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MANAGEMENT PROBLEM

1. Brief Statement

VTR (video tape recording) is predicated to be a billion dollar industry. The problem is that technology is changing so fast that it is hard to determine what the product mix will become. Our company wants to invest its financial and managerial assets into this market. The problem is to determine a product mix that capitalizes on our capabilities.

2. Topical Outline

- I. Background of VTR
 - A. History
 - B. State of the Art
- II. Market Research Data
 - A. Various uses
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- III. Competitive Strategies
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- VI. Alternate courses of action
- VII. Developing a Plan
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 - D. Financial

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Excellent!
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MANAGEMENT
PROBLEM
ANALYSIS

Prepared for: Dr. W. J. E. Crissy

MSU-AMP Program
Andre A. Blay

FOREWORD

This paper addresses the problem of determining a product mix for Magnetic Video Corporation in the growing video tape industry. This industry is in the embryo stage and is expected to have implications in all walks of life.

It soon will become evident to the reader that the major difficulty is defining a final configuration from among the many systems beginning to get press coverage. As is true with all new technology, improvements are almost a daily occurrence. This paper has been conceived as a management analysis and report. It will be reviewed and graded academically. Because, the academic reviewer is not as familiar with the video tape industry as Magnetic Video management, certain explanations will appear where they might not for a purely internal report. In order to have some idea of what we mean by "future video systems" a special packet has been prepared called PRE-ANALYSIS READING. (Appendix A) This will make the reader familiar with the three major systems competing for the video record and playback billion dollar home consumer market.

MANAGEMENT

PROBLEM

ANALYSIS

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BACKGROUND AND SIGNIFICANCE OF THIS MANAGEMENT
PROBLEM ANALYSIS

The Magnetic Video Corporation was formed in July of 1969. Our corporate charter reads in part: "To produce magnetic tape cartridges and related equipment, to produce any and all related parts in the manufacture of magnetic tape cartridges; to produce audio compositions on to magnetic tape; to produce recording equipment and related items; to conduct research in the field of tape recordings and recording equipment".

Broadly speaking we wanted to provide services and products for the entertainment, education and communications industries that utilize the comparative advantages of magnetic tape. Capital structure was based on our immediate entry into three distinct business areas.

Number one - The manufacture of 8 track cartridge tapes and cassette tapes. Marketing emphasis is on a job lot order basis with targeted companies from the recording industry. Companies such as RCA, Columbia, and other major record companies. This area of business appealed to us because our background has been oriented towards engineering and manu-

facturing. This would allow us to secure business quickly while letting the marketing, selling and distribution of the finished product rest with the company that owns the artist contract and the copy written material.

The second distinct business area was the development of a cassette tape recorder that would make multiple copies of the original recorded material. For instance the sales manager who wants to make ten copies for his field salesmen normally would have to go to a tape duplicating facility such as our company and pay a minimum of one or two hundred dollars to have several copies of his recording made. There is a big market potential for this type of portable, inexpensive, easy to operate, copying machine that makes instant copies of a recorded message. We like to draw an analogy with the xerox machine. There is a huge market, as we all know, for multiple copies of the type written page. Not the type of material that you go to the printer to have done, but just a quick reference copy. And this is the type of need we want to fill with our cassette copying machine.

The third distinct business area that we sought to enter immediately was the video tape equipment sales area. We believe that video tape or the audio and video message is what the communication industry is going to rely heavily on in the future for reaching mass audiences. People are no longer interested in sorting through dozens and dozens of magazines and newspapers. They also are no longer interested in watching what three major networks have to offer. They like to receive information via tv but they are not happy with the time barriers. The American as well as the world population is ready for an inexpensive, audio-visual medium that they can use to entertain themselves, communicate with others, be educated and enhance their personal development, But they want to do it at their convenience and with a choice of programmed material. Just as in the last five years there has been a huge growth in tape cartridge products for the audio tape market so will there be in the next five years in the video tape market. The reason we moved into video tape equipment sales is that there is no consumer market at this point for programmed tapes. Mainly because of the economies involved but also because of certain quality portability, and standardization problems. However

