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# Approach to E-Business: A Case Study of Shanghai Tobacco Group Corporation

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## Abstract

With the fast development of Internet, e-Business is prospering in the recently five years. Many traditional companies have been convinced of this revolutionary change, and they are exploring a feasible way to adapt to the transition. Chinese companies have weaker bases than the developed countries, but they are also cognizant of the big trend, and are making great efforts to grasp the opportunities. This paper introduces a practical Chinese case that illustrates the increasingly strategic role of e-business applications in traditional manufacturing industries. The company we studied is a large Chinese tobacco corporation, which locates in Shanghai, one of the most developed areas of China. After the WTO entry of China, the regulation system of Chinese tobacco industry will be transformed from STMA (State Tobacco Monopoly Administration) to a more open one. This will bring about more competitive pressures to Chinese tobacco enterprises. How can traditional large corporations adapt to the real new economy in the new environment, it is a big problem that most of the Chinese tobacco corporation faced on. Sensing the challenges and opportunities, Shanghai Tobacco Group Corporation started to search after a new development way, and they intend to develop an e-business application model to improve its distribution processes to integrate their purchasing, manufacturing, delivering, logistics, and sales. Studying such a typical large company, it may be helpful for other large company in other industry.

This paper first reports the background of Chinese tobacco industry and a brief history of the IT applications in Shanghai Tobacco Group Corporation (in the next part we use SHTG for short), then we discuss the environment and business factors that led to the e-business application. Based on the above introductions and discussions, we illustrate an e-business solution to handle the situation SHTG faced.

**Keywords:** e-Business Model; E-Business applications; Enterprise Information System; Strategic Information Systems;

## 1. Introduction

Information technology (IT) is transcending its

traditional back office role toward a strategic role in the recent years. It has been successfully applied by many companies to increase their competitive advantages [1,2,3,4]. It plays more comprehensive roles in wide scopes of business domains than before. In business world, IT does not only reduce the corporation's cost and increase its efficiency, but also change the industry structure, the rules of competition and the organizational structure [2,5,6,7]. In past twenty years, the rapid growth of the Internet and Internet based applications is stimulating an ever-increasing number of businesses to participate in e-business worldwide. For Example, United Parcel Service, Dell Online, Ford Motor Company, Seven-Eleven Japan, and etc., they are the well-known companies who pioneered e-business applications in their own industries and greatly leveraged their competitive competence by use of IT. E-business is one of the hot application areas of today's business, and it shapes a new landscape of business competition.

In this paper, we will introduce a practical case — Shanghai Tobacco Group Corporation (SHTG) and explain how and why SHTG expends its IT to the domain of e-business applications and integrates the operations of the company with its enterprise-wide information system.

In the first part, we will give a brief introduction on the background of Chinese tobacco industry and a brief history of information system applications in SHTG. Next, we will introduce the current situation of SHTG's IT applications. In the third part, we will discuss the problems SHTG faced in today's environment of running businesses and what will happen after the China's entry into WTO. Based on the above introductions and discussions, an e-business solution to handle the situation SHTG faced is introduced. In summary and discussion, we will discuss the significance of this case study.

## 2. Background

### 2.1 Background of the Industry

The China's tobacco industry is regulated by the system of state monopoly administration. All the tobacco related operations, such as growing tobacco leaves, cigarette manufacturing, distribution and sales, are all

regulated by the State Tobacco Monopoly Administration (STMA). STMA exercises a strict control role over tobacco production by planning. Tobacco makers have to coordinate their production in line with the production quotas issued by competent administrative authorities. Under this system, the tobacco production and sales are regulated and protected by the Tobacco Monopoly Law. Furthermore, the Chinese tobacco wholesale and retail markets are also protected by the government by measures such as the restriction of tobacco import, the imposition of high import duties and the establishment of non-tariff trade barriers. Table 1 is the Chinese import duties rate of tobacco related products in 2001. Compared with other industries, tobacco industry is a closed one.

**Table 1 The Chinese import duties rate of tobacco related products in 2001**

Tobacco related products	Import duties rate (%)
tobacco leaves	34
homogenized or “reconstituted” tobacco(such as strips)	54
tobacco	57
cigarettes	65(regulation rate) and 36 (effective rate)
cigarette paper	45

China’s tobacco industry has experienced a long period of prosperity. According to the STMA’s statistics, Chinese tobacco industry has provided an accumulative 697.4 billion Yuan RMB for the country over the past ten years. Some 10 percent of the revenue for the national finance and taxation comes from the tobacco industry in China.

