This is to certify that the

thesis entitled

Comparative Analysis of the RBOCs strategic entry into the video services market

presented by

Mohamed A MALOUCHE

has been accepted towards fulfillment
of the requirements for

Master of Arts degree in Telecommunications

Major professor

Date 5/6/97

DATE DUE	DATE DUE	DATE DUE

COMPARATIVE ANALYSIS OF THE RBOCs STRATEGIC ENTRY INTO THE VIDEO SERVICES MARKET

By

Mohamed A Malouche

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF ARTS

Department of Telecommunications

1997

ABSTRACT

This thesis examines an aspect of the convergence between information technologies and industries, the RBOCs strategic entry into the video services market. Its aim is twofold. First, it provides a profile of some common characteristics of RBOCs video services targeted areas. Demographic, socioeconomic and geographical data are examined and analyzed for every trial. Second, it compares the approaches and motivations for the RBOCs entry into the video services market based on their prior experiences, technologies, regulation and market characteristics.

Empirical results show that selected areas profiles depend on the type of services offered and on the technology used. High-income areas are targeted when RBOCs are offering enhanced cable services (through a better network or a better bargain than the incumbent). High-income areas are not necessarily targeted when it comes to interactive or broadband services. Instead these services are provided in metropolitan areas or suburbs of metro areas. "Interim" technologies (ADSL, MMDS, DBS) are not offered in affluent places but are more likely to be provided in less costly, convenient areas, in high-cable penetration markets.

The qualitative study of RBOCs entrance in video shows that their video strategies depend on their other businesses, on the market structure and on the technologies adopted. RBOCs are dropping and adding technologies and services in order to move to more economically realistic video deployments. Two main strategies have been identified. The first is a network-centered strategy that focuses more on building a broadband network through which all services would be provided. The second is a services-centered strategy that focuses more on acquiring the experience to manage video services through acquisitions or international experience.

In order to gain market shares RBOCs are joining forces to differentiate their content and provide more choices. However, original programming is not yet on their agenda and programming differences tend to relate to offering certain channels in basic instead of as premium at competitive prices.

ACKNOWLEDGMENTS

I would like to express my appreciation and gratitude to the following individuals. I have great respect for Professor Charles Steinfield, my advisor, who inspired the writing and supervised the preparation of this work.

Much respect must go as well to Professor Johannes Bauer who have provided me the basis for this thesis.

I would like to express my deep thanks to Professor Joey Reagan for his insight and assistance. Professor Reagan for whom I worked as a teaching assistant in Telecommunications Technologies continually helped and guided me throughout the accomplishment of this work.

I am greatly undebted to my family for the many ways in which they offered me their support. I would like to especially thank my brother, Mehdi, for his helpful suggestions and his tremendous patience.

Lastly, but of paramount importance, my sincere appreciation and thanks to my fiancee, Myriam, for her continuing understanding, support and encouragement.

To All, I am deeply grateful.

TABLE OF CONTENTS

LIST OF TABLES

FIGURE

INTRODUCTION

1) Presentation

The evolution of technology along with regulation changes have deeply modified the context in which the Regional Bell Operating Companies (RBOCs) defined their strategies. Now that the new Telecommunications Act of 1996 has passed, one of the current strategic dilemmas for all telecommunications actors is where to invest. Local telephony, long-distance, video, internet, high-speed data transmission and many other services are all strategic and growing businesses.

This thesis provides an analysis of the RBOCs entrance in the video services market and compares their different strategic approaches in the provision of video.

It is particularly interesting to examine in detail the entrance motivations of historically local telephony providers in a completely new field for them. Indeed, The economic and financial equilibrium of RBOCs is at stake. A Deloitte & Touche study (1996) estimates that the growth of value added services, the changes in regulation as well as digitalization might provoke a massive redistribution of market shares in the local business. New entrants in local telephony services "cherry-pick" the best metropolitan areas and neglect rural regions. A Morgan Stanley analysis (Business Week, April 1996) estimates that the Bells could lose 25% of their residential customers and 35% of the business market over the next 10 years.

Moreover, the US cable market is valued at $26 billion in 1995 and is expected to grow eight percent to 11% a year to $44 billion by the year 2000 (Ameritech's Annual Report, 1995). Cable growth is twice as much as local telephony growth (a market of $123 billion that will grow four percent to six percent a year). Cable growth is more important than the long distance market growth (valued at $45 billion in 1995 and expected to grow eight percent to nine percent a year).

Finally, surveys show that US households want more and more entertainment, integrated easy-to-use services, and would seriously consider changing providers if they could get all their bills and troubleshooting from a single source (C/J research, TeleSight survey 1996).

These are reasons why RBOCs need to reevaluate their historical strategies of re-centering into their core business, and enter the video services business.

2) Purpose of this thesis

This thesis covers one aspect of the convergence between telecommunications industries. Moreover, Telcos entrance into the cable TV market is one of the outcome of the Telecommunication Act of 1996.

The purpose of this thesis is to see how profitable companies that are losing market shares in the local market and therefore that need to diversify their sources of revenues will adapt to change and cope with competition after many years of monopoly. It will also look at how corporate strategy-makers think differently according to their strengths, weaknesses, and to see how outside factors like regulation, technology and competition affect RBOCs video strategies.

It will review the technological, regulatory and economic aspects of the RBOCs entrance into video services and will compare their strategies. The empirical part will focus on the shared behavior of RBOCs in the process of targeting locations for their initial service offerings. Further, it will examine in an exploratory fashion, the criteria selected by RBOCs to provide video services in particular locations, and the common features in terms of age, population concentration, Median Household Income (MHI) and educational level between these different areas. It will include other criteria in order to explain the RBOCs motivations to penetrate certain areas and see why a few locations do not match the profile. This research will focus on the relationship between type of services offered, selected markets and entry strategies.

Chapter I

THEORY AND CONTEXT

1.1) Entry strategy, adoption of new services

1.1.1) Introduction

The globalization of the economy and the convergence of information technologies industries have turned strategic planning of telecommunications firms to a major management concern.

Growth through diversification into markets where these firms have not previously competed ranks as a top priority, especially after the recent regulatory changes. Entry into markets unfamiliar to the parent company has received less attention in the field of telecommunications, compared to strategies for existing businesses. The reasons are multiple and range from the cross-ownership bans imposed by regulation to the reminiscence of a corporate monopolistic attitude in the RBOCs.

This research is about diversification at both the corporate and business unit levels. It focuses on corporate decisions that affect the diversification field and it looks at the unit of the corporation that made the diversification attempt.

Entry strategy literature as well as studies that have examined adoption of new media services and the relation between consumption of these services with demographics and socio-economic variables will be reviewed.

1.1.2) Entry strategy: economic and marketing literature

According to Biggadike (1979), entry occurs when "a firm already established in a line of business begins to compete in a market where it did not previously operate."

In economic theory, entry plays a crucial role in attaining competitive markets. Economists have traditionally assigned this role to newborn firms, but have realized that it is also performed by established firms. In the literature on product diversification and multi-product firms, Hines (1957) had recognized entry by established firms and argued that established firms can enter more easily than newborn firms. Andrews (1964) has pointed out that recognizing established firm entry means that the "differentiated segments of industries cease to be little monopolies but subject to strong competition of an oligopoly kind." Moreover, he argued that some of the problems faced by an entrant such as acquiring capital, establishing a brand name or reaching economies of scale are less severe for established firms. Caves and Porter (1975) have developed this idea into "a general theory of the mobility of firms among segments of industry."

Despite the importance of entry by established firms, little is known about the strategy of the business units that made the entry and its implications. Indeed, economists have studied the state of entry conditions (Bain 1956), the public policy implications of diversification (Markham 1973), the effect of entry on market structure (McGuckin 1972) and on performance (Biggadike 1979; Green and Ryans 1990; 1995) and the determinants

of entry (Orr 1974; Goercki 1975). Business researchers have focused on the firm's total performance as well as on its marketing mix and product line policy (Andrews 1971). Their focus is primarily on corporate strategy, the strategy of the firm as a whole, not on business unit strategy and how this unit will compete for customers in the new market.

This study will emphasize the interdependence of the business unit strategy and the corporate strategy and will focus on what the business unit offers to customers. In this research, *strategy* is used to mean the competitive market strategies that are the RBOCs answers to three questions: Who are our potential customers? How will we attract them? What is the level and allocation of our efforts? Strategy here is distinguished from corporate strategy, which is more concerned with a different question (what businesses are we in?), and with putting together a portfolio of businesses and product- markets.

In the marketing literature, writers have given attention to a wide array of variables. The marketing mix is composed by four main elements: product, price, distribution and communication. Smith (1956) classified marketing strategies into two main categories, product differentiation or market segmentation.

A product differentiation strategy described the firm with a product orientation designed for a large number of people rather than a consumer orientation. Smith described product differentiation approach as "building some difference into the product and then advertising it heavily as suitable for the mass market." Kaufman and Lane (1996) suggested improving existing products by adding new functions or increasing the capacity, combining existing products in new ways or coming up with innovations that meet consumer needs. The opposite strategy is market segmentation which focuses more

on a niche of customers with common needs or characteristics. Smith described the firms that adopt this type of strategy as "recognizing consumer heterogeneity, dividing consumers into groups with common needs and then designing a version of the basic product suitable for each group."

Kotler (1972) has classified strategies into those suitable for large firms and those suitable for smaller firms. He argued that smaller firms should concentrate on improving their relative position by differentiating themselves from the larger firms. He suggested four different strategies related to three of the four marketing mix basic components: improving the product which relates to product differentiation, finding a different segment of the market which relates to market segmentation, opening up a new channel of distribution which relates to distribution, or developing a superior advertising campaign which relates to communication. Other possibilities, according to Biggadike, are innovation in personal selling, packaging, pricing, services and promotion.
In contrast, the larger firm's objective is to "discourage" or "discipline" the smaller firms. Their strategy alternatives are innovation, fortification (brand proliferation), confrontation (price war) and persecution (using their relationships with suppliers, channels and legislators to restrict smaller firms).

According to Porter (1975), firms that follow a differentiated strategy are likely to use all the components of the marketing mix to create customer loyalty to their brand. Non-differentiated firms rely primarily on low price to obtain a share of the market. Biggadike (1979) reported a similar concept that has been developed by the Boston Consulting Group: cost reduction versus defensible segmentation.

A cost reduction strategy seeks the greatest accumulated volume with the objective of attaining the best cost position relative to competitors. A defensible segmentation strategy seeks a portion of the market which the holder can defend against large competitors, in spite of their superior cost position.

Other strategies have been suggested by marketing researchers. Heflebower (1954) proposed at least three strategies: market segmentation, product improvement and improved services. Hines (1957) pointed to entry strategies that open new marketing channels, extend geographical areas served, and offer a specialized, high-priced product or a mass-market, low priced product. Kottke (1966) discussed three strategies of entry: offering a better product at the same price, the same product at a lower price or the same product at the same price but with better service or more attractive terms.

Entry strategies have evolved since the 70s and among the big headlines of today's globalized economy is a trend that particularly affects the information technologies industry: alliances, acquisitions and mergers. Indeed, an overriding strategic question for management of RBOCs is whether entry into the cable business should be made on a competitive basis or on a cooperative basis with existing firms already in the segment or area they are seeking to enter. A number of industry observers think that the economics of telco entry through overbuilding existing cable systems are prohibitively unfavorable. Dholakia and Mundorf (1996) reported research by CBS/New York Times showing that consumers are not willing to pay very much for interactive TV: only 47% will spend between $5 and $10 per month and 48% will spend more than $10 a month. Consumer willingness to pay for cable's extra TV channels being somewhat lower than anticipated and rising competition especially from Direct Broadcast Satellite (DBS) are

factors that limit the potential for profitable RBOCs video services at least in the short-term. Cable subscriber's interest in broadband video services has been described by Dizard (1994) as "nonplussed." Moreover, the inexperience of telcos in offering packages of video programming, which is a barrier to entry, may lead them to acquire existing cable or wireless cable or DBS companies in order to gain time. There are indeed incentives to cooperate rather than compete. However, since cooperative strategies might lead to the creation of bottleneck monopolies, regulators will probably dismiss this kind of agreement.

This research will identify what entry strategy or combination of entry strategies has been developed by RBOCs to enter video services. It will be based on the study of the context, targeted segments and marketing mix elements.

At the business unit level, the literature provides several strategies: product differentiation that actually uses all the mix components, market segmentation, new channels of distribution, superior communication campaign, innovation in packaging or bundling, innovation in pricing or confrontation (price war), innovation or improvement in services, extension of geographical areas served and exploitation of "market position" (skills, brand name, prior experience, level of investments).

Theoretically, these strategies can be applied separately but they are usually mixed. Combinations of strategies are endless because even changing only one of the marketing mix components results in a different entry strategy.

At the corporate level, video will compete with other multiple business opportunities that emerged as a result of the Telecom deregulation of 1996.

As for business units strategies, RBOCs corporate strategies are multiple. The National Association of Broadcasters (NAB) has identified two main orientations that have been used by telephone companies to diversify into video services: focusing on operating a cable TV system (services-centered), or developing a broadband network that will be able to handle a lot of services (network-centered). A third strategy consists of a combination of these two, a hybrid network/services approach.

1.1.3) Adoption of new services and socio-economic characteristics

The empirical study will examine closely one aspect of entry strategy, the targeted markets. The diffusion theory literature has given considerable attention on the characteristics of innovators and other adopters' categories. Perhaps the most prevalent research topic within consumer diffusion theory has been to find the profile of innovators for particular product categories. The overall conclusion is that there is not a generalized innovator across product categories and that distinct innovator profiles must be obtained by product category or interest domain. A review of research across product categories by Robertson, Zielinski and Ward (1984) indicated some tendencies for innovators to have the following characteristics: higher income, higher education, younger, more socially mobile, more favorable attitudes toward risk, greater social participation and high opinion leadership. Rogers (1983) showed that innovators and early adopters of innovations are likely to be more upscale than late majority or laggards. Atkin (1993) pointed out that Rogers' findings "stem from the assumption that education could make one more aware of adoption benefits, while income is necessary in overcoming cost barriers to such purchases."

Adoption of cable TV studies have shown that "older households, especially those without children, and low-income homes are relatively unlikely to have cable" (Atkin & La Rose 1996). Papazian (1994) found that middle age and upper income are associated with heavy investment in video equipment and services. Different research on cable portrayed an upscale subscriber profile that fits with Rogers' diffusion of innovation theory (La Rose & Atkin 1988; Greenberg, Heeter, D'Alessio & Sipes 1988). Subscribers to premium channels where found to have higher income, better education than basic cable subscribers who were found to have higher incomes and better education than non-subscribers (Krugman 1985; Wirth & Bloch 1990).

However, such variable as income or education applies more to some product categories than others and the absence of a generalized innovator still holds as the overall conclusion. A Link Resources study (1992) showed that high income is correlated to adoption of answering machines, personal computer, fax machines and CD player, but is less correlated to adoption of VCRs and video-game console.

Demographic findings related to diffusion of innovations vary from research to research and are likely to have changed in relation to the rise in media offerings. Indeed, recent research contradicts Rogers' type of upscale profile and diminishes the role of demographics. Reagan showed that early adopter's profile is not valid for all technologies (1987) and suggested differences among technology adopters (1991). Jeffres and Atkin (1996) showed that education and income are negatively related to use of technology for consumer purposes.

These findings demonstrate that conventional demographics and socio-economics variables are not enough to measure the adoption rate of users and get a profile of users of

information technologies. Other subjective measures should be included, as well as an analysis of the particular product and its potential demand.

1.1.4) Will there be a demand for broadband video services?

The success of RBOCs broadband video business will be determined by consumer demand for interactive video services. Unless the demand for switched video is strong, households will continue to be served separately by cable TV networks and twisted pair telephony networks (Johnson & Reed 1992). New technologies introduced by RBOCs will be successful only if they are embedded into easy-to-use and understandable applications that are perceived useful by households (Samuelsson 1996). In 1991, consumer purchase of entertainment services (basic cable, video rental, movies) was estimated at $45 billion, or $475 per household, per year (Bilotti, Hanson, Mac Donald 1993). Will RBOCs video services increase the overall market or simply take market shares from existing markets, such as video rental and premium cable channels? According to Dholakia and Mundorf (1996), different indications such as consumer interest, willingness to pay and early trials' results are either in favor or skeptical about an existing demand.

1.1.4.1) Consumer Interest

Bell Atlantic's Ray Smith expects to see customers attracted by Video On Demand (VOD), interactive games and home shopping. Movies on demand will compete with the $12-$15 billion video rental business, interactive games with the $6 billion in-home video games business and home shopping will compete with incumbent networks

like home shopping network or QVC which achieved $2.5 billion in 1993. A survey conducted by CBS/New York Times (1993) showed that 77% of respondents would like to have ready access to replays of past shows, a form of video-on-demand (Dholakia & Mundorf). A Deloitte & Touche report (1996) estimates a figure of 94% popularity rating for Movies On Demand. Moreover, a study done by PacTel (PacTel's press releases: "New research could spur entertainment industry to digitize more movies" 1995) reveals that consumers prefer MPEG digital video and sound compared to VHS.

However, research by Bryant and Love (1996) indicated limited consumer interest in advanced technologies. The sensationalistic way the media often have handled the "information superhighway" might discourage consumers use of advanced interactive technologies and generate a lack of confidence from the public. Becoming used to the new technologies is often perceived as an inconvenience. Public opinion polls conducted by Gozenbach and McCord (1994) showed that fewer than 40% of the respondents saw themselves as being regular users of interactive movies or television. A survey conducted by MCI reported that only 24% found great appeal in the 500 channels environment and 35% reported that they have "very little" appeal. A nationwide poll of 1,000 respondents by Clinton Research Services (1996) found that only 18% were extremely or very interested in interactive media and 38% showed no interest whatsoever. Such lack of confidence and interest can be a barrier to the adoption and use of broadband video services. These surveys reveal an apparent gap between marketers' forecasts and general consumer interest. Moreover, it has been shown that the source of profits in video rentals comes from late fees that do not exist in VOD. Therefore, VOD providers will need to raise their prices to gain profits. That may be another factor that affects demand.

Dholakia (1996) showed that the appeal for new broadband video services is highest among consumers who currently view movies at home and have invested in technologies that allow viewing movies at home. To succeed broadband video services will have to appeal to selected market segments.

1.1.4.2) Willingness to pay?

The figures above demonstrate that certain consumers are spending money on interactive games, home shopping services and VOD. Households' expenditures for media entertainment have risen steadily from 7.71% in 1993 to 9.43% in 1994 (The Entertainment Economy 1994).

However, many writers in the trade magazines have expressed concerns about the possible lack of demand for broadband video services. Research by CBS/New York Times (in Dholakia & Mundorf 1996) showed that consumers are not willing to pay very much for interactive TV: only 47% will spend between $5 and $10 per month and 48% will spend more than $10 a month.

Carey (1992) asserted that media expenditures are relatively constant. Therefore, given this constancy of budgeting for information and communication, new services will have to offer added-value in order to substitute expenditures from other parts of the household's budget.

1.1.4.3) Early trials consumer behavior results

In the mid 1990s, movies have become the prime form of video entertainment--whether through basic, premium cable, VCR, theater-- (Dholakia 1996) with 85% of the

movies consumed by households inside their homes. Consequently, telephone companies have been interested in getting a share of this market. In July 1992, AT&T, TCI and US West began a test of VOD and Near Video On Demand (NVOD) in Littleton, CO. Two and a half movies were rented per month (versus 2.6 PPV *per year* estimated by Paul Kagan Associates), or 12 times more. Consumers were paying $0.99 to $3.99 per movie and payment per month averaged between $6.00 and $7.00. About 70% of the households used these services per month versus 20% for PPV. A similar trial conducted by Bell Atlantic showed that the buy rate for NVOD in its Fairfax, VA trial was twelve times more than the average buy rate of PPV (Bell Atlantic press releases, www.ba.com 1996). Moreover, the Fairfax households average of 3.3 videos purchased per month is higher than 3.2 videos rented per month by households with a VCR (Bell Atlantic press releases, www.ba.com 1996).

Even though the results from video-on-demand trials showed that consumer usage is likely to be greater than pay-per-view, it is unlikely that the VCR will be thrown out soon. As Mundorf and Dholakia (1996) pointed out, video on demand will not yet be a great threat to traditional video because consumers do not have the need to watch a movie instantaneously without having to go and rent this movie.

Forecasts for information and communication technologies products are optimistic for two main reasons. First, technology generates interest; second, it is in the interest of those who forecast these figures to have positive results for the Information Technologies (IT) firms that are paying them. However, these forecasts are made before a single customer has purchased the product and, according to Carey and Elton (1996), around

one out of 10 product launches is successful. That is why forecasting demand and use of new products do not always reflect reality and need to be interpreted cautiously.

1.1.5) Analytical framework

1.1.5.1) Research Questions

Adoption of new services studies can provide profiles of those who are relatively early in using RBOCs video services. Entry strategies can provide several kinds of strategies to penetrate the markets composed by these targeted people.

In fact, RBOCs are offering two main categories of products. First are enhanced cable services that cannot be considered innovations but improved services. This type of service can be theoretically offered to any market, but has actually been offered by RBOCs in carefully selected areas. Second are interactive services that can be considered as innovation regarding their quality and new features. These services have also been offered to selected regions. The type of entry strategy used for these two types of services will be examined.

In the light of the literature reviewed above, the study will address two research questions. Each question has an intermediate research question.

First, *how do video strategies between RBOCs differ?* The intermediate research question is: *what strategies were used to enter the market, differentiate its offer and attract customers*?

The second research question is *what factors influence the RBOCs communities selection process?* Four demographic and socio-economic variables will be tested: age, population concentration, MHI and education level of the area targeted.

The intermediate research question is therefore: *on what demographic and socio-economic basis did the RBOCs enter the video market*?

1.1.5.2) Criteria relevancy

1.1.5.2.1) Age

This criterion has been selected to test if age has influenced the RBOCs' communities selection process. The literature showed that older people spend much more time than younger people at home and thus might entertain with TV more than others. Moreover, Papazian (1993) showed that for regular TV use, older consumers watch more TV than younger consumers (according to the Census bureau, elderly people are over 65).