these can all be solved in the near future. There is no major inventive technological breakthrough that must be made before a small compact home unit can be developed. There is one to two years of nuts and bolts type of product development that has to occur, however, before a home market will emerge. Therefore, back to the reason why we moved into the video tape equipment sales at this early date. There is a significant market in educational institutions and in large corporations that use video tape for training. There is also some closed circuit tv used for security and for other observation projects. Therefore it appeared to us that if we could be identified with this market, which is the market that will precede the home consumer market, it would help us create an image in the market place of a company that is prepared for the home consumer market when it does develop. Also we would be up to date in technical developments, distribution systems, and expected demands.

So you can see that our three distinct business areas are indeed related in that they are all methods of communicating or entertaining or educating a person or a large group of people with the use of magnetic tape. Everything that we are doing is aimed at being in the

best possible position when the huge home consumer market starts to open up for video tape or other types of personalized video transmission systems.

After six months of operation we have penetrated marketing areas number one and three. The second marketing area has been delayed because of difficulties in finding a source to manufacture the cassette Copy-Corder. Marketing area number one has been expanded to include cassette communication programs written, recorded, marketed and sold under our copy written trademarks. In other words we have expanded from being a supplier of tapes to marketing companies to being a manufacturer and marketer of magnetic tape cartridges. Our product lines are related to education and training rather than entertainment.

DEFINITION OF THE PROBLEM

The problem that Magnetic Video Corporation faces can be defined this way. The video tape recording industry or the home video consumer market of a non-broadcast nature is predicted to be a billion dollar industry. However, technology is changing very fast, and new improvements are being made almost daily. These developments that are occurring make yesterday's product obsolete. The

problem we have is to try and determine which type of a product will become widely accepted by the consumer. This is a problem for dozens of companies as well as Magnetic Video, and most of these companies are significantly larger than MVC. Furthermore, even if the product could be defined at this time, what segment of the market would our company choose to enter to maximize its capability and return of investment. We have several choices open to us mainly because we're not in any of them right now. We could choose to become inventors and engineers of the hardware if we think we have a better idea. We also could choose to be developers and manufacturers of software such as we are now in the audio cassette field. In other words, the person who sells the program material to use on these video products of the future. We could choose to simply be a sales facility for another manufacturing firm, say a Japanese firm, or we could choose to be a manufacturer of the tape or other material that the video transmission will occur on. With this background we now begin an in depth analysis of history, trends, competitive positions, potential uses, and the most likely course of action for Magnetic Video Corporation.

PRESENTATION

What is a video tape recorder? When did video tape recording start? (Appendix B) The industry or the process of video tape recording is much newer

than most of us would think. As a matter of fact, the first commercially available video tape recorder was announced in 1956 by the Ampex Corporation. The inventor of the machine was Charles Ginsberg, an Ampex project leader who began his project of developing the Video Tape Recorder in 1951. These first products were used at tv stations to tape programmed material to be broadcast at a later time. The first machine sold for \$75,000. A long way from the targeted four to five hundred dollars that the industry foresees in the next two years. The industry started taking off at a rapid pace after that and has not slowed down since. Technological improvements have reduced the cost from \$75,000 down to current models selling for \$750. There is a wide range of quality available as you would expect from an industry this new. But there are still only a handful of manufacturers. Except for Ampex who manufactures in the United States, all of the other manufacturers are either in Japan or Europe. As we shall see further on in the development of this paper, the Japanese are head and shoulders ahead of all the rest of the manufacturers in reaching a home consumer market. Just as they literally monopolize the audio cassette tape recording market, they now stand ready to monopolize the video tape recording hardware industry. American industry just might be left