Undoubtedly, SMA system and protection from the government play key roles behind the prosperity and success of the tobacco industry. The success of a tobacco enterprise is guaranteed by output quotas, which is assigned by STMA. Therefore, manufacturers primarily put their main resources on their production and product quality.

## 2.2 A Brief History of SHTG’s IT Applications

The IT history of SHTG started from the late years of 1970s when it was still Shanghai Cigarette Factory (SHCF). At that time, it introduced single-chip computers in the application field of process control in 1978, which aimed at automating its manufacturing process for cigarette manufacture. In 1982, several microcomputers were put into use in the management areas, such as the allocation of worker force, payoff accounting and cost accounting. And then SHTG expended its IT application

into the domains of inventory management and financial accounting. In this period, all the applications of IT in SHTG were isolated systems. Their functionalities were limited to the organizational units where they were deployed. What they did in IT deployment was just embedding the existed processes in silicon and software<sup>[7]</sup>. However, the situation of SHTG’s IT was in line with its need of IT. Because what it focused on in business operation at that time was to improve its efficiency in production and lower its operational cost under the protection from SMA system.

At the late of 1980s, having seen that IT had expended to many operational units and considering the future trends of IT applications, SHTG decided to leverage its IT applications to a new level. The establishment of a network based on Novel structure in 1987 started its attempt toward this goal. What SHTG had done first was to establish a network within SHTG so as to integrate all of these applications and facilitate communications among different applications.

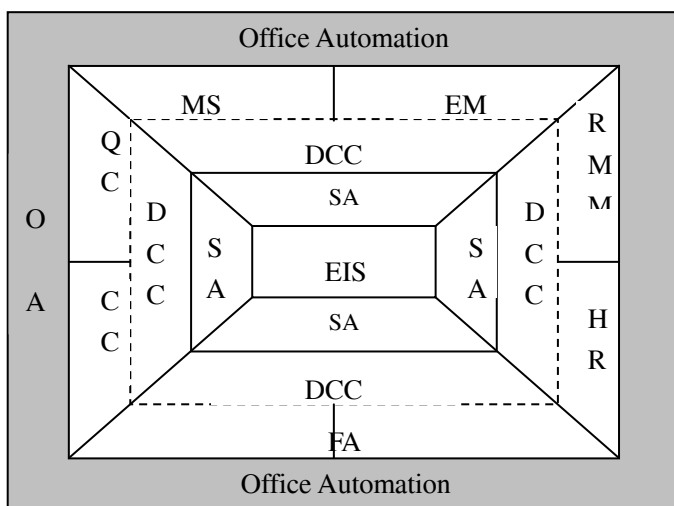
Entering into 1990, an excellent opportunity for SHTG of fast development came when Shanghai’s Pudong area was established as a developing zone by the central government. Shanghai was opened wider to the outside. Shanghai has gained the focus from the whole China and the world. Many foreign companies flushed into Shanghai to establish their own branches or invest to create a new one. In 1993, SHTG was founded, and the scale of the corporation increased many times compared with SHCF. Besides SHCF, SHTG includes other enterprises, sub-companies and holding companies, e.g. the Tobacco Trading Center, tobacco leaf grow bases (13 in total), Guanshenyuan Food (Group) Corporation and others. Its business scope expanded from tobacco related products to food, drinking, real estate, transportation and others. Its enterprises cover many parts of China, for example SHTG cooperates with other 15 tobacco limited companies distributed in different provinces of China. With the incentive from the managerial abilities of European and American companies and increasingly intense competitiveness among Chinese tobacco market, SHTG felt an urgent need to leverage its ability to manage such a large scale group corporation and to enlarge its market share.

## 3. Current Situation of SHTG’s IT: Enterprise Information System

### 3.1 Structure of Current Information Systems

In the middle of 1990s, SHTG set up a information system plan, which outlined its blueprint of enterprise information systems and proposed a schedule to implement it during a five-year period. Several partners

from the tobacco industry and IT industry were included in the development of the application systems. The subsystems such as executive information system (EIS), row material management (RMM), inventory management (IM), coding management (CM), auxiliary material management (AM), manufacturing schedule (MS), quality control (QC), cost control (CC), equipment management (EM), statistical analysis (SA), data capturing and collection (DCC), finished goods circulation (FGC), comprehensive statistical processing (CSP), financial accounting (FA), human resource (HR), intranet and office automation (OA) have been implemented and put into use in SHTG. Figure 1 show the structure of SHTG's enterprise-wide information system. These systems were developed in hope that the deployment of IT would help the corporation to realize its strategy of leveraging its managerial competence.



