: '*Product selection*' (N=1), '*Process related with color*' (N=2), and '*Finished at the fourth stage*' (N=1). Eight interviewees agreed that qualitative evaluation would be followed by quantitative evaluation.

Interviewees from C3 and C4 forecasted product selection before qualitative and quantitative evaluation, because they bought samples from Europe or better markets before the qualitative evaluation process and gauged colleagues' and sales-peoples' response to the samples. However, the sample selection of C3 and C4 would be considered as preparation of evaluation, because they selected actual products after a quantitative evaluation for the final sales plan. The evaluation process of C3 and C4 was similar to that of small specialty stores in New York City, C5 and C10. C5 and C10 selected small amounts of products before the qualitative and quantitative evaluation process and gauged customer response. The buying process could be different depending on retail buyer location. An interviewee from C7 located in Virginia and not in a market city could not buy a small amount of actual products for a test run. The interviewee cautiously planned before buying anything and evaluated products before the selection plan, because the interviewee could not visit markets as frequently as other small stores due to her long distance from vendors. From interviewees of C5, C7, and C10, the assumption was made

that size of the buying volume or location of stores affected the assortment planning process and strategy. Based on eight interviewees' validation, the functional activity of the fifth stage (A5) was named as '*Evaluate quantitative value of products*' (see Figure 8-2).

As with qualitative evaluation, four interviewees agreed that they would follow the order of style, color, and size. Two interviewees suggested that style, color, and size quantitative evaluation could be done simultaneously. The functional activities of qualitative evaluation were categorized as style quantitative evaluation (A51), color quantitative evaluation (A52), and size quantitative evaluation (A53) without order (see Figure 8-48).

Functional activity A6

Throughout the interview process, interviewees often confused the term, '*Forecasting product selection*' with '*Forecasting fashion*.' Interviewees from C2, C3, C5, C6, C7, C9, and C10 would normally determine actual product selection after finishing qualitative evaluation and quantitative evaluation. Interviewees from C 5, and 10 bought actual products after qualitative evaluation and quantitative evaluation. After an explanation of '*Forecasting product selection*' and asking for more suitable words, seven interviewees selected '*Product selection*' as a right term for the explanation. Five interviewees validated product selection activity as the sixth stage of assortment planning process. Five interviewees explained that qualitative evaluation output might affect product selection output. Other answers were as follows: (a) '*Quantitative evaluation*' (N=2), (b) '*Determine order quantity*' (N=1), and (c) '*Process related to size*' (N=1). As previously mentioned, three interviewees placed product selection before qualitative evaluation, but one interviewee's explanation could be understood as sample selection for evaluation process. The functional activity of the sixth stage (A6) of assortment planning process was identified as '*Select product*' based on the response of six interviewees.

Seven interviewees agreed that style, color, and size selection activities were operational levels of product selection activities. Regarding order of style, color, and size selection, eight interviewees agreed that style selection could be followed by color and size selection, explaining that color and size selection would be limited by style selection. As with qualitative evaluation, interviewees from C1 and C9 considered brand as one functional activity of product selection, and C3 suggested price range selection as one operational level of product selection. In the practical-use assortment-planning model, brand and price range selection were considered as one operational activity of style selection. Therefore, the functional activities of product selection

were categorized as style selection (A61), color selection (A62), and size selection (A63) order (see Figure 8-66).

Functional activity A7

As with the confusion of the term, '*Forecasting product selection*,' interviewees often confused the term, '*Forecasting sales plan*,' with '*Determination of order quantity*.' Interviewees from C1, C2, C3, C5, C6, C7, C9, and C10 suggested that they would determine actual order quantity after finishing product selection and quantitative evaluation. After an explanation of '*Forecasting sales plan*,' interviewees explained the sales plan as determination of order quantity in the following terms:

- Balance with order schedule. (C1)
- Buy minimum amount for each size. (C2)
- Consider minimum order requirement. (C3)
- Buy small quantity at the beginning of the month. (C5)
- Determine open-to-buy dollars. (C6)
- Determine order quantity of each style, color and size. (C7)
- Spread open-to-buy dollars and consider delivery schedule. (C9)
- Make a balance of orders. (C10)

Therefore, '*Forecasting sales plan*' was renamed as '*Determine order quantity*' in the practical-use assortment planning model (see Figure 8-2 & Appendix A-II). All ten interviewees validated '*Determination of order quantity*' as the final stage of assortment planning process. Regarding the functional activities of A7, dissimilar from previous stages, interviewees did not categorize activities into style, color, and size quantity determination. Interviewees described the determination of order quantity as simultaneous processes of spreading quantitative evaluation output into style, color, and size selection in a whole picture. For example, an interviewee from C10 described determination of order quantity as follows: "I place every selection into a big picture board, spread open-to-buy dollars for the selections, and make a balance" (C9).

Based on interviewees' perspectives, the functional activities of determination of order quantity (A7) were categorized into the following: (a) spread quantitative evaluation output with product selection (A71); (b) consider retail price (A72); (c) consider external forces in sales (A73); (d) consider agreement with vendors (A74); (e) balance with open-to-buy dollars (A75); (f) consider delivery schedule (A76); and (g) decide quantity for selected styles, color, and sizes

(A77) (see Figure 8-79).

In summary, the process of the practical-use assortment planning was identified by the following order: (a) problem recognition (A1), (b) fashion forecasting (A2) and information search (A3), (c) qualitative evaluation (A4), (d) quantitative evaluation (A5), (d) product selection (A6), and (e) determination of order quantity (A7). Detailed activities of each functional entity are described in the IDEF0 diagrams of the practical-use assortment planning model (see Figure 8-2).

Definition of Assortment Planning

With one question in the flexible interview, interviewees were asked to define assortment-planning process in their own words. The terms repeatedly mentioned by interviewees were: (a) classification, (b) breaking down, (b) category, (c) balance, (d) arrangement, (e) selection, (f) quantity, and (g) open-to-buy dollars. Detailed description of the assortment-planning process was illustrated in the contextualization table (see Appendix A-II). In conclusion, an assortment-planning process was defined as the following: The assortment-planning is a process of breaking down product categories, arranging selections and quantity for each classification, and balancing with open-to-buy dollars.

