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An Analysis of Factors and Trends Affecting the Parcel Delivery Industry

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Abstract

The parcel delivery industry has seen much change over the years. Businesses have entered and left the industry. Major players have expanded. Consolidations have occurred. The industry today faces a variety of factors and trends that can significantly alter the size and shape of the participants. This paper will utilize a model of the impact of external environmental factor change on business decision making to analyze and project impacts on the industry. Factors and trends to be analyzed include JIT inventory production systems, the growth of mail order sales, B2B and B2C internet and new media, TV shopping networks, the effects of zoneskipping, discounting, the UPS strike, and possible government responses to these changes. Indicators of change in these factors will be examined. The paper will utilize these trends to project changes in the industry in the future.

AN ANALYSIS OF FACTORS AND TRENDS AFFECTING THE PARCEL DELIVERY INDUSTRY

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INTRODUCTION

The parcel delivery industry has seen much change over the years. Businesses have entered and left the industry. Major players have expanded. Consolidations have occurred. The industry today faces a variety of factors and trends that can significantly alter the size and shape of the participants. This paper will utilize a model of the impact of external environmental factor change on business decision making to analyze and project impacts on the industry. Factors and trends to be analyzed include JIT inventory production systems, the growth of mail order sales, B2B and B2C internet and new media, TV shopping networks, the effects of zoneskipping, discounting, the UPS strike, and possible government responses to these changes. Indicators of change in these factors will be examined. The paper will utilize these trends to project changes in the industry in the future.

A MODEL OF EXTERNAL FORCES AND THE PARCEL DELIVERY INDUSTRY

The manner in which changes in the external environment affect the parcel delivery industry is through a process by which key elements interact and interrelate. A model of these relationships is presented in Figure 1. In this model, the elements of the environment are apportioned among systems and response categories which constitute the external environment. These are the societal elements and the responses of the public sector, marketplace and business. These responses are linked through the political system, the market system and the social

UNDERLYING FORCES
 Demographics, Beliefs, Values, Cultures, International Events,
 Scientific Discoveries, Resources, Natural Events

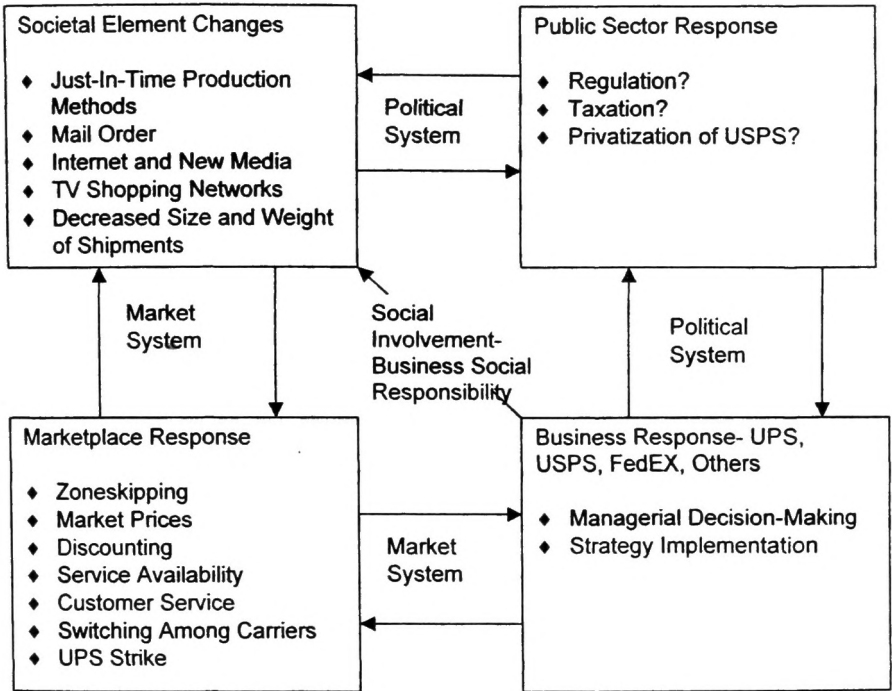


Figure 1. A Model of the Impact of Change in the External Environment on the Small Package Delivery Industry

involvement of business. For further information on this model see Pagano and Verdin (1997).