**Figure 1 A IS pyramid structure of SHTG**

Figure 1 shows that there are four levels in the IS pyramid structure of SHTG. They are divided into four different level: Decision Support Level, Information Services Level, Transaction Processing Level and Office Automation Level, from the top (center of the diagram) to the bottom (out ring of the diagram) separately.

- In Decision Support Level, EIS provides information for executives of every managerial level. It is the top level of all the applications;
- Information Services Level is a mediate layer between EIS and other lower level subsystems. It captures and processes data from its sub-level applications. It provides statistics analysis to all subsystems and it is actually incorporated in the subsystems. But it is logically independent from its incorporated subsystems;
- Transaction Processing Level, the third layer of the pyramid structure, is made up of the

different functional subsystems as mentioned above. These subsystems are applied in specific application fields separately. Different systems use different processing approaches and generate a large amount of different data, both structured and non-structured, and they are essential to the decisions of executives. These subsystems are the main body of SHTG's IS that supports the daily operation of SHTG;

- Office Automation Level is a level to support the office automation for middle executives. It is a channel for information transformation. It is logically the infrastructure of the whole information system as showed in figure 1.

Furthermore, the system not only facilitates internal communication of everyday operations, but also helps the company acquire the external information, for example, it links with the other intranets of SHTG, and connects to Internet.

### 3.2 Benefits from IT Applications

The existed information system covers the main value chain of SHTG. In manufacturing, it provides the function of manufacturing schedule, quality control, cost control and equipment management systems. In material supply and inventory aspect, it integrates the row material management, inventory management, coding management, auxiliary material management and finished goods circulation systems. In management domain, it has the function of statistical analysis, human resource management, financial accounting, and office automation systems. The implementation of these systems bring benefits to SHTG in the following aspects:

- Facilitating the communication throughout the group;
- Having the first-hand information when market changes;
- Lowering inventory level of row material;
- Improving managerial efficiency and productivity;
- Supporting decision making for the top executives of the group;
- Improving skills of all end-users in using computer; and
- Leveraging IT competency.

### 4. China's WTO Entry — Changing the Competitive Rules

At the beginning of the new century, China welcomed a historical turn — she joined the World Trade Organization (WTO) on November 10, 2001. However, it is not a good news for the Chinese tobacco industry.

China's tobacco market will further integrate itself into the world's free trade system characterized by open international business competition. For the Chinese tobacco industry, how it reacts after the WTO entry has become an issue of great concern.

Though according to the agreements, STMA can still temporarily apply the Tobacco Monopoly Law after China's entry into WTO, China will lower the tariff on tobacco imports eventually. On the other hand, STMA has to reform itself to adapt to the free market environment. Its regulation over the tobacco manufacturing and sales market will be more loose and indirect. Generally speaking, China's WTO entry will bring great pressures to the tobacco industry. Homemade cigarettes and foreign cigarettes will compete fiercely as soon as China releases down many regulations. In the wake of global competition, Chinese tobacco industry is expected to choose either to catch up with the steps of the counterparts in advanced countries or to give up and be driven out of the industry, as the superior will survive while the inferior will die. For the tobacco industry, the good times of being cosseted under the protection of the government will go away.

### 5. The Solutions of SHTG to Face the WTO Entry Challenges

To respond to the challenges imposed by WTO entry

and the changes of domestic market, SHTG sets its corporation strategy with the support of IT. Concerning that production could not guarantee the success in the future tobacco market any more, SHTG turns its strategic focus on marketing—a lesson it must learn in the new industry environment. Establishing a new marketing network to maintain its market share is in its agenda, an e-business solution is therefore proposed.

#### 5.1 The current market channel and selling chain

Figure 2 illustrates the current selling chain of cigarettes sales in SHTG. Its customer can be generally classified into three groups: local customers, domestic customers and international customers. They are accessed through different market channels.