Difficulties in Assortment Planning

Overall difficulties in the assortment-planning process could be categorized into five aspects: (a) difficulties due to fashion product characteristics, (b) difficulties related to the clothing buying system, (c) difficulties related to vendor relationships, (d) difficulties related to finding customer needs in assortment, and (e) others (see Appendix A-II). Interviewees most often mentioned difficulties due to fashion product characteristics. Interviewees explained that fashion products had so many different factors and could not be predicted into exact amount because of subjective touch part (*i.e.*, qualitative aspects) in evaluation and fast trend change. Style trend changes could get shorter for a season, a plan which would require that be established to adjust to the fast trend change, and the retail buyer might not have much time to analyze the various factors affecting assortment plan.

Regarding difficulties related to the clothing buying system, interviewees mentioned the difficulties of adjusting point-of-sales (POS) data into a buying plan. A long time advance plan

(i.e., 12 months or 6 months) meant that they would get sales data of one or two weeks of the present season (e.g., fall/winter 98) before finishing the assortment plan for the next season (e.g., fall/winter 99 or spring 99). Because of the limit of a long time advance plan for trendy items, big companies plan a separate time schedule for such items, such as monthly buying from domestic vendors. Interviewees mentioned that a separate plan schedule made it difficult to keep a balance of trendy items and basic items.

Regarding difficulties related to vendor relationships, all interviewees mentioned that relationships were very important factors in assortment planning. Vendor offers and regulation, differed for each company. Although vendor opinions were not always reliable, vendor relationship could be critical, when deciding size and color assortments. All interviewees had different vendor regulations (e.g., minimum requirement, pre-packaging) and agreements based on their individual relationships with vendors.

Interviewees mentioned *finding customer needs*' as another difficult aspect of clothing assortment planning. When interviewees analyzed customer needs, they used target customer characteristics, customer requests, and other sources. Two interviewees from big companies reported that customer request data could not be used as a reliable source, because a very small percent of customers actually requested something from the companies. An interviewee from C1 explained that the company had a national distribution channel, but geographical customer characteristics and demand were not clearly documented, making it difficult to spread quantities by balancing the area demand and characteristics.

Other difficulties mentioned were: (a) increased competition, (b) unpredictable weather patterns, (c) downsized clothing market, and (d) no difficulties in assortment planning because of small company size and management of stores by the retail buyer.

Taking Time for Assortment Planning

Taking time for an assortment planning process was clearly different depending on company size. Big companies developed an assortment plan from one month to twelve months in advance of the selling season. Interviewee from C1 reported buying basic items with an ongoing plan based on the point-of-sale situation, and buying fashion items by monthly plan. Other interviewees from big companies (C4, C8) began developing concepts one year before the selling season, actual planning of basic items at least six-months in advance, and planning of fashion

items at least three months in advance of selling time. Big companies often bought basic items from foreign manufacturers who offered the lowest production cost, but buying abroad would have problems associated with an advance plan. Purchasing from foreign manufacturers required that assortment planning begin six months before the selling season.

Interviewees from small companies (C2, C5, C10) mentioned that they would plan and buy simultaneously each week or month that new products came out in the market. This was possible, because retail buyers of C2, C5, and C10 were located in New York City, which made it easy to visit vendor showrooms. Detailed information regarding taking time of assortment planning is illustrated in Appendix A-II.

Problem Recognition

The first stage of an assortment planning process was identified as '*Recognize problem.*' Most interviewees explained the term, '*Problem recognition,*' as the identification of an assortment plan direction after analyzing the good and bad aspects of the past season's sales. Two interviewees mentioned that '*Problem recognition*' was simply a determination of repeatable products and not-repeatable products. One interviewee explained the term as recognizing consumer demand. The conceptual definition of problem recognition is the realization of a need for change based on the perception of a gap between the current state and the desired state.

Compared to a conceptual definition of problem recognition, interviewees used more operational concepts for their definitions. Combining operational with conceptual definition, '*Problem recognition*' in assortment planning was identifying the need for a new assortment plan based on the perception of a gap between past sales and desired sales, or undesirable products and desirable products. The definition of problem recognition was cleared more after interviewees' explanation of mechanisms for problem recognition. The mechanisms of problem recognition, as explained by the interviewees, were: (a) analyze vendor performance (A11); (b) analyze product performance (A12); (c) realize customer's needs (A13); (d) consider market change (A14); (e) realize the reason for overstock or shortage (A15); and (f) define the problem and a direction for a new assortment (A16) (see Figure 8-4). The first five mechanisms, A11 to A15, were connected to activity A16. Activities A11 to A15 were connected to the final

definition of problems and direction for the new assortment. Activities A11, A12, A13, and A15 were enumerated with operational activities.

To analyze vendor performance, operational activities were described as the comparison of sales for two years by vendor (A111), categorization of gross margin by vendor (A112), comparison of vendor relationship (A113), and ranking vendor performance (A114) (see Figure 8-5). Inputs for activities A111 to A114 were sales history and past relationship with vendors. Constraints for these activities existed when a retail buyer faced high competition, had miscomprehension of sales history, and found important vendors closing. If a retail buyer found a vendor to be highly qualified, other retail buyers in competing companies could also recognize the importance of the vendor in their sales, competition to keep the vendor could increase, and the prices and regulations from the vendor could be different for the next season. Retail buyers could misunderstand the reason of sales history. Sales history in a number of different ways: A retail buyer could rely too heavily on a vendor's reputation and sales history, or repeat a mistake based on inaccurate analysis of sales reasons. One interviewee had difficulties finding new vendors to replace large vendor that had recently closed. The interviewee had to take time to find new vendors and spread the large volumes charged by the closed vendor to small vendors.

Analyzing product performance (A12) was the most frequently mentioned functional activity for problem recognition. Related functional activities for analyzing product performance mentioned by interviewees were comparison of sales past years (A121), categorization of net profit by product (A122), comparison of markup and markdown by product (A123), comparison of shortage and overstock product (A124), and ranking product performance (A125). Vendor performance outputs and sales history regarding past product were required to complete product performance. Difficulties related to merchandising performance analysis were price competition and miscomprehension of sales history. Input, constraints, and connections for A121 to A125 are illustrated in Figure 8-6.