The model in Figure 1 is one of change and interaction, rather than a static depiction of a balance of forces. Changes in one or more of the societal elements may result in public sector and marketplace responses through the political and market systems. In turn, a business response may also result. The business response may affect the societal elements through the marketplace, the political system, or directly through business social involvement. The business organization represents a particular enterprise in the environment. Management is involved and is influenced by each of the changes and responses to change. All of the elements of the external environment are affected and shaped by a variety of underlying forces.

Underlying forces include demographics, social norms and cultures, beliefs and values, and international events such as wars, famines and agreements between nations. Other underlying forces include scientific discoveries, resource discoveries and depletions, and natural events such as the weather, floods, earthquakes and long-term climatic change.

Some of these forces are completely exogenous to the system described in Figure 1; that is, they are completely independent of and are not affected by the societal elements, the public sector, marketplace or business responses. Business, however, usually interacts with the environment at the societal element level, not at this more basic level. This does not mean, however, that these underlying forces are not important. Major changes in the business environment can be initiated by one or more of these factors. For example, catalog and internet consumer sales have been stimulated by the increase in the labor force participation rate of women.

Information on external factors and trends affecting the small package delivery industry was obtained from a variety of data sources. First, information from the trade press and special consultant studies were examined. Few academic studies have explored this area. One reason is the paucity of data which is public and readily available. Until recently, UPS, the largest ground parcel carrier in the US, was privately held. It did not make public much data concerning its operations. This has created an environment which is not very hospitable to research.

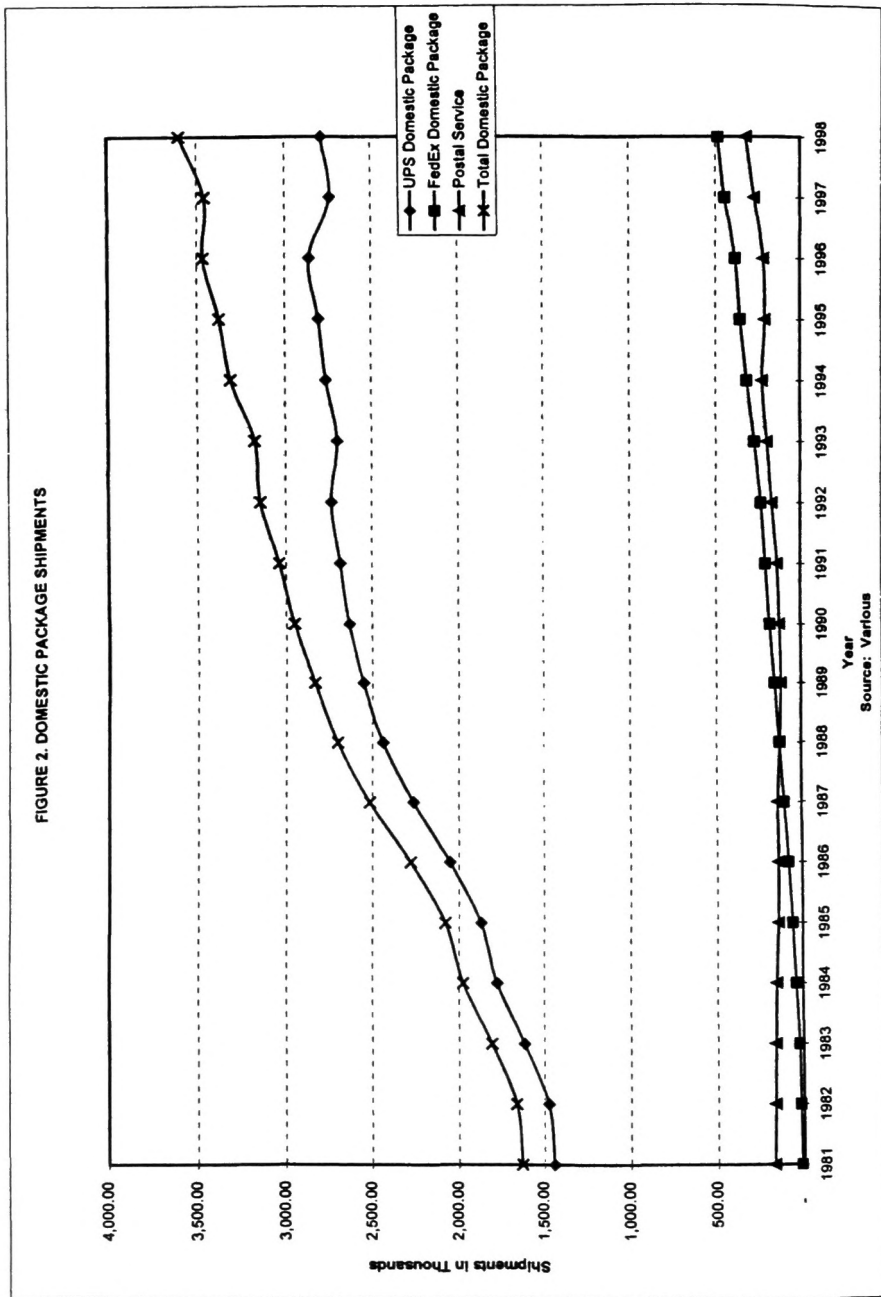
Second, a focus group was conducted with managers and experts in the field of small package delivery. These experts provided information and insights not available through the professional and trade literature.

