

**FIPS SETS THE FASHION: A DSS FOR PURCHASE PLANNING IN A
EUROPEAN DEPARTMENT STORE**

Claudia Loebbecke & Juliane H. Kronen

Abstract

This case study introduces a DSS run by a large department store chain in order to support the buying process. The "Fashion Information and Planning System" (FIPS) is a DSS, which is characterized by its inextricableness in other IT applications of the corporation as a result of established interfaces; it is integrated into AAA's warehouse management as well as financial planning, and comprises two modules called "Fashion Information System" and "Purchasing Planning and Control".

In order to understand the strategic benefits of FIPS, its organizational impact is addressed from three perspectives: it is shown how FIPS leads to innovative business procedures, shifts functions and competencies within the company, and changes the role of IT for the corporation. Additionally, the paper discusses the strengths and benefits of the FIPS system, which has already become indispensable for the daily work of the purchasing managers. The article also identifies potential design improvements and discusses further development perspectives of the system.

Claudia Loebbecke & Juliane H. Kronen, University of Cologne, Wilh.-Backhaus-Str.
23, 50931 Koeln, Germany.
Tel: +49 (221) 444900. Email: afa03@rs3.rz.uni-koeln.de

FIPS SETS THE FASHION: A DSS FOR PURCHASE PLANNING IN A EUROPEAN DEPARTMENT STORE

Claudia Loebbecke*, Juliane H. Kronen

University of Cologne

*Wilh.-Backhaus-Str. 23, 50931 Koeln, Germany
Tel. ++49 (221) 444900, e-mail: afa03@rs3.rtz.uni-koeln.de

Abstract

This case study introduces a DSS run by a large department store chain in order to support the buying process. The "Fashion Information and Planning System" (FIPS) is a DSS, which is characterized by its inextricableness in other IT applications of the corporation as a result of established interfaces; it is integrated into AAA's warehouse management as well as financial planning, and comprises two modules called "Fashion Information System" and "Purchase Planning and Control".

In order to understand the strategic benefits of FIPS, its organizational impact is addressed from three perspectives: it is shown how FIPS leads to innovative business procedures, shifts functions and competencies within the company, and changes the role of IT for the corporation. Additionally, the paper discusses the strengths and benefits of the FIPS system, which has already become indispensable for the daily work of the purchasing managers. The article also identifies potential design improvements and discusses further development perspectives of the system.

1. The Company

As one of the largest department store chains in Europe, AAA runs more than 100 stores of different sizes, mainly located in downtown areas. With roughly 65,000 employees, AAA is a typical multicategory retailer characterized by value pricing, a wide assortment of goods, and offering both brand name and private label merchandise. During the business year 1992 / 93, AAA increased its retail turnover by almost 7 % to almost US \$ 6 billion, thus exceeding the overall growth in the European department store market. [For a classification of AAA's turnover by categories of goods, see Figure 1.] Altogether, AAA made a profit of US \$ 85 million in 1992/93. [AAA Annual Report 1992]

During 1992, AAA increased its total store space by approximately 1 %, in line with an increase of productivity by almost 2 %; stocks in the stores turned 3.7 times (compared to 3.9 times in the previous year). [AAA Annual Report 1992]

	% of Turnover
	1992
Fashion	35
Furniture / appliances	20
Miscellaneous	30
Groceries	11
Restaurants	3
Service Dept.	1
Total	100
Source: AAA Annual Report 1992	
Figure 1: Distribution of AAA's Turnover between Categories of Goods	

2. Trends in the Industry

2.1. Trends in Retailing

Department stores represent the retailing channel which is at the highest risk in the nineties. The market share of European department stores compared to other retail forms has slightly decreased by about 1 % between 1988 and 1993, and is expected to further decrease in 1995 [AAA Annual Report 1992]. Assortments that are too broad, a lack of focus, and too many store types have lowered turnover and profit in the industry. Spending on "department store relevant goods" went down, especially in clothing and footwear.

2.2. Trends in the Fashion Industry

An important trend in the industry is backward integration, i.e. the merging of retailing with functions originally performed by manufacturers. In the traditional business, the retailer simply buys and sells products, the manufacturer or importer performs the design function, the branding function, the physical distribution of product stores, and, most importantly, makes the commitment to manufacture products for inventory. In many cases, the actual manufacturing is done by a domestic subcontractor or by an overseas factory.