However, Kerschner & Chelsvig (1981) and Zeithmal & Gilly (1987) pointed out that older adults are generally more reluctant to use emerging technologies than younger people. Further, the fact that RBOCs are new competitors providing new interactive services might jeopardize the desire of a stability and routine among old people. This desire might make older people less likely than others to change providers and adopt new services. Research conducted at Bellcore (in Baldwin, Mc Voy, Steinfield 1996) showed that greater consumption of video media is associated with younger families. An Arbitron study (Inter@ctive week November 25, 1996) revealed that old people show below-average comfort with technology and change. Papazian (1993) showed that when video use is expanded to include premium channels, Pay Per View (PPV) channels and VCR, heavier video users are mostly middle-aged. Therefore, the question that will be examined is whether RBOCs are targeting elderly people because they might be heavy TV viewers or younger people because they are more likely to adopt their new services.

1.1.5.2.2) Area population concentration

The question of whether RBOCs have decided to build enhanced networks, upgrade their existing networks or provide video services within or next to populous areas (like metropolitan areas) or in rural areas will be studied. If population concentration matters to them or if it is not related to their selection process will be put under scrutiny. Indeed, area population concentration might not intervene in the process of selecting the trial areas, but can be of strategic importance if the RBOC has in mind a long term network deployment plan to important markets like metro areas.

1.1.5.2.3) Median Household Income

"The MHI is the amount which divides the household income distribution into two equals groups, half having incomes above the median, half having incomes below the median" (US Census bureau).

On one side, this criterion is crucial since RBOCs want to maximize their profits and prosperous communities are likely to provide the best return on investment. Moreover, affluent places do have important spending habits and therefore might be early adopters of new expensive services. Finally the full service network might be given its best chance to succeed when the test area is a high-income place as pointed out in the review of some diffusion theory authors.

On the other side, the RBOCs know that they are not going to make significant profits in the first few years, so why not pick locations that would defuse the threat that someone could accuse them of cherry-picking and avoid time and money consuming law

suits. According to Backer Spielvogel Bates agency (1993), Americans are unlikely to spend significantly more for entertainment because the MHI is down by $2,000 from its 1989 high (Backer Spielvogel Bates agency: "future effects of new consumer and commercial communication technologies" 1993). Affluent households are therefore an attractive target market, but is also the group that seems to have the least leisure time. The issue therefore is to see whether there is a relationship between income and locations where trials have been set up.

1.1.5.2.4) Educational attainment

The literature above showed that high education level is associated with greater use of new services, an ability to change supplier if it provides better services and a likeliness to buy innovative services. Indeed a high education level might be associated with more receptivity to new technologies and new services.

A study conducted by Reagan (1987) showed that high education is correlated with VCR ownership. However, another study by Atkin and Jeffres (1996) revealed that television and movies viewing are inversely correlated with income and education level. Indeed, well-educated people spend more time at work and have other sources of entertainment, like reading books. Typically, penetration of cable services is greater in areas that are not at the top of the income and educational attainment scale. The issue therefore is to see whether there is a relationship between education level and the areas where trials have been set up.

The research question that relates to these four criteria is:

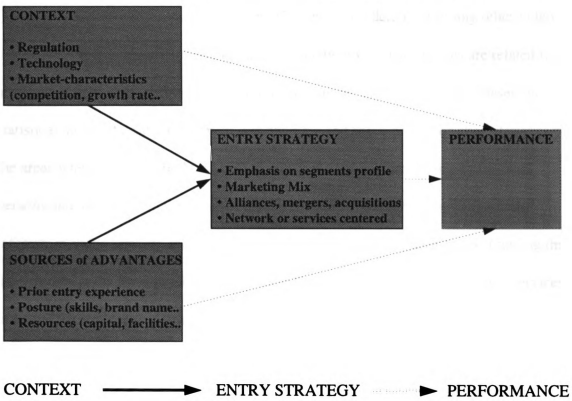
To what extent are age, population concentration, MHI and education influencing the RBOCs communities' selection process?

According to the literature cited above, four hypotheses will be tested in answering this research question. First, younger people are a privileged RBOCs video services target. Second, the most attractive opportunities for RBOCs video services are found in high-concentration of people, residential areas. Third, video trials are held in high-income communities to insure the best return on investment. Finally, fourth, better educated households are more likely to be targeted by RBOCs because they are more likely to use new technologies.

1.1.5.3) Entry Strategy model

The analysis will examine the entry strategy of RBOCs in video according to different aspects. The target market and its demographic and socio-economic characteristics are the subject of the empirical study. Figure 1 examines the causal factors that affect performance. However, only the context, mainly the regulatory and technological changes, the sources of advantages and motivations to enter video will be thoroughly examined. This study is solely concerned with what have affected the formulation of RBOCs strategies. Finally, the focus will be on RBOCs video strategies at both the video business unit and at the corporate level.

Figure 1. Analytical framework for studying RBOCs entry strategies in video services



1.1.6) Limitations of the study

This research has some specific limitations. First, it does not attempt to predict the failure or success of any of the strategies adopted by RBOCs. Indeed, it will not measure the performance related to RBOCs entry into video simply because RBOCs are just starting in this new business, and there are no available data over a period of time that allow the measurement of success or failure. This research is solely concerned with the characteristics of RBOCs selected markets, the services they are offering and how these relate to their video business units strategies.

Second, several studies show that intention to use new technologies for consumer purposes is strongly related to media use or at least to the adoption of another technology (Reagan 1989). Movie consumption, ownership of camcorder, VCR or any other video device and more generally investment in video technologies and services are related to adoption of new video services. However, the empirical part of the study is based on statistical data that describe the main demographic and socio-economic characteristics of the areas where RBOCs are doing video trials. It is not a research using a sample of persons and asking them about these characteristics or about their consumption and interests in video services and related information technologies products. Not having this kind of data at the level of all the cities where RBOCs are launching their video services is one of the weakness of this study.

Third, using the relevant state demographics and socio-economic data as a means of comparison with the data for each targeted city might be problematic. Indeed, the state data are not totally independent from the cities data since data from the cities has been

used to obtain the state data. However, the main goal of this study is to look at RBOCs strategic selection process. Therefore, the data of the states will be used as a means of comparison with cities, because the goal is to see in terms of strategies what demographics and socio-economic criteria have influenced the RBOCs choices.

Finally, the data collected have been extracted from the 1990 Census and are aggregated. For example if an RBOC is doing a trial in a precise part of the city of Boston, the 1990 US Census does not provide demographic and socio-economic data for this particular area but for the whole city of Boston. That could obviously lead to some misinterpretations concerning these particular areas.

Chapter II

RBOCS VIDEO TRIALS DEMOGRAPHIC ANALYSIS

2.1) Introduction

The aim of this empirical analysis is to look at the demographic, geographical and economic specifics of areas where the RBOCs are doing their video trials.

This analysis will look at the characteristics of each target and try to see if they are related to the strategies adopted by each RBOC to penetrate the video services market.

It is believed that all RBOCs video trials have been included in this study, at least those that have been publicly announced. Therefore, to current knowledge, this is the census not a sample that is being used.

2.2) Methodology

2.2.1) Introduction

The universe chosen is the households in each of the target areas. Indeed consumption of video services (cable TV, VCR, video games...) occurs at the household level. Each household has one cable subscription, one VCR and so on.

Four sets of consumer variables have been used to define the profile of the households targeted by the RBOCs. How age, population concentration, MHI and educational attainments of the target households differ from the average households at the state level will be analyzed. In fact, by households it is the householder, his/her age, MHI, educational attainment and the population concentration of the area he/she is living in that are designated. The analysis will consist on finding out whether the RBOCs target areas do have in common a certain amount of these criteria.

Age, population concentration, MHI and educational attainment that have been chosen will be measured now.

2.2.2) Criteria measurement

For each of the RBOC trial areas, the age of the households represented by the age of the householder has been classified in six categories: between 15 and 24, 25 and 34, 35 and 44, 45 and 54, 55 and 64, and 65 and over.

The population concentration criterion has been measured by two types of information: first, the actual number of households in the trial area and second whether this area is next to or within a large metro area. The US census bureau defines metropolitan areas as large population nucleus with more than 50,000 inhabitants.

The MHI has been measured for each one the RBOCs trials locations and compared to the MHI of the relevant state.

Measure of education is the percentage of people who went to college, including people who went to college but did not get a degree, people who got either an associate

degree, a bachelor's degree or a graduate degree have been ranked in the "high education level" category. The data have been collected from the US 1990 census (Appendix 1).

2.2.3) Excluded locations

Several types of trials and market tests of full service networks are in progress now. Baldwin, McVoy and Steinfield (1996) pointed out that "market tests range from forecasting the demand for a narrow aspect of service or evaluate the technology that has been used, all the way to performing a fully operational integrated broadband network with interactive services, management software and customer premises equipment, simultaneously doing a technical trial and market test." Technical trials are usually performed in schools or company employees homes. Since these types of trials are not commercial, their motivations are not the same as if they would have involve real customers. Therefore, technical trials, called also internal or limited field, will not be taken into account in the analysis.

This study will only consider the market trials that have been directly initiated by the RBOCs inside or outside of their local telephone provision area. Indeed, many RBOCs have chosen to implement a market trial in "convenient" locations after acquiring a company that has assets in these locations. These "convenient" locations should not be included in the analysis since they have not been directly chosen by the RBOC using the same range of criteria that would have been applied for any location. "Convenient" locations have been chosen because they require fewer investments and are a means to immediately penetrate the market. Since the purpose of this research is to look at RBOCs motivations to enter a certain profile area, cable or wireless acquired company

"convenient" locations will not be included in the analysis. Those are the result of another type of business decision. For example, US West has acquired Continental Cable in 1996 but has not directly chosen Continental's cable provision locations. That was Continental's own past business decisions. Therefore, these locations can not be included because they are not the choice of US West video policy-makers, even though the two companies have merged.

All the locations that have been chosen before the acquisitions have not been included in the analysis. However, the locations that have been selected after the merger will be considered. Therefore, the analysis will focus on direct (as opposed to through acquisition) market or technical trials of a commercial nature (as opposed to internal).

Ameritech is doing 25 basic cable trials. Bell Atlantic is common carrier in three locations, has six interactive broadband trials and is using interim technologies in five locations. US West has one interactive broadband trial and eight basic cable trials. PacTel uses interim technologies in three locations and has four interactive trials. SBC has one interactive trial, two interim and two in basic cable. Bell South has five interactive, one interim and six basic cable trials. Finally, Nynex has two interactive and one interim trial.

2.3)Empirical findings analysis

The analysis of the data collected for each of the RBOCs trials locations has revealed a certain number of common features between the test areas, directly related to the selected criteria. Those similarities will provide a foundation to establish a profile of the typical targeted region.

It is important to acknowledge that not all the target areas match the profile. Indeed, a few locations do not correspond to the established profile on at least one of the criteria described above. The characteristics of these locations and why they do not fit to the profile will be examined carefully. New criteria will be included in order to understand the RBOCs motivations in these particular locations.

2.3.1) Broadband networks are built within each RBOC telephone service area

It has been noticed that each RBOC has been trying to provide video services in its telephone service area, first. Since they are building broadband networks that require financial and human investments, RBOCs would rather do it within their operating regions. Indeed, in their regions, they do have facilities as well as an enhanced network. It is important to notice that the RBOCs operate in their respective states, but never in GTE or other independent carriers telephone service areas within their service areas.

Two RBOCs, US West and SBC are providing cable services outside of their regions, in addition to the services they are currently testing in their telephone service areas. It is interesting to point out that both companies are providing basic cable services

through the acquisition of cable companies. US West has acquired MediaOne and operates in suburbs of Atlanta whereas SBC provides cable in communities in Virginia and Maryland as a result of the Hauser Communications acquisition. These are US West and SBC direct investment decisions to acquire these companies and to choose new locations for cable provision.

Other RBOCs have also acquired companies that deliver video. Bell Atlantic and Nynex have jointly acquired CAI Wireless that operates Multichannel Multipoint Distribution System (MMDS) cable systems in New York, Pennsylvania, Virginia and Washington, DC. PacTel has acquired Cross Country Wireless that has properties in Riverside and Orange county CA, Seattle and Spokane, WA, Greenville, SC and Tampa, FL. PacTel did also acquire Wireless Holdings and Videotron Bay Area Wireless cable systems.

Outside of their territories, the RBOCs have commercial activities. They are providing basic cable services through existing technologies while upgrading their networks. Until now coaxial cable is used by US West in suburbs of Atlanta and by SBC in Maryland and Virginia. PacTel is using MMDS in Cross Country territories (Washington, South Carolina and Florida) as do Nynex and Bell Atlantic in CAI Wireless territories (Cleveland, OH, Stockton and Bakersfield, CA). They are targeting other regions than their traditional ones and that is a means to gain experience in a new field for them, video, and to have access to other RBOCs' customers.

However, when it comes to broadband, RBOCs mainly favor their own operating regions in the provision of new services and the deployment of an advanced network. Indeed, Bell Atlantic for example has first tested its Switched Digital Video (SDV)

network with a range of new services in Dover Township, NJ, in the heart of its operating region. US West started the largest trials in terms of households covered, in Omaha, NE, using Hybrid Fiber Coax (HFC) and providing interactive services. PacTel has begun trials in the San Francisco bay area using HFC and providing VOD and a range of other new services. SBC has implemented SDV in Richardson, TX and Bell South is testing an HFC network in Florida, Chamblee, GA, Daniel Island, SC, Alabama and Tennessee. Finally, Nynex has started providing interactive video services to three buildings in Manhattan using an HFC network. It is also testing SDV in Somerville, MA.

It is understandable that RBOCs are favoring the construction of new broadband networks and the delivery of new types of services in their telephony provision regions because of their existing facilities, the convenience of implementation and because of customer awareness of their brand. Customers will be more likely to rely on their existing phone providers than on others. Finally, a major reason why RBOCs are doing their trials in their own regions is that they want to become full service providers and offer their customers a package of services, video and telephony included (Bell Atlantic's, Ameritech's, Pactel's and Nynex's CEOs letters to shareowners, Annual Reports 1995; US West's CEO in Communacopia conference 1993).

2.3.2) Trials are located within or next to metro areas

RBOCs are doing their trials either within the most important metro areas of their telephone service regions or in the suburbs of these metro areas. Ameritech has, for instance, several trials within or around the cities of Chicago, Milwaukee, Cleveland, Columbus and Detroit. Bell Atlantic has started trials in the suburbs of Newark, NJ and

the suburbs of Washington DC. It also has trials in Baltimore, Philadelphia and Pittsburgh. US West has chosen the cities of Denver, Portland, Minneapolis, Saint Paul, Salt Lake City, Boise and Omaha. It also has properties in suburbs of Atlanta. PacTel is focusing on California where is has entered the major metropolitan areas, San Francisco, Los Angeles, San Diego and their suburbs. SBC is targeting suburbs of Dallas, Enid, OK, and Little Rock, AR. It also has properties in the suburbs of Washington DC. Bell South has begun trials in several Florida's major cities, New Orleans, Suburbs of Atlanta, Birmingham and Memphis. Finally Nynex has trials in New York City, Boston and Providence, RI.

However, two trials are being held in isolated areas. Toms River, NJ for Bell Atlantic and Dekalb county, GA for Bell South. These two exceptions and why their respective RBOC have selected these regions will be studied in section 2.5.

RBOCs are implementing their trials within or in the suburbs of their telephone services areas most important cities. They are seeking residential areas proximate to important cities. RBOCs might have considered that if they start in these areas, it will be easier to proceed in the future to an eventual deployment of broadband networks into all these metro areas. These cities have potential customers because of the importance of the market in terms of population but also because cable penetration is, in certain cases, lower than in rural areas where over the air signals are weak. Cable penetration might be an important factor that is influencing RBOCs strategic decisions to begin trials in certain regions (see 2.5 below). The introduction of new services and an appropriate marketing strategy might persuade non cable subscribers to try the RBOCs systems, and the cable subscribers to switch to the RBOC video services.

2.3.3) Population concentration

A close look at the distribution between suburbs of large cities and cities themselves shows that in overall the RBOCs have targeted 25 cities and 57 suburbs among 84 locations (Toms River and Dekalb county have not been included). Ameritech has entered Chicago's south side and Columbus. Bell Atlantic has focused on Hampton Roads, VA, Baltimore, Philadelphia, Pittsburgh and Washington DC, US West on Denver, Portland, Minneapolis, Saint Paul, Salt Lake City, Boise and Omaha, PacTel on San Francisco, Los Angeles and San Diego, SBC on Enid, OK and Little Rock, AR, Bell South on Orlando, Tampa, West Palm Beach, New Orleans and Memphis, and finally Nynex on New York City. In overall, suburbs are a preferred target for RBOCs video trials. In particular, Ameritech is targeting 23 suburbs among 25 locations, Bell Atlantic nine among 15, and PacTel five among eight. Other RBOCs did not target as many suburbs as Ameritech, Bell Atlantic and PacTel. Bell South for instance has six trials among 11 in suburbs of large cities and Nynex has two among four. US West has targeted the main cities of its telephone services area. However in Georgia, MediaOne has entered only suburbs of Atlanta. SBC has targeted suburbs of DC outside of its territory, and a suburb of Dallas among three locations inside of its territory.

The criterion of high-concentration of people can be applied to the cities mentioned above. RBOCs want to insure a large number of potential customers for their long term network deployment strategies.

2.3.4) Affluent suburbs

When considering the figures (e.g. Appendix 1), it seems that the main incentive for RBOCs picking up suburbs of large cities is their affluence. Indeed, apart some exceptions (see 2.5 below), RBOCS are targeting prosperous communities. Several points related to the RBOCs focus on high income communities should be emphasized.

2.3.4.1) High-income communities are particularly targeted each time an RBOC is providing cable TV or is a common carrier for a cable TV company.

RBOCs cable TV providers are Ameritech, US West, SBC and Bell South. Bell Atlantic is a common carrier for Sammons Communications in New Jersey. Ameritech is building a network for its video services separate from its telephone network inside its five states region. With a couple of exceptions, Ameritech's cable markets have MHIs that exceed the MHI of the relevant state, in some cases by a little bit but in the majority of cases by a lot. In certain areas like Naperville, IL, that ranks sixth MHI nationally, Upper Arlington, OH, Troy and Northville Township, MI, it is nearly two times more. Twelve locations among the 25 selected by Ameritech have their MHI superior to $40,000, 11 between $30,000 and $40,000 and only Chicago south side and Columbus have MHI that are below $30,000. Median household income figures tend to understate the relative wealth of a community because family median income figures tend to be even higher according to the US census bureau. In Michigan, only Lincoln Park has an MHI that falls below the state level and just slightly. In Ohio, Ameritech has seven franchises and all but one--Columbus-- have MHIs that exceed the state's MHI level. The Ohio Cable Telecommunications Association even argued that in Columbus, although

Ameritech has the franchise for the entire city, where they are signing up customers right now, is the most affluent area of town (Multichannel News, September 30, 1996). The last area in which MHI falls below the state level for Ameritech, is the south side of Chicago. Ameritech has decided lately to build a cable system in this area, "represented by Rep. Bobby Rusch (D-Ill), an African American lawmaker whose house district takes in part of the Chicago's predominantly African-American south-side" (Multichannel News, "We don't redline", Sept 30, 1996). Ameritech has submitted a franchise proposal to Chicago regulators. The reason why Ameritech has chosen this low-income area in the city of Chicago will be explained (see 2.5 below). It is important to notice that Ameritech agreed to serve Rush's district only after he accused the telco of bypassing minority communities. A final remark concerns Ameritech's distribution of trials locations within its five states. In Indiana there are no trials. Indiana is the lowest income and lowest concentration of people of the five states composing Ameritech telephone services area. Ameritech is, therefore, the most obvious example of RBOC providing cable services inside its territory to affluent suburbs of metro areas.

US West provides basic cable TV services to communities in suburbs of Atlanta. The examination of the MHIs of these communities shows clearly that they all have a significantly higher MHIs than the state of Georgia's. All MHIs are well above $29,000 (Georgia's MHI), in Fulton, Dekalb, Clayton, Cobb, Douglas, Fayette, Gwinnett and Rockdale counties. As well SBC is providing cable services in Arlington county, VA and Montgomery county, MD. These two cable markets have MHI that are much higher than the relevant states, respectively $44,600 and $54,089 compare to $33,328 and $39,386. Finally, Bell South provides cable services in several locations in Florida.

These places have either higher or similar MHIs than Florida's average. Therefore, as basic cable services providers outside of their telephone services areas, US West, SBC and Bell South do target high income suburbs.

Bell Atlantic is a common carrier for Sammons cable in New Jersey, more precisely in Morris County, Madison, Florham Park and Chatham Borough. All these communities have MHIs that exceed New Jersey MHI ($40,927) by a lot, respectively $56,273, $56,478, $68,450 and $62,129. Therefore as a common carrier, Bell Atlantic does target high income suburbs in its own telephone services area.

2.3.4.2) Trials that involve new services and new types of broadband networks are always held in the RBOCs' top markets (Income is not relevant).

When it comes to new technology, the technical test is fundamental. Therefore, RBOCs have to give the new services as well as the new network their best chance. It is natural to start these new experiments in their own telephone services area, for convenience reasons. SBC is offering VOD, games and other interactive services in Richardson, TX using an SDV broadband network. The MHI of Richardson ($50,240) is much higher than the average MHI for Texas ($27,016). Bell Atlantic has begun to deploy an SDV broadband network in Dover Township and Toms River in New Jersey. Otherwise, it has tested an HFC network in Morris County, Madison, Florham Park and Chatham Borough, NJ as well as in Baltimore, Philadelphia, Delaware county, PA and Pittsburgh. In terms of MHI, the areas where Bell Atlantic is building SDV networks are not wealthier than the relevant state, even though they are not far behind. Dover, NJ has an MHI of $38,822 and Toms River, NJ, an MHI of $35,464 compared to New Jersey

MHI of $40,927. However, New Jersey's HFC networks are being built in higher income areas than the state's income. Baltimore, Philadelphia and Pittsburgh have their MHIs lower than the relevant states MHIs. Therefore, income is not a relevant criterion for Bell Atlantic's broadband networks deployment.

US West is doing a large commercial trial involving a whole range of new interactive services using an HFC network in Omaha, NE. Besides being a large metro area in Nebraska, Omaha's MHI ($26,927) is pretty much the same as Nebraska's MHI ($26,016). Therefore, income has not been a major reason to select this city.

PacTel has invested important amounts of money to deploy a broadband HFC network in the San Francisco Bay area. Besides the criterion of high-concentration of people, the San Francisco area is very wealthy. San Jose where PacTel has held its first HFC trial has an MHI of $46,206 compare to California's $35,798. However, Oakland has a lower MHI than both San Francisco's and California's. Therefore, the choice of the San Francisco, as well as the LA and San Diego's areas does not seem as an immediate consequence of the examination of incomes but rather a common sense decision since these three markets are among the top markets in the country and are located within PacTel's telephone service area.