Third, information was obtained from reports provided by the US Postal Service, reports and analyses conducted by Colography Group, Inc, and searches of the Postal Library in Washington, D.C.

TREND IN PACKAGE SHIPMENTS OVER TIME

Small parcel volume is influenced by the trend in package shipments over time. Figure 2 shows the course of domestic package shipments for UPS, Federal Express and the Postal Service from 1981 to 1998. These shipments include ground, three day, two day and overnight for both UPS and Federal Express. Only ground parcel movements are included for the Postal Service. Not included in the figure are overnight letters and international shipments. The figure is based on data taken from a variety of sources including the Colography Group (1999), FedEx annual reports, and the professional literature.

FIGURE 2. DOMESTIC PACKAGE SHIPMENTS



Source: Various

In 1998, Federal Express, UPS and parcel post combined accounted for over 90 percent of the domestic package market. Thus, the pattern of shipments of these three carriers over time provides a reasonable appraisal of the entire domestic package market in the United States. As can be seen from the figure, the volume of shipments has soared over this period. In 1981, these three carriers shipped 1.6 billion packages per year. In 1998, they shipped over 3.5 billion packages in the US. It is evident from this figure that the domestic package market experienced a phenomenal growth over this period. The growth of UPS parallels this growth in demand.

The ground parcel industry has been more or less stagnant recently, with total domestic shipments increasing by seven percent over the seven year period 1992 - 1998. The market showed a slight decline from 1996 to 1997 but rebounded in 1998. UPS has a commanding share of the ground market. However, its market share has eroded from 86 percent in 1992 to 75 percent in 1998, as RPS and the Postal Service were able to expand market share. (Colography Group, 1999)

Traffic Management (1995) surveyed the largest manufacturing companies in the US to find out how the typical freight dollar is spent. The respondents indicated that on average, 10.3 percent of the average freight dollar is spent in the surface package market. Respondents were asked for their outlook for future modal use. Over 60 percent indicated that they expected their use of surface parcel services to increase. The study was conducted with the 247 largest manufacturing firms in the US.

SOCIETAL ELEMENT CHANGES

The societal elements include all of the changes in the external environment outside the political system and the market system which impact business decision-making. These are some of the major factors and trends affecting the small package delivery industry today. The societal elements impact the public sector response through the political system and business through the market system.

A variety of factors have acted to affect the volume of parcel deliveries over time. These include specific events impacting individual competitors and long term trends affecting market demand.

Just-in-time Production Methods

Just-in-time production methods are spreading throughout US industry. For example, a survey conducted by Northeastern University Professors Millen and Lieb of *Traffic Management* readers in 1990 found that 70 percent of the respondents had or planned to implement JIT programs. Over one fourth of the responding companies had fully operational programs at the time of the survey. (*Traffic Management*, 1990). Allen (1995) reports on a survey by the National Association of Purchasing Management that indicated that as much as 26 percent of respondents purchased materials "hand to mouth" in January 1995, compared to 4 percent in February, 1970. One analyst predicted that more than half of the inbound transportation deliveries in the year 2000 will be done on a just-in-time basis, (Schulz, 1996).

The shift to JIT inventory-production methods means that companies require smaller, more frequent shipments of raw materials and intermediate goods. This in turn can affect the business demand for package delivery since a portion of these shipments may best be

accomplished through small parcel service either on the ground or in the air. Helms (1989) argues that many companies are becoming dependent on air express shipments for materials that were formerly inventoried.