Recently however, retailers have increasingly integrated backwards and taken over some of the manufacturers' function. They put their store label on designer and brand name merchandise instead of, or alongside, the brand label. The design and inventory commitments are still handled by the manufacturer. [Consulting Interviews]

Lately, specialized companies like 'The GAP' and 'Benetton', and even department stores, have taken things even further. They design their own products and go directly to overseas contractors to have them made. Chains like 'The GAP' and even AAA now sell predominantly private label fashion wares.¹

¹ AAA has increased its turnover through private labels to more than 60 % [AAA Annual Report 1992].

3. Context of the Decision Support System "FIPS"

The decision support system FIPS ("Fashion Information and Planning System") is embedded in an overall new merchandizing system which is in line with a new integrated logistics concept for staple and fashion goods. The logistics concept has evolved over time and focusses on the centralization of purchase power as well as on streamlining the physical distribution of goods.

In its current state, the new integrated logistics concept describes a state-of-the-art logistics approach which would not be operational without targeted decision support tools significantly increasing the decision capabilities of the central buyers. However, the new logistics concept was also basis for the design and the implementation of the new planning and control tool and the resulting changes in the spread of decision competencies within the organization.

3.1. The New Business and Logistics Concept

Staple versus Fashion Goods

AAA handles several categories of goods that have different purchasing and distribution processes. The discrepancies between the two main groups in terms of turnover, staple and fashion goods,² are briefly discussed to illustrate the unique requirements in the fashion business.

Staple goods are a continuous part of the assortment. Normally, each item is repurchased without any changes from the same vendor at a certain predefined inventory level. Only after long periods of time is the item replaced by a different model or taken out of the assortment. Most hard goods are staple goods, but also certain textiles (e.g. socks, underwear, certain home textiles like towels) belong to this group.³

Fashion goods usually can be purchased only once. Repurchases of the same items are only rare exceptions. Therefore, the assortment is characterized by continuous changes among different product categories, colors, materials, and cuts. Especially the lower price levels, relevant to a department store like AAA, can be bought only in low-wage countries. Since vendors in these countries manufacture only according to orders and due to the time-consuming transportation, it is necessary to purchase early before the actual season. Articles coming from the Far East for the fall or winter season must be ordered in August of the previous year, while fashion purchases in Europe for the fall season are usually placed in January or February. To reduce the purchase risk, only part of a season's fashion goods are ordered at early points in time. After the first sales in the season, trends have to be recognized and converted into short-term orders to be placed in Europe.⁴ The challenge is to quickly and reliably foresee these trends.

² In the case of AAA, the other categories include groceries, furniture, sound carriers (CDs, tapes, and records), consumer electronics, cloths, eye care, restaurants.

³ AAA yields roughly 45 % of its turnover with 200,000 different staple goods, managed by about 40 departments.

⁴ Additionally, some standard goods are stored at the vendor's or wholesaler's facilities to be available within 48 hours. A predefined set of rules to manage these short-term reorders, known as "Quick Response Service", has been developed by the apparel industry.

Other complexity-adding characteristics of fashion goods are sales price reductions as the season proceeds. Caused by these apparent changes of the assortment, apparel can only be planned and controlled according to price categories. Due to the uniqueness of fashion goods, purchases cannot be based on previous figures of certain items. Therefore, items are put together in groups of goods whose contents remain relatively stable over time. All planning and control is based on these categories which are specified by additional aspects such as price categories, sizes, colors, promotions, or special topics.

Overall Concept for Fashion Goods

Traditionally, AAA, like most department stores, purchased fashion goods decentrally in almost each store to be as close as possible to the customer. This approach resulted in high coordination efforts and ignored any potential synergies with respect to buying power, transportation, and skills to be achieved from centralization.

In 1986, AAA started to change its buying organization. The number of buying employees was drastically reduced, and most activities became central buyers' responsibilities. Stores were divided into eight regions; for each department and region there is one regional buyer. The division of rights and responsibilities between central and regional buyers depends mostly on the central buyer and the business environment.

3.2. The "New Merchandizing System"

The newly designed business and logistics concept is backed by an integrated system approach, the "New Merchandizing System", which covers the different phases of the concept. It is a set of applications designed to support the new business and logistics processes in a complex business environment. Each module of the "New Merchandizing System" provides crucial information that contributes to the DSS data base.