One frequently mentioned mechanism of problem recognition was knowing customer needs. In this research, the term, knowing consumer needs, explains retail buyers' actual activities to know customer needs to specific own stores as an operational concept. After recontextualization, realizing customer needs was explained by observing customer's purchase in a store (A131), categorization of consumer requests and complaints (A132), and defining customer needs (A133) (see Figure 8-7). Inputs for realization of customer needs were customers

visiting stores, customer requests, and past quality problems in company. Interviewees in big companies mentioned caution in analyzing customer needs from gathered customer request cards, because so few customers requested products and the generality of the data was unacceptable.

The fifth mechanism of problem recognition involved knowing the reason for the overstock situation, which was the clearest evidence of an assortment problem in the last season (see Figure 8-8). Although shortage was also a problem in the stock situation, one interviewee investigated overstock problems by checking first the product selection and then external reasons such as socioeconomic situation and vendor performance. Three interviewees mentioned a difficulty due to too many factors in reasoning. The mechanisms of realizing the reason for overstock and shortage were as follows: identifying types of overstocked products, identifying the types of shortage products, and illustrating the reasons and recommendations. Stock situation report and the outputs from A11, A12, A13, and A14 were used inputs for identifying the types of overstock products.

Some opinions were difficult to categorize into operational activities for problem recognition such as the following: decide which factor was an important influence of sales change, (C3) and classify past style runs (C10).

The identification of factors in sales change was an abstract concept for the problem recognition activity, because the factors could be in vendor performance, merchandize performance, customer needs, market change, and/or stock situation. A retail buyer could identify factors in sales change by working through A11 to A15. Classification of past style runs was considered an operational activity of A12, analyze merchandize performance.

Fashion Forecasting

Interviewees used qualitative mechanisms to forecast new fashion or fashion-cycle. The mechanisms of '*Forecast fashion*' were as follows: (a) consider socioeconomic situation (A21), (b) identify customer life style and fashion-ability (A22), (c) read newspaper (A23), (d) catch new trend from TV (A24), (e) have a fashion forecasting service report (A25), (f) define new styles and colors in fashion show (A26), (g) identify common new items in vendors' new collections (A27), and (h) define overall new trend (A28). The time order of activities was not considered in the fashion forecasting process (see Figure 8-10).

Each interviewee used three to four mechanisms for fashion forecasting. One interviewee rarely counted repeated styles among vendors' new collections, a process that was not considered a statistical trend analysis. Interviewees in big companies (C1, C3, C4, C6, C8) used several internal and external forecasting services to identify new trends. The fashion forecasting services provided a summary of their research regarding new style and color trends; reading these reports was the most important, and sometimes the only, activity used to identify new trends. Interviewees, using fashion-forecasting service, mentioned that they needed to choose appropriate information from the forecasting service report to match with their target customers.

Socioeconomic situation and target customer fashion-ability were identified when planning the sales goal in the beginning stage of the clothing buying process (See Figure 1).

In considering socioeconomic situation (A21), retail buyers realized the reasons for a new trend from socioeconomic change and identified important concepts in the new trend. All interviewees mentioned that women's clothing retail buyers must consider target customer fashion-ability before accepting a new trend in their companies. Five interviewees believed that a new fashion could trickle down from a better market to their own market. Interviewees expected about one year for a trend to spread from an advanced to a better market and another year from a better market to a majority market. Interviewees targeting majority markets, therefore, expected that new trends by designer brands displayed in magazines could be new trends in their markets two years later. To forecast new fashion, inputs were a report regarding socioeconomic situation, target customer identification, newspapers, TV programs, magazines and periodicals, fashion forecasting services, fashion shows, and vendor collections.

For the constraints in fashion forecasting, two interviewees mentioned about taste gap (or fashion-ability gap) between the major vendor collection and target customers; it was difficult to anticipate the gap through the assortment planning process, especially when the vendor had a good sales history. Interviewees in big companies frequently referred to long time advance plan as constraints to forecasting new trends. Because the interviewees in big companies usually bought large volumes, they gave long lead time to manufacturers; therefore, big companies usually focused on more basic styles and colors and gave a very small percentage of the budget to new styles and colors.

An interviewee from a big company adopted two separate schedules for assortment planning to reduce the time constraint: short time (about one month) advance planning process

for fashion-sensitive items and long time advanced planning process for ongoing or basic items. An interviewee from a small company, buying mostly fashion-sensitive styles, suggested that the time for fashion cycle had become shorter and variable, making exact trend forecasting more difficult. As a result, interviewees from small companies visited markets whenever new products came out and bought small quantities of new products. Lead time for fashion forecasting varied the most by fashion-sensitivity of the product.

Information Search

Interviewees sometimes mentioned an information search related to a new trend. In the practical-use model, the information search for a new trend was considered fashion forecasting. Therefore, the explanations related to new trend were excluded from 'Search information' stage and included in fashion forecasting. Information sources related to current and past sales and market situations were, however, considered in the information search activity in the practical-use model. Information search activity (A3) was categorized as style information search (A31), color information search (A32), and size information search (A33). Information search output might determine the direction and criteria of qualitative and quantitative evaluation. The three activities could be done simultaneously or on different schedules and affect evaluation of separate dimensions related to style, color, and size. The constraints and inputs of the information search activity could be understood as a summary of constraints for operational activities (A31, A32, & A33). The summarized inputs and constraints are explained in Figure 8-11.

Interviewees were asked if they used any type of filing methods for keeping and organizing information. All interviewees from big companies kept sales history as a file without pictures. Two interviewees categorized pictures with sales data and comments in a report book or on a board, used the report or the board as an information summary, and kept them for years. The two interviewees strongly agreed the effectiveness of the filing systems through the whole assortment planning process. All interviewees agreed on the effectiveness of a filing system, but questioned the availability of time to organize information.

Style Information Search

The mechanisms of the style information search were recognized as follows: (a) identify target market (A311), (b) analyze sales data by style (A312), (c) gather opinion (A313), (d)

observe TV guests (A314), (e) watch better market trend (A315), (f) observe street trend (A316), (g) observe competitors (A317), and (h) summarize information (A318). These eight activities included all answers from interviewees and were placed by the logical explanations of connections. The outputs of the style information search were used as inputs of the style qualitative and quantitative evaluation. Seven interviewees in this research used fewer than six mechanisms to finish the style information search. The connection of activities is illustrated in Figure 8-13. The most frequently mentioned mechanism was gathering opinion (A313), followed by analyzing sales data by style (A312). All interviewees gathered opinions from own sales people and vendors (A313), and nine interviewees analyzed sales data (A312) as one mechanism for style information search. The least mentioned mechanisms were watching TV guests and observing street trends, answered by one interviewee each.