In addition, the growth of JIT methods places an increased demand on carriers to guarantee delivery. This does not necessarily mean faster delivery, but rather assured delivery. JIT methods require that raw materials arrive at the plant close to the moment of production. Production is scheduled in advance, so planners know how much of what items are needed when. JIT can be accommodated through ground truck service that guarantees delivery. Cooke (1991) argues that time definite freight makes sense in many instances.

One measure of the extent to which JIT methods have been implemented by business is the Inventory-Sales Ratio. One would expect this ratio to decline over time as JIT methods are implemented by business. However, the I/S ratio is subject to cyclical effects, increasing during contractions and declining during expansions. These cyclical effects mask the extent to which the ratio may have declined over time. The ratio has declined slightly from 1.55 in the first quarter of 1977 to 1.37 in the first quarter of 1995. Between these years, however the ratio varied, peaking at 1.78 in the fourth quarter of 1986.

Growth of Mail Order

The growth of mail order sales over time has also had an effect on small package delivery volumes. Catalog purchases, direct mail to lists, telephone sales and other forms of direct marketing have soared over time. This, in turn has increased the demand for package delivery. The main beneficiary of the direct marketing boom has been UPS. However, this growth in mail order has had an impact throughout the package delivery industry.

Sales from catalogs have been increasing throughout the 1990's. Both consumer and business-to-business catalog sales have increased by around 25 percent from 1990 to 1995, according to *Catalog Age* (1996). Overall, catalog sales were expected to increase by 45 percent in the 1990's. The Direct Marketing Association (1999) provides data on the percentage of the population who ordered by mail or phone. These data are based on stratified probability samples of adults in each year. This percentage has been consistently above 50 percent since 1988.

The List industry mails direct marketing materials to individuals whose names are obtained from subscriptions and other lists. The industry was asked whether overall mailing quantities and mailing frequencies have changed over the previous year. The results of surveys taken between 1987 and 1996 show that a high percentage of List industry respondents consistently mail greater quantities, more frequently over the previous year (Direct Marketing Association, 1999)

The percentage of advertising spending going to direct mail has for the most part increased over time with direct mail comprising 14 percent of advertising spending in 1980, rising to 19.7 percent in 1996. Estimated annual US direct mail advertising expenditures from 1980 to 1996 has steadily increased throughout the period. (Direct Marketing Association, 1999)

Internet and Other New Media Sales

A recent development in direct marketing is the use of the internet and other new media technologies. These technologies include internet, on-line services, CD-Rom, Kiosks, Screen Phones, and Interactive TV. The Direct Marketing Association and A.T. Kearney and Associates conducted a survey of direct marketing companies using new media, *Direct Marketing* (1996). Although sales from new media are not great, the survey indicates that eight out of ten

direct marketing companies are using some form of new media technology, with the internet and on-line services being the most popular.

The internet in particular has experienced substantial growth in the past few years. The Direct Marketing Association (1999) reports that twenty two percent of polled consumers in 1998 indicated that they have purchased a product or service via the Internet, World Wide Web, or other online service. The Association reports that by 2002, consumers will spend a projected \$52 per year in online/Internet access services which is triple the amount spent in 1996.

Oberndorf (1999) reports on predictions of explosive growth of interactive TV or iTV. She states: " Early statistics show that some consumers are more than willing to buy products via the TV. Microsoft's WebTV . . . found that 49% of its nearly 1 million subscribers have purchased a service or product online in the past year." She notes that more than 11 million households worldwide subscribe to interactive television and it is predicted that 67 million in the US and Europe will have access by 2003. (Oberndorf, 1999, p 1.)

TV Shopping Networks

Another growing source of parcel delivery is purchases from home shopping programs. While the percent of the population viewing these programs declined slightly from 1991 to 1993, it has increased in 1998. Those buying items from this medium have decreased from 3.7 percent of the population to 2.6 percent, possibly because of the growth in internet sales. (Direct Marketing Association, 1999)

Decrease in Size and Weight of High Value Products

Another factor which is mentioned in the literature that may have contributed to the growth in the parcel delivery business is the decreased size and weight of high value products.

It is argued that more LTL freight is moving in small packages as high value products such as VCR's and PC's decrease in size and weight. Bearth (1996) has a short discussion of this issue. Unfortunately, there is no readily available data that can be used to examine this hypothesis.

MARKETPLACE RESPONSE

Initial societal element changes, such as those listed above for the small package delivery industry, modified by a possible public sector response, will then affect the marketplace in which business is involved. If many businesses in an industry or market adapt to these changes, then the marketplace variables can be further affected. The following marketplace responses have occurred.