**Local customers** refer to the customers within Shanghai area. They can be accessed through the Cigarette Wholesale and Retail Net of SHTG. They are the only customers who can be reached by the net so far. Cigarette Wholesale and Retail Net of SHTG has more than 24,000 members distributed in the whole Shanghai area. Among them, there are over 600 shops directly belong to the sub-branches of SHTG, over 1,000 chartered shops belong to the top 8 supermarkets in Shanghai and more than 20,000 retailers. They are all licensed by SMTA.

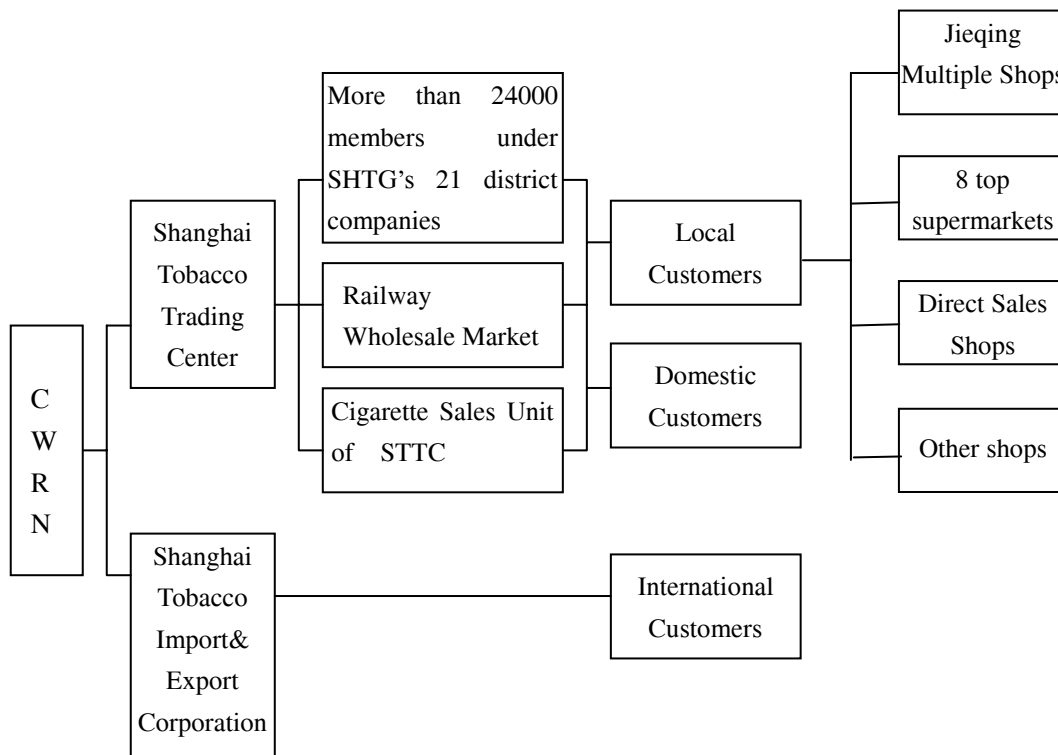


Figure 2. Current wholesale and retail network of SHTG

**Domestic customers** refer to the domestic customers outside Shanghai area. They are can be accessed through orders from other provinces. The orders can be obtained in the tobacco trade fair, which hold twice a year. Though the orders obtained could be varied in terms of quantity and other transactional details such as finish time and transportation means each year, the total quantity of production output can not over-fulfill the quota issued by SMTA for the enterprise each year. So the vary in orders would not influence the total requirement.

**International customers** are accessed through the orders from the sub-branches of Shanghai Tobacco Import and Export Corporation (STIEC). The production output for the orders should be planed according to the plan set by the Foreign Trade Ministry of China. These orders would not influence the total requirement as well.

### 5.2 E-business Based Model of Marketing and Selling Chain Management

The above introduction shows that SHTG has a long selling chain, e.g. the customer can be reached only via

many intermediaries. Its sales net structure is complicated comparably. Its customer profiles are different, too: they are located at different part of the country (e.g. countryside, city), and in the different walks of life. As regard to the WTO entry and the changes of domestic market, it is imperative to integrate all its existed market channels so as to make it works in a more efficient way. Put it specifically, SHTG need its CWRN to achieve the following goals:

- Making best use of the existed CWRN, e.g. fast respond to the requests from its retailers and distributors;
- A mechanism to manage its relation with its customers (CRM);
- A better way to promote its products; and
- Expanding its existed CWRN, which covers only Shanghai area now, so that the other regions can be reached.