Goals of the "New Merchandizing System"

Embedded into the abstract objective to support and complement the new business and logistics concept, AAA aims to achieve the following main goals with the "New Merchandizing System":

- Releasing department managers from non sales-oriented activities to concentrate on selling,
- Generating processing- and storage capacities for increased business scope,
- Benefitting from additional sales opportunities by offering complete and up-to-date assortments,
- Improving purchase prices through greater importation,
- Lowering sales price reductions by adjusting purchases to correspond better to market requirements and by flexibly adapting predefined distribution lists,
- More cost-efficient handling of goods in the regional warehouses.

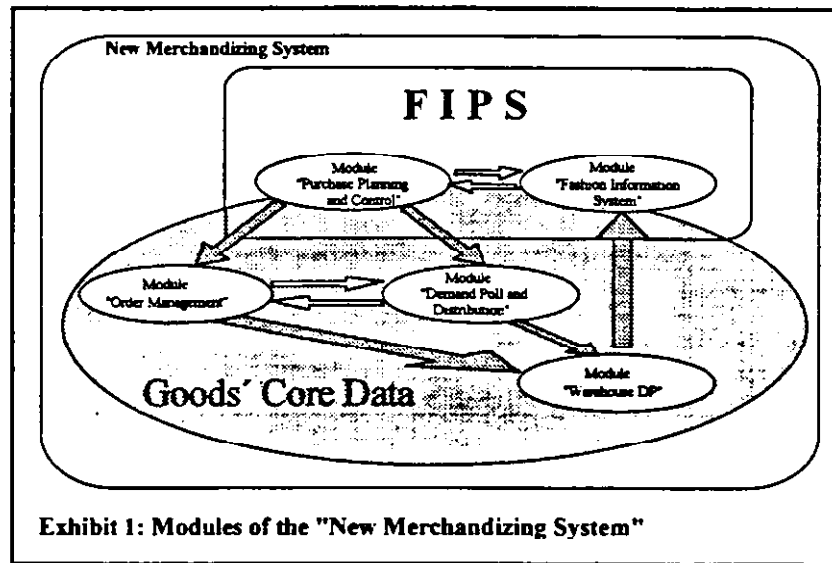
Implementation of the "New Merchandizing System"

The main decision to support the new business and logistics concept was made in 1987, with the last modules still being in the programming stage. While the full range of applications should be completed by the end of 1994, numerous implementation and even development delays regarding some modules were recognized. The reasons for these delays can be split into two groups: Firstly, after releasing the modules, users often have requested to change or adapt the system to their needs, and thus prolonged the

development process. Secondly, process changes which occurred intentionally or unintentionally after the design phase caused a mismatch from the beginning between the designed system and the processes it is supposed to support.

Main Modules of the "New Merchandizing System"

The "New Merchandizing System" consists of four operational modules and the integrated decision support system "FIPS" (see Exhibit 1); together they cover the whole process from ordering goods to delivering them to the stores. To illustrate the interlocking of the modules within the system, each module is described below.



Module "Goods' Core Data"

The module "Goods' Core Data" was started in 1989 to provide common core data for staple and fashion goods since many departments purchase and sell both. It was introduced in 1991 for all fashion departments and one year later for most staple ones.⁵ The new goods' core data structure is a common basis for all other modules of the "New Merchandizing System", since it allows for an integrated information flow.

The main advantages of the new structure can be summarized as follows:

- Larger number of order positions per article group,
- Easy aggregation of order positions to articles,
- Automatic placement of core data,
- Only deliverable sizes in the system,
- Order positions valid until the last piece is sold,
- Real-time storage of changes, thus less routine procedures,
- Instantaneous availability of logistical data to control the warehouses, and
- Automatic request of selected statistics and reports by establishing the core data.

⁵ The application is installed on a DB2 data base system.

Module "Order Management"

The module "Order Management" allows orders from most of the world, uniquely differentiated by goods' core data, to be placed directly into the system.⁶ All orders can be copied into the merchandizing module "Demand Poll / Distribution", thus significantly reducing redundant data input. In return, goods' core data and incoming volumes can be extracted from "Demand Poll / Distribution" into the "Order Management" module.

Several reports, e.g. regarding order- and delivery dates, current inventory orders per week, orders without valid goods' core data, order inconsistencies, or cancellations, are run automatically and provided to the users. Any other report format based on available raw data, e.g. analyses concerning vendors, countries, certain buying departments etc., can be requested from the IT-User Support Group. This organizational unit is in charge of assisting the system users in all aspects of the system and providing them with ad-hoc reports.