Bell South has chosen to upgrade its network in selected areas using HFC, except in New Orleans. The examination of Bell South target areas MHIs reveals that Bell South has not developed a homogeneous strategy of targeting wealthy places. To the contrary, in every state, Bell South has chosen communities that have an MHI above and below the relevant state's MHI. For example in Florida, all the selected areas MHIs are about the same as Florida's MHI. Chamblee, GA, has an MHI ($27,157) that is a little below

Georgia's MHI ($29,021). Daniel Island, SC and Memphis, TN have the same characteristic with MHIs of respectively $25,153 compared to South Carolina's $26,256 and $22,674 compared to Tennessee's $24,807.

Finally, Nynex is testing an SDV network in Somerville and an HFC network in Manhattan. Somerville has a lower MHI than Massachusetts whereas Manhattan is very affluent. Like Bell South, Nynex did not choose these locations primarily because of income. Manhattan is at the heart of NYC, Nynex's top market and ranked first nationwide in terms of cable subscribers number, and Somerville is located near Boston, its video second top market.

RBOCs know that they will not make a lot of money in the first years of trials. Their main concern is to upgrade their network progressively in strategic areas, mainly in their top telephony market, with a minimum cost.

In conclusion, when it comes to new broadband networks, all of the RBOCs are doing their trials within their territory, in top markets, to give the network the greatest chance to succeed in terms of infrastructure and maintenance.

2.3.4.3) Interim technologies --ADSL, MMDS, DBS-- are <u>not systematically deployed</u> in the most affluent places

Five out of ten interim trials have been held in communities which MHI is lower than the relevant state MHI. It is interesting to notice that interim technologies trials that have been intended, among other reasons, to generate cash in order to sustain the effort to build the broadband networks (www.vipconsult.com 1996) are not held in particularly wealthy areas. That all of the RBOCs except PacTel-- that already invested a lot in

MMDS-- want to limit the cost of these trials because of their short life will be kept in mind. Bell Atlantic has started Asymmetrical Digital Subscriber Line (ADSL) trials in Fairfax, Reston and Hampton Roads, VA. Whereas, the first two areas have MHIs (respectively $50,913 and $56,884) that are well above Virginia's MHI ($33,328), the last one has an MHI of $30,144. Income is therefore not a factor. One reason might be linked to marketing. Indeed ADSL is interactive and Bell Atlantic might want to test the consumer preferences of all the income segments that could be potential users. MMDS is also being tested by Bell Atlantic in Norfolk, VA which has a low MHI of $23,563.

PacTel is a heavy user of MMDS. It has concentrated its effort in Riverside, Orange county and the Los Angeles area (the Riverside area has been chosen by Cross Country Wireless (CCW) before its acquisition by PacTel since it is the location of CCW headquarters, and will therefore not be taken into account). Los Angeles has a high population concentration and is one of PacTel's top markets (ranked second in the nation by cable TV households, Broadcasting & Cable yearbook 1993). Finally, Orange county has a much higher MHI than California's MHI. MMDS has also been deployed in San Diego, the third top market of PacTel (18th in the country by cable TV subscribers) and ADSL has been deployed in San Ramon a very wealthy community which MHI's ($63,607) is almost the double of California's.

SBC is reselling DBS in Enid, and Little Rock. These areas have an average MHI compare to their relevant states. Income is not the main reason that led to the choice of these two areas. Bell South is testing MMDS in New Orleans which is one of its top market (36th in the country by cable TV households) but has a very low MHI.

Finally, Nynex is testing both MMDS in communities around Boston and in Providence, and ADSL in Boston. Providence is not a high-income area. Concerning the Boston area, that income is not involved in the choice of these areas can not be concluded since we only have the aggregate MHI of Boston and not the MHI of each of the communities targeted within Boston.

2.3.5) Conclusion

Technology and type of services are determinants in the RBOCs selection process Indeed, if RBOCs choose to deploy new broadband technologies and services, they do it in their top markets, but not necessarily in high-income places. On the other hand, if they decide to provide basic cable services or to be a common carrier with an enhanced network, they more likely target the most affluent suburbs of metro areas. Finally, interim technologies trials are not particularly held in affluent places but rather in less costly, convenient areas close to top markets.

Table one shows that RBOCs are targeting different income areas depending on the nature of the services they want to offer in these communities.

Table 1: Classification of trials relatively to Median Household Income and nature of services

Median Household Income*	Basic cable services	Interim services (ADSL, MMDS, DBS)	Interactive broadband services
Percentage of trials which MHIs are above or equal to the relevant state MHI	78%	12%	10%
Percentage of trials which MHIs are below the relevant state MHI	23%	27%	50%

*: The MHIs of the video trials locations picked up by the RBOCs have been compared to the relevant state MHI. If the MHI of the location is above its relevant state MHI, this location has been counted as being Above the relevant state MHI. If not it has been counted in the Below category. The total number of trials=75
**: Washington DC has been compared to the US average MHI.
***: Manhattan, NY, Northville, MI and Warwick, RI have not been included because of missing data.

2.4) Non consistent criteria

2.4.1) High level of education

Even though a study conducted by Backer, Spielvogel Bates agency (1993) showed that people who went to college do have 19% higher interest in interactive TV than the average, it does not seem that this criterion has been a major one in the RBOCs communities selection process, all services included. Based on the figures found for Ameritech, it is essential to point out that affluent locations are in most of the cases well educated. Almost all their target locations are well educated. However, that does not

mean that education played a primary role in the selection process even though it is common to believe that high educated people will be more likely to accept and test a new generation of services than less educated people. The point is that Ameritech is providing existing cable services that do not require in theory a specific profile of potential adopters. Cable is available through other providers for the segments of the population where Ameritech is doing its trials. That is why the education criterion has been dismissed in the case of Ameritech's trials.

In big cities the average education level is pretty low because of the diversity of people. Since the locations within big cities where RBOCs started their trials are not known, the education factor for big cities cannot be analyzed. Now the focus is on low-concentration of people areas with medium or low income. The analysis consists on seeing if education has been a factor that influenced the RBOCs locations choices.
In Bell Atlantic's Dover Township, NJ and Toms River, NJ respectively 32% and 43% people went to college which is below New Jersey's percentage of 46%. Norfolk, VA has 40% of people who went to college compares to Virginia's 48%, and Hampton Roads has a little more than 48%. US West, Pactel's and SBC's trials have only been held in top, high-concentration of people markets or high income areas. Bell South's Chamblee has a 39% level of education compare to Georgia's 41%. Dekalb county's 24% is also much lower than Alabama's 38%. Finally Nynex's Providence has a level of education of 36% which is lower than Rhode Island level of 44%.

Table two shows that the assumption that there is no relationship between nature of services and educational level is true. Education has not been taken into account by RBOCs in the provision of different type of services to selected communities.

Table 2: Classification of trials relatively to Educational level and nature of services

Educational level*	Basic cable services	Interim services (ADSL, MMDS, DBS)	Interactive broadband services
Percentage of trials which educational levels are above or equal to the relevant state level	64%	16%	20%
Percentage of trials which educational levels are below the relevant state level	45%	20%	35%

*: The educational levels of the video trials locations picked up by the RBOCs have been compared to the relevant state level. If the location educational level is above its relevant state's, this location has been counted as being Above the relevant state educational level. If not it has been counted in the Below category. The total number of trials=75
**: Washington DC has been compared to the US average educational level.
***: Manhattan, NY, Northville, MI and Warwick, RI have not been included because of missing data.

2.4.2) Age

Old people have not been targeted by Ameritech. Indeed, a look at the proportion of old people (over 65) in the regions selected by the RBOC gives almost an equal number of communities that are above and below the relevant state percentage. In Michigan, eight communities among the 13 selected, which is more than half, have fewer people over 65 than Michigan's average. Older age is not consistent with the implantation strategy of Ameritech. Bell Atlantic has the same characteristic: age is not a relevant criterion and older people are not specifically targeted. In New Jersey, three communities among the six selected, have a higher percentage of old people than New Jersey percentage: age is not consistent with the long term strategy adopted by Bell Atlantic.

However age might be consistent with the level of interactivity involved in the trials. Indeed, whereas the ADSL trials Fairfax, Hampton Roads and Reston are held in younger communities (respectively 30%,33% and 31% compared to Virginia's 29% people between 18-34 and 16%, 17%, eight percent compared to Virginia's 18% people over 65), the MMDS trial is held in older communities (Norfolk has 20% of people over 65).

In California, PacTel is providing MMDS to areas that are younger than California's average (LA, Orange county and San Diego have respectively 18%, 16% and 17% of people over 65 whereas California's average is 19%). Old age is therefore not a criterion for PacTel. However, the only ADSL trial in addition for being held in an extremely wealthy community, target a young community, San Ramon (7% of people over 65 compared to California's 19%). In its HFC trials, PacTel did not take into account age since some areas have a greater old people percentage and some others have less older people than California's average.

It does not seem that age intervened in the selection process of US West either. Indeed, Omaha, as well as all the other markets that US West has chosen and then withdrawn, are its top markets.

SBC has also chosen to enter with DBS in Enid and Little Rock. In Enid the proportion of people over 65 is three percent more than the average of the state but that does not mean that SBC is focusing on older people. Indeed, Little Rock is younger than the average of Arkansas (20% of over 65 compared to an average of 26%). Bell South's case is interesting and might be the most valuable to test if this RBOC has focused on the older segment of the population or not. Indeed, Florida is the state with the greater proportion of old people in the US. However, the data collected about the trials location

shows that in no one of the areas chosen by Bell South, the percentage of people over 65 is higher than Florida's average. For MMDS in New Orleans, it is right that this city has greater percentage of old people than the relevant state but that's not sufficient to prove that Bell South is targeting old people. Also, the data collected for both Nynex's short term and long-term technologies are not consistent with the criterion of old age. Indeed, MMDS has been tested in both older areas and younger areas relatively to the relevant state and there is until now only one single SDV trial, so nothing can be concluded.

It seems that neither older nor younger people have been a common factor of segmentation for all the RBOCs in their early trials. Age has not been a critical criterion for the RBOCs communities selection process.

Table three shows that the assumption that there is no relationship between nature of services and age is true. The percentage of people over 55 in each trial has been compared to the relevant state percentage. Age has not been taken into account by RBOCs in the provision of different type of services to selected communities.

Table 3: Classification of trials relatively to Age and nature of services

Age*	Basic cable services	Interim services (ADSL, MMDS, DBS)	Interactive broadband services
Percentage of trials for which percentages of people over 55 are above or equal to the relevant state level percentage	50%	17%	33%
Percentage of trials for which percentage of people over 55 are below the relevant state level percentage	64%	18%	18%

*: The percentage of people over 55 of the video trials locations picked up by the RBOCs has been compared to the relevant state percentage. If the location percentage is above its relevant state's, this location has been counted as being Above the relevant state. If not it has been counted in the Below category. The total number of trials=75
**: Washington DC has been compared to the US average percentage of people over 55.
***: Manhattan, NY, Northville, MI and Warwick, RI have not been included because of missing data.

According to table one, two and three the income's range of targeted households differs according to the nature of services offered. High-income communities are targeted when basic cable is offered and low income are more likely to be targeted when interactive services are tested. Education does not look like a significant criterion since the percentage of trials above and below the relevant states percentage are slightly the same for each type of services. For the same reasons, age is not a relevant criterion.

2.5) Why a few trial areas do not fit with the profile?

This part will focus on the target areas that do not match with the profile of communities described above. The study will explain why some places do not correspond to the profiles?

In fact, as implied above, the four factors initially selected do not always intervene in the process of communities' selection. Age and educational attainment have been dismissed. However, income and area population concentration play a primary role in the RBOCs decisions. It is obvious that income plays a significant role. As for area population concentration, the criterion is probably best described by "top-market" because that is really where the RBOCs are beginning their first moves in the video field. Other factors may have influenced RBOCs decision when it was not related to one of the last two criteria: suitability, high cable penetration, competitive response and avoiding the charges of redlining.

2.5.1) Suitability

This criterion has been selected because RBOCs are trying to limit the cost of their networks. The criterion of "convenient" locations covers acquired companies, existing markets, suitable geographical areas or existing RBOCs facilities. In fact, most of the RBOCs that have used acquisitions as a means to their short-term entry in the video field, have chosen to increase service quality and upgrade the network in existing acquired companies' markets. These companies have already the license rights, installed base and transmission towers in these particular places. Bell Atlantic and Nynex have

respectively focused on Norfolk and Providence for the provision of MMDS services, through CAI wireless acquisition and PacTel has chosen to continue targeting Riverside and Orange counties, CA, which are CCW main markets.

A second aspect of suitability relates to topography: MMDS is line-of-sight and requires, therefore, a flat topography or where the antennas can be positioned in hills to have the most efficient coverage. Southern California is perfectly adapted to this technology and that is one of the reasons why PacTel has chosen to deploy MMDS in specific flat areas like LA, San Diego and Orange county (PacTel's press releases 1996). Bell South has also used MMDS in New Orleans because of its very flat topography (Bell South Press releases 1996) and Nynex did so in Providence (Nynex's press releases 1996).

A third aspect relates to existing facilities. Bell Atlantic has its digital video production center in Norfolk, VA and it has launch an MMDS trial there. Nynex has an important technical facility in Needham, MA, in the suburbs of Boston and has launched trials in 14 communities around Boston. Finally, Bell South is building an HFC network in Chamblee, GA, very close to the headquarters of its video group (www.vipconsult.com).

Finally, a fourth aspect relates to rehabilitation of the telephone network. In certain locations, the telephone service quality is getting bad because of the low quality of twisted pair. RBOCs that have decided to build a network that will combine the provision of telephony and video services might have chosen to construct the video network and rehabilitate the cooper telephone network --which is due anyhow-- at the same time. A significant example is Bell Atlantic's building of an SDV network in Dover Township.

Bell Atlantic had to build a new telephone network because twisted pairs have been damaged by the salt air (Bell Atlantic communication services 1996). Therefore it has chosen to kill two birds with one stone and build a fiber-to-the-curb network that will both be a superior alternative to copper and would result in longer life and lower maintenance, and will provide interactive video services.

2.5.2) High cable penetration

Bell Atlantic's Ray Smith pointed out in his interview to Vipconsult (1996) that his company wants to compete from the beginning in "tough" markets where cable penetration is high. Indeed, that has been materialized into two trials in Virginia using short-term technologies, MMDS in Norfolk, and ADSL in Hampton Roads. These two cities are very close geographically, they are only separated by a bridge, and they are one of Cox Communications largest system. Cable penetration in 1989 was 68.5% (38th in the top 50 cable markets ranked by penetration). Bell Atlantic is therefore experiencing a market dominated by Cox with a relatively high cable penetration (www.cox.com/Services.html). As Ray Smith implied, that is the best way to get invaluable marketing and packaging insights on how to make Cox customers switch to Bell Atlantic's services. As well, PacTel has adopted the same strategy in San Diego. Besides being one of its top market (San Diego's cable penetration rate is 79.3%, ranked 8th in the country by cable penetration in 1989), this city is mainly dominated by Cox. PacTel by deploying both an HFC network and MMDS towers wants to rapidly gain market shares from this top cable market. The same analysis can be applied to Orlando and West Palm Beach that had respective cable penetration rates of 71.1% (29th in the

country by cable penetration) and 76.5% (16th in the country by cable penetration) in 1989. Bell South is entering these markets with basic cable television and is enhancing its network from analog/coax to HFC in order to compete with the incumbent, Time Warner. MMDS and ADSL have been deployed by Nynex in communities around Boston exactly for the same purposes as Bell Atlantic: early marketing and packaging knowledge. The cable penetration in Boston is 71.5% (ranked 26th in the country by cable penetration). Finally, Nynex launched MMDS services in East providence where the cable penetration is 70% (ranked 35th in the nation by cable penetration). Therefore, these RBOCs have deployed their short-term technologies in high cable penetration markets in order to gain both experience and potential clients among a large number of CATV subscribers.

However, these high-cable penetration areas are also populous and correspond to top markets for the relevant RBOC. It is coincidental that selected top-markets like San Diego (ranked #8), Pittsburgh (ranked #19), Philadelphia (ranked #30), Boston (ranked #26), Orlando (ranked #29) and Greenville, SC (ranked #31) only to cite these ones are both high-cable penetration and populous areas (Broadcasting & Cable yearbook 1993). Therefore, the question is which of population concentration or high-cable penetration factors have influenced the RBOCs to begin their trials in top-markets? The two non-top markets areas where RBOCs started a video trial, Toms River, NJ and Dekalb County, GA do not have high-cable penetration and can not be used as a means of comparison.

High-cable penetration areas in medium cities as well as large cities with low-cable penetration should be used to see what criterion has most likely affected RBOCs decisions to held their first trials in top-markets. For example Palm Springs and Santa Barbara, CA have cable penetrations of respectively 86.8% and 83.8% (1993) and are

ranked #1 and #3 in the nation (Broadcasting & Cable yearbook 1993). However, they have not been picked up by PacTel. Instead PacTel focused on its most populous top-markets, Los Angeles, San Francisco and San Diego. Likewise, Nynex focused on Boston and New York even though Hartford, CT and Springfield, MA for example have respective cable penetration rates of 82.9% and 78.1% and are ranked #4 and #12 in the nation. Bell Atlantic did not choose Johnstown, PA (ranked #14 with 76.9%) or Wilkes Barre, PA (ranked #18 with 75.8%) but instead Philadelphia and Pittsburgh. SBC could have picked up Laredo, TX (ranked #13 with 78.0%) instead of suburbs Dallas and finally Bell South did not focused on Tuscaloosa, AL (ranked #5 with 80.8%) but instead it entered suburbs of Birmingham. However, Bell South's chosen areas in Florida combined both high-cable penetration and high-concentration of people: Orlando is ranked #29 with 71.1%, West Palm Beach is ranked #16 with 76.5% and Tampa has a rate of 66.2%.

US West focused on its main telephone service area's cities. Some of these cities have particularly low cable penetration rates: Minneapolis/Saint Paul is ranked #5 lowest percentage of cable penetration with 46.1% and Boise, ID is ranked # 15 lowest percentage of cable penetration with 50.0%. Both have been however picked up by US West. Likewise, Ameritech focused on suburbs of its main cities or the cities themselves: Milwaukee and Chicago have very low rates of cable penetration respectively 51.9% and 54.1% but have been picked up. SBC picked up Dallas, TX even though its cable penetration is as low as 47.1%.

It seems that high-cable penetration is not the major, but a complementary factor of RBOCs selection of top-markets. Large metropolitan areas are primarily selected because of the large potential number of customers.

2.5.3) Competitive response

Locations that did not match one of the profiles previously described might have been chosen because a cable company entered telephony services in an RBOC territory. Therefore, as a counter-attack this RBOC will enter one of the cable company main operating regions no matter what its profile target areas are. Cable companies' entry in the telephony field and the locations they targeted have been searched. However, since these trials were really small scale technical experiments, RBOCs did not launch trials in the relevant cable company markets as a competitive response. The markets that do not belong to the profiles are not any cable company top markets or main operating regions. For example, Cox launched a full-service trial in Omaha, in the heart of US West territory and also in the location of US West's most important video trial (Cox press releases, www.cox.com 1995). However, US West did not deploy until now its video network in any of Cox's top markets. Time Warner aggressively entered the telephony market in Orlando right in the heart of Bell South's territory but there is not until now a competitive response (Time Warner press releases 1995).

Two locations can be seen as the result of competitive response actually between two RBOCs, Bell South and US West. MediaOne a unit of US West Media Group operates in Dekalb and has immediately been followed by Bell South even though this county does not correspond at all to the typical community profile targeted by RBOCs. Bell South also recently purchased a wireless system in Atlanta to compete with MediaOne.

It seems that neither actors, Multiple Systems Operators (MSOs) nor RBOCs, are willing to start head-to-head video wars. That is why the criterion of competitive response has been dismissed regarding to the small scale trials that both RBOCs and MSOs are doing in each other original business. Competition has not reach an important level yet, and each of the actors is carefully choosing their targets.

2.5.4) RBOCs: "We are not redlining"

RBOCs are very influential in the choice of their original video trials sites. Unlike fully commercial business, regulated businesses are subject to commentary and scrutiny from many outside parties. Minority rights groups, public interest groups, the National Cable and Television Association (NCTA), several state cable and telecommunications associations are following RBOCs entry in video very carefully and are complaining to the Federal Communications Commission (FCC) and even intending lawsuits against large appetite RBOCs (Multichannel News: "PUC alleges more telcos violations" September 30, 1996). That is why RBOCs are continually trying to prove that they are not redlining, that is, they are not deploying communications plant that bypasses disadvantaged communities. Therefore, the RBOCs spent an inordinate amount of time, picking locations that could not be derailed by claims of redlining. Aside from being the socially responsible thing to do, it is good business. None of the RBOCs is going to make a load of money in the first few years, so why not pick up locations that will defuse the threat that someone could accuse them of cherry-picking.

Ameritech already has a bad record relating to cherry-picking. The Ohio Cable and Telecommunications Association accused Ameritech of favoritism in Ohio

(Multichannel News, November 11, 1996). The Illinois cable operators say the RBOC is "predominantly focused on up-market townships." Gary Maher, president of the Cable TV and Communications Association of Illinois said he is "concerned that Ameritech, a regulated monopoly with $13.4 billion in revenue, is acting in a predatory fashion by entering communities with high hedges and high incomes. They do not want to compete, they want to put us out of business." Ameritech officials say they select communities based on various factors generated by survey firms and not median incomes alone. However, the best RBOCs defense is to pick up communities that are not affluent. That is precisely what Ameritech did in Chicago's south side and Columbus. Besides, being high-population concentration areas, these "disadvantaged communities" places provide a tool for Ameritech to dismiss redlining accusations (Multichannel News, We don't redline", Sept 30, 1996).

The same principles applied to the other RBOCs even though the empirical results showed that among the RBOCs, Ameritech had redlined the most. Bell Atlantic picked Dover, NJ and Toms River, NJ to avoid challenges of redlining. Moreover, they made significant commitments to the New Jersey utility commission and had to do something in this state (www.vipconsult.com 1996). Bell South has also chosen to provide video in Dekalb county which is a rural area for the same reasons (www.vipconsult.com 1996).