at the gate while the biggest home entertainment market in the history of mankind unfolds. The VTR was developed out of necessity by the needs of the broadcast industry. Just think of the problems they had trying to broadcast the weekly schedule that they had to maintain. The cost to have high priced artists, musicians, etc. all on one stage was astronomical. Also the chance of having some one sick or of having some sort of failure or some sort of goof on a major network show was so great that the broadcast industry would have been willing to pay almost any price. The \$75,000 price paid wasn't even considered when the product was made available. They would have paid a half a million dollars if that's what the price had been. Another problem that the broadcast industry had was showing a program the same hour allowing for the fact that there are different time zones in the United States. As we all know, broadcast time is paid for by the so called prime time or non prime time of listening and viewing audiences. If a major show such as the "Andy Williams Show" is shown at eight o'clock in New York, it meant it would have been seen at four o'clock in Los Angeles, just when people there were leaving work or still working. Therefore, hundreds of thousands of dollars would be lost in advertising revenue. Now, with the use of a VTR, the show can be video taped in New York City and viewed later in Los Angeles and other parts of the United States.

Ampex was a small one man company in 1947 when it introduced the first professional quality audio tape recorder. By 1952 when it began its work on the video tape recorder it was still primarily a small company. In 1956 when it introduced the first product, it received over four and a half million dollars in orders during the first two weeks and the rest of their success is a matter of history. Needless to say, they have now become a multi-million dollar company, very successful financially and managerially. However, all of their emphasis has been of the professional use of the recorder and they have almost run away from any home consumer products. Their first venture into entertainment products occurred only a couple of years ago when they introduced consumer audio tape cartridge players. It is because of this philosophy that the Japanese have been able to make such big inroads into the video tape recording industry and are now ready to be the big winners in the home consumer market. Therefore regardless of the course of action that Magnetic Video Corporation takes in the future, one of the most significant things that we should keep in mind is that probably the market will be developed largely, if not primarily, as a result of the products that come out of Japan.

The development of the VTR since that first introduction has brought forth the following course of events. First of all the first machine recorded on what is called the quadraplex principle. (Appendix C) Quadraplex requires extremely high speed and very wide tape to make the image of a picture. However, the quality is excellent and still is the standard of the broadcast industry. The improvements that have been made along the method of recording on the quadraplex principle are mainly to do with properties and electrical circuit work rather than a complete change in recording principles. The major disadvantage to this system is the high tape consumption and also the necessarily big piece of equipment required to run a wide piece of tape. Therefore the equipment does not find much of an appeal outside of the broadcast industry. Even schools, hospitals and corporate training systems could not afford a piece of equipment in the \$75,000 price range particularly when it used tape at the rate of \$90 to \$100 per hour. These constraints brought forth the development of another recording principle. The recording principle that is now most common is called helical-scan video tape recording, and it uses tape only one quarter the width and moves at half the speed as the quadraplex type recording. It is

because of this method of recording that the price has been able to be reduced down to \$750 and under for a tape recorder and the cost of recording is down to \$25 per hour. However, both equipment cost and cost of the tape are outside the range of a home entertainment product, but well within the range of a school, hospital, college, a doctor or corporate training director and even the affluent hobbyist who likes to make his own home movies.

Besides the further development of VTR there are two other methods of providing home video images that should be mentioned at this time. First of all there is the CBS announced electronic video recording system. Electronic video recording uses film to recreate its images. The cartridge is similar to a film loaded 8 mm cartridge and is not revolutionary in its principle of recording or playing back the recording. Its major significance occurs in the development of the player. The player can be manufactured in volume in the \$300 to \$400 category and is directly attachable to the tv set for transmission of the picture and sound. Therefore a person now can buy EVR cartridges and play them on his \$400 machine and view them through his tv set in full color. Of course the EVR cartridges also carry the sound so the person can buy for \$10 to \$15 a one hour

play movie, or any other commercially available pre-recorded material.