Module "Demand Poll / Distribution"

The module "Demand Poll / Distribution" serves three main functions: (a) it provides an IT-supported poll of demand in the stores which is then transferred to the order management; (b) it can be used with temporary goods' core data, and is therefore applicable during early stages of determining demand and sample preselections; and (c) it allows for the distribution of "pre-sales" to the stores. The distribution of volumes can be managed during on-line dialogs according to different criteria, such as "store-group" or "pre-defined distribution lists".

Using the module "Demand Poll / Distribution", one can manipulate the delivery dates, enter temporary order information, and key in prices for order positions (without changing the prices in the goods' core data), add texts to certain order positions, exclude specific delivery dates, distribute volumes according to different criteria, and check store feed-back

Module "Warehouse-DP"

The module "Warehouse-DP" controls the flow of goods in different warehouses: two main central warehouses, six large distribution centers, three regional centers for fashion, a storage facility for special sales goods or promotions, and an additional storage facility for eye-glasses. Characteristics of the application are: procedures with deadlines, high transaction volumes, and the integration of several automated operational systems. The application supports the development, automatic updating and optimization of transportation and warehouse strategies for a large variety of categories of goods.

4. FIPS - the "Fashion Information and Planning System"

FIPS, the decision support system of the "New Merchandizing System", is designed as the strategic module within the range of applications introduced above. It consists of two decision support tools, the module "Fashion Information System" and the module "Purchase Planning and Control".

⁶ In the new system, even temporary goods' core data can be used as dummies until the final ones are available, i.e. goods' core data as well as all other information can be input incompletely and filled in later. Furthermore, the system fills in import / export regulations automatically whenever applicable.

4.1. FIPS Modules

"Fashion Information System"

The "Fashion Information System" is integrated into an overall information system for staple and fashion goods. It covers all information regarding sales, inventory, and sales price reductions in the stores, and ensures high data consistency (comparable data on all different hierarchical levels), fast and flexible data availability, and easy and secure data input. Standard reports are optimized based on (insufficient) user surveys, resulting in a large amount of information provided in these formats. Additionally, users can request free-flow formats⁷ or other special reports from the IT-User Support Group. It is envisioned that all reports and analyses will be available instantaneously and can be printed decentrally.

"Purchase Planning and Control"

In spite of all difficulties due to fashion trends, the planning of a season's assortment is crucial. Every six months, AAA's central buyers apply the FIPS module "Purchase Planning and Control" to plan the volumes of inventory, sales, and demand on the basis of various categories of goods.⁸ Through established interfaces, the purchase planning is integrated into the warehouse planning (see module "Warehouse-DP") and AAA's planning of financial data where the volumes are transferred into turnover, gross margins, and profits.

Central buyers plan sales for article groups, sub-categories, and categories for a maximum of ten price categories, i.e. they do not plan colors or sizes. The system splits the planned volumes into the stores on the basis of the five store groups.⁹ The department managers¹⁰ can tentatively change the figures for their own store, however, the central buyer makes the final decision.

4.2. FIPS Operation and Use

The large number of data transactions - up to 800 data requests access approximately 250 different applications every second - signifies that data transmission is a challenge that requires further optimization.¹¹

A central buyer uses the system for three main decision categories: purchases of regular assortment items, purchases for special promotions (approximately 60 % of turnover in AAA's fashion retailing), and sales price reductions. The assumption of a maximum of

⁷ Free-flow formats are created in SQL (Structured Query Language).

⁸ The module "Purchase Planning and Control" is based on the assortment plan which shows the price levels and assortment varieties (ranges and depths) of the different store types taking into account the current fashion trends.

⁹ To take advantage of synergies while also paying attention to the location specific requirements, AAA distinguishes between five store groups, depending on turnover, size, location, and prestige: Extraordinary Stores, Excellent Stores, Very Good Stores, Good Stores, and Decent Stores.

¹⁰ In this article the term "Department Manager" refers to the managers in the stores.

¹¹ These enormous information needs exclude the actual reporting function, i.e. the preparation and aggregation of data for list formats, which is provided by separate applications on the host.