2.6) Summary of empirical findings

The main Research Question is: *What factors influence the RBOCs communities' selection process?* The intermediary Research Question is: *To what extent are the following factors, age, area population concentration, MHI and education influencing the RBOCs communities selection process?*

The summary of the findings for the intermediate question first relatively to each one of the criteria is as follow:

- Age: neither older nor younger people have been a specific target of RBOCs in their early video trials
- Education: "well educated" people have not been a specific target of RBOCs.
- Population concentration: suburbs of Top markets (generally high-population concentration metro areas) as well as large cities are targeted
- Income: affluent communities are particularly targeted when the RBOC provides basic cable services or is a common carrier.

It does not make sense intuitively that broadband trials are more likely to be tested in low-income areas. Basic cable should have been offered in low or medium income areas whereas broadband should have been tested in high well educated areas that can afford its price.

Table 4: Original and relevant criteria

Criteria originally chosen in the hypothesis	**Relevant criteria found**
Age	Not found
Population concentration	Top-markets in terms of population (large cities)
Median Household Income	Yes for basic cable services and common carriage
Education level	Not found
Additional criteria	
Cable penetration	Not found
Avoid challenges of redlining	Yes
Suitability	Yes

The most attractive opportunities for video services provision are found in large, high-income, high-population concentration residential areas where the RBOC is the local telephony provider. However, both technology and the type of services that will be provided play an important role in the selection process. The typical targeted community profile for RBOCs video trials strongly relates to technology and services:

Table 5: Community profile by technology and services

	Technology	**Analog/coax networks being upgraded**	**Interim technologies, digital MMDS and ADSL**	**Long-term technologies**
	Type of services	**Basic cable provision, common carriage**	**Digital cable services, VOD, NVOD**	**Interactive and broadband video services**
CRITERIA				
Income		Deployed in the most affluent places	Not deployed in the most affluent places	High-income areas in general
Geographical location		Inside and outside of the RBOC telephone service area	Inside and outside of the RBOC telephone service area regard to acquisitions topography, existing facilities, rehabilitation of telephone network	Only inside of the RBOC telephone service area
Population concentration		Within and suburbs of Top markets with high cable penetration	Within and suburbs of Top markets with high cable penetration rates	Within and suburbs of top markets

Chapter III

RBOCS VIDEO STRATEGIES

3.1) Introduction

The analytical framework developed in Chapter I discussed several factors that will control how quickly and how well telcos will enter the video market. Their prior experience, their market positions, their resources, the technology, regulation and market characteristics are important factors. An analysis of each one of these factors will provide an understanding of the context within which RBOCs have to define their video strategies.

The RBOCs video trials empirical analysis showed that RBOCs targeted different area profiles according to the type of services offered and the type of technology used.

The objective of this part is to compare RBOCs strategies in function of their experiences, their motivations and the context. Then, the results of the empirical analysis (part II) that addresses the question who is targeted?, will be compared with the results of the qualitative study (part III) that addresses the questions what are RBOCs goals and how will they be reached (in terms of services offered and technologies used)?

A historical review of RBOCs entry in video, as well as an analysis of the evolution of technology, regulation and the market structure will be provided first. Then, the focus will be on RBOCs video strategies characteristics by taking into account RBOCs strengths, and by analyzing their mix and their key differentiating factors.

3.2) Historical involvement of RBOCs in video services provision

Since the break-up of AT&T, RBOCs have shown different kinds and levels of interest in entering the video services market. Each one has developed its own strategy for dealing with the cable-telco cross-ownership prohibition (section 613 of the 1984 cable Act), the 1992 Video DialTone (VDT) order and lately the Telecommunication Act 1996. As a result of regulation changes, each RBOC has established a distinct identity through different strategies. RBOCs started paying closer attention to the video market in the beginning of the 90s as a consequence of the evolution of technologies, regulation and a need to diversify their sources of revenues.

In the beginning of the 90s, two main tendencies appeared. Some RBOCs focused on developing and upgrading their network while others went international to gain experience in services in deregulated markets. Bell South adopted, in the beginning of the 90s, a strategy focusing on the development of an advanced network capable of handling video services (NAB report on RBOCs video diversification 1990). Five trials of fiber-to-the-home networks had been implemented within Bell South's territory around 1990 for the purpose of being a carrier for other video providers. However Bell South had little engagement in acquisitions of cable TV companies (mostly in Ireland). To the contrary,

PacTel was pursuing a strategy of cable TV company acquisitions in the UK deregulated market. PacTel focused on operating a cable system more rather than on developing a broadband network. Its UK presence was a joint venture with Jones Intercable. In the US, it has aggressively made efforts to acquire cable TV franchises and properties in Chicago and California (NAB report 1990). PacTel was considered by the NAB as "by far the lead RBOC in preparing itself for entry into the video market" (NAB report 1990). Nynex's video activities were primarily services focused and have been directed to meet large business-users needs. There was no indication of an entry strategy for the video-services market (NAB report 1990). As of early 1990, Nynex has not participated in any international cable TV venture. The company failed to gain US regulators consent to enter a parternship with Cable & Wireless to create a trans-Atlantic fiber optic cable system.

US West and SBC defined a hybrid strategy of building an enhanced network and at the same time acquiring experience in provision of services. US West had a service-centered strategy in international markets where it positioned itself in the UK, France and Hong Kong. It had a network-centered strategy in the US where rather than engaging in direct competition with MSOs, it made provision of video transport the central purpose of its video strategy. US West had no plans to be involved in programming. Likewise SBC acquired an equity position in a UK cable TV group and was involved in the Israeli cable TV system in terms of marketing, finance and management. In the US, its efforts had been concentrated in developing its network and support video services operated by other providers.

Finally, according to the 1990 NAB report on the potential impact of RBOCs' video diversification on the broadcasting industry, Bell Atlantic and Ameritech had

indicated little interest in entering the video services market in the early 90s. These companies have not been involved in any kind of international opportunities in cable and their efforts were limited to an eventual provision of transport for content providers. Bell Atlantic had limited domestic activities in video fiber trials even though its management stated in Annual Reports of 1988 and 1989 its interest in video services. In the early 90s, Bell Atlantic was not involved in international deregulated video markets. This indicates that its priorities lay elsewhere. Ameritech showed some interest as a future vehicle of video transport. The strongest indication of its distance from the video market is the absence of competitive reaction in response to PacTel's acquisition of a local cable company in the Chicago area. In the early 90s, Ameritech stayed close to its core competency in telephony within its five states territory.

In the early 90s, PacTel and at a lower level US West and SBC, were the RBOCs that focused on the content and service aspect of video provision. Their intentions were to develop the system from scratch and bring the experience and expertise acquired overseas into the US market. The second element of this strategy involves US West's and SBC's domestic plans regarding the development of a broadband network. Bell South had been the most active RBOC in this domain by doing aggressive video transport experimentation.

In the early 90s, RBOCs strategies have been characterized as conservative in terms of entering situations involving high business risk.

3.3) Contextual changes

3.3.1) Introduction

This part will take a close look at how the telecommunications market environment has change because of major changes in technology, regulation and market structure. It will provide a review of the context surrounding RBOCs entry into the video services market. It will start by examining how regulation and market structure have affected RBOCs, particularly the effects of the VDT order and the recent Open Video Systems (OVS) regulation.

3.3.2) Evolution of cable regulation and market structure: impact on RBOCs

3.3.2.1) Introduction

Barriers preventing RBOCs from entering the video services market have been falling after 1984. The 1984 Cable Act established a set of rules that prohibited RBOCs from providing any sort of programming in their local service areas, directly or indirectly through an affiliate. The FCC was concerned that telcos would engage in cross-subsidization and hinder the development of cable services (www.fcc.gov 1996).
This Act essentially deregulated cable television allowing it to grow at a rapid pace. However, subscriber rates rose and the quality of services declined. Therefore, in 1987, the FCC started re-investigating these rules because of a changing context in the cable TV industry. Indeed, this industry has moved from several small independent providers trying to create a new business to a few powerful players. The industry structure is an oligopoly but most of the cities grant the right to provide cable services just to one single MSO.

There was no point to grant them local monopolies anymore. Consequently, for several years, the FCC has evaluated the costs and benefits of continued video monopolies. In 1992, It allowed telcos to offer video over their networks. It created Video DialTone Regulations. According to D. Smith (www.vipconsult.com 1997), these regulations were not based on true market economics, they were not finalized and the review process was unattractive, but at the time its was very attractive to the telcos because they had no other in-region entree into the video marketplace. In February 1996, the President signed the new legislation which eliminated many of the artificial barriers that prevented telcos from getting into the cable business. The VDT order has been replaced by the OVS laws.

3.3.2.2) Regulatory changes

3.3.2.2.1) The 1992 VDT, the 1996 OVS

The key points in the VDT order were that telcos were allowed to provide a common carrier video transmission service in their telephone service areas, as a non-discriminatory common carrier service but were prohibited to select and offer programming. Telcos were not required to pay franchise fees to local municipalities for the right to provide VDT in these communities, and were not free to engage in market pricing. However court decisions have permitted the RBOCs to offer programming in their service areas, Bell Atlantic in Dover Township, US West in Omaha and Bell South in suburbs of Atlanta (www.fcc.gov 1996). In fact, many of the video DialTone systems set up prior to the 1996 Act are waiting to be converted either to cable systems or to OVS (e.g. Appendix 1).

The Telecommunication Act 1996 stated that if an OVS operator charges "fair" rates to unaffiliated content providers for carriage on its network, that operator will be subject to "less" regulation. In other words, in exchange for two-third of its platform, the OVS operator is relieved of many of the requirements of the franchise process that cable goes through. Must carry rules and Public Educational Governmental (PEG) requirements did not apply to VDT operators but are part of OVS. However, OVS operators do not have to submit section 214 of the 1934 Communications Act which outlines a review process for obtaining permission to begin construction. That means a significant gain of time and money. Additionally, they are permitted to provide video services on their own in-region platforms, using up to one third of all available channels where there is demand for all channels. This raises the question of whether the FCC will allow one unaffiliated programmer to get two-thirds of the OVS platform. Indeed, OVS are prohibited from discriminating among video programming providers. Therefore the regulation allows a programmer to get the two-third channel's capacity, in which case the original intention of the Act of having the most diverse programming will fail. The exact term in the Act is "unjust or unreasonable discrimination." The difficulty is to define what constitutes a just and reasonable rate in the FCC certification process. This means that OVS operators must offer access on equal terms to all content providers. They can, however, offer discounts to Video Information Providers (VIP) that purchase large blocks of transport, but they cannot change the price of carriage because a VIP is either large or small or because they approve or disapprove the proposed programming. Bell Atlantic ("OVS and the media market place" in www.ba.com 1996) argued that "just and reasonable has to get away from all of the baggage that came with Title II" and that "the market will set just and

reasonable rates." The Alliance for Community Media wonders if the price to get on the system is too high, the OVS operator could take all the programming for itself and become nothing more than a cable operator without a whole set of statutory protections and regulations that apply to cable. That is why cable operators are drawing the FCC's attention to avoid unfair competition between an unregulated and a regulated cable operator. The problem for public-interest groups is that in the long run cable operators are likely to get into OVS to avoid time-consuming regulations and even if the FCC regulates that they can not, they will create their own phone companies and bypass the regulation.

3.3.2.2.2) Concerns of RBOCs towards OVS

The fact that RBOCs, if they opt for OVS will have to give two-thirds of their platforms to VIPs raises major issues What if an RBOC overbuilds a cable operator, and that operator wants to take up the capacity on the platform? Can the OVS RBOC treat its cable competitors differently from other programming providers? The question is ultimately what kind of control do RBOCs have over their own network if they become OVS operators? One of OVS advantages over VDT is more programming control but to what extent? The fact that the FCC is taking a lot of time to rule for OVS may lead eager RBOCs to choose other regulatory options.

3.3.2.2.3) Alternatives to OVS

The 1996 Telecommunication Act has declared that RBOCs can provide video programming in their own territories. Therefore, in addition to Open Video Systems, RBOCs are now pursuing video distribution over wireless cable, DBS, and wired cable.

The 1996 Act offers telephone companies four options for entering video. First, providing video programming through radio communications like MMDS or DBS, under Title III of the Communications Act. Second, transmitting video programming on a common carrier basis under Title II of the Communication Act. Third, providing video programming as a cable system under Title VI of the Communication Act, and finally, fourth, providing video programming by means of an Open Video System under new section 653 of the Communications Act (Telecommunication Act 1996, www.fcc.gov). Except Ameritech that opted to offer video under cable regulations in order to be the primary programmer on its systems, the other RBOCs are waiting for the OVS regulations specifications (channel capacity, PEG, franchise requirements, rates) to move from their old VDT systems to one of the four available choices. Uncertainity is surrounding these specifications that were supposed to be available on August but have been postponed first to November 1996 and then to February 1997. However, wireless, DBS and common carrier systems have already been tied to the matching regulations (e.g Appendix 1).

3.3.3) Evolution of video technologies and their impact on RBOCs

3.3.3.1) Introduction

Telecommunications technologies are evolving at such pace that makes the most contemporary systems obsolete. The positive results of this change have been slow down in the late 80 and early 90s by government policies that were meant to regulate a different time and a less complex telecommunications field.

Although each network will be different according to each strategy, there are common technologies used by all the RBOCs. All the systems are designed to receive a signal from the content provider, then encode and send the signal through a high-capacity network to a set-top box in the home. Wired systems like ADSL, HFC or SDV have the advantage of allowing interactivity, in the form of viewers selecting from on-screen options. The network will be either the existing one for ADSL or a new one composed by fiber optics and coaxial cable. SDV brings fibers closer to the home than HFC. Video-switching equipment, set-top decoder boxes and a computerized video gateway that will offer on-screen options and will interpret subscribers responses, will constitute the other parts of the network (FAQ, www.vipconsult.com 1996). Wireless and satellite systems like MMDS and DBS have limited interactivity but are far less expensive. RBOCs that have invested in these technologies plan to establish a market presence while their wireline systems are being built. It also gives them more flexibility in service offerings once the wired network is complete.

3.3.3.2) Regulation and technology

While OVS is clearly more attractive to RBOCs than VDT, the question that many scholars are raising is will it be attractive enough to engender their entry in the video services market under this new regulatory framework? (E. Noam, On-Line debate on OVS, Columbia University 1996). In fact, that will depend on the technology each RBOC chooses and on the number of channels that this technology enables.

OVS, VDT and title VI are not technologies, they are framework because they are subject to FCC regulations. However, the networks required to meet the OVS regulation

limit the practical technologies for wide distribution to either SDV or HFC. Indeed, with the one-third limit imposed by regulation, RBOCs that will opt for OVS will have to get a large overall number of channels to have a sufficient number for their own programming. OVS is not attractive if an RBOC plans, like Ameritech, to offer around 80 channels of analog video. If there is demand for channels from outside content providers, OVS could limit the telco to one-third of the non-PEG channels or about 25 channels. It would not be worth investing huge amount of money in building two-way cable systems and have only 25 channels to control. However, if the RBOC is planning to build an SDV network like Bell Atlantic, Nynex and SBC, OVS can be very attractive. In this case with a 100% demand for channels, the RBOCs will get one third of approximately 385 channels which means more than 125 channels. That is why many RBOCs are planning on deploying broadband networks to have enough control of the content. OVS would then allow RBOCs to sell their extra-capacity to other content providers. It would allow them to have wide latitude in determining what rates to charge for carriage. It would also allow them to share the cost of an integrated network with the telephony side. Additionally if they deploy in a large region, they can apply for a single OVS certification rather than negotiate multiple franchise agreements. Bell Atlantic is, to this date, the only RBOC that has applied and gotten approval to become an OVS operator in Dover Township, NJ.

In the beginning of the 90s, RBOCs remained skeptical about entering video because of regulation, cost and uncertainty of demand. RBOCs had limited video activities and mainly stayed in their core services not only because of the telcos cable cross ownership ban but also because they did not want to take risks. In the mid 90s, however, things have evolved. Regulation changes, new technologies and the market

made the RBOCs acknowledge the necessity of entering this field. RBOCs are split about the best technology to deploy today and the best regulation to adopt according to this technology. That is indeed reflected in their strategies.

3.4) A new RBOCs video orientation

The purpose of this part is to assess the main characteristics of RBOCs video strategies in the light of the new Telecom Act 96 and the availability of several different technologies that can be used to provide video services.

3.4.1) Same objective, different strategies

Following the Telecom Act of 1996 , RBOCs want to directly compete with cable companies in the video provision business, on a large scale, as soon as possible. An overall examination of their recent actions shows that the RBOCs are developing individual strategies to deal with both the technological and regulatory aspects evoked in the previous part.

Each RBOC has a different approach to enter this market. However, some RBOCs have aspects of their strategies that are alike. For example, Ameritech and Bell South have decided respectively to build CATV systems and to convert their VDT system to cable because OVS requires that two-third of the platform be reserved for unaffiliated programmers. Ameritech and Bell South do not want to see themselves left with a small

number of channels because they have only a few and they want to have significant control over the content.

Bell Atlantic has decided to experiment with SDV technology after having wondered for three years whether it will use HFC (Bell Atlantic's Annual Report 1995). Nynex is testing at the same time different ways of delivery in different locations: MMDS in CAI wireless locations, SDV in Somerville, MA, HFC in Manhattan and ADSL around Boston (Nynex press releases 1996). PacTel is focusing on wireless cable systems to deliver video in Southern California and wired systems in Northern California ("Wired in the Bay, wireless in LA in Multichannel News, October 1996). SBC is testing SDV in Richardson, TX and is delivering video through DBS in Enid, OK and Little Rock, Arkansas (SBC's press releases 1996). Finally, US West is waiting for its HFC test results in Omaha to decide whether it is worth deploying the same type of network elsewhere (US West Annual Report 1995).

The diversity of possibilities offered to RBOCs makes it hard to forecast their future plans. Furthermore, each RBOC has its constraints, its corporate philosophy, its structure and several other specificity that makes it impossible to have two exactly alike video strategies. Even though they are in the same business, each RBOC has its own distinctive personality and its own priorities. Therefore, financial, regulatory, technological and economic factors as well as personal corporate philosophies proper to each RBOC, make it incoherent to talk about one single RBOCs video strategy.

3.4.2) Changing strategies

Technology and prices change so rapidly that last month's strategy is probably being reconsidered today. RBOCs have been modifying their video plans along with market changes to move to more economically realistic deployments. For example, PacTel has decided in September 1996 to change its California exclusive HFC strategy. Instead, it kept both MMDS and HFC in the San Francisco Bay area, and left only MMDS in Southern California after having acquired three wireless cable companies. In November 1996, PacTel decided to abandon its MMDS plans in San Francisco ("PacTel scraps MMDS deal for the Bay area," Multichannel News November 1996), shortly before the beginning of a commercial launch, and to stop the deal with Wireless Holdings and Videotron citing "lack of equipment from its suppliers." PacTel still plans to provide wireless cable in the LA area using the existing facilities of Cross Country Wireless.

Bell South is approaching video provision with a "mosaic strategy" of wired and wireless. It is testing different technologies to deliver video with technological decision made on a market-by market basis. By evaluating the results of these trials, it wants to determine the key success factors in video so it can drop commercially outdated technologies.

In May 1995, Bell Atlantic withdrew its VDT trials in seven cities to reconsider the technology to deliver broadband and finally adopted the SDV model (Bell Atlantic's press releases 1995). Moreover, ADSL that several months ago was a dying technology is being heralded today by Bell Atlantic as the interim solution before broadband.

Ameritech withdrew its VDT trials in early 95 and started building and operating stand-alone cable TV systems. Ameritech is competing with other cable operators as a cable provider itself under the same regulation as cable companies (title VI).

In May 1995, US West has suspended all its HFC trials waiting the Omaha trial results (US West Investment report 1995). In late November, US West concluded that overbuilding the incumbent cable company is not a money-maker, and that the company is "not willing to do it on a wholesale basis" (Interview with US West CEO, Multichannel News, December 2, 1996). However, shortly after the new Act was signed, US West acquired Continental Cable to have, among other reasons, a quicker access and provide full services in other RBOCs areas.

After the failed merger with Cox, SBC is entering progressively into its own telephone service area market with video services and an experience in video acquired both abroad and outside its territory in the US. SBC is testing an SDV broadband network, cable networks and DBS. However, compared to the other RBOCs, SBC is lagging behind in the video services market and has not make yet significant moves neither to a future broadband technology nor to an interim one.

Finally, Nynex that was until 1996 favoring HFC (Nynex Press releases 1995) has switched to SDV and MMDS (probably as a result of its acquisition by Bell Atlantic).

What RBOCs are doing is selecting markets where they want to do either technical or commercial trials. According to Ray Smith (Interview to Vipconsult 1996), the RBOCs make shorter term decisions in some areas and longer terms decisions in others. Then they establish very specific dates on which they will review their decisions again. In other words they are doing "dynamic budgeting." If a technology, a type of

services or a deal with a partner is successful it is given more money. If not, it is replaced or canceled.

3.4.3) RBOCs video strategies depend on their other businesses

As Ray Smith pointed out, the RBOCs video strategies are tied to every other business they are currently in, and in many they are just evaluating. First, that is true in terms of money distribution. Indeed, if an RBOC decides to heavily enter the long distance market, Personal Communication Services (PCS) or the internet business, it will allocate less money for video. It is important to keep in mind that after the Telecom Act 96, possible attractive opportunities for RBOCs are overwhelming and full of promises: cellular, PCS, high speed internet access, international, publishing, paging, manufacturing, information services, second line POTS and literally dozens more. Even within the video field, the ADSL, HFC, SDV and MMDS supporters (only to cite these ones) in RBOCs compete against each other. As Ray Smith, CEO of Bell Atlantic, pointed out (Interview to Vipconsult 1996), "the ADSL guy knows that he can make money because of the tremendous demand for the internet. The broadband guy wants capital dollars so he can deploy faster. The Plain Old Telephone Services (POTS) guy is selling all kinds of new services over his existing lines. So he needs more money for marketing. The long distance guy is after money to enter as many markets as he can. The dilemma within the RBOC is that all are strategic businesses."