Based on above requirements, an e-business based model of marketing and selling chain management is articulated, as Figure 3 shows it.

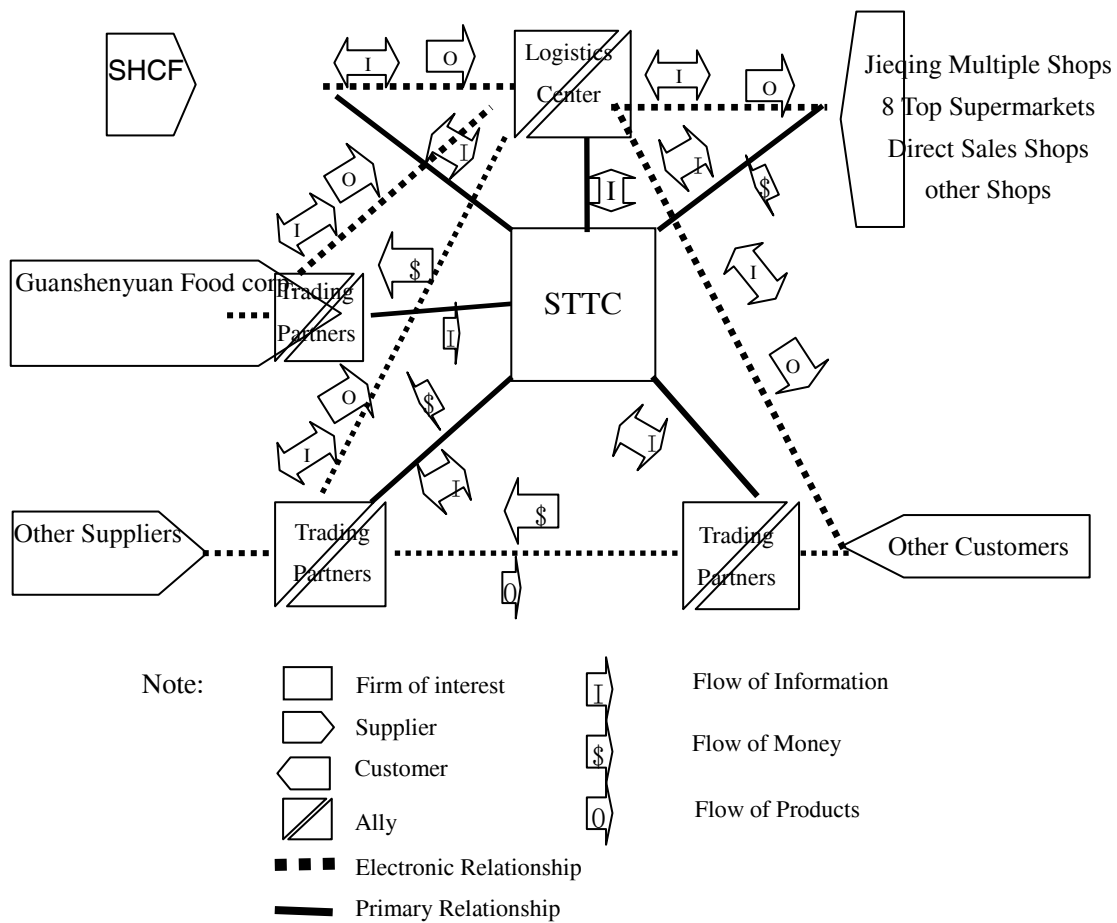


Figure 3 An e-business based model of marketing and selling chain

### 5.3 Value Net Integrator and Sales Channel Integrator

Shanghai Tobacco Trading Center (STTC) is an organizational unit of SHTG and it will act as the core unit for all e-business-related applications in SHTG. It also acts as value net integrator [9] and sales channel integrator in SHTG. As a value net integrator, it is the core unit for all sub-corporations of SHTG. It will integrate the whole value of the corporation through collecting, integrating and distributing information that is distributed in the different value activities of value chain [3] in whole SHTG. As a sales channel integrator, it will integrate all sales channels in SHTG through the coordination of sales activities in the selling chain.