100 sales price reductions, 50 "promotion purchases", and 20 "regular assortment purchases" per month seems to be conservative. For those approximately 170 decisions per month, a central buyer at AAA receives, reads and analyzes about 280,000 information items.¹²

A department manager's daily routines focus on a different set of decision categories, namely sales price reductions, synchronization of incoming goods and sales, and placement of goods (successful items are placed in the front row). The respective figures for a department manager in an "excellent" store are about 460,000 pieces of information for approximately 120 decisions (20 sales price reductions, 50 synchronization decisions, and 50 special placements) and his additional information needs.

This information volume is time-consuming. On the average, 35 central buyers responsible for fashion goods spend about 4,200 hours per year reading and analyzing the reports they have requested. Sixty regional buyers need about 7,200 hours per year to go through the information, and approximately 910 department managers require about 87,000 hours per year.

Nevertheless, several central and regional buyers still use their intuition regarding fashion trends and generally question the value of a computerized decision support tool for fashion purchases.

4.3. FIPS Cost

The estimated cost for FIPS is shown in Figure 2. Due to extended project schedules and additional functional requirements, the development cost have significantly risen to almost US \$ 900,000. However, considering that the estimated life-time cost of the system is US \$ 65 million until the year 2000, development cost account for less than 2%.¹³

The operating cost of about US \$ 24 million until the year 2000 stems from two main sources: (a) the high number of data transactions per day and the corresponding data base storing and manipulating costs, and (b) the growing data communication expenses for dialogs between the headquarters and the stores. The comparatively small budget for FIPS' maintenance and user support (US \$ 1.5 million until 2000) mainly comes from the IT-User Support Group.

The crucial part of the cost is caused by the system users. Divided into the three groups "central buyers", "regional buyers", and "department managers", they account for US \$ 37 million until the year 2000, i.e. for about 60 % of the total cost. The more data are fed into the system, the more reports users request, and the more the system is used.

¹² A piece of information in this context refers to one field or cell in a report (rows times columns).

¹³ The figures for the complete "New Merchandizing System", which account for more than 30 % of the total DP costs, amount to US \$ 18 million development cost per year, and US \$ 65 million operational cost per year. Precise cost figures for the total FIPS are currently not available. However, the given figures raise the same issue of user and life-cycle cost.

allow for an increased flexibility, so that FIPS can be adapted rather quickly to the rapidly changing business needs, and thus strengthens the market position of a large department store chain like AAA.

5. Organizational Impact based on FIPS

FIPS has considerable impact on the user organization and increases the strategic importance of IT for AAA's business on several levels: it changes (a) the business processes underlying the purchasing and sales functions, (b) the patterns of function distribution within the corporation, and (c) the role of AAA's IT-User Support Group.

5.1. New Business Processes Underlying the Purchase Function

FIPS supports adjusting the pattern of purchasing decisions to new business needs by improving the link between different functional processes within AAA and between AAA and its suppliers. Mainly due to the pressure to provide low-price items and stable prices, pre-orders are increasingly placed abroad, whereas late orders during the seasons are placed mainly in Europe. However, the long time-span between ordering and payment on the one hand and sales of the goods on the other hand increases economic and decision risks: Additional working capital is used and the danger of a misjudgement of fashion trends increases. Longer planning periods have to match with faster fashion cycles.

5.2. Strengthening Purchase versus Sales Function

FIPS causes a shift of purchase functions between different positions in the company. Traditionally, purchases were placed both centrally and decentrally. FIPS shifts buying competencies gradually to the headquarters, and thus leads to an increasingly centralized purchasing function¹⁴. This centralization can be justified by

- economies of scale in ordering goods by bundling buying volumes [Clemons, Reddi 1993].
- complete, better controlled assortments in the stores and thus increased turnover and performance [for a detailed analysis of the IT control function, see Malone, Yates, Benjamin 1987].
- improved purchase planning and automatic allocation of goods to stores reducing the necessary stock, and thus increasing AAA's cashflow, and
- more efficient flow of goods to stores by store-specific shipping scheduling.