Second, in terms of regulation, the RBOCs do have in the new Telecom Act, a 14 points checklist requirement to enter the long-distance market. One of these requirements is to sign interconnection agreements with competing companies and allow them to use

the RBOC network in the location where the agreement has been signed to enhance competition. Bell South already signed a nine states agreement with Teleport communications group (Bell South press releases 1996). SBC signed with MFS, a co-carrier interconnection deal covering Texas and Missouri (SBC report on its video activities, www.sbc.com 1995). PacTel and Cox signed an interconnection agreement that allows Cox to provide telephony in residential markets --in partnership with Sprint-- in Southern California (in www.cox.com 1996). Ameritech is working on an interconnection deal with Time Warner ("Time Warner-Ameritech" in Multichannel News, July 22, 1996) and the remaining RBOCs, Bell Atlantic, Nynex and US West have not yet announced any agreement. It is interesting to note that the companies that are strongly involved in video (except for Nynex)-- Bell Atlantic, US West, Ameritech and PacTel-- are the last one to sign these agreements whereas the ones that did not show a strong interest in video until now--Bell South and SBC-- are the first ones. This fact suggests that Bell South and SBC are favoring their entry in the long distance business over video.

The quest by RBOCs to deliver video services is being shaped not only by cost, regulatory and time-to market issues but also by the many other business opportunities they are now allowed to seize.

3.5) Short-term and long-term strategies

3.5.1) Introduction

As a consequence of the Telecom Act 96, all RBOCs have made significant revisions to their VDT plans. Not only do they have to switch their VDT systems to either OVS or traditional cable by the early months of 1997, but they also have to operate strategic changes due to financial, technical, regulatory and market considerations. RBOCs have adopted new strategies to get into the market as soon as the early months of 1996, via wireless cable (MMDS mainly), DBS and ADSL. This will give them both the "flavor" of the video market and the time needed to perfect their HFC and SDV broadband networks, which they plan to implement as long range solutions.

3.5.2) Short term and long term video strategies at the corporate level

3.5.2.1) Description of RBOCs technical systems and services

Table six provides a summary of the technologies adopted by the RBOCs and the strategies that are related to these technical solutions.

Table 6: RBOCs short-term and long-term technical systems

RBOC	Short Term	Long Term
Ameritech	Franchised stand-alone cable TV systems	Separate network from telephony upgraded with fiber (HFC)
Bell Atlantic	Wireless cable through CAI (MMDS) Common carrier for Sammons cable (HFC) ADSL trials in Virginia	Strategic switch from HFC to SDV
US West	Cable TV systems in suburbs Atlanta Continental properties	HFC upgrade Continental properties
PacTel	Wireless cable through Cross Country (MMDS) ADSL in San Ramon	HFC
SBC	DBS Cable TV systems in Virginia and Maryland	SDV
Bell South	Cable TV services in Florida MMDS in New Orleans	Same network (as opposed to Ameritech) upgraded with fiber (HFC)
Nynex	Wireless cable through CAI (MMDS) ADSL in Boston	From HFC to SDV

Source: RBOCs annual reports and press releases 1996

RBOCs short term provision of video services will consist on offering "value-added" basic cable services. In broadband trials, they will also include VOD, NVOD, games and transactional services like home shopping and home banking (VIP consulting, www.vipconsult.com 1996).

In order to gain market shares, one strategy is to offer enhanced and better services than their current competitors in the target market. That is why both content and the interactive nature of the services are two crucial key success factors. Americast is the content provider of Ameritech, Bell South and Southwestern Bell. Bell Atlantic content is provided by both FutureVision and TELE-TV, US West by Telechoice and Time Warner, PacTel by TELE-TV and Nynex by TELE-TV and Time Warner.

3.5.2.2) Architecture strategies

As Table six shows, each RBOC is testing different technologies, and is establishing both a short term strategy and a long term strategy. The aim of the short term strategy is to be in contact with the customers, understand the demand, operate video systems and become accustomed to the management of a new type of business. The long term strategy is a multi-services strategy. It means that in the future, RBOCs are not thinking about the provision of separate services to separate customers anymore, but are rather seeing themselves as full interactive services providers. Therefore, they are building a consequent enhanced network to be a one stop telecommunication services

providers. Only Ameritech has chosen to build a video network that is separate from its telephone network.

The technological solutions are different depending on what will be called initial conditions: how much fiber is the ground, what the regulatory situation is, what the competitors are doing in a given market.

Basically, all RBOCs need video capable networks. They are adapting their networks for video as fast as the markets and the technology permit, just as they did for direct dialing in the 60s or for distributed intelligence and digital switching in the 80s and early 90s. The question is how to make the smart investments to get into the marketplace fast while migrating to the ultimate network solution. What are RBOCs doing in the meantime?

Short term technologies that have been mostly adopted by RBOCs are digital wireless cable and ADSL besides traditional cable and DBS. Digital wireless cable uses line-of-sight digital transmission (i.e. microwave) to a rooftop receiver. The Customer Premises Equipment (CPE) consists on a digital set-top converter. Services include digital TV transmissions with superior picture and sound. Unlike analog wireless cable that is currently in use with a limited channels capacity of about 30 channels, RBOCs will offer with digital MMDS, 80 to 100 channels with a wide variety of programming. Digital MMDS will include NVOD, limited interactivity and local programming which is the main advantage compared to DBS.

ADSL uses existing twisted pair lines with a breakthrough signal processing technology. It provides digital video only, therefore requires a set-top box.

Two long term technologies will constitute the future broadband network. In Switched Digital Video, telephone and digital video are sent over a single-paired fiber cable. Then a Network Interface Unit on customer's house splits the signal to be carried into the house via existing coax or cooper wires. It requires a set-top box since video signals are digital. Potential services include interactive multimedia, voice and high speed data. Advantages include much of the system's intelligence residing in the network rather than in set-tops or server.

A Hybrid Fiber-Coax is also a switched network. However, unlike SDV it runs fiber only until neighborhood nodes, each serving approximately 500 customers. Coaxial cable then runs to Network Interface Units on customers' houses. From there, the process is the same as SDV, except that set-top boxes are not needed if only analog video is used. The system is capable of Video On Demand with VCR-like features pause, rewind, with digital pictures and CD quality sound. It will also have enough upstream bandwidth to accommodate video telephony; otherwise its interactive capabilities are limited compared to SDV.

Which of these architectures will "win" depends on a number of factors, including how fast the cost of their respective technologies comes down, and the amount of consumer demand for large scale interactive services. Thus market considerations have a great impact on the RBOCs technical decisions. The RBOCs will probably jump to other strategies if they perceive that one technology is becoming much cheaper to provide, or if consumer demand exceeds or fails to meet their expectations. A significant example has been provided by Bell Atlantic when it moved from HFC to SDV.

In its July 28, 1995 edition the Wall Street Journal denounced some RBOCs for "scaling back plans to build interactive networks." If RBOCs are not going to build the super-advanced highway that everybody is talking about and overhyping, then should they just do nothing at all? It seems clear that each change in strategy that moves an RBOC closer to economically realistic video deployment is a sign that more hard thought is being given to actually constructing these networks. Pacific Telesis, for example, by altering its strategy so that it does not simultaneously build competing wireless and wireline networks in the same market, is showing that it is moving and starting to look at video networks as a business.

3.5.2.3) Alliances, acquisitions and mergers strategies

In terms of infrastructures, know-how (distribution, marketing, R&D) and cost sharing, acquisitions or mergers are the easiest and quickest way to enter a new business and access new markets. Most of the RBOCs have adopted this type of strategies as both short and long term decisions in order to gain experience in this new field. Moreover, as was pointed out in the historical review of RBOCs entry in video, many went international to gain profits as well as knowledge, and be prepared for the day they will be able to provide video services in the US. The RBOCs have been classified according to their level of involvement in alliances, mergers or acquisitions with companies operating in the video field nationally and internationally.

3.5.2.3.1) Small scale involvement RBOCs:

Ameritech and Bell South are the RBOCs that did not adopt either an international or a national video strategy of alliances. Ameritech's CEO said "we are not going to make a deal where our shareowners or our customers have to bear the burden of paying an excessive premium for an acquisition" (Ameritech 1994 Annual Report). Ameritech is concentrating its effort in building its network whereas Bell South is putting HFC in certain areas within its territory. Bell South has purchased the use of a wireless CATV license in New Orleans by auction for $12 million. It has recently purchased another MMDS system in Atlanta in a move to competitively respond to US West's Atlanta-based cable provider MediaOne ("Bell South buys Atlanta wireless system", Broadcasting & Cable, November 4, 1996). Both Ameritech and Bell South rely on their own knowledge to put fiber in their network and do not seem to need external assistance neither for the network nor for the cost or above all, the experience in video. However, both developed in partnership with Disney, SBC, GTE and SNET, a content provider called Americast that will develop interactive video programming. Moreover, in 1991 Ameritech purchased with Bell Atlantic, TCI and Time Warner, the first PPV TV station in New Zealand, Sky Network TV Ltd (Ameritech's Annual Report 1994). Other than these deals, Ameritech has not been involved in any type of alliance or merger related to video. That is the second distinctive feature of Ameritech compared to the other RBOCs, in addition to its stand-alone cable network. Bell South has focused more on the content by signing a deal with QVC Inc. to deliver entertainment and information.

Bell South and Ameritech did not develop heavy alliances or international strategies. They rather focused on existing technologies upgraded with fiber to provide

existing cable services and compete against incumbent cable providers in their telephone service areas.

3.5.2.3.2) Intermediate scale involvement RBOCs

PacTel and SBC did employ a moderate strategy of alliances and acquisitions, mainly at the national level. Cross Country Wireless (CCW) has been acquired by PacTel through stock transaction in 1995 for $175 million. In a transaction that has been dropped lately , PacTel has tried to acquire the wireless spectrum assets of Videowave television (V*TV) for $160 million ("PacTel scraps MMDS plans" 1996). Through two entities-- Wireless Holdings Inc. and Videotron Bay area-- V*TV holds licenses and rights to provide wireless video services in the San Francisco Bay area, San Diego, Victorville and in San Bernardino, CA. Besides this strong involvement in wireless video, PacTel has created, in cooperation with Nynex and Bell Atlantic, a content provider, TELE-TV which is in charge of providing programming and Customer Premises Equipment.

SBC has a record of alliances after its Cox communications merger failed in 1993. At the international level, SBC Media ventures is a subsidiary of Southwestern Bell and is operating and maintaining CATV systems overseas in the UK, France, Chile and Israel. SBC Cable Comms is the fifth largest cable provider in the UK (SBC's press releases 1995). In 1993, SBC upgraded its cable network to provide telephony and installed the first cable/telephone network in the world. In June 1995, SBC announced its intention to merge its United Kingdom operations, jointly owned with Cox communications, with TeleWest the number one cable provider in the UK which is jointly owned by TCI and US West. In Chile, SBC purchased in February 1995, 40% of VTRI a private telecom holding that operates in 18 cities and has a potential customer base of 1.3 million

households (SBC's Annual Report 1995). At the national level, SBC is involved in the Americast content deal that has been signed in April 18, 1995. Moreover it has merged with PacTel creating the third largest telephony company in the US.

3.5.2.3.3) Heavily involved RBOCs in alliances, acquisitions or mergers nationally and internationally.

This category of RBOCs gathers those who have combined alliances with content providers, with technology providers and with companies that operate outside of their original telephone service area. Three RBOCs belong to this category: Bell Atlantic, Nynex and US West.

At the national level, in terms of delivery of content, Nynex and Bell Atlantic made a joint investment of $100 million in CAI Wireless cable company in March 1995 to speed delivery of video entertainment in the Northeast and Mid Atlantic states (www.vipconsult.com 1995).

Bell Atlantic has already a record in video alliances with its failed merger with TCI in 1993. In terms of content itself, Nynex and Bell Atlantic have created in cooperation with PacTel TELE-TV. Moreover, Bell Atlantic Video Services intends to acquire certain assets of Future Vision, a division of digital broadband applications Corp. that is providing programming to 5300 households in Dover Township, NJ (Bell Atlantic's press releases 1996).

Nynex invested $1.2 billion in Viacom, which controls some of the country's most valuable entertainment brands. However Nynex is reconsidering this agreement since there is no collaboration between Viacom and TELE-TV (Nynex's press releases

1996). In term of advanced broadband trials, Nynex cooperates with Liberty cable as well as Time Warner communications in Manhattan. At the international level, Nynex Cable Comms has been designing and constructing a broadband network that has delivered telecom and CATV services since 1994 in the UK as well as in Thailand.
Finally, Nynex and Bell Atlantic have merged creating the second largest telephone company in the US after AT&T.

As for US West, this RBOC is probably the one that has used an alliance centered strategy the most. US West Media Group has acquired in February 1996 Continental Cable that serves 16.2 million customers mainly outside of US West 14 states region (The Wall Street Journal, Feb 28, 1996). The bulk of Continental's properties clustered in five large markets: New England, California, Chicago, Michigan/Ohio and Florida. US West became the nation's third largest cable company managing 16.3 million domestic cable customers and 13.9 million homes abroad. Moreover, three operations- MediaOne in Atlanta, the Time Warner entertainment properties and TeleWest in the UK, gave US West one of the best cable-telephony positions in the world. US West Media Group purchased the Atlanta properties in 1994 from Wometco cable and Georgia cable television for $1.2 billion (US West investor report 1995). Through its 25% ownership of Time Warner Entertainment (TWE), US West has established a national presence capable of providing cable-telephony services, information services and entertainment in 29 markets across the US, and has therefore, the opportunity to compete against other RBOCs in their territories. By 1997, TeleWest, the venture with TCI (made in July 1992) and the world's largest provider of cable telephony services plans to pass 80% of the 4.1 million homes it is franchised to serve in the UK, Norway, Sweden and Hungary (US

West's press releases 1996). US West Media Group also operates cable telephony ventures in the Netherlands, Japan, the Czech Republic, Italy, Spain, France and Malaysia. Finally in terms of content, in addition to TWE, US West media group has 25% ownership of Warner Brothers Studio/HBO which are respectively the world's largest distributor of theatrical and television entertainment and the largest pay television programmer in the world.

3.5.2.4) RBOC strategy, a combination of strategies

To the end of providing new services, the RBOCs are building broadband networks in their own telephone service areas only, and buying or building less enhanced networks in terms of provision of services, either in the US or internationally. Indeed, broadband networks involve a lot more money than interim solutions like wireless cable, ADSL or DBS and therefore are tested in RBOCs own territory where they face less competition and are able to use their own facilities. However, buying a cable operator or operating a wireless system, which is far less expensive, can be done outside of their territories in carefully selected places.

Ameritech has a slightly different approach. Its subsidiary Ameritech New Media Services has been aggressively pursuing its plans as a cable overbuilder, building second cable systems in 30 communities in its region. Bell South has chosen also to provide cable services under "Title VI" regulation. Like Ameritech, Bell South has been filing for franchises to provide cable services to residents of its territory, especially in Florida where it has its largest cable venture in Orange and Seminole counties.

However, unlike Ameritech, Bell South is approaching video delivery with a "mosaic strategy" of wired and wireless services.

SBC Communications Inc. may share common interests with Pacific Telesis Group, the company it has acquired. But video strategies do not appear to be among them. SBC has a reputation for going slowly into video delivery, while PacTel has been quicker. PacTel likes digital wireless cable while SBC prefers DBS. SBC is experimenting with SDV in Texas, while PacTel is building HFC networks in Northern California. SBC's programming alliance is Americast whereas PacTel is in TELE-TV. However, both companies are venturing into broadband carefully, testing technologies and consumer demand and making sure they offer customers something they want and something economically viable. Moreover, executives of both Americast and TELE-TV are having discussions about possibly combining the two ventures, and SBC's buyout of PacTel could make a merger more likely (Interview with Steve Weiswasser, video information providers newsletter, November 1996).. TELE-TV appears to be further along than Americast, having built a digital production studio and having signed a $1 billion contract for wireless cable digital set-top converters. TELE-TV's CEO has estimated for example that his consortium will spend $120 million this year as compared to $5 million by Americast (Interview with Howard Stringer, video information providers newsletter, September 1996). However, Americast has the advantage of having the partner that's the buyer in this buyout, and SBC gave them an indication that it will remain a part of Americast (Interview with Steven Weiswasser, Vipconsult 1996). However, TELE-TV and Americast will have problems working together if their telcos plan to invade each other's video markets. Even so, none of the Americast or TELE-TV phone companies

have announced plans to target another's territory to sell video services. Many of the RBOCs will enter long distance and that may create tensions between them. Moreover, an Americast/TELE-TV merger might threaten the diversity of programming.

Unlike the SBC/PacTel merger, Bell Atlantic and Nynex seem to be on the same brain wave. They are both testing ADSL and MMDS as interim technologies in order to gain experience in packaging and marketing video services, to get additional subscribers and engender customer loyalty. Indeed, they want to know consumer preferences with interactive TV in VOD market trials using ADSL for Nynex in Boston and for Bell Atlantic in Fairfax, VA. Nynex and Bell Atlantic will first enter the video market in late 1996 using wireless technology to deliver a TELE-TV branded digital service from CAI wireless infrastructures. They are both, in the long term, equipping themselves with SDV to offer the full market-basket of services packaged by TELE-TV: interactive Video-On-Demand capabilities presented via a navigator, full VCR functionality, electronic program guide in order to challenge Pay-Per-View and video tape rental. In fact, both of these RBOCs have a network-centered strategy. They started using a variety of technology from ISDN, ADSL, wireless cable to HFC and SDV until they finally chose ADSL, MMDS and SDV. In fact, Nynex has been influenced by Bell Atlantic's decision to convert all its broadband systems from HFC to SDV. In Manhattan, Nynex has been testing video services through an HFC network and was unlikely to change broadband technology until it has merged with Bell Atlantic. Bell Atlantic is using an "align and conquer" strategy in order to penetrate the North (Nynex territory) and Mid (Bell Atlantic territory) east coast of the US with the same technology and the same range of services. That will allow the new Bell Atlantic (after the merger) to achieve significant economies of scale and

establish a brand name ("Nynex takes GI's next level for switched fiber network", Multichannel News, October 21, 1996). Bell Atlantic's and Nynex's long term strategy is to focus on the development of interactive multimedia TV in order to offer an alternative to CATV ("Bell Atlantic and Nynex: together at last", Yankee Group 1996). Neither of these companies have bought a cable TV company, but they want to provide video through more advanced networks for the same targets as cable companies.

Unlike all the other RBOCs, US West has acquired cable companies as a tool to its services-centered strategy. US West's short term strategy is also to compete with cable but with CATV systems through acquisition of cable TV companies that are mainly operating outside of its territory (Wometco, Georgia cable and Continental).
US West has chosen , to use its international experience in operating cable TV systems and its alliance in content with TWE, to provide immediately cable services in profitable markets (Atlanta and Continental properties). US West has also announced its plan to deploy commercial ADSL services in late 1996. As a long term strategy, US West adopted HFC to be its network architecture of the future. It has already used this type of network in the UK. As US West CEO, Richard McCormick pointed out "US West is now both a telephone company in the cable business and a cable TV company in the telephone business" (US West 1995 Investors report). Indeed, US West' Media One has a subsidiary called Southern Multimedia Communication Inc. in Atlanta, that is in charge of upgrading its system to offer local telephone services. In terms of provision of services, US West is in advance compare to its Bell cousins.

3.5.2.5) RBOCs motivations to adopt their current strategy

This part intends to explain the changes in RBOCs video strategies. Ameritech's cable model reflects an abrupt departure from their earlier Video DialTone strategy. In its 1994 Annual Report, Ameritech also emphasized that it will invest in the content since it believes that programming will be the key to success in a future video competitive environment. However, VDT regulations contain a non-discriminatory access clause. This means that the RBOC is the carrier and has the obligation to make channel capacity available to every content provider and must ensure that no single programmer dominates the available capacity. Ameritech did not want to be only a common carrier. That is why it has moved from a position of carrier to an active involvement in the cable TV business. Ameritech created Ameritech New Media Services, a subsidiary that will offer CATV as a cable franchise, under the cable regulation and thus without being obliged to share its network with other content providers. Indeed, under cable rules, the company does not have to make channel capacity available to independent video information providers and can program the majority of the available channels (the rest are PEG channels).

Why is controlling the content so important? Probably because Ameritech felt that to be able to gain market shares, it will have to differentiate its offering from traditional cable TV programming by adopting a strategy of localism and offering more diverse programs ("Telcos talking to TV stations for content", Multichannel News September 16, 1996). That is one of the reasons why Ameritech has canceled its VDT plans and planned to invest $4.4 billion in building an HFC video network separate from its cable network

in early 1995. Why did they build a separate network? That indeed makes a lot of experts confused. The economics behind Ameritech's business model (build state-of-the-art, hybrid fiber coax, stand-alone, non-integrated, overbuild cable systems where there will be almost no cost sharing) seems to be uncertain. The telco appears to have taken the most expensive route to providing video in its region. In fact, Ameritech did separate the two networks for two reasons: first, to avoid regulatory uncertainty over the FCC's VDT rules in early 1995. Indeed, in 1995 all other RBOCs were waiting the outcome of the new regulation before they decide whether to offer video services under title VI, under title II or under OVS. Second, with a stand-alone network, Ameritech has been able to build its video network in certain carefully selected areas that will probably insure the best return on investment. It has been able to select suitable areas where the demand is strong. It has been able to "cherry-pick" the best areas.

Southwestern Bell could not stand the uncertainty that was surrounding Video DialTone regulations (www.sbc.com), and has started trials in profitable regions outside of its territory in the DC area, under the Title VI cable regulations, as US West did in suburbs of Atlanta.

Why are SBC and US West entering a new business outside of their territories? In fact, there are two main reasons. First, SBC and US West are using their assets-- respectively, cellular properties in Rochester, NY and between Albany and Buffalo, and cable alliances-- to make an entrance into the local markets. Second, these RBOCs are entering their Bell cousins' territories where they want to offer a package of services, including telephony to gain market shares in the incumbent RBOC's territory. SBC has clear plans to eventually integrate telephony and video on the same network.