Interviewees determined price range (A3111) and categorized customer style needs (A3112) based on target market identification. Inputs for target market identification could be target market position, determined in the first stage of the clothing buying process, and customer request files (see Figure 8-14).

The mechanisms of analyzing sales data (A312) were categorized into three-step activities based on interviewees' explanations: identification of basic products, test-run results of the previous year, and tracking current sales. Inputs for the activities were sales history, test-run results, and POS data. In big companies, the sales data analysis was done by the Inventory Control Department or the Financial Department. Therefore, most interviewees were not familiar with quantitative data analysis methods. Because of the importance of sales data in assortment planning in big companies, interviewees faced difficulty in accepting new styles due to the lack of history base. All interviewees bought small amounts of the new colors as test-run for the beginning of the season. After getting test-run results, the amount of tested styles would increase or decrease.

Constraints of style information search included a lack of an established information organization system and the need for flexibility in sales data analysis. Interviewees in small companies did not use a computer or other filing system for their assortment planning process. While these interviewees did not keep a sales history for a long time, they did not have many problems, because the companies sold fashion-sensitive products that were changing fast. These interviewees explained that a sales history of the prior two years would not mean anything for

new products, and they would visit the market more often to catch new products if they had extra time for filing information. An interviewee in a big company explained that they could not use an advanced information filing system or sales analysis system, because their computers had not been updated for long time, and the software for advanced analysis could not be installed. This interviewee expected to apply advanced filing and analysis methods after updating the computers. Another interviewee mentioned that retail buyers need to be careful and flexibility by considering other possible factors (*e.g.*, unpredicted weather) in sales analysis. Inputs, constraints, connections, and outputs were specified with each activity (see Figure 8-15).

Gathering opinion regarding styles (A313) included all activities performed to find a common opinion about style assortment. The opinions could come from their own experience, sales people, vendors, and fashion forecasting service reports. One interviewee said that sales people's opinions were the most accurate and useful information. Three other interviewees said that her/his own experience was the most important of the style information sources. One interviewee mentioned sharing a vendor's sales record with other retail buyers; the vendor's sales record was very effective information to apply to assortment. Trustworthy relationships with vendors could be an important factor for adopting the vendor's opinion. Constraints in gathering opinions were described as follows: subjective experience, time constraint to collect more opinions, trustworthy opinion from vendors, and the applicability of fashion forecasting service report to own assortment. Inputs and constraints were specified into each activity under A313 (see Figure 8-16). Gathering opinions from vendors (A3133) could be explained with four operational activities: file catalog (A31331), see actual products (A31332), listen vendor opinion (A31333), and pinpoint repeated products (A31334) (see Figure 8-17).

Watching style trends in better markets (A315) could be done after filing pictures and visiting fashion shows. The constraints for this activity were fast changes and the task of screening information from a better market situation to their own assortment plan. Input, constraint, connections, and output were specified in each activity (see Figure 8-18).

Color Information Search

Inputs, mechanisms, and constraints for the color information search were similar to those for the style information search. The difference between the two information searches was whether they were considering styles or colors (see Figure 8-19). The procedure of the color

information search is illustrated in Figure 8-20. Like the style information search, the procedure of the color information search was not placed by time order, but logical connections.

Customers' ethnicity and geographic area were considered especially important factors to determine color concept and quantity in target market identification (A321). An interviewee from a big company explained that if more accurate geographical information would make it easier to adopt an assortment plan to various customer needs as differentiated by store location (see Figure 8-21).

The mechanisms of color sales analysis (A322) were similar to style sales analysis. A few interviewees, however, did not analyze color sales because of a lack of detailed sales data by color. As in the style sales analysis, adopting new colors was difficult due to a lack of sales history (see Figure 8-22).

Regarding gathering opinion (A323), one interviewee mentioned that color forecasting service report or vendor opinion was not always applicable or acceptable, because target customer taste could be different from their opinions. To gather information from vendors, interviewees viewed catalogs (A32331), visited the showroom to see actual fabric colors (A32332), observed color image difference by tone and hue (A32333), and pinpointed repeated colors among vendor collections (A32334) (see Figure 8-24).

To pinpoint suggested colors from a publication (A326), most interviewees identified images that strongly explicated the colors, and could be used as a reference for color concept. One interviewee gave a specific example of the process of transferring an image to a color concept:

Color forecasting service provides a report regarding color concepts for company wide. The report contains pictures and color cards with explanations. Usually, a picture is titled by a concept, for example Oriental Express or whatever, then color in the picture was extracted as a color story of Oriental Express, which means a color concept. Based on buyer's judgement of applicability of the color concept into their items, like our dresses, we select a color concept and use color cards for the concept.

One interviewee from a small company determined color trend information from cosmetic colors (*e.g.*, nail colors, lipstick colors) that was usually matched to the color trend of dresses (See Figure 8-25).

Size Information

The size information search involved procedures similar to the style and color information searches. The mechanisms of the size information search were as follows: (a) identify target customers (A331), analyze sales data by size (A332), gather opinions (A333), consider vendor's offer (A334), define growing size range (A335), consider the necessity of new size range (A336), and summarize information (A337) (see Figure 8-27). Due to time constraint, interviewees in big companies did not do the size information search except when new size ranges were required. The interviewees explained that most of the size information came from the size sales analysis reports from the Inventory Control Department. Interviewees from small companies usually followed past size assortments except in the case of size sales change, style change, and vendor's recommendations. Considering necessity of new size range, was applicable only when a retail buyer had test-run sizes in the previous season.

To identify the size range of the target market, age and ethnicity were important factors. Interviewees from small companies knew customer age and ethnicity because they had familiar local customers. Interviewees in big companies needed more accurate demographic information regarding ethnicity and age. After defining the age and ethnic group of customers, the size range was considered with the design of style, the fit of the style, and a color balance within the size range. Only two interviewees from small companies said that they could determine size range by style and color. Since interviewees could not compare size range balanced with styles and colors, the relationship between size and style or size and color was a subjective consideration. Inputs, constraints, connections and outputs were specified with each operational activity (see Figure 8-28).