5.3. Changing Role of the IT-User Support Group

For a company of AAA's size, appropriate data gathering in the stores, data processing and storage, and the meaningful output of lists and reports constitute difficult tasks. While the pure gathering of data is a question of implementing advanced scanner or chip-card technologies, the challenge of intelligent data aggregation cannot be solved by technical means only. The growing amount of data available has changed the capabilities

¹⁴ Taking away buying responsibilities from the department managers implies the risk of employee dissatisfaction, and therefore requires careful attention. A residual amount of the purchase volume probably has to remain with the department managers in order to avoid this dissatisfaction. Special attention has to be paid to encourage the feedback of local buyers to the central buying department; local staff is the hinge between customers and the organization; their judgement is therefore needed to react to consumers' demands appropriately.

profile required from the users. A core ability required is the knowledge to extract relevant information from all daily produced data for making purchasing decisions. The IT-User Support Group has to increase their efforts to train the purchasing staff to use the system efficiently and effectively.

The traditionally main role of the IT-User Support Group, the delivery of requested reports, will be reduced in the near future due to users' on-line access to the applications on the host [For moving IT applications to the core of the business see Stalk; Evans; Shulman 1992.] Nevertheless, making the data accessible and useful for decision making requires the input of the IT-User Support Group, thus increasing its role for supporting the buying process. The permanent update of information contained in the system requires a considerable staff which is well trained in "feeding" and "harvesting" the system.

Finally, the IT-User Support Group collects, analyzes, weighs, and integrates the various user propositions for system changes, adaptations, and add-ons. With every user accessing the system, the variety of individual requests has significantly increased; making it almost impossible for the programming staff to fulfill all of them. Therefore, the IT-User Support Group has gained importance as the representative of all central buyers for fashion goods towards the IT/Organization-Department, where the software is actually developed.

6. Potential Improvements

The main advantage of FIPS lies in its capability to help increase turnover due to complete, up-to-date assortments and less sales price reductions as well as to lower purchase-, inventory-, and distribution costs. Furthermore, the data and functional integration between FIPS and the other modules of the "New Merchandizing System" provides a technical platform to enhance the integration between business processes and their IS backbones. FIPS has become indispensable for the daily routines of the purchasing managers, nevertheless, it can be improved in the following areas

Price Categories Reports

Price categories include regular goods, sales promotions, and sales price reductions. Due to high-price reductions, sales seem to be higher in low-price categories (which then include the originally higher priced goods). Therefore, the central buyer purchases increasing volumes of goods in the low price ranges, "ignoring" profit-decreasing price reductions.

Level of Detail of Gathered Information

For many fashion goods, labels with size and color information are too expensive. In these cases, even after having scanned the sold items, the central buyer does not know if there are sizes or colors missing in some stores. Therefore, he is unable to restock the store adequately. On the other hand, in some cases detailed data are gathered although customers hardly seem to differentiate to such a degree. This illustrates the trade-off between data input or processing costs and the value of additional information: While for some goods detailed information may become more important as the competition between retailers increases, for others the focus on a limited number of decision-oriented data is more successful.

System Dialogs

Most requests for standard reports are still processed in batch mode, which means that receiving a detailed report takes several days: The first report, which shows the level of highest aggregation, is sent to the user who picks the group of goods he wants to see in more detail. The user then sends a more specific request to the central DP department, receives the next report the next day, picks the third level of detail, etc. Each level of detail requires one day. Consequently, on-line dialogs are demanded by most users.

7. Individual or Integrated Systems?

A major design issue is the degree of customization to meet the specific business needs, daily routines and personal preferences of individual buyers for fashion goods. Furthermore, as mentioned above, purchasing fashion goods differs in various aspects from buying staple goods. Therefore, a crucial issue for any department store regarding the design of DSSs is the question of how many different systems should be installed.¹⁵ On the one hand, each system should be as specific as possible to meet the business needs of a group of decision makers, e.g. central buyers for fashion goods. On the other hand, common development-, eventually hardware-, maintenance- and support costs for separate systems trigger the idea of an integrated system for the whole department store chain. AAA chose to start with nine separate systems (for the different categories of goods, see footnote 2), and is about to integrate the system for staple goods into the more advanced one for fashion goods.

8. Further Development Opportunities

The development of FIPS can occur along two tracks, the scale and the scope of the system [Ebers 1992]

8.1. Extension of Scale

The scale of the system relates to the frequency and the volume at which transactions are handled. An increase in FIPS' scale can rise from three main sources: (a) additional workload from mergers and acquisitions, (b) an extension of AAA's geographical scope of business activities, and (c) an increase in the range of products (numbers of articles listed in the system) due to a further integration of AAA's nine current merchandizing systems.