Indeed, in the SDV trial in Richardson, TX, customers have a combined delivery of telephone and cable services, in addition to VOD and games that are provided by Americast. This trial has been intended to learn consumer behavior and gain experience in pricing, packaging and marketing in the heart of SBC territory and its largest market, Texas. SBC is also reselling DBS services in its region, beginning in September 1995 with programming delivered by Direct TV. Clearly SBC's entry into the video business is slow and very careful. The issue is how will this strategy evolve now that SBC acquired PacTel which has been actively working on its entrance into video. Moreover, will these two companies manage their differences in style, in technologies and in the content that have been used to deliver video? Analysts generally believe that SBC will proceed into broadband in its core service area, where it faces less competition, but that it will sustain PacTel's video investment because of stiffer competition in California (Multichannel News, April 4, 1996). However, cable operators do not agree. They predict that SBC will rethink PacTel's video strategy because PacTel's plans are very ambitious and a factor behind its financial difficulties. PacTel has always maintained that their wireless plans are "both a strategic and economic imperative to us" in the words of PacTel's CEO Phil Quigley (PacTel's 1995 Annual Report). It believes that it is the fastest way to the market, and that it will be able to offer a superior, digital, combined national and local broadcast network to its customers and establish a brand name. Moreover, from a capital perspective, beyond initial investment in licenses, capital costs for wireless digital TV will be low compared to other video delivery systems. Most costs will be variable based on subscriber levels. The service involves relatively few network components-- transmission tower sites, head-end equipment and digital encoding devices-- and does not

require digging trenches, installing cable or other construction. PacTel anticipates that the initial network investment will total around $60 million to install head-end and network components in their California markets. Other costs cover equipment at the subscriber's end of the network, which will decrease as demand rises. Initial costs for converter equipment are expected to be around $125. However, what suits hilly Southern California (MMDS) would not necessary play in Texas where the topography of the terrain is different. Because wireless digital TV operates on a light-of-sight basis, buildings, trees, hills and other topographic features may interfere with transmission, reducing the number of homes some towers can serve. The majority of PacTel's acquired territories--hills, mountains and valleys with modest tree coverage-- are well suited to MMDS. By placing transmission towers on mountain peaks, enabling a higher angle of elevation, PacTel will be able to bypass foliage and reach more customers. This issue of DBS versus MMDS also has economic aspects. Indeed, MMDS offers local programming which is crucial from a marketing standpoint but DBS offers a large coverage with the same audio and video quality as digital MMDS.

In wireline networks, analysts expect PacTel to operate a "midcourse correction" and to join the SDV camp that has been chosen by SBC (www.vipconsult.com 1996). Michael Fitzpatrick, CEO of Pacific Telesis Enterprise Group pointed out, "Pactel's strategy is to focus wireline construction where the most intense competition is expected--in the San Francisco area from TCI--and to pursue a complementary wireless video approach in other areas" (PacTel's 1995 Investors Report). It is important to note that PacTel's CEO used the word complementary instead of interim. Indeed, until now PacTel has spend $525 million dollars on the wireless set-tops and the spectrum alone.

This figure does not include the cost of digital head-ends, content acquisition, marketing, installation and customer management. When all the costs are figured, PacTel has passed the point where wireless can be considered an interim strategy. Eventually --that is valid for all the RBOCs that has developed in parallel a short-term and long-term technology-- in areas where both networks operate, customers will be able to choose the level of interactivity, services, prices and technology that best meet their needs.

As PacTel did, Bell Atlantic and Nynex both have chosen wireless cable as an interim technology for practically the same reasons as PacTel except the topographical one: reasonable coverage, reasonably quickly, local programming and immediate access to customers with better quality cable services. In parallel they are testing ADSL originally not intended for video but for high-speed internet access. ADSL allows testing video on demand services even if it is not with the best quality. It allows both of the RBOCs to understand consumer behavior towards VOD and to adapt their offerings according to the results of the ADSL tests. One enormous advantage of ADSL for the RBOCs is that they can roll out ADSL household by household as each new subscriber asks for the service ("Will ADSL beat cable", Internet World, October 1996).

As for wired long-term systems, Bell Atlantic decided in May 1995 to withdraw its VDT trials from seven cities to reconsider different technologies to deliver broadband services. Bell Atlantic decided to adopt SDV as its broadband technology in order to bring fiber much closer to the home and be able to deliver more and better interactive services. Another particular feature of Bell Atlantic video strategy is its status of common carrier in Morris County, NJ. Bell Atlantic is planning to build a fiber network to transport video programming for the current cable company, Sammons Communication

that will use less than 50% of the capacity. The remaining capacity will be leased to other video information providers. It appears that Bell Atlantic believes that it can generate immediate revenues by simply leasing capacity to unaffiliated programmers on a common carrier basis.

As a long term strategy, Nynex wanted originally --before its merger with Bell Atlantic-- to provide cable services in the Northeast part of the US in continuation of what it was doing overseas with the same type of broadband network. The knowledge it has acquired overseas is crucial for Nynex even after its merger with Bell Atlantic and the change in broadband technology from HFC to SDV.

US West stopped its HFC trials except in Omaha, NE, to do more investigation on different wireline architectures (US West's Annual Report 1995). In fact, different press articles report that even the Omaha broadband trial is a financial failure because US West invested too much money and the return on investment was much less than expected (Interview with US West's CEO, Multichannel News December 2, 1996- Cox Communication press releases, "Cable Telco execs clash" in Multichannel News, September 1996). US West obviously does not want to lose money in similar trials as Omaha. That is why they stopped the other trials and are examining other opportunities to offer video in the long term. As a short term strategy, they are strongly involved in cable TV in Atlanta as well as in content partnership and alliances. The Continental acquisition was the fastest way to gain access to other RBOC customers since Continental is mainly operating outside of US West territories and provides them both video and telephony services. Moreover, Continental's experience in video and cable TV will be invaluable for US West. Finally, this acquisition will probably allow US West to extricate itself from

its agreement with TWE. Since early 1995, when Time Warner raised the idea of restructuring US West's investment in TWE, US West's CEO, Chuck Lillis said the companies have tried numerous times to reach a mutually acceptable agreement before eventually going to court. "Unfortunately, we have not," he said, "and I do not think a near-term resolution is likely" (1995 US West's Investors Report). Recently, the pressure rose when US West wanted to block Turner's acquisition by TWE that finally occurred in October 1996. In terms of network architecture, US West has chosen without any hesitation HFC. This type of architecture has already been tested by TeleWest in the UK to deliver bundled communications services over a single network. Moreover, US West engineers argued that HFC networks capacity will meet near-term market demands even with 100% voice and data penetration, and can be easily and cost-effectively expanded (US West Investors report 1995).

The RBOCs that are not thinking about cable, Bell Atlantic, Nynex and Pacific Telesis are committed in the short term to providing MMDS wireless cable service. All the Bells are committed therefore to providing a video service other than under the OVS regulation, either a cable system or a wireless cable system.

Bell South is unique among the Bells because it has chosen to test both traditional cable and wireless cable services. Following the lead of Ameritech, Bell South is increasingly gravitating toward the cable system model as the best way to penetrate video markets. It is planning to convert its VDT systems to cable system as quickly as they get a franchise from their target markets cities ("Bell South in franchise talks", Multichannel News October 28, 1996).

3.6) How will RBOCs gain market shares in the competitive video market: business unit strategies

3.6.1) Gain experience and know the customer best

When asked about his company's investment strategy, Chuck Dolan of CableVision reduced to this simple proposition: "if somebody else is operating a competing network in your territory, he is going to take part of your subscriber base. We need to do everything this plant is capable of doing to amortize its cost, including video, PC hookups and telephony" (Conference CATV administration and marketing society 1995). This statement applies equally to telcos as it does to cable companies and any other companies that decide to enter the telecommunications market. According to Ray Smith, CEO of Bell Atlantic (Conference CATV administration and marketing society 1995), the immutable fact is that both telcos and cable operators want to offer their customers a full package of voice, data and video services, because competition will. They have to offer the broadest possible array of services because competition will. The question is who will provide it first and gain market shares in both the telephony and cable markets. Both telcos and cable companies have to find the best way to get customers early and keep them. As Ray Smith pointed out "if the ultimate technology solution is not economically feasible at the moment, find another avenue into the marketplace and bring your customers along as the technology evolves" (Ray Smith speech in Cable Television and marketing society September 19, 1995).

In video, RBOCs are the new kids on the block, coming in against competitors with an established identity and customer base. RBOCs have to offer customers a reason to switch to their new services and to stay with them over the long-term, meaning that they need to enter the market with a differentiated product line at a competitive price. And they have to do all this in a way that makes economic sense. That is why RBOCs believed it is so important to enter the video market early, with technical trials, market tests and development activities, all of which are critical to the development of a commercially viable video product and business structure. These trials, whether they have occurred within the US or outside the US in deregulated markets, improved RBOCs video market intelligence, got them an early insight into customer programming and packaging choices and enhanced their technical expertise. Ray Smith pointed out how Bell Atlantic's broadband trials "are bringing invaluable experience" to his company. US West's CEO argued that without its experience in the UK, US West would not have neither been able to manage its MediaOne properties nor its activities with TWE and lately Continental (US West's Investor Report 1995). Indeed, not only, are RBOCs working on mastering the technical side of the digital video business --the interfaces, the encoding, the operating systems, the server technology, and so forth-- but they are learning about the economics of fiber networks, whether HFC or SDV, and how to operate a cable system. RBOCs that have been heavily involved in international operations in video, US West, SBC, and Nynex are able to transfer skills and learning to their video operation inside the US.

All RBOCs, except Ameritech, want to apply what Dolan said: they are loading as many services on a common investment base as possible. Above all, they are learning

about consumer preferences for interactive services, what customers like, and more important, what they will pay for. Almost every RBOC is experiencing at least one VOD trial. Bell Atlantic in Northern Virginia, US West in Omaha, PacTel in the San Francisco Bay area, SBC in Richardson, TX, Bell South in Chamblee, GA and Nynex in Massachusetts. In the words of Bell Atlantic CEO "what we are learning is that the depth and breadth of a true, differentiated VOD product drives significant buy-rates and attracts high quality programmers" (www.vipconsult.com 1996).

3.6.2) Join forces to create content

To be a force in video requires more than mastering technical systems and the demand. As purely local players, RBOCs understood that they would be at permanent disadvantage in obtaining the kind of programming their customers want at favorable rates, if they operate separately. That is why Bell Atlantic, PacTel and Nynex formed TELE-TV, US West acquired 25% of TWE, and Bell South, Ameritech and SBC among others created Americast. Developing and owning content becomes a key success factor because that is the way an RBOC can differentiate its product, gain market shares and avoid paying a retail price. It is generally considered that the holder of the content is the holder of the control: "whoever can control what goes on the lines, will control what is done with that information" (Carlson 1996). For example a customer might change service providers if his or her favorite program is not carried by a service provider. These alliances were formed to establish the kind of scale that will attract high-quality content, create brand awareness and allow RBOCs to have a competitive advantage over cable. Together these companies have the kind of volume purchasing power that will drive

lower prices for digital television programming. For example, PacTel, Nynex and Bell Atlantic proved the power of economies of scale when analysts were talking about a $700 MMDS set-top, and these companies, 6 months later, had a contract to manufacture set-top boxes for less than half that number.

These alliances in content provide the RBOCs brand names. These brand names whether TELE-TV, Americast or US West/MediaOne ("Continental ponders change to MediaOne", Multichannel News, July 22, 1996) are critical to the RBOCs strategies because they are necessary to the trust of the customers.

3.6.3) RBOCs Key Differentiating arguments

The main competitors of the RBOCs in the video services arena are the "traditional" cable companies and at a lower level, DBS providers. PacTel, for example, has the strategic objective to get 15-20% of the cable company's customers. By cutting the cable companies' cash flow, the RBOCs hope to reduce cable's capital investment abilities, thus allowing them to be first with interactive broadband. RBOCs operating expenses in providing cable services could be slightly lower due to economies of scale and advanced billing/customer service operations.

In terms of marketing mix, the RBOCs plan to compete with cable companies on the following basis:

3.6.3.1) Price

Since wireless and ADSL are relatively cheap, the RBOCs can underprice cable to some degree, at least in the short term. But they will still need to raise revenue to finance their long range plans. In terms of CPE, the customer's initial investment for

equipment will be less costly for MMDS than it is for DBS. Concerning content, Bell Atlantic for example is offering its movies at a price of $0.49 to $4.49 per movie --in addition to a $7.50 month connection fee--. Depending on the movie, it can be cheaper or more expensive than traditional PPV that is offered in cable today ($3.99 to $4.95 in average per movie for TCI). Bell Atlantic's basic monthly service rate in Dover is $14.95, and that obliged the incumbent, Adelphia, to cut its own rates from $25.28 to $18.95 (Bell Atlantic's video activities 1996). In Michigan, Ameritech is offering substantially similar video services as Continental, a package of 59 basic channels plus premium channels --Showtime network, the golf channel-- at non-premium prices for $29.95 whereas the cable operator price is around $40 (Ameritech's press releases 1996). In Chamblee, GA, Bell South is offering a package of 64 basic channels for $23.95 a month, VOD at $3.95 per video and NVOD at $2.95 per movie. PacTel's customers are proposed a $28.95 package which competes head-to-head with TCI's expanded basic offering priced at $30.64. In addition, customers can select from four premium channel families (HBO, Cinemax, Showtime and STARZ!) in which multiple premium channels are offered for the price of one. For example for the price of HBO subscribers also receive HBO2 and HBO3 (PacTel' internet releases: "Pacific Bell video services launches commercial cable TV service in San Jose", August 30, 1996).

However, this price war is only as RBOCs are entering the market, so they can attract customers by the low-cost. As Dave Onak, Ameritech New Media emphasized (Broadcasting&Cable, October 21, 1996): "Our prices would be competitive and they would stabilize at some point. RBOCs are not going to be the Wal-Mart of the cable industry and be the lowest priced."

3.6.3.2) Product

3.6.3.2.1) Diversity of programming, more choices

RBOCS are determined to provide something more than what consumers can get from a cable system. People who think they are paying too much for cable in exchange for poor content are potential customers for RBOCs. For example, in Bell Atlantic's SDV trial in Dover Township, NJ, 384 channels are being offered. The content is extremely varied, entertainment, children's programming, learning, lifestyles, marketplace and distance learning applications. In order to cruise all these programs and not get lost among such variety, TELE-TV and Americast are developing a user-friendly network navigator that will help customers select the programs they want to watch. Also, on-screen ordering and instant previews have been already developed. Those are key elements of differentiation that make the customer's life easier. One challenge facing the RBOCs is to package and deliver video and entertainment services so they are "incredibly easy to use" as Richard McCormick pointed out (Communicopia conference November 1993). Indeed, RBOCs already experienced this type of challenges with caller ID. They found that people do not memorize phone numbers. That is why they have included the name that goes with the number in the display.

However, trade magazines reported that original programming is not on the RBOCs' initial agenda for their early video launches. New programming that would have set RBOCs apart from their cable and satellite TV rivals has not materialized yet. Instead, in locations where RBOCs are going head-to-head with cable operators, their programming differences tend to be only to offer certain channels in basic instead of as premium channels. RBOCs tend to have a "best of cable plus best of satellite kind of

combination." However, changes are expected soon, especially the electronic program guides and the local programming for which Americast and TELE-TV are looking for alliances with local broadcasters (Multichannel News January 27, 1997).

Dr. Ron Rizzuto, professor of finance at the University of Denver is wondering if RBOCs video services have not already missed their market window with the number of heavy-spending customers who have shifted to DBS ("The coming of digital", Cablevision, October 21, 1996). However, analysts doubt that DBS will take a huge market share of the cable TV business because of lack of cash, the important number of companies competing and because DBS services offer much the same fare ("Falling stars, in Fortune, March 1997). In fact, RBOCs expectations were not to get these customers shift to their own version of enhanced cable services, but to attract them by other arguments. That is why easiness of use, for example, is fundamental.

PacTel, Bell Atlantic and Nynex have invested in digital MMDS to offer local programming which is a critical advantage over DBS systems. These companies, along with Ameritech, are negotiating with TV stations to obtain local programming such as news for the markets where they plan to offer video services.

Finally, most of the RBOCs will offer, at launch, incentives like some premium channels for free, or free PPV, sports, music or events in order to get the interest of customers. Basically, wherever it enters, the RBOC has to meet or exceed all "extra-services" of the incumbent cable provider.

3.6.3.2.2) Bundling

One aspect of the 1996 Act is that it removes most of the barriers to the bundling of telecommunication services. The "full service network" is usually used to describe this technology. In fact, as Ray Smith pointed out, "It is really a marketing strategy--the attempt to put together the right basket of products for the right market niche, at a price a customer will pay and for value he can not get elsewhere. The more arrows in the quiver, the better the package you deliver to the customer." Since the RBOCs do have a range of other services than video, they are able to combine and make attractive global offers for their customers. For example, if you buy cable services, you get a wireless phone, if you subscribe to the phone service, you get free VOD programs and so forth. Nynex wants to introduce its digital video services through MMDS in Boston in February 1997 as part of a package (wired and cellular telephony, data, internet) with a competitive price. SBC applied for local exchange authority in the Chicago metropolitan area. It plans to build on its existing cellular base to create a package of local, cellular, video and long-distance. Other RBOCs are, however, focusing on video as a stand-alone product. Ameritech because of the stand-alone nature of its network, but also PacTel that will provide different packages of video through digital MMDS.

Telcos are the only operators in the market right now that are able to put together their services. Cable operators do not have large penetration rates in telephony essentially because coaxial cable is a tree architecture and is one-way, which makes upgrading very expensive.

The practice of bundling should be very careful. A December 1996 IDC survey (Multichannel News December 2, 1996) showed that bundling is not appealing to all the customers in the same way. For example, "entertainment households" that have children and consume lot of multichannel TV might be interested in changing long distance carriers if they are offered a premium channel free but they are non attracted if they are offered a pager or cellular services. Therefore, even though the RBOCs are well positioned to provide bundle services they have to make sure to bundle the right things for the right people. RBOCs have to carefully package their products. An Arbitron study ("Interactive services require careful packaging" Inter@ctive week, November 25, 1996). indicates that "companies that want to provide interactive services into the home must very carefully target the packaging of those services in order to assure market success". Indeed, eight different consumer segments have been found in this study. RBOCs have to differentiate therefore their emphasis for each segment.

RBOCs want to provide full services but to targeted segments. They will definitely need more than marketing and packaging schemes to set their services apart from cable and DBS. They need original programming too.

3.6.3.3) Distribution: Quality and Reliability

Digital pictures and CD quality sound will be more appealing than analog cable. Reliability of RBOCs broadband networks as well as their current ways to deliver video are main advantages. These networks will offer considerable improvements over today's standard cable or DBS services, and even over the wireless MMDS and ADSL systems.

Advanced broadband communication network will offer levels of interactivity--video on demand, electronic home shopping and interactive, multiplayer video games-- that are not available over today's cable television, wireless digital TV or DBS systems.

3.6.3.4) Communication

3.6.3.4.1) Advertising

Communication is about emphasizing the value of the product/service to the eyes of consumers. RBOCs' communication efforts are based on maximizing the value of their services for customers and developing their brand name through advertising. Advertising is crucial to develop and maintain the appeal of the brand and make the targeted communities people acknowledge that their local telephone provider is offering cable TV services that have more value than the incumbent. RBOCs main arguments are their clear picture, quality programming, free pay-per-view and their customer care in services, billing, installation and repair.

A survey of 500 residential customers conducted by C/J research (1995) found that customers would seriously consider changing carrier if they could get all their bills and troubleshooting from a single source. Similarly, a TeleSight survey of 1000 cable TV customers found that customers place a high premium on hassle-free quality service but are according far less importance to the programming and the availability of pay-per-view. The message of these surveys to RBOCs video units management is clear: find out what customers value the most because it might be very different from what they are promoting (i.e. pay-per-view, quality of programming and picture).

3.6.3.4.2) Trust

RBOCs have offered in the past superior and more reliable customer service image than cable operators: according to a Telechoice/Bullet poll survey (1995), only 3% of consumers surveyed would purchase phone services from a CATV company if identical service were available from a Local Exchange Carrier (LEC), Inter eXchange Carrier (IXC) or cellular provider. 53% of consumers would buy phone services from the local telco and 32% from the long-distance carrier.

In that same survey, 47% of consumers surveyed thought that local telco would be the most reliable provider and are willing to buy CATV service from their telco. Only 3% of consumers surveyed thought that CATV would be the most reliable provider of phone service. PacTel's CEO, Michael Fitzpatrick pointed out : "if cable goes out, you are annoyed; if phones go out people could die." RBOCs have a critical advantage in that they have strong brand names. People trust their local phone providers more than their cable providers. That is critical because no one will rely on unknown and untested providers for something central in the lives of people: their phone services or their TV services. That is why RBOCs' brands are critical.

3.6.3.4.3) Customer loyalty

Getting a customer is only half the battle. Keeping him is much more difficult in a competitive world where people are continually surfing for a better deal or the latest promotion. The real winners in a converged market place will be the companies that can offer consumers an attractive global deal: a full range of services, with high reliability and

a lot of choice, convenience and control that competitors can not match RBOCs want this type of "faithful" customers but everybody in the market wants them too. That is why RBOCs have to fight with everything they have to win these customers' loyalties. RBOCs main advantage, as local carriers, is the experience they have acquired in their daily interaction with customers.

The future of RBOCs in this environment of convergence will depend not only on the quality of their services/networks or their customer care capabilities but above all on their ability to understand and respond to customer behavior as uniquely as economically feasible.

3.7) How are RBOC having sufficient financial resources to sustain their video activities

Even though they are considered as deep pocket companies, RBOCs have to capitalize a lot of money to build their video networks. They have to make huge investments to build their broadband networks and sustain their short term deployment strategies. A study done at the University of Colorado (1996) estimated the RBOCs revenues in 1998, at $12,332 million with a 45% market penetration for broadband and $5,481 million for interim technologies like ADSL or wireless with a 20% market penetration rate. Deploying interim technologies could provide a quick financial playback, but will that be enough? For Switched Digital Video, a study done by Reed (1992) found that the cost for LECs will be $1,222 per home passed and around $2,000 per subscriber if 60% of the homes passed sign-up. The assumption that 60% of homes will sign up to the new provider appears to be optimistic. Research by Marianne Barrett

(1995) has shown that the incumbent provider will retain around 50% of the market with the new provider getting 38%-45% of the market, and the remainder going to DBS and satellite. Therefore the cost per subscriber will rise to $1,222/.45=$2175 and $1,222/.38=$3215 per subscriber. It is right that SDV might be the most expensive solution. However, according to a Mercer Management study (1995), broadband solutions will cost at least $1,000 to $1,600 per location depending on time, population concentration and other factors. Ovum Ltd. estimates per line costs of $1,050 for fiber to the curb and $2,050 for fiber to the home at production volumes of at least a million lines (OECD report: alternative local loop technologies).

Acquisitions are also very expensive: for example, US West paid over $2,000 per subscriber for its acquisition of Continental which is a lot of money. Why build broadband networks then if the financial prospects are so poor? The reason is that competing cable and telcos know that "they will lose money if they upgrade but they will lose more money if they do not upgrade and their competitor does" as Bane, Christer and Fox pointed out ("The broadband revolution" 1995). Basically RBOCs, as well as other actors in the telecom industry, have to upgrade or die. How will RBOCs generate the cash necessary to build and commercialize these networks? As previously pointed out, RBOCs operating expenses in providing cable services could be slightly lower due to economies of scale and advanced billing/customer services operations. Also, alliances in content like TELE-TV, Americast, US West/TWE/Continental allow economies of scale and scope. This scale and scope help spread costs over a large customer base and provide new marketing and distribution opportunities. However, RBOCS have determined that they

are not going to spend hundreds of millions of dollars in content creation because they know it will not pay off for years to come.