Zoneskipping

Zoneskipping is the consolidation of multiple small parcel shipments into a truckload shipment that is hauled across several shipping zones, then turned over to a parcel delivery company (UPS, USPS or a regional delivery company) for final delivery. The advantages of zoneskipping are that it saves money, and provides for faster, more reliable delivery. Several days can be cut off the delivery time. Some shippers find that zoneskipping is a viable alternative to air freight.

The service was begun in 1989-1990 with two firms, SPS (Small Parcel Service) and Zoneskip. Small Parcel Service (SPS) was based in Congers, NY. A trucking company did the long haul from a SPS central distribution center. ZoneSkip used its own fleet of trucks to make pickups at customers's docks. Packages moved to a company sorting center for consolidation into truckloads. A trucking company handled the line haul. The service was geared to shippers

of 150 or more packages per week, weighing between 10 and 70 lbs. Both companies were short lived, however. UPS began offering discounts to large customers in 1992, except for package consolidators. Both companies shut their doors in 1992. However, the concept of zoneskipping still lives on. Small carriers and regional delivery companies have continued the practice using either UPS or USPS for the final delivery leg.

The small parcel delivery focus group felt that growth in bulk parcel volume since 1990 especially at USPS can be explained by the growth of volume through consolidators. One consolidator, CTC, which is headquartered in Minneapolis, deposits 80% of parcel volume through Bulk Mail Centers, and goes to every BMC every day. Currently, the consolidation market consists only of CTC and a few regional carriers. The group felt that new discounts will bring in new consolidators in the future.

Market Prices

The importance of price in determining market volumes depends on the type of shipment. Helms (1989) has observed that the faster the shipment, the more price inelastic the demand and the more sensitive demand is to service factors. Thus, the demand for overnight shipments tends to be price inelastic, while ground shipments tend to be price elastic.

Colography Group (1999) has estimated average revenue data for the various types of shipments by carrier. Average revenue per shipment can be considered the average price of a shipment. Average distance, weight and other factors affect this variable. Average revenue per shipment is the greatest for RPS and least for parcel post. In 1997, RPS revenue per shipment averaged \$7.21, while parcel post averaged \$3.16. The UPS average was \$5.14. When looked

at in this way, it seems that parcel post is priced much lower than the other two ground parcel services.

Another way of looking at average revenue data is through average revenue per piece. Each of these services has a different average number of pieces per shipment. The UPS average is 1.5. USPS counts each piece as a separate shipment; its average is 1.0. On a per piece basis, UPS and USPS revenues are very similar. In 1997, the UPS average was \$3.43, while the USPS average was \$3.16. RPS average revenue per piece was above the other two services.

Colography Group (1999) also provides information on the average weight per shipment and per piece. These are fairly constant from year to year. UPS average weight per shipment was 10.7 lbs in 1997. RPS and USPS averages were 20.5 and 5.3 lbs respectively. On a per piece basis, UPS averaged 7.1 lbs, USPS averaged 5.3 and RPS averaged 14.7. RPS's larger average revenues per shipment and per piece thus are probably due to the larger average weight of its shipments.

UPS Discounting

The focus group discussed UPS prices. In particular, participants were asked if they had information on the extent to which UPS discounts its prices and the volume of packages subject to discount. They were also asked if the discount changed over time and why they thought UPS pricing changed.

The group felt that the UPS published rate is more representative today. There is less discounting than in the past. UPS looks at the total bundle of services that a shipper uses - air, international, ground - in determining the size of the discount a particular shipper would get. The discount for ground only is very low. One participant stated that shippers will not provide

information on discounting, because of their agreements with UPS.

Service Availability

One argument that is used to explain the growth in parcel delivery, especially air express, is that the very availability of such services creates demand for the service. Helms (1989) cites the examples of international air shipments of flowers and food items, which are goods that formerly were not even traded between countries, but now are common shipments with the advent of air express. She argues that the innovations of today such as on-line package tracing, satellite communications networks and logistics planning services will encourage continued growth in the package delivery industry.

Customer Service Issues

Service quality is an important consideration for shippers of all modes of transportation. A survey of the 100 largest corporations in the US (*Traffic Management*, 1992) found that improved service reliability was as large a concern as cost containment and reduction. Shippers place most importance on on-time pickup and delivery. Keller (1996) compiled the results of several shipper surveys and found that on-time delivery was the top priority of shippers of both LTL and parcels.