For example, by viewing the information related to the inventory of its subordinated shops via a POS, which is connected to the STTC, the top executives of SHTG can easily know the sales performance of the shops, and then with the support of data mining systems, the top executives can also know the consumer behaviors. With this information, the top executives can easily know what and when the customers need, and then decisions can be made rapidly and automatically. The STTC can also integrate information about suppliers and forward it to the customers, or in reverses, prepare information related to customers for suppliers. In doing so, the STTC also acts as an information integrator.

The model is hoped to support the corporation to carry out its corporation strategy goal of being a value integrator of the industry in the following aspects:

- Coordinating the relationship among the members linked by selling chain by conducting

the activities of capturing, collecting, analyzing and distributing information;

- Strengthening its “core” position in the selling chain, so as to leverage its competence in information accessibility; and
- Facilitating the corporation with other enterprises, improving the efficiency of the selling chain.

### 5.4 Single Contact Service

SHTG is a comprehensive corporation. Besides tobacco related products and services, it also provides other products and services, e.g. sugar, food, drinking, and others. For example, Guanshenyuan Food (group) corporation, which is running in the food industry, is one of its holding companies. It is necessary for STTC to provide information services not only for tobacco related products and services, but also for other products and services as well. So the STTC will be implemented as an integrated platform for SHTG to carry out its all operation activities. The single contact service model provides a better solution to this requirement.

By single contact service solution, STTC will integrate all information services in a platform so that it can improve the internal operation environment and different business units can exchange information efficiently in SHTG. As regard to the customers and suppliers, it will provide a “total solution” for them — get all they want and finish all the transactions at a single point.

Figure 4 gives the main frame of e-business based selling chain model of SHTG. It illustrates the above ideas.

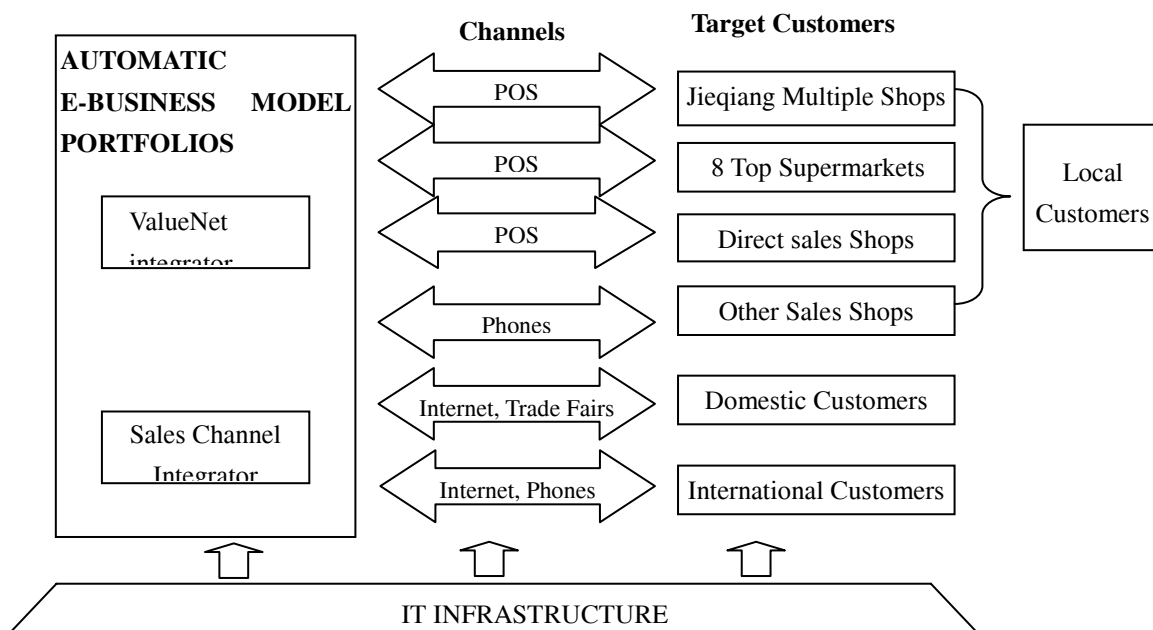
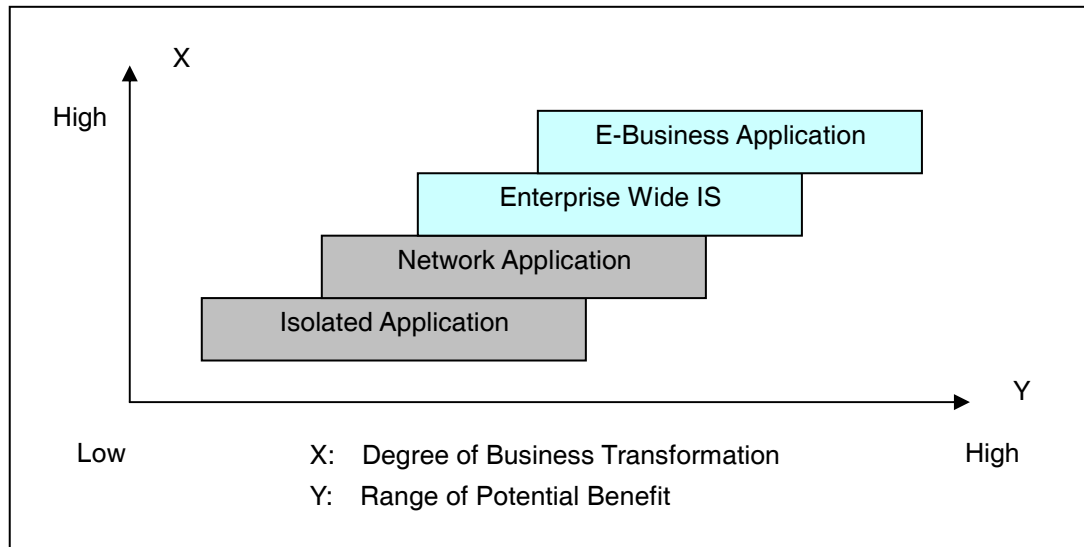