An important issue raised by cable operators as well as the NCTA is cross-subsidization. Indeed, RBOCs are still local monopolies in the local telephony market. None of the other major actors, long-distance companies and cable operators have set up a large local telephony trial that will be a threat in the short-term. Therefore, some cable companies are accusing RBOCs of subsidizing their video activities by increasing local telephony rates and making telephone customers pay for video services. Ameritech in particular is accused by its five states region Public Utilities Commissions (PUCs) of transferring investments into their cable TV business. The other RBOCs are building a combined telephone/video network and it is difficult to discover how much money is allocated to telephone and how much to video since the costs are shared. The FCC has been conducting a cost-allocation rule making for telco provision of voice and video over an integrated facility and has not come up with a final decision yet. Obviously, all the RBOCs are strongly denying these charges. They are arguing that state laws make it impossible to do what they are accused of. Commerce commission rules prevent them from transferring non-telephone related expenses into its phone rates. (Ameritech's release: "cable companies lawsuits attack consumers freedom to choose," October 23, 1995). RBOCs are maintaining high capital spending but they are changing the distribution of capital to favor investments in new fields like video. In fact, all the RBOCs will invest billions to build new interactive video networks during the next 15 years. The strategy is to spread the cost of the network over this period of time. Ameritech, for example, has decided to reduce investments in its other networks in order

to sustain the construction of its stand-alone video network (Ameritech's Annual Report 1994, questions to the CEO). Since almost all of the states are under price caps, which is to say RBOCs cannot raise rates to fund their entry in video, the general trend will be that RBOCs will cut the expenses and use shareholders money.

To be successful in entering the video services market, the RBOCs should:

- Find out what the customers value the most
- Enter the market with a differentiated product line at a competitive price
- Provide easy-to-use and understandable applications
- Make attractive global offers to their customers
- Gain experience in operating video systems and developing content

CONCLUSION

The aim of this conclusion will be twofold. First is discussing how empirical findings relate to RBOCs strategies. Second is discussing the validity of the frameworks within which RBOCs targeted areas and video strategies have been studied.

All RBOCs are selecting closely their markets with a particular focus on either income or/and top-markets. Strategies depend particularly on the context (market, regulation, technologies) and above all on the nature of services.

From part III (RBOCs video strategies) and part II (Empirical findings), RBOCs can be classified in two categories (in terms of focus), within which their approaches to video (in terms of target) will be compared.

First is a service-centered strategy that includes RBOCs that have acquired cable or wireless companies and have focused primarily on services.

Second is a network-centered strategy that includes RBOCs that have chosen to focus more on developing advanced network capabilities and test different new technologies.

Table seven summarizes the empirical findings and compares them to RBOCs video strategies.

Table 7: Summary

	Services-centered strategy	**Network-centered strategy**
Ameritech Strategy	Is following the cable model, and a stand alone network being built in areas that will insure the best return on investment.	
Empirical findings	Show that Ameritech is the RBOC that has targeted the most affluent places.	
Bell Atlantic Strategy		Is trying many technologies (ADSL, MMDS, SDV) and a new range of interactive services to test demand.
Empirical findings		Show that Bell Atlantic is focusing on affluent and middle-income places, top-markets and is using a lot of suitable areas.
US West Strategy	Uses the companies it has acquired/make a deal with (Continental, MediaOne, TWE) as well as its international experience	
Empirical findings	Show that US West, like Ameritech, is offering its basic cable services to affluent suburbs of Atlanta.	
PacTel Strategy	Focuses on digital wireless cable complementary to its HFC advanced network.	
Empirical findings	Show that PacTel target its top markets and not really high-income people or high-cable penetration areas.	
SBC Strategy		Uses its cellular assets to enter video, is testing SDV and DBS.
Empirical findings		Show that SBC has chosen two affluent locations to provide cable services. Like Bell Atlantic, it has chosen to select communities next to its existing facilities. However, those are outside of SBC territory
Bell South Strategy		Adopted the cable model, like Ameritech,and wants to provide both telephony and video over the same enhanced HFC network like US West. Like Bell Atlantic, it is aggregating multiple technologies into more concrete plans on a market by market basis
Empirical findings		Show that Bell South entered among the most affluent communities and top markets in Florida.
Nynex Strategy		Is testing several technologies: MMDS, SDV and HFC in different markets to test the demand.
Empirical findings		Focused on its top markets (NYC and Boston respectively #1 and #5 by cable TV households) like Bell Atlantic and Bell South.

It is acknowledge that this study has examined empirically, only one aspect of RBOCs entry strategy in the video services market, the profiles of targeted segments.

It has not been proven empirically but inferred that there is a causal link between the context (technology, regulation, market characteristics, RBOCs prior experience) and the entry strategies. This research did not attempt to predict the failure or success of any of the strategies adopted by RBOCs. Its purpose was to examine the characteristics of RBOCs selected markets, the services they are offering and how these relate to their video business units strategies. The analytical framework discussed in Part I has been used to show that several factors, outside the immediate control of management, will influence the adoption of the entry strategy: prior experience, resources, the market, the technologies and the regulation. Among these factors, the empirical study showed that technology and nature of services offered are determinants in the RBOCs communities selection process.

In the empirical study itself, it is acknowledged that the areas analyzed could match coincidentally with several of the criteria selected. For example, some areas can be at the same time, populous, high-educated, high income and might be also high-cable penetration areas. The problem is to figure out which one of these criteria has been the major cause of RBOCs picking up this area and what are the complementary factors. The study examined this problem and tried to weight and select the most appropriate criteria. It compared the RBOC targeted area with other areas that have not been picked up and have the same characteristics but the one that has to be tested. For example, to determine whether metro areas have been chosen because of high-cable penetration or

high population, RBOCs targeted areas have been compared to both areas with high population and low-cable penetration or low population and high-cable penetration.

However, concerning income in metro areas for example, it has not been possible to do that because the precise targeted areas within the metro areas are not known. When the metro area's income is higher than the relevant state's income, it has been considered that the metro area fit with the profile which is not correct. Indeed, it has been argued that if the metro area's income is lower than the relevant state, nothing can be concluded because of the lack of information concerning where precisely the trial has been held. Therefore, in higher income metro areas, RBOCs could have picked up lower income places than the metro area's average and the state average income which therefore lead to the conclusion that this area doe not fit with the profile. Aggregated information have been truly, the main weakness of this study.

The message conveyed in this paper to RBOCs video units management is simple. They have to find out what customers value the most. The questions that they have to face are the following. Are they sure that they are providing the customers with the type of services they are looking for? Are they after the one-single bill and the hassle-free quality service the customers are envisioning? RBOCs are promoting the "five hundreds channels environment," better image and sound quality, all of these are clever strategic advantages but perhaps they are not what the customers feel they need.

It is not clear or certain yet whether RBOCs will fully involve themselves in the field of video. Indeed, video is not an immediate generator of cash flow and is difficult to manage for new entrants.

Sanford Bernstein & Co. (1997) argued that the RBOCs have turned away from cable because they want to concentrate all their efforts in the long-distance market that is closer to their core competencies and where they have good chances to win market shares quickly, increase their profitability and at the same time diversifying their revenues (Multichannel News February 3, 1997).

However a converging marketplace where image will be predominant will probably convince sooner or later the RBOCs to be full actors in video.

APPENDIX 1

EMPIRICAL STUDY OF RBOCS VIDEO TARGETED AREAS

Direct (means not through a merger or an acquisition like CAI wireless or Continental cable) **commercial or technical trials since VDT order**

	age of householder						#Household	MHI	suburb of city	ducatio	Technology	Services	regulation
	15-24	25-34	35-44	45-54	55-64	over 65				%attended college			

Ameritech

Stand-alone cable overbuild systems regulated as cable companies (all VDT trials abandonned 6/27/95)

Illinois	195878	912765	921423	666468	574230	926956	4197720	$ 32,252.00		47%			
% of population	5%	22%	22%	16%	14%	22%	100%						
Naperville	911	7629	9666	5542	2720	2791	29259	$ 60,979.00	Chicago	80%	Analog/coax upgr HFC	Basic cable (americast)	Title VI
	3%	26%	33%	19%	9%	10%	100%						
Glendale Heights	606	3232	2667	1702	736	666	9609	$ 42,822.00	Chicago	57%	Analog/coax upgr HFC	Basic cable (americast)	Title VI
	6%	34%	28%	18%	8%	7%	100%						
Vernon Hills	269	2081	1753	844	434	502	5883	$ 48,873.00	Chicago	72%	Analog/coax upgr HFC	Basic cable (americast)	Title VI
	5%	35%	30%	14%	7%	9%	100%						
Chicago (south side)	53225	238695	213125	155064	138832	221970	1020911	$ 26,301.00	Chicago	42%	Analog/coax upgr HFC	Basic cable (americast)	Title VI
	5%	23%	21%	15%	14%	22%							
Wisconsin	102511	396343	400520	268329	238642	417907	1824252	$ 29,442.00		43%			
	6%	22%	22%	15%	13%	23%	100%						
Greendale Village	48	748	1314	1190	1090	1146	5536	$ 44,735.00	Milwaukee	60%	Analog/coax upgr HFC	Basic cable (americast)	Title VI
	1%	14%	24%	21%	20%	21%	100%						
Ohio	215487	857190	887475	634183	580340	914637	4089312	$ 28,706.00		40%			
	5%	21%	22%	16%	14%	22%	100%						
Upper Arlington	93	1910	3248	2362	2269	4146	14028	$ 53,140.00	Columbus	81%	Analog/coax upgr HFC	Basic cable (americast)	Title VI
	1%	14%	23%	17%	16%	30%	100%						
North Olmsted	345	2240	2954	2406	2049	2739	12733	$ 39,657.00	Cleveland	53%	Analog/coax upgr HFC	Basic cable (americast)	Title VI
	3%	18%	23%	19%	16%	22%	100%						
Hilliard	115	1266	1052	646	536	545	4160	$ 36,415.00	Columbus	46%	Analog/coax upgr HFC	Basic cable (americast)	Title VI
	3%	30%	25%	16%	13%	13%	100%						
Berea	346	1346	1645	1068	976	1671	7052	$ 34,695.00	Cleveland	55%	Analog/coax upgr HFC	Basic cable (americast)	Title VI
	5%	19%	23%	15%	14%	24%	100%						
Columbus	29300	75020	54638	31156	27751	39511	257376	$ 26,651.00	Columbus	52%	Analog/coax upgr HFC	Basic cable (americast)	Title VI
	11%	29%	21%	12%	11%	15%	100%						
Perry	10	100	88	49	34	58	339	$ 35,391.00	Cleveland	34%	Analog/coax upgr HFC	Basic cable (americast)	Title VI
	3%	29%	26%	14%	10%	17%	100%						
Worthington	61	676	1486	1222	991	1177	5613	$ 49,851.00	Columbus	77%	Analog/coax upgr HFC	Basic cable (americast)	Title VI
	1%	12%	26%	22%	18%	21%	100%						

Source: US Census Bureau, 1990; Source for RBOCs trials data are from relevant web pages, annual reports, investment reports.

Michigan	178544	562505	774001	540775	468991	724406	3424122	$ 31,020.00		45%			
	5%	16%	23%	16%	14%	21%	100%						
Troy	521	4856	7643	5617	3517	4048	26202	$ 55,407.00	Detroit	67%	Analog/coax	Basic cable (americast)	Title VI
	2%	19%	29%	21%	13%	15%	100%				upgr HFC		
Plymouth Township	112	1593	2110	2112	1390	1526	8843	$ 53,806.00	Detroit	66%	Analog/coax	Basic cable (americast)	Title VI
	1%	18%	24%	24%	16%	17%	100%				upgr HFC		
Northville Township								$ 55,465.00	Detroit		Analog/coax	Basic cable (americast)	Title VI
											upgr HFC		
Northville	70	422	625	501	372	490	2480	$ 49,282.00	Detroit	71%	Analog/coax	Basic cable (americast)	Title VI
	3%	17%	25%	20%	15%	20%	100%				upgr HFC		
Canton	870	5443	6198	3640	1648	1716	19515	$ 47,009.00	Detroit	59%	Analog/coax	Basic cable (americast)	Title VI
	4%	28%	32%	19%	8%	9%	100%				upgr HFC		
Garden City	222	2441	2301	1910	2140	2084	11098	$ 38,717.00	Detroit	33%	Analog/coax	Basic cable (americast)	Title VI
	2%	22%	21%	17%	19%	19%	100%				upgr HFC		
Plymouth City	128	1114	931	565	473	1068	4279	$ 38,326.00	Detroit	61%	Analog/coax	Basic cable (americast)	Title VI
	3%	26%	22%	13%	11%	25%	100%				upgr HFC		
Fraser	125	999	1144	878	858	1117	5141	$ 36,644.00	Detroit	46%	Analog/coax	Basic cable (americast)	Title VI
	2%	19%	22%	17%	17%	22%	100%				upgr HFC		
Southgate	432	2529	2578	1797	1902	2900	12138	$ 36,526.00	Detroit	36%	Analog/coax	Basic cable (americast)	Title VI
	4%	21%	21%	15%	16%	24%	100%				upgr HFC		
Wayne	348	1723	1672	1163	871	1374	7151	$ 31,250.00	Detroit	34%	Analog/coax	Basic cable (americast)	Title VI
	5%	24%	23%	16%	12%	19%	100%				upgr HFC		
Lincoln Park	645	3603	3275	2101	2382	4275	16821	$ 30,638.00	Detroit	30%	Analog/coax	Basic cable (americast)	Title VI
	4%	21%	19%	12%	14%	25%	100%				upgr HFC		
Sterling Heights	1219	8778	10696	8586	5049	6551	40879	$ 46,470.00	Detroit	52%	Analog/coax	Basic cable (americast)	Title VI
	3%	21%	26%	21%	12%	16%	100%				upgr HFC		
Clinton Township	1595	7574	7787	5278	4606	5754	32594	$ 39,215.00	Detroit	47%	Analog/coax	Basic cable (americast)	Title VI
	5%	23%	24%	16%	14%	18%	100%				upgr HFC		
Indiana	114758	440060	447604	322944	283306	455574	2064246	$ 28,797.00		38%			
	6%	21%	22%	16%	14%	22%	100%						

Bell Atlantic

New Jersey	81273	553531	622989	476477	415255	644791	2794316	$ 40,927.00		46%				
	3%	20%	22%	17%	15%	23%	100%							
Morris County	3209	29028	36842	31279	22936	25333	148627	$ 56,273.00	Newark/NYC	59%	HFC	Comon carrier Sammons title II		
	2%	20%	25%	21%	15%	17%	100%							
Dover Township	229	1326	1163	681	621	1128	5148	$ 38,822.00	Newark/NYC	32%	SDV	NVOD,PPV, transaction		VDT to OVS
	4%	26%	23%	13%	12%	22%	100%					Futurevision+TELETV		
Toms River	126	643	587	415	391	747	2909	$ 35,464.00	nothing	43%	SDV	NVOD,PPV, transaction		VDT to OVS
	4%	22%	20%	14%	13%	26%	100%					Futurevision+TELETV		
Madison	127	1107	1031	1022	873	1246	5406	$ 56,478.00	Newark/NYC	69%	HFC	Comon carrier Sammons title II		
	2%	20%	19%	19%	16%	23%	100%							
Florham Park	45	290	695	637	663	563	2893	$ 68,450.00	Newark/NYC	67%	HFC	Comon carrier Sammons title II		
	2%	10%	24%	22%	23%	19%	100%							
Chatham Borough	24	554	717	526	462	846	3129	$ 62,129.00	Newark/NYC	76%	HFC	Comon carrier Sammons title II		
	1%	18%	23%	17%	15%	27%	100%							
Virginia	127374	529623	535758	382247	296305	423415	2294722	$ 33,328.00		48%				
	6%	23%	23%	17%	13%	18%	100%							
Fairfax (Stargazer)	443	1798	1453	1350	1121	1208	7373	$ 50,913.00	Washington	66%	ADSL	VOD		VDT
	6%	24%	20%	18%	15%	16%	100%							
Norfolk	10226	23693	17016	9844	10392	18272	89443	$ 23,563.00	Hampton	40%	MMDS	NVOD		Title III
	11%	26%	19%	11%	12%	20%	100%							
Hampton Roads	3363	13148	10617	7949	6348	8274	49699	$ 30,144.00	Hampton	51%	ADSL	VOD		VDT
	7%	26%	21%	16%	13%	17%	100%							
Reston (Stargazer)	808	5103	5517	4250	1822	1455	18955	$ 56,884.00	DC	80%	ADSL	VOD		VDT
	4%	27%	29%	22%	10%	8%	100%							
Maryland	74582	396588	416671	303927	232799	324775	1749342	$ 39,386.00		50%				
	4%	23%	24%	17%	13%	19%	100%							
Baltimore	15036	58547	55800	41194	37888	67512	275977	$ 24,045.00	Baltimore	33%	HFC to SDV	NVOD,PPV, transaction		VDT
	5%	21%	20%	15%	14%	24%	100%					Futurevision+TELETV		
Pensylvannia	182164	847166	923353	681839	676046	1182390	4492958	$ 29,069.00		37%				
	4%	19%	21%	15%	15%	26%	100%							
Philadelphia	29293	116430	116079	88058	88165	162715	600740	$ 24,603.00	Philadelphia	33%	HFC to SDV	NVOD,PPV, transaction		VDT
	5%	19%	19%	15%	15%	27%						Futurevision+TELETV		

Delaware County	6083	39107	40817	30438	31587	53586	201618	$ 37,337.00	Philadelphia	47%	HFC to SDV	NVOD,PPV, transaction	VDT	
	3%	19%	20%	15%	16%	27%						Futurevision+TELETV		
Pittsburgh	11477	29502	26960	17982	21758	45928	153607	$ 20,747.00	Pittsburgh	41%	HFC to SDV	NVOD,PPV, transaction	VDT	
	7%	19%	18%	12%	14%	30%						Futurevision+TELETV		
Washington DC	14974	55858	53397	38834	33006	52965	249034	$ 30,727.00	DC	52%	ADSL	VOD	VDT	
	6%	22%	21%	16%	13%	21%	100%							
Delaware	12935	55175	53544	38934	35074	51501	247163	$ 34,875.00		45%				
	5%	22%	22%	16%	14%	21%	100%							

US West

Colorado	79717	314295	326546	200894	149473	214194	1285119	$ 30,140.00		57%				
	6%	24%	25%	16%	12%	17%	100%							
Denver (suspended)	13373	53384	48129	27347	23769	45135	211137	$ 25,106.00	Denver	54%				
	6%	25%	23%	13%	11%	21%	100%							
Oregon	62806	218347	264173	169227	137145	253664	1105362	$ 27,250.00		52%				
	6%	20%	24%	15%	12%	23%	100%							
Portland (suspended)	12245	41552	46514	24269	19758	42924	187262	$ 25,592.00	Portland	57%				
	7%	22%	25%	13%	11%	23%	100%							
Minnesota	93425	387656	372893	241383	200508	352960	1648825	$ 30,909.00		50%				
	6%	24%	23%	15%	12%	21%	100%							
Minneapolis (susp)	14523	46736	35466	17647	14445	31714	160531	$ 25,324.00	StPaul/Minn	58%				
	9%	29%	22%	11%	9%	20%	100%							
St Paul (susp)	8207	29158	23965	12381	11375	25522	110608	$ 26,498.00	St Paul/Minn	52%				
	7%	26%	22%	11%	10%	23%	100%							
Utah	41816	134305	123762	78636	61639	97038	537196	$ 29,470.00		58%				
	8%	25%	23%	15%	11%	18%	100%							
Salt Lake City (susp)	6451	17035	13196	7158	6631	16182	66653	$ 22,697.00	Salt Lake Cit	61%				
	10%	26%	20%	11%	10%	24%	100%							
Idaho	23586	76095	82149	55962	44962	78678	361432	$ 25,257.00		49%				
	7%	21%	23%	15%	12%	22%	100%							
Boise (susp)	4344	12442	12146	6857	5320	9789	50898	$ 29,121.00	Boise	64%				
	9%	24%	24%	13%	10%	19%	100%							
Nebraska	37370	132063	127237	83213	77934	145041	602858	$ 26,016.00		48%				
	6%	22%	21%	14%	13%	24%	100%							
Omaha	9623	31920	27469	18809	17520	28547	133888	$ 26,927.00	Omaha	52%	HFC	PPV,games, VOD,cable ! VDT to titleVI		
	7%	24%	21%	14%	13%	21%	100%					Telechoice		
outside of Uswest zone														
Georgia	141242	559758	550803	391764	296531	426477	2366575	$ 29,021.00		41%				
	6%	24%	23%	17%	13%	18%	100%							
Fulton county	16231	64145	61920	41957	28155	44684	257182	$ 29,978.00	Atlanta	55%	HFC	CATV services	Title VI	
	6%	25%	24%	16%	11%	17%	100%							