Activities mentioned regarding size sales analysis (A332) were as follows: (a) categorize sales data by size variation (A3321), (b) consider the frequent shortage or overstock (A3322), (c) consider the return rate due to fit problem (A3323), and (d) observe weekly sales of sizes (A3324). Required inputs for size sales analysis were sales data, inventory situation, returned sizes, and POS data. Inputs, connections, and outputs were specified with each activity (see Figure 8-29).

The mechanisms of gathering opinion related to size (A333) were as follows: (a) remind own experience (A3331), (b) gather sales people's opinions regarding size (A3332), (c) gather information regarding size sales pattern from vendors (A3333), and (d) conclude survey results

(A3334). An interviewee from a big company said that vendors used to recommend a growing size range from vendors' sales record, and it was important to consider their opinion. Another interviewee had a survey related to fit satisfaction and size range satisfaction; concluding survey results could be possible activity. The outputs for gathering opinions were subjective color assortment direction, color direction in market, color direction by sales people, and new color direction. Inputs, constraint, and outputs were specified into IDEF0 diagrams (see Figure 8-31).

Among functional activities for size information search, considering vendors' offer, was considered a higher operational functional activity than it was in the style and color information searches. Two interviewees mentioned that size specification was an important factor to determine size range, and two interviewees mentioned that vendors' regulations such as minimum requirement, affected quantitative evaluation. The vendor's size offer should be recognized in the information search stage. The mechanisms of considering vendors' offers (A334) were considering the difference in size specification (A3341) and knowing vendors' regulations (A3342). The constraints were different size specification by vendors and minimum quantity or pre-pack regulations. Importing from Europe added the difficulty of adjusting the size specification difference in the United States market. Inputs, constraints, connections, and outputs were specified into IDEF0 diagrams (see Figure 8-31).

Qualitative Evaluation

After the information search and the fashion forecasting, interviewees were ready to '*Evaluate qualitative value of products.*' Inputs for qualitative evaluation were as follows: (a) information search, (b) fashion forecasting outputs, (c) target customer characteristics, (d) merchandising concept, (e) own experience, (f) sales history, (g) seasonality, (h) vendor reputation, (i) vendor opinion, (j) sales people opinion, and (k) customer opinion. Qualitative evaluation was categorized as style qualitative evaluation, color qualitative evaluation, and size qualitative evaluation. Overall inputs and constraints are summarized in Figure 8-32.

Style Qualitative Evaluation

To complete style qualitative evaluation required inputs were as follows: style information search outputs, merchandising concept, sample styles or actual products for evaluation, price of products, brand or vendor reputation, own experience, sales people opinion, colleague opinion, customer opinion, and sales history. Interviewees in small companies put

more faith in customer opinion and their own knowledge to evaluate styles, while interviewees in big companies relied more on sample styles and product concepts. All interviewees used other inputs, which were categorized into eight operational functional activities: (a) define the merchandising concept, (b) define the depth and width of assortment, (c) buy samples, (d) predict the product sales ability, (e) get opinions for evaluation, (f) consider price, (g) consider brand or vendor reputation, and (h) organize evaluation results. Constraints of style qualitative evaluation were explained with each operational activity (see Figure 8-39).

Information search outputs (A411) defined the merchandising concept, which could be the basis for evaluation through the whole process. Two interviewees faced difficulty finding styles matched to a merchandising concept. If matching styles was too difficult, the merchandising concept could be wrong. After defining product concept, the depth and width of assortment was established, interviewees' own experience was the most important input in this activity. Interviewees in small companies complained that fashion-sensitive products had too many variations to establish depth and width of assortment. Before gathering opinions and predicting sales ability, interviewees from big companies bought samples, and interviewees from small companies bought small amount of actual products instead of samples.

The mechanisms categorized as predicting product sales ability were as follows: (a) evaluate how to update ongoing styles, (b) pinpoint repeated styles by vendors over time, (c) consider new styles, (d) see prevalent styles in market, and (e) review sales record. Interviewees evaluated samples or actual styles and vendors' collections based primarily on sales history and also on the information search output. Discrepancy between past and future due to fast fashion change was a constraint by interviewees. Inputs, connections, constraints, and outputs were specified into IDEF0 diagrams (see Figure 8-35).

For style evaluation, interviewees gathered opinion (A415) from manager, sales people, and customers; the constraint of this activity was time limit. To get opinion from customers and sales people, interviewees in small companies bought and displayed a small amount of certain styles in the beginning of the season. One interviewee suggested Style-out for style qualitative evaluation that was a very effective method to gather opinions and to get more objective evaluation results. Style out is a convention in which the people involved meeting and critique product samples or pictures to find what seem to be key styles. Inputs, connections, constraints, and outputs were specified in Figure 8-36.

The mechanisms to consider product price (A416) were comparing the design of styles to their price (A4161) and comparing the material quality to price (A4162). For comparing the design of styles to price, the input was the product price and the output was the style quality compared to price. For comparing the material quality to price, inputs were product price and material of product, and output was material quality compared to price (see Figure 8-37).

Organizing evaluation results meant a subconscious activity defining important styles and the value of styles. None of interviewees used an established form or report for qualitative evaluation results.

Color Qualitative Evaluation

Summarized inputs for color qualitative evaluation (A42) were as follows: (a) color information search outputs, (b) merchandising concept, (c) vendors' opinions and offers, (d) style qualitative evaluation, (e) fashion-ability of products, (f) sales potential of the product, (g) color related to fabric, (h) sales people opinions, (i) customer opinions, and (h) sales history. Small companies accepted vendor's opinion, sales people opinion, and customer opinion more often. Big companies followed the merchandising concept or color palettes to decide the colors of products. The mechanisms of color qualitative evaluation were categorized as follows: (a) identify color palettes (A421); (b) consider if vendors offer the colors in the palette (A422); (c) consider if the color matched the style (A423); (d) consider the sales potential of evaluated styles (A424); (e) compare the color quality with fabric quality (A425); (f) limit the depth of color assortment (A426); (g) gather opinion (A426); (h) organize evaluation results (A427). The procedures of color qualitative evaluation are displayed into IDEF0 diagrams (see Figure 8-39). One interviewee from a small company mentioned difficulty in finding colors for a particular style among major vendors. Two interviewees from big companies did not have the difficulty because they bought large volume, which requests for their color selections to vendors possible.