8.2. Extension of Scope

The dimension of scope relates to the functional range the system can perform. Again, three extensions can be differentiated: (a) additional functionalities regarding the currently performed tasks, (b) backward integration (already discussed under 2.2), and (c) forward integration.

¹⁵ The same question applies to operational (different from strategic) modules of merchandizing systems.

Additional Functionalities Regarding Currently Performed Tasks

User propositions for additional features include system support for budget-based planning and the preparation of promotions and sales, automatic updating of vendor accounts, and proactive advertising impact control. Moreover, FIPS tracks sales and follows up on the productivity per product group.¹⁶ However, in spite of the huge availability of data, the system does not also allow for detailed reviews of line and item profitability with vendors.

Another issue is the information flow between the headquarters and stores, since the system does not yet support the transfer of order information to the stores. Each month, letters are sent to inform department managers what they can expect.

Forward Integration

Forward integration could occur within AAA's business system and beyond the company's borders. In the first instance, it would include specialized marketing and market research functions in the system. The system provides a large data base for retrieving selected information for various marketing purposes. However, the challenge remains to have the "right" questions in order to get valid results from the data.¹⁷ Forward integration beyond AAA will most likely be based on the integration of the internal and external value chains and on technical progress in the fields of telecommunications or multimedia.

On-line connections with offices abroad have already been established, while those with vendors are still in the planning stage. The introduction of Electronic Data Interchange (EDI)¹⁸ with vendors will decrease the cost per transaction by avoiding media disruptions, and further the integration of warehouse logistics, transportation and administration. On the other hand, it limits flexibility and needs considerable up-front investments from AAA.

8.3. Future Challenges

FIPS will also face challenges which stem from AAA's corporate strategy. AAA has already acquired a large mail-order company and is currently preparing a merger with another large department store chain. Whether, and if so, how, FIPS can support those different growth strategies, is an issue for investigation. The gap between the desirability to combine AAA's FIPS with the DSS of the acquired corporation(s) and the technical feasibility has to be bridged if AAA wants to take full advantage of the potentials created by its merger and acquisition decisions.

9. Outlook

Having assessed the strengths and weaknesses as well as the opportunities and risks of the system, and also knowing the technical, financial and political constraints to system developments, top-management is aware of several opportunities to further improve and develop the system. The CIO states:

¹⁶ The latter is extremely complex since - due to varying sales price reductions - prices can differ from store to store and from day to day.

¹⁷ Some retailers have started to experiment with neural networks in the context of interpreting scanner data to find detailed customer clusters.

¹⁸ The introduction of EDI is enhanced by data standards like EDIFACT or SEDAS.

"The new technologies (relational data bases, data communication) and the new system will provide important options for future solutions to business challenges: On-line dialogs and graphic interfaces will make information more easily accessible and readable. Menu-driven applications will allow the users to determine themselves what their reports should look like. Direct data exchange with vendors will lead to even faster and more differentiated reactions to market requirements. Finally, the customer will be able to access the information, to check assortments, specific items and their sales locations, as well as to place specific orders "

References

- [AAA Annual Report 1992]
- [Clemons, Reddi 1993] Eric K. Clemons, Sashidar P. Reddi: Some Propositions Regarding the Role of Information Technology in the Organization of the Economic Activity, in Jay F. Nunamaker, Ralph P. Sprague (Eds.): *Information Systems: Collaboration Technology, Organizational Systems and Technology, Proceedings of the Twenty-Sixth Annual Hawaii International Conference on System Sciences 1993*, Vol IV, pp 809-818
- [Consulting interviews] Numerous interviews of AAA's top-management and local staff during a consulting project.
- [Ebers 1992] Mark Ebers: *Transaction Scale and Scope: How Organizations Get Hooked on Interorganizational Systems*, Paper for the European Science Foundation Workshop "Modes of International Integration of European Science Organization", Milano, Italy, June 11-12, 1992
- [Malone, Yates, Benjamin 1987] Thomas W. Malone, Joanne Yates, Robert E. Benjamin: Electronic Market and Hierarchies, in *Communications of the ACM*, June 1987, Vol 30, No 6, pp 484 - 497
- [Stalk, Evans, Shulman 1992] George Stalk, Philip Evans, Lawrence E. Shulman: Competing of Capabilities: The New Rules of Corporate Strategy, in *Harvard Business Review*, March-April 1992, pp. 57-69.