Dekalb county	12379	55744	53109	34515	24107	29222	209076	$ 35,721.00		60%	HFC	CATV services	Title VI
	6%	27%	25%	17%	12%	14%	100%						
Clayton county	4706	18468	16865	11839	7151	6383	65412	$ 33,472.00	Atlanta	40%	HFC	CATV services	Title VI
	7%	28%	26%	18%	11%	10%	100%						
Cobb county	9765	48995	47968	29890	17331	17460	171409	$ 41,297.00	Atlanta	60%	HFC	CATV services	Title VI
	6%	29%	28%	17%	10%	10%	100%						
Douglas county	1151	6209	6711	4608	2755	2960	24394	$ 37,138.00	Atlanta	34%	HFC	CATV services	Title VI
	5%	25%	28%	19%	11%	12%	100%						
Fayette county	498	3774	6581	4936	2452	2728	20969	$ 50,167.00	Atlanta	56%	HFC	CATV services	Title VI
	2%	18%	31%	24%	12%	13%	100%						
Gwinnett county	6834	41030	37967	21227	10587	9523	127168	$ 43,518.00	Atlanta	59%	HFC	CATV services	Title VI
	5%	32%	30%	17%	8%	7%	100%						
Rockdale county	683	4201	4874	3661	2330	2525	18274	$ 39,389.00	Atlanta	43%	HFC	CATV services	Title VI
	4%	23%	27%	20%	13%	14%	100%						
Washington	113696	423236	448440	293392	224242	372502	1875508	$ 31,183.00		51%			
	6%	23%	24%	16%	12%	20%	100%						
Montana	17229	61556	71455	46634	40072	69971	306919	$ 22,988.00		48%			
	6%	20%	23%	15%	13%	23%	100%						
Wyoming	10295	38593	42154	25821	21122	31324	169309	$ 27,096.00		50%			
	6%	23%	25%	15%	12%	19%	100%						
Arizona	90482	306389	293034	203554	173715	304711	1371885	$ 27,540.00		31%			
	7%	22%	21%	15%	13%	22%	100%						
New Mexico	29552	122960	127070	85783	71942	106518	543825	$ 24,087.00		45%			
	5%	23%	23%	16%	13%	20%	100%						
S Dakota	16402	55098	53270	33942	34431	66916	260059	$ 22,503.00		44%			
	6%	21%	20%	13%	13%	26%	100%						
N Dakota	16690	53948	50504	30954	30412	59294	241802	$ 23,213.00		50%			
	7%	22%	21%	13%	13%	25%	100%						
Iowa	63086	215434	217905	150332	143647	274839	1065243	$ 26,229.00		43%			
	6%	20%	20%	14%	13%	26%	100%						

Pactel

California	550467	2451393	2470202	1682543	1E+06	1946991	10399700	$ 35,798.00		52%				
	5%	24%	24%	16%	12%	19%	100%							
Oakland	7778	32702	35235	22151	16432	30468	144766	$ 27,095.00	SF	53%	HFC	CATV services+NVOD	VDT	
	5%	23%	24%	15%	11%	21%	100%							
San Jose	11511	67625	64858	45801	29265	31990	251050	$ 46,206.00	SF	55%	HFC	NVOD, VOD, CATV	VDT to title VI	
	5%	27%	26%	18%	12%	13%	100%							
San Francisco	14041	69260	70391	46152	36973	69167	305984	$ 33,414.00	SF	60%	HFC	NVOD, VOD, CATV	VDT to title VI	
	5%	23%	23%	15%	12%	23%	100%							
Los Angeles	73312	306662	281668	190180	148365	219583	1219770	$ 30,925.00	LA	46%	MMDS	NVOD	Title III	
	6%	25%	23%	16%	12%	18%	100%							
Orange County	41640	201770	197632	147546	107136	133125	828849	$ 45,922.00	LA	58%	MMDS	NVOD	Title III	
	5%	24%	24%	18%	13%	16%	100%							
San Diego	31813	107396	94022	57562	44597	70926	406316	$ 33,686.00	San Diego	60%	HFC+MMDS	CATV services+NVOD	VDT+TitleIII	
	8%	26%	23%	14%	11%	17%	100%							
San Ramon	574	3143	4340	2748	1082	919	12806	$ 63,607.00	SF	76%	ADSL	VOD	VDT	
	4%	25%	34%	21%	8%	7%	100%							
Nevada	27769	106770	107089	79895	64377	81613	467513	$ 31,011.00		46%				
	6%	23%	23%	17%	14%	17%	100%							

SBC

Texas	391833	1486372	1397604	938742	756862	1107928	6079341	$ 27,016.00		46%				
	6%	24%	23%	15%	12%	18%	100%							
Richardson	657	5659	7590	6229	4047	3128	27310	$ 50,240.00	Dallas	74%	SDV	VOD, games Americast	VDT	
	2%	21%	28%	23%	15%	11%	100%							
Oklahoma	73830	255251	247199	185658	163541	281756	1207235	$ 23,577.00		44%				
	6%	21%	20%	15%	14%	23%	100%							
Enid	1143	3866	3534	2341	2732	4794	18410	$ 22,746.00	Enid	40%	DBS	CATV programs	Title III	
	6%	21%	19%	13%	15%	26%	100%							
Arkansas	49068	173272	177476	135639	124340	231870	891665	$ 21,147.00		34%				
	6%	19%	20%	15%	14%	26%	100%							
Little Rock	4740	17468	16543	10745	8405	14536	72437	$ 26,889.00	Little Rock	57%	DBS	CATV programs	Title III	
	7%	24%	23%	15%	12%	20%	100%							
Kansas	60497	207713	200984	132801	121162	223096	946253	$ 27,291.00		49%				
	6%	22%	21%	14%	13%	24%	100%							
Missouri	104565	415341	404354	296052	270649	470403	1961364	$ 26,362.00		42%				
	5%	21%	21%	15%	14%	24%	100%							
outside of SBC zone														
Virginia	127374	529623	535758	382247	296305	423415	2294722	$ 33,328.00		48%				
	6%	23%	23%	17%	13%	18%	100%							
Arlington County	5161	22297	19434	11148	7573	13132	78745	$ 44,600.00	DC	71%	analog/coax	Basic CATV	Title VI	
	7%	28%	25%	14%	10%	17%	100%							
Maryland	74582	396588	416671	303927	232799	324775	1749342	$ 39,386.00		50%				
	4%	23%	24%	17%	13%	19%	100%							
Montgomery County	8962	66948	71783	51764	36330	47116	282903	$ 54,089.00	DC	72%	analog/coax	Basic CATV	Title VI	
	3%	24%	25%	18%	13%	17%	100%							

Bell South

Florida	243045	980907	972375	735260	719234	1487539	5138360	$ 27,483.00		44%				
	5%	19%	19%	14%	14%	29%	100%							
St Johns county	1496	5991	7000	5239	5099	8605	33,430	$ 29,926.00	Jacksonville	50%	Analog/Coax upgr HFC	CATV		VDT to title VI
	4%	18%	21%	16%	15%	26%	100%							
Orange County	18860	67851	55137	37209	31845	44275	255177	$ 30,252.00	Orlando	49%	Analog/Coax upgr HFC	CATV		VDT to title VI
	7%	27%	22%	15%	12%	17%	100%							
Seminole County	5183	25224	27739	18415	13460	18093	108114	$ 35,637.00	Orlando	57%	Analog/Coax upgr HFC	CATV		VDT to title VI
	5%	23%	26%	17%	12%	17%	100%							
Orlando	5713	19295	12865	8288	7013	12452	65635	$ 26,119.00	Orlando	49%	Analog/Coax upgr HFC	CATV		VDT to title VI
	9%	29%	20%	13%	11%	19%	100%							
Tampa	7493	26137	22029	16221	15590	27572	115042	$ 22,772.00	Tampa	43%	Analog/Coax upgr HFC	CATV		VDT to title VI
	7%	23%	19%	14%	14%	24%	100%							
West Palm Beach	1470	6454	5358	3712	3674	8106	28774	$ 26,504.00	WPalm Bea	45%	Analog/Coax upgr HFC	CATV		VDT to title VI
	5%	22%	19%	13%	13%	28%	100%							
Louisiana	83879	328387	333073	235685	206241	311106	1498371	$ 21,949.00		37%				
	6%	22%	22%	16%	14%	21%	100%							
New Orleans	10689	38752	41378	27294	25158	44391	187662	$ 18,477.00	N Orleans	45%	MMDS	NVOD Americast		Title III
	6%	21%	22%	15%	13%	24%	100%							
Georgia	141242	559758	550803	391764	296531	426477	2366575	$ 29,021.00		41%				
	6%	24%	23%	17%	13%	18%	100%							
Chamblee	323	928	643	349	236	269	2748	$ 27,157.00	Atlanta	39%	HFC	CATV, VOD, NVOD transactions		VDT to title VI
	12%	34%	23%	13%	9%	10%	100%							
South Carolina	68072	271668	281762	202437	172965	261879	1258783	$ 26,256.00		39%				
	5%	22%	22%	16%	14%	21%	100%							
Daniel Island (figures f	2672	7135	6324	3872	3650	7214	30867	$ 25,153.00	Charleston	57%	HFC	CATV, VOD, NVOD transactions		VDT to title VI
	9%	23%	20%	13%	12%	23%	100%							
Alabama	83064	303353	314229	236626	217612	351125	1506009	$ 23,597.00		38%				
	6%	20%	21%	16%	14%	23%	100%							
Vestavia Hills	201	1173	1863	1368	1105	1989	7699	$ 49,858.00	Birmingham	78%	HFC	CATV, VOD, NVOD transactions		VDT to title VI
	3%	15%	24%	18%	14%	26%								
Dekalb County	960	3856	4181	3362	3230	5426	21015	$ 20,135.00	nothing	24%	HFC	CATV, VOD, NVOD transactions		VDT to title VI
	5%	18%	20%	16%	15%	26%	100%							

Tenessee	102171	385420	401074	300380	256688	407782	1853515	$ 24,807.00		37%				
	6%	21%	22%	16%	14%	22%	100%							
Memphis	13541	51987	48840	33723	31559	50076	229726	$ 22,674.00	Memphis	43%	HFC	CATV, VOD, NVOD transactions	VDT to title VI	
	6%	23%	21%	15%	14%	22%	100%							
Kentucky	75365	286845	295485	215345	192277	314293	1379610	$ 22,534.00		34%				
	5%	21%	21%	16%	14%	23%	100%							
Mississipi	46193	186653	189124	141826	128291	218487	910574	$ 20,136.00		38%				
	5%	20%	21%	16%	14%	24%	100%							
North Carolina	149233	549442	547706	398752	347943	524022	2517098	$ 26,647.00		41%				
	6%	22%	22%	16%	14%	21%	100%							

Nynex

New York	253440	1327681	1457751	1113204	974926	1507432	6634434	$ 32,965.00		46%				
	4%	20%	22%	17%	15%	23%	100%							
Manhattan (3 buildings)									NYC		HFC	interactive video services Liberty cable +TWC	VDT	
Massachussets	102426	481127	473400	344374	302929	520150	2244406	$ 36,952.00		51%				
	5%	21%	21%	15%	13%	23%	100%							
14 communit. Boston	22340	61990	45644	28734	25820	43430	227958	$ 29,180.00	Boston	52%	MMDS+ADSL	NVOD	Title III+VDT	
	10%	27%	20%	13%	11%	19%	100%					TELETV		
Somerville	2507	9132	5546	3381	3411	6342	30319	$ 32,455.00	Boston	50%	SDV	Broadband services	?	
	8%	30%	18%	11%	11%	21%	100%							
Rhode Island	18317	77385	78412	55398	52137	95431	377080	$ 32,181.00		44%				
	5%	21%	21%	15%	14%	25%	100%							
East Providence	632	3785	3845	2716	2797	6188	19963	$ 31,007.00	Providence	36%	MMDS	NVOD	Title III	
	3%	19%	19%	14%	14%	31%	100%					TELETV		
Warwick	783	6070	6852	5228	5123	9296	33352	$ 35,786.00		45%	?	?	?	
	2%	18%	21%	16%	15%	28%	100%							
New Hampshire	20985	98071	100278	63123	51055	77875	411387	$ 36,329.00		50%				
	5%	24%	24%	15%	12%	19%	100%							
Maine	24395	98601	105858	69484	63469	103922	465729	$ 27,854.00		42%				
	5%	21%	23%	15%	14%	22%	100%							
Connecticut	48057	259370	269872	204037	171072	277835	1230243	$ 41,721.00		50%				
	4%	21%	22%	17%	14%	23%	100%							
Vermont	12014	46428	51161	32124	26296	42610	210633	$ 29,792.00		47%				
	6%	22%	24%	15%	12%	20%	100%							
USA	**4786066**	**2E+07**	**2E+07**	**1.4E+07**	**1E+07**	**2E+07**	**91993582**	**$ 30,056.00**		**45%**				
	5%	**22%**	**22%**	**16%**	**13%**	**22%**	**100%**							

APPENDIX 2

LIST OF ACRONYMS

ADSL: Asymmetric Digital Subscriber Line.
Technology that allows the transmission of a one-way 1.5 megabits per second (Mbps) digital signal capable of delivering compressed digital video programming,. ADSL transmits encoded video signals over existing copper facilities on an integrated basis with traditional voice and data services.

CATV: Co-Axial Television.
So called because the wire used is a copper-based co-axial cable. Also referred to as Cable TV

CPE: Customer Premises Equipment.
Telecommunications- communications equipment located in a user's premises.

DBS: Direct Broadcast Systems.
These systems are typically satellite-delivered TV. They compete with "over-the-air" and Cable TV. They are not typically very interactive, but provide many channels, typically about 100.

HFC: Hybrid Fiber-Coax Architecture.
The hybrid fiber-coax broadband architecture provides signal transport of both broadband and narrowband telephony services from a video distribution central office to an end-user subscriber's residence or business. The hybrid fiber-coax architecture supports a wide range of services, including analog and digital video broadcast, pay per view, and video on demand.

ISDN: Integrated Services Digital Network.
An emerging international standard that defines interfaces for simultaneous voice and data transmission through a single channel over the public network.

IT: Information Technology.

IVS: Interactive Video Services.
Interactive video services are services that are generally provided through the use of digital servers. Potential interactive services to be offered include: Movies on Demand or Video on Demand, arcade type video games enhanced shopping capabilities, banking services, audio programming selection, interactive learning functions, information access, and other advanced applications.

MHI: Median Household Income.
It is the amount which divides the household income distribution into two equals groups, half having incomes above the median, half having incomes below the median.

MMDS: Multichannel Multipoint Distribution Systems.
Wireless transmission at very high frequency to deliver telecommunications services, including TV distribution, between two points. It is dependent on line of sight.

MPEG: Motion Picture Expert Group.
This is the international standard for digital video compression.

MSO: Multiple Systems Operators.
Multiple System Operators in the Cable Business.

NAB: National Association of Broadcasters.

NCTA: National Cable and Television Association.

NVOD: Near Video On Demand.
Provides a one-way broadcast video channel with functionality similar to Video On Demand. The basic configuration of this service provides linear broadcast of a particular program on a regular interval basis - typically every 15 minutes - over multiple channels rather than on a scheduled event basis like PPV.

OVS: Open Video Systems.
New regulation (Telecom Act 1996) that replaces the Video Dial Tone regulations.

PEG: Public, Education, Government
Public Interest Access channels are channels which originate within a community. Typically these channels cover events such as County or City. Council Meetings, educational programming originating from local community: colleges, entertainment programs of local interest, charity events...

POTS: Plain Old Telephone System.
Refers to the telephone wiring.

PPV: Pay Per View.
A special event promoted by a programmer-customer. The programmer-customer loads its PPV event schedule and definitions in network via an on-line interface. The programmer-customer broadcasts the event per the schedule they defined in the network using the channel and specified bandwidth that was purchased. End-user subscribers select to purchase the event using an on-line procedure.

PUC: Public Utilities Commission.
A government agency that approves tariffs to regulate the telephone companies within state or local boundaries.

RBOC: Regional Bell Operating Companies.
Former Operating Telephone Companies which existed before the breakup of the Bell system.

SDV: Switched Digital Video- Fiber-to-the Curb Architecture.
This system consists of fiber optic transport facilities and copper and coaxial cables used for the final link to the end-user subscriber, The fiber-to-the curb system offers broadcast and narrowcast service channels.

VDT: Video Dial Tone Service.
The services provided by the Telephone Company for the delivery of video and other information programming services offered by programmer-customers to end-user subscribers.

VIP: Video Information Provider.
Also known as the programmer customer, the provider of programming to an end-user subscriber who transmits video and other information programming services over the network.

VOD: Video on Demand or Movies on Demand.
One of the initial services that will be available from programmer-customers is Video on Demand or Movies on Demand. This service allows the end-user subscriber to select movies they wish to view from a large selection of titles and categories. This service may also provide VCR functionality, (stop, pause, fast forward, rewind, play) which allows the end-user subscriber to control the "play back" of the server from the remote control,

BIBLIOGRAPHY

Andrews P.W.S., "On competition in economic theory", Macmillan 1964

Atkin D., "Adoption of cable amidst a multimedia environment," in Telematics and Informatics, (1993)

Ameritech Annual Reports 1994 and 1995, Ameritech Investors report, Ameritech press releases in http://www.ameritech.com/.

Backer Spielvogel Bates agency, "Future effects of new consumer and commercial communications technologies" in BSB Media Research & Technology Department (March 1993).

Baldwin T, Mc Voy S, Steinfield C., "Convergence: Integrating media, information & communication ", (1996)

Barrett M., "Direct competition in cable television delivery: a case study of paragould, Arkansas", (1995)

Biggadike, "Corporate diversification: Entry, strategy and performance", Harvard University Press 1979

Bilotti R, Hanson D, MacDonald R., "The cable television industry. New technologies, new opportunities and new competition" Vol. I: Industry review and outlook (December 8, 1993)

Bell Atlantic Annual Reports 1994 and 1995, Bell Atlantic Investors report 1995, Bell Atlantic press releases in http://www.ba.com/.

Bell South Annual Reports 1994 and 1995, Bell South Investors report 1995, Bell South press releases in http://www.bellsouth.com/.

Broadcasting&Cable, "Bell South buys Atlanta wireless system", (November 4, 1996)

Broadcasting&Cable yearbook 1993, "Cable penetration by market" (1993)

Brousseau E, Petit P, Phan D., "Mutations des télécommunications, des industries et des marchés", Ed. ENSPTT Economica, (1996).

Business Week, "Telecom's new age" April 1996

Cable TV administration and marketing society, Ray Smith speech, (September 19, 1995).

Cablevision, "The coming of digital", October 21, 1996

Carlson R., "The information superhighway: Strategic alliances in telecommunications and multimedia" (1996)

Caves R & Porter M., "From entry barriers to Mobility barriers", Harvard institute of economic research 1975

Communicopia conference, Presentation by Richard D McCormick, US West's CEO (November 18, 1993)

Cox Communications home page, "Cable services" in http://www.cox.com/Services.html

C&J research and TeleSight in Telephony, March 18, 1996

Deloitte&Touche, Report on consumer loyalty, 1996.

Dholakia R, Mundorf N & Dholakia N., "New Infotainment technologies in the home" (1996), Ed Lawrence
Erlbaum Associates, Publishers, New Jersey.

Fotte N., "Market segmentation as a competitive strategy", in Market segmentation: concepts and applications ed Engel, Fiorillo and Cayleg 1972

FCC, "Second annual report of the status of competition in the market for the delivery of video programming" in http://www.fcc.gov (December 7, 1995).

Fortune Magazine, "Falling stars", March 17, 1997.

Green D & Ryans A., "Entry strategies and market performance: causal modeling of a business simulation, Journal of product innovation management 1990

Heflebower R., "Toward a theory of industrial markets and prices" American economic review 1954

Hines H., "Effectiveness of entry by already established firms" Quarterly Journal of Economics Feb 1957

Internet World, "Will ADSL beat cable", Oct 1996

Jeffres L, Atkin D., "Predicting use of technologies for communication and consumer needs" in Journal of Broadcasting&Electronic Media, Vol 40, (1996), pp318-330

Kerver T., "The coming of digital TV" in Cablevision, (October 21, 1996) ,p24.

Kotler P., "Marketing management", Englewood cliffs 1972

Kottke F., "Market entry and the character of competition" , Western economic journal, 1966

KPMG., "Public policy arising from telecommunications and audiovisual convergence" in http://www.kpmg.com, (April 1996).

Kravilovsky P., "Interactive TV testbeds" for Benton foundation in http://www.cdinet.com/Benton

Lacroix J, Tremblay G., "Les autoroutes de l'information: un produit de la convergence", Ed. Presses Universitaires de Québec, (1995).

Mercer Management, " The broadband revolution"in http://www.mercermc.com (1995)

Multichannel News,

"Continental ponders change to MediaOne", "Time Warner-Ameritech: something for both" (July 22, 1996).

"Cable Telco execs clash", "Telcos talking to TV stations for content" (September 16, 1996).

"Colorado PUC alleges more telco violations", "Ameritech: we don't redline" (September 30, 1996)

"Nynex takes GI's next level for switched fiber network" (October 21, 1996)

"Bell South in franchise talks" (October 28, 1996)

"PacTel scraps MMDS deal for the Bay Area", "Ameritech accused of favoritism" (November 11, 1996).

"Interview with US West's CEO" (December 2, 1996).

Mundorf N, Dholakia R., "Video On Demand in the United States: A survey of trials and market potential", (1994).

NAB, Impact of RBOCs video diversification, 1990.

Nynex Annual Reports 1994 and 1995, Nynex Investors report 1995, Nynex press releases in http://www.nynex..com/.

OECD, "Information technology outlook", Information Computer communications policy (1995).

OECD, "Telecommunications and broadcasting: convergence or collision", Information Computer communications policy (1992)

Pacific Telesis Annual Reports 1994 and 1995, Pacific Telesis Investors report 1995, Pacific Telesis press releases, report on wireless cable, 1996 in http://www.pactel.com/.

Papazian, "TV dimensions 93", Ed. Media Dynamics, (1994).

Reagan J., "Classifying adopters and nonadopters of four technologies using political activity, media use and demographic variables" in Telematics and Informatics Vol 4 No1 (1987), pp3-16.

Reed D., "Residential fiber optic networks, an engineering and economic analysis" Ed Artech House (1992).

Rennie J., "The uncertainties of technological innovation" in Scientific America, (September 1995), pp57-58.

Smith W.R., "Product differentiation and market segmentation" Journal of marketing (July 1956)

Southwestern Bell Annual Reports 1994 and 1995, Southwestern Bell Investors report, Southwestern Bell press releases in http://www.sbc.com/.

Telco Business Report, "Analyzing US telephone company strategies at home and abroad" in http://www.telecommunications.com/samples/nls/tbr.htm.

L.Johnson & D. Reed, "Telephone company entry into cable television" in Telecommunications Policy, March 1992

Teleport home page, " Cable modems trials in the US" in http://www.teleport.com/.

US Census Bureau, "1990 US Census data" in http://www.census.gov/

US West Annual Reports 1994 and 1995, US West Investors report 1995, US West press releases in http://www.uswest.com/.

Vipconsult, "An exclusive interview with Bell Atlantic's Ray Smith", "An interview with TELE-TV CEO Howard Stringer", in http://www.vipconsult.com/

Wall Street Journal, "PacTel scaling back plans to build interactive networks throughout California", (July 28, 1995).

Wilson C for Arbitron, "Interactive services require careful packaging" in Inter@ctive week (November 25, 1996).

Yankee Group, "Bell Atlantic and Nynex: together at last", consumer communications white paper v 13 n12 in http://www.yankeegroup.com/nynex.html