Figure 4 Mainframe of e-business based selling chain model of SHTG



**Figure 5 SHTG's IT application trajectory**

## 6. Summary and recommendation

In this case study, we illustrate the roadmap of SHTG to e-business. Figure 5 outlines SHTG's IT trajectory. Following the framework developed by Venkatraman[6] and Davidson[10], we can observe that SHTG's current IT is at the phase of business redefinition. Therefore, it is inevitable that great changes will happen in the organizational structure and processes. Taking the current problems SHTG facing both in the business domain and external environment domain into account, several beneficial conclusions can be reached for SHTG.

- It is imperative to settle the contradiction between the operation in the SMA system and the operation in the open tobacco market, e.g., transform from production oriented management to marketing oriented management and make its organization system closer to the market;
- It is imperative to accomplish the innovation of the organizational form and mechanism;
- It is imperative to thoroughly reform the current system of internal institutional establishment, management system and distribution system of enterprises.
- It is important for the top executives to recognize the inevitability of changes to the organization when IT is deployed if SHTG want its investment in IT will deliver desired benefits to the organization.

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## References

- [1] Henderson, J. C. and Venkatraman, N., Strategic alignment: Leveraging information technology for transforming organizations, *IBM Systems Journal* 32(1), 1993, 4-16
- [2] Porter, M. E. and Millar, E., How Information Gives You Competitive Advantage, *Harvard Business Review*, July-August, 1985, 1-13
- [3] Porter, M. E., *Competitive Advantage: Creating and Sustaining Superior Performance*, New York, Free Press, 1985
- [4] Clemons, E. K., Information systems for sustainable competitive advantage, *Information & Management*, 11(3), 1986, 131-136
- [5] Luftman, J. N., Lewis, P. R. and Oldach, S. H., Transforming the enterprise: The alignment of business and information technology strategies, *IBM Systems Journal*, 32(1), 1993, 198-221
- [6] Venkatraman, N., IT-Enabled Business Transformation: From Automation to Business Scope Redefinition, *Sloan Management Review*, Winter, 1994, 73-87



- [7] Hammer, M., Reengineering Work: Don't Automate, Obliterate, *Harvard Business Review*, July-August, 1990, 2-8
- [8] Kalakota, R. and Robinson, M., *e-Business 2.0: Roadmap for success*, Addison Wesley, 2001
- [9] Weill, P. and Vitale M., *From Place to Space: Migrating to Atomic e-Business Models*, Harvard Business School Press, Forthcoming, 2001
- [10] Davidson, W. H., Beyond re-engineering: the three phases of business transformation, *IBM Systems Journal*, 32(1), 1993, 65-79