The important factors affecting identification of the color palette were target customer ethnicity and geographical uniqueness and seasonality. The mechanisms for identifying colors to be matched with color concept were specified with inputs, connections, and outputs (see Figure 8-40).

Considering vendor color offers (A422) was a necessary activity to check availability of ideal colors in color concept and to transfer color concept into practical-use assortments. If interviewees had too many difficulties in finding colors from vendors, the interviewees redefined

the color palette based on color availability. Two interviewees from small companies mentioned the limit of choices when colors were pre-packed by manufacturers. Inputs, constraints, outputs, mechanisms, and connections were specified into IDEF0 diagrams (see Figure 8-41).

Interviewees mentioned that colors could also be seen as one design factor of the style when evaluating qualitative aspects of styles, indicating that interviewees considered the relationship between color and style (A423). If a style was fashionable, interviewees preferred basic colors for the style (A4231); if the style was basic, interviewees preferred more trendy colors (A4232). Interviewees said that they could be subjective in this evaluation process. The output from this activity was color palette for each style. Inputs, connections, constraints, and mechanisms, and outputs were specified into IDEF0 diagrams (see Figure 8-42).

When considering the sales potential of style for color evaluation (A424), interviewees considered more color variations for a high sales potential style and only one or two colors for uncertain sales potential styles. The mechanisms are explained in Figure 8-43. Required inputs for this activity were style sales potential, color style match outputs, and color information search outputs.

As with style qualitative evaluation, interviewees gathered opinion related to color assortment from managers, sales people, and customers (A427). Interviewees from small companies bought and displayed a small amount of certain colors in the beginning of the season and got feedback from customers and sales people. Constraints for this activity were subjective opinion. Inputs, constraints, mechanisms, connections, and outputs are displayed into IDEF0 diagrams (see Figure 8-44).

Size Qualitative Evaluation

All interviewees mentioned the following past size assortment and vendor's offers except when making big changes in current size sales. To evaluate qualitative aspects of sizes, required inputs were size information search (A33) outputs, vendor's size offer and opinion, fit of style, and fabric attribute. The mechanisms of size qualitative evaluation (A43) were as follows: (a) define size range of target customer (A431), (b) distinguish the size range that sold well in the past (A432), (c) define needs for new size range (A433), (d) define size range by fabric attribute (A434), (e) consider vendor size offer (A435), (f) consider style for size range (A436), (g) watch fit of samples or actual products (A437), and (h) organize evaluation results (A438). The mechanisms were ordered without considering a time schedule (see Figure 8-46).

Regarding defining size range of target customer (A431), inputs of the activity were customer ethnicity, age, and geographical area. Interviewees observed that size ranges were different by age, ethnicity, and geographical area. However, interviewees from big companies did not have accurate geographical information due to a lack of detailed sales record by store location. After defining size range of target customer, interviewees distinguished size range that sold well from past sales history (A432).

As mentioned in styles information search, vendor size offer or opinion was an important factor in size assortment. The mechanisms of considering vendor size offer or opinion were as follows: (a) consider fit of size spec (A4351), (b) decide how to translate vendor size specification into store size specification, and (c) negotiate vendor size offering rules. When considering new vendors for the next season, interviewees often found problems due to the lack of an established size specification standard. After considering size specification difference, interviewees decided how to translate the different size specification for their own store. Interviewees translated the different size specification based on own store system or size specification of other similar products. Size offer regulations mentioned by interviewees were pre-packaged size assortment and minimum quantity order. Interviewees in small companies, especially, had problems because of this regulation; one interviewee from a small company did not select vendors who only offered size pre-package, because she did not want overstock or shortage due to pre-package. Interviewees needed negotiation (A4353) and determination for size offers to evaluate quantitative value of sizes and to plan size selection. Inputs, mechanisms, connections, and outputs of the activity A435 were specified into IDEF0 diagrams (see Figure 8-47).

Interviewees bought samples or a small amount of actual products to evaluate the fit of the style. Interviewees from small companies could watch how customers or sales people felt with the fit. Practical-use evaluation was to watch the fit of sample styles (A437) and determine size range for the fit.

Quantitative Evaluation

Interviewees mentioned that the stage of '*Evaluate quantitative value of products.*' (A5) could be done simultaneously with qualitative evaluation; however, they agreed on the conceptual difference and activity difference between qualitative and quantitative evaluation. Like qualitative evaluation mechanisms, quantitative evaluation was categorized with three mechanisms: style quantitative evaluation (A51), color quantitative evaluation (A52), and size quantitative evaluation (A53). The inputs and constraints for quantitative evaluation are summarized in Figure 8-48.

Style Quantitative Evaluation

The mechanisms for style quantitative evaluation (A51) were divided into eight categories: (a) decide open-to-buy dollars for own department (A511), (b) categorize store characteristics (A512), (c) analyze percentage of basic (A513), (d) decide percentage of previously tested styles (A514), (e) define remaining percentage for new styles (A515), (f) predict percentage of each style (A516), (g) consider agreement with vendors (A517), and (i) organize evaluation results (A518). The procedure of these mechanisms is illustrated in Figure 8-50.

Before style quantitative evaluation, decisions about open-to-buy dollars (A511) were necessary for the selling period of the assortment plan. To decide open-to-buy dollars, interviewees considered growth rate of business and information search output, including remaining stock levels and sales goal for the season. The inputs, outputs, and connections to the mechanisms of A511 were specified into IDEF0 diagrams (see Figure 8-51).

Regarding store categorization (A512), an interviewee explained significant similarity between fashion-ability of stores and fashion-ability of products as following:.

I decide how many doors I am going to sell to. I prepare what I am calling A-pack, which has urban taste and fashion sensitive items. I prepare what's called B-pack. My B-pack is usually smaller and more basic, and it still follows the image what is important as message of designers giving (A-pack). My C doors are markets that don't have urban taste and sophisticated fashion level.