On time delivery is also a concern of the catalog industry. Saccomano (1995) notes that in the mail order industry instant gratification is the name of the game. She notes: "People are less likely to cancel an order or return an item if it's delivered quickly. The longer an order stays unfilled, the more time for buyer remorse and second thoughts about the purchase." (Saccomano, 1995 p. 43)

Service quality issues can be real or perceived. Even if quality is improved, adverse

perceptions can persist for a long time. From 1988 to 1993, around 90 percent of the List industry ranked USPS delivery issues as very important or somewhat important. This percentage has fallen somewhat to 82 percent by 1996, reflecting service improvements on the part of the Postal System (Direct Marketing Association, 1999). These real or perceived delivery and other quality issues can affect the volume of parcels shipped by each carrier.

Switching Among Carriers

The focus group also discussed the factors that affect the decision as to which carrier to use and how easy is it to switch carriers. One participant mentioned that the most important factor is whether the carrier can provide the service that is needed. Delivery time is also important with a maximum time of 10 - 12 days. Each year, about 4% of all shippers switch carriers.

Is there a sense that companies are switching today, and what does it take to get a switch was the next topic addressed. The group felt that shippers are more open minded about switching today, but they are locked into UPS software. There is about an 8% switch occurring today.

Business and Household Interactive Volume Flows

When comparing USPS to UPS it is evident that most of UPS's business is in the non-household to non-household market. Almost eighty percent of its ground parcel business is in this segment, as opposed to just under 29 percent of the parcel post volume. The Postal Service is specializing in the household market, with 10.7% of its volume originating with households, and over 69 percent of volume destined for households. RPS segment shares show that this

carrier is almost exclusively a non-household to non-household carrier. (Source: USPS Department of Market Research and Analysis)

The UPS Strike

The focus group was asked for the reasons why Parcel Post volume increased during the UPS strike and never returned to previous levels. They felt that several factors internal to the Postal Service and UPS impacted this volume. Recently, the USPS has been providing a high level of service. Another factor is that parcel shipments have experienced a 4-5% rate of growth. This amount of growth forces management to look around and investigate alternatives.

THE PUBLIC SECTOR RESPONSE

A change in a societal element, possibly initiated by a change in one of the underlying forces, will not directly affect business. Rather, its impact will be modified by a public sector response and/or a market response. The public sector response is determined through the political system. The political system is the mechanism by which broad public policy objectives are defined and evaluated and are translated into the appropriate public sector response.

The public sector response to the changes in these factors and trends is not clear at this point. The growing importance of the internet means that the small package delivery industry will grow in importance over time. With the demise of the ICC, government regulation of this industry has ceased. However, an important industry, dominated by only three organizations, could be ripe for increased government scrutiny and possible regulation of service standards, rates, etc. Since USPS already is under scrutiny through the Postal Rate Commission, a possible logical extension of regulation to the other firms in the industry could be considered.

Taxation of internet transactions has already been considered by Congress. Currently, there is a moratorium on such taxes. If this moratorium is eventually lifted, internet commerce will suffer. This will have a negative effect on the growth of the small package delivery industry.

One big uncertainty is whether the Postal System will continue in its present form. The more market oriented USPS becomes and the fewer the bureaucratic strings, the more likely that this organization will expand and take market share from other market participants, especially UPS. The ultimate would be complete privatization of USPS. Completely freed from bureaucratic shackles, this organization could become the dominate player in the small package delivery industry.

PARCEL DELIVERY INDUSTRY RESPONSE

Business does not merely adapt to a changing environment, but its actions can also affect and influence the political system and the societal elements. The public sector response can be altered by the anticipatory as well as the defensive response of business. Management actions can also have a direct effect on the societal elements. Business can also take a proactive stance and institute socially beneficial programs. Many actions will have consequences far beyond the plant gate or office door.

Each of the major participants in the small package delivery industry have taken a variety of steps to deal with this changing environment. Federal Express has purchased Caliper Corporation and is expanding into the ground parcel market. UPS has attached a residential surcharge to its rates and has ceded much of the B2C and C2C market to other market

participants, especially USPS. The Postal Service has embarked on a program to increase customer service, especially through the use of the OTIS tracking system.

The future of the small package delivery industry is indeed bright. The variety of external factors and trends indicate a long period of growth for this industry. Government could intervene, however and either directly or indirectly stifle such growth. The future of this industry could well be shaped by policies adopted in Washington, D.C. The story is still being written.

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