Since style fashion-ability and the quantity for each fashion-ability category (*e.g.*, basic, new, contemporary) was determined by distribution and demand, categorizing store types was

included as a quantitative evaluation mechanism. To complete store categorization, interviewees categorized store or space type by fashion-ability (A5121), determined the percentage of each store or each space type (A5122), and determined the percentage of each style fashion-ability (A5123). Inputs for these activities were numbers of stores and information research output regarding store fashion-ability and taste. Inputs, connections, and outputs were specified into IDEF0 diagrams (see Figure 8-53).

After the determination of open-to-buy dollars and an overall percentage for each style category, interviewees determined a percentage for each style category. The terms for style categories mentioned by interviewees were as follows: ongoing style, basic style, volume item, must-have item, key style, pre-tested style, new style, and trendy item, which could be grouped into three style categories: basic, pre-tested, and new. Basic style included ongoing style, key style, must-have style, and volume item. Interviewees used the terms, key style and must-have items, to mean an abstract concept of the activity, deciding necessary styles from past sales items including test-run styles. The key style or must-have style could be coincidentally determined through the activities, analyzing percentage for basic and pre-tested styles.

Analyzing the percentage of basic style (A513) required outputs of A512, remaining stock level, sales history, and growth rate of business. The mechanisms of analyzing the percentage of basic styles were as follows: (a) check remaining stock level of basic styles, (b) analyze change of sales pattern past several years, and (c) predict sales potential of basic styles for the next season. Checking remaining stock level (A5131) was an important mechanism to decide stock level. The remaining stock level could be considered with sales potential of the style for the next season. A few companies, especially big companies, kept basic styles (*e.g.*, black dress) year-around but changed color of garment dye every season. All interviewees used gross margin and numbers of reorders as an index of quantitative evaluation of style. Six interviewees compared the sales change pattern of two years and used the difference rate between the two years as an index for forecasting next year's sales. Not having advanced analysis methods, they used simple statistics like average percentage and difference rate. Four interviewees from big companies analyzed sales change pattern for the past several years. One interviewee tracked past sales by style, color, and size in specific time frame and analyzed reasons of the sales. Another interviewee commented that weather change could be an unpredictable factor in sales analysis. Inputs, mechanisms, connections, constraints, and outputs of A513 are illustrated in Figure 8-53.

The mechanisms of deciding percentage of previously tested style (A514) were similar to deciding the percentage of basic style (A513). For deciding percentages of previously-tested style, inputs were basic style percentage, test-run results, and growth rate of business. Because tested styles had less than one-year of sales history, the mechanisms of this activity were simpler than A513. The mechanisms of this activity could be summarized as follows: (a) calculate percentage of sold units by order units (A5141), (b) calculate sale profit of each tested style (A5142), (c) predict sales potential of tested styles for the next season (A5143), and (d) define percentage of tested styles in entire styles (A5144). Constraints on these activities were limit of Point of Sales (POS) utilization due to long time advance plan, a need for updated technology, and unpredictable weather change. Inputs, constraints, outputs, and connections for each activity is illustrated in Figure 8-54.

After predicting the percentage of basic style and previously tested style, the remaining percentage could be calculated and devoted to new style (A515). Many interviewees first decided the percentages of basic styles having sales history and then decided the percentage of new style. Interviewees sometimes increased the percentage of new products to refresh the image of style.

After defining percentages of basic, tested styles, and new styles, the percentage of each style could be predicted. Except for the percentages of basic, tested and new styles, the promotion plan, weather forecast and sales history of each style could be used to predict its percentage. The mechanisms of predicting the percentage of each style (A516) were as follows: (a) consider seasonality (A5161), (b) calculate total cost considering cost difference by volume (A5162), (c) calculate sales profit of each style (A5163), and (d) balance sales profit with qualitative evaluation results (A5164). The connections of these mechanisms are illustrated in Figure 8-55.

Required inputs for considering seasonality of each style were A515 output, sales history, weather forecast, and promotion plan. Considering seasonality was explained with three functional activities: (a) tracking sales and stock by time frame (A51611), (b) considering unexpected weather change (A51612), and (c) considering new promotion plan (A51613). An interviewee from a big company tracked sales data of each style by time frame, but complained of the limits in detail data due to outdated system. Interviewees from small companies did not have much difficulty in seasonality consideration, because they bought small quantities weekly or monthly and could change their plan based on weather change and promotion plan. The

outputs of considering seasonality could be volume change due to seasonal uniqueness. Inputs, connections, outputs, and constraints are specified in Figure 8-56.

The quantity of each style could be limited by agreement with vendors, like minimum quantity, return back guarantee, markdown coverage, and lowest cost guarantee.

Interviewees did not mention the activities regarding organization of evaluation results, or use established evaluation sheets. They did, however, use spread-sheets to track the quantity of each style, which could be considered as organizing evaluation results.

Color Quantitative Evaluation

Interviewees mentioned that the mechanisms of color quantitative evaluation were similar to style quantitative evaluation categorizing. The mechanisms of color quantitative evaluation were as follows: (a) decide open-to-buy dollars for own department (A521), (b) analyze percentage of basic colors (A522), (c) analyze percentage of previously tested colors (A523), (d) define percentage of basic, tested, and new colors (A524), (e) predict percentage of each color in a style (A525), (f) consider agreement (A526), and (g) organize evaluation results (A527) (see Figure 8-58). After deciding open-to-buy dollars for each style, the percentage of colors could be analyzed from top-down or bottom-up. Top-down meant evaluating color percentages in whole assortment before deciding color percentages for each style. Bottom-up meant evaluating color quantity for each style before evaluating color quantity for the whole assortment. Interviewees analyzed the overall percentage of colors in the color concept, but the color percentage for each style was determined by vendor's pre-package. One interviewee decided color percentage for each style and then balanced the whole color assortment so as not to emphasize one color too much. Quantities of colors were balanced and organized after negotiating the color pre-package percentage with vendors.

As in analyzing percentage of basic style (A513), sales history and remaining stock level were important inputs for analyzing the percentage of basic color (A522); other required inputs were open-to-buy dollar plan, style quantitative evaluation output, and color information search outputs. The mechanisms of A522 were as follows: (a) analyze sales pattern of basic colors in past years (A5221), (b) predict sales potential of basic colors with evaluated styles (A5222), and (c) define percentage of basic colors (A5223). The inputs, connections, and outputs are illustrated in IDEF0 diagrams (see Figure 8-59). The mechanisms, inputs, connections, and outputs of the activity, analyzing percentage of previous tested color, were similar to those

involved in analyzing percentage of basic color with the exception of considering previously-tested colors (see Figure 8-60).

Inputs for predicting the percentage of each color (A525) were color sales history, weather forecast, promotion plan, A524 output, A521 output, and A42 output. In predicting percentage of each color in each style, interviewees tracked sales by time frame, considered weather change, and balanced the percentages. Inputs, constraints, connections, and mechanisms of predicting percentage of each color are illustrated in Figure 8-61.

Size Quantitative Evaluation

The mechanisms of size quantitative evaluation were similar with color quantitative evaluation with the exception of considering style fit (A534). Most interviewees mentioned that size quantitative evaluation was basically same activity with color and style quantitative evaluation. Interviewees decided key size range (A531), analyzed percentage of previously tested sizes or new sizes (A532), predicted percentage of each size for evaluated styles (A533) and each style (A534), negotiated agreement with vendors (A536), and organized evaluation results (A537) (See Figure 8-63). All but one interviewee usually followed past size ranges or vendor's pre-package percentage. After deciding the quantity of styles and colors, the quantity of size was decided by pre-package percentage. The pre-package rule was different among vendors:

That is usually what vendor cuts. What cuts for each style would probable same for all the styles. Most vendors to cut to eight to eighteen, one, two, three, three, two, one for dozen. But A brand cuts one, one, one, two, two, two. You know it all depends on the person who's buying from. But most parts, everything cut on one, two, three scale.

One interviewee did not use the vendors who offered pre-package only and found other vendors who allowed freedom in size quantity.

The activity, analyzing percentage of past size, was specified with inputs, mechanisms, connection, and outputs (see Figure 8-65). If it was necessary to adopt a new size range, interviewees ran a small amount of the new size range. If a test-run was done in the previous season, interviewees predicted the sales potential of the tested size range in this stage (see Figure 8-65).

Product Selection Plan

As mentioned above, seven interviewees agreed that style, color, and size selection activities were operational levels of '*Select product*' activities, and size selection was limited by style selection.

The inputs for 'Select product' were qualitative evaluation output, quantitative evaluation output, and depth and width of assortment. Constraints mentioned by interviewees were a tendency to be subjective and difficulty focusing on the merchandising concept (see Figure 8-66).

Style Selection

Because the style evaluation process (A61) was done in this stage, the mechanisms of style selection were more related to rank priority and balance evaluation outputs. The mechanisms of style selection were as follows: (a) recheck merchandising concept for selection (A611), (b) decide numbers of styles selecting (A612), (c) rank the priority styles to buy (A613), (d) be certain of getting the best version of similar styles (A614), (e) confirm the price range acceptable (A615), and (f) determine style selection (A616) (see Figure 8-68).

To recheck the merchandising concept for selection, inputs identified merchandising concept, A41 output, and A51 output. To decide priority styles (A613), interviewees selected the best basic styles and the best previously tested styles (A6131), and the best new styles from evaluation outputs (A6132). After ranking the next styles, interviewees made sure of availability of the styles to vendors (A6133) (see Figure 8-69). In determining style selection, one interviewee displayed all selected styles on a big board (A6161). All interviewees balanced among styles to avoid repetition or forcing (A6162) and refined selection (A6163).

Color Selection

The mechanisms of color selection were different from style selection. After style selection (A622), color palettes (A621) were distributed into each style (A623), ranked the priority colors for each style (A624), and finally determined the color selection (A625) (see Figure 8-72). The rules for spreading numbers of colors for each style were as follows: (a) define more than three key colors, including basic colors and pre-tested colors (A6231), (b) decide numbers of colors for trendy styles, usually one to three colors (A6232), and (c) decide numbers of colors for basic styles, usually more than three colors (A6233) (see Figure 8-74). Interviewees compromised the risk factors of colors with styles: basic or pre-tested colors with uncertain

trendy styles (A6241) and uncertain trendy colors with basic styles (A6242) (see Figure 8-74). As in style selection determination (A616), to determine color selection (A625), interviewees visualized selected colors with selected styles (A6251), and balanced selection with open-to-buy dollars (A6252) (see Figure 8-75).

Size Selection

In big companies, the Inventory Control Department evaluated and selected size range based on past sales records. Interviewees in big companies, however, said that practical-use reconfirmed the final size selection to balance with depth and width plan, style and color selection, and evaluation output in case of change. The mechanisms of the size selection process were identified as follows: (a) have style and color selection, (b) balance with vendor's size offer, (c) define size range for each style, (d) define size range for each color if possible, (e) visualize size ranges with style and color, and (f) balance assortment with depth and width plan. Inputs and connections for each activity are described in Figure 8-77.

Determine Order Quantity

Forecasting sales plan was renamed as '*Determine order quantity*' (A7) in the practical-use assortment planning model based on interviewees' explanations. The mechanisms for determining order quantity (*i.e.*, forecasting sales) were summarized as follows: Interviewees spread quantitative evaluation outputs with product selections (A71) by considering retail price (A72), external forces in sales (A73) and agreements with vendors (A74). When arranging product selections, interviewees should recheck open-to-buy dollars for the department (A75). If order quantities for each selection were revealed after finishing activities, interviewees arranged the assortment plan in terms of selection and order quantity into order schedule with vendors (A76). Assortment planning was completed and prepared for actual buying (A77) (see Figure 8-79). Examples of external forces were manufacturer's competition, competitor's promotion activities, weather change, and shipment delay. For interviewees in small companies, determining order quantity was a type of reordering stage, because they had already bought small quantity of products and tested them in their stores as part of the evaluation process. Big companies could not be as flexible in reordering as small companies due to a long time advance plan. When interviewees in big companies realized needs for reordering product-A, manufacturers had usually already begun to produce new products and finished producing the

original product-A. Big companies considered manufacturer location importantly, as delivery schedule, product cost, and order quantity could differ for domestic production or overseas production. Large quantity products and less time-sensitive products were usually produced by overseas manufacturers, because interviewees could save on production costs.