The next system that promises to be a formidable competitor against both VTR and EVR is the RCA announced Selectavision principle. The concept of the RCA Selectavision system is the projection of a video image using holograms. Holography is a very new science and there are very few companies in the United States, or in the world for that matter, who understand its technology and are doing any development at all. Basically it is the creation of images called holograms on a plastic surface by the use of clear beam lasers. The beauty of holograms is that they can be recreated on almost any type of surface. The device used to playback the hologram also utilizes a laser beam. The exceptional high quality and ease of creating the image makes holography a formidable type of medium that might be the ultimate product of the future. Like the CBS EVR system, the playback equipment is readily attached to the home tv set and the cost is estimated to be under \$400 for a unit. So again, you can get a color program recreated using your present tv set with the adaption of a \$400 machine. The cartridges that can be played on the machine in the RCA system are even less expensive than the EVR format. A

one hour program would typically cost four to five dollars. The quality of the holograms promise to be better than the EVR system and the life of the cartridge promises to be longer. EVR will be available to the industrial market in the fall of 1970 with more products available in early 1971. The announced target date for the RCA system is not until the spring of 1972. Therefore, certain market penetrations will have been made by the EVR system before RCA is ready. The main difference between EVR and Selectavision as compared to VTR is that neither of these two systems allow the user to make his own recordings. In other words, he can only playback on his machine what RCA or CBS or other people adopting these formats choose to make available for sale. A recent development in the video tape market is the joint adaptation of standards among the Japanese manufactures and certain European manufactures. They apparently have recognized the wide range of specifications currently being used is a detriment to the industry as a whole and that if they all want to share in the future market they better get together now and create standards. The announced program is a two step affair. First of all the equipment that is available now, the recorders that sell for \$750, are all being standardized for distribution in the fall of 1970. Approximately the same time the EVR system

Becomes available. These machines will sell for \$750 and will be interchangeable among eight or nine Japanese manufacturers. They also have announced standardization of a video cassette format that they will plan to introduce in early 1971. Instead of using reels of tape they will use video tape in a cartridge similar to the audio cassette cartridges that are on the market now. This standardization of the video cassette will be the main competition in the home market against CBS and RCA systems. While not too much more information is available on the cassette video tape system it can be surmised that at least two models will be offered. One is a playback only system that will be most likely in the \$400 category and the other is the record and playback system that will probably be \$100 to \$200 more expensive. Both models will playback through your tv set and be in color.

Now that we've looked at the development of the equipment and talked somewhat about the state of the art let us turn to the uses for these products. In other words, what do we mean when we talk about a home market or an educational market? What exactly are the people using this equipment for? Some of the uses are similar to what we normally think of as the uses of a television. In other words, a television receives a

broadcast signal for programmed entertainment. Now we will be able to have the full range of entertainment. We can see a play, we can see a movie, we can watch a particular artist perform. And only with a packaged video product can we do it at our leisure and at our choice of time rather than when it happens to be broadcast.

I would like to break down the various uses of these video products into the following categories: No. 1, educational; No. 2, training; No. 3, home entertainment; No. 4 home movies; No. 5, communication between parties.

First of all the education market. Schools and universities have probably already done more for the video tape market than any user except the broadcast industry. They have seen the value of lectures, laboratory programs, and almost anything that the professor or the curriculum planners want to prepare on video tape. Their main problems with the industry have centered around the non-standardization and the rapidly changing technological scene. They've seen their equipment outdated and overpriced and of inferior quality. Therefore, they obviously will welcome improvements along this line. They do not need to be sold as much as the general public as to what the values and uses are of video tape recording. The teaching profession would love if if each classroom could afford to have its own VTR.

Think of the teacher who wants to record his class skit or record robins out the window hatching their eggs and be able to play that back for the children. Almost anything that the teacher can think of could be easily adapted to classroom use. Additionally, video tape recordings can not only be made live, but they can be made by attaching the video tape recorder to the tv set and record off the air. Therefore, the teacher can make video tape recordings of major events that happen on television and play them back for her class. Class participation and class involvement can be created through the use of replay.

The next area for discussion is the training area. One of the biggest problems in corporate life is the turnover of personnel, regardless of what kind of job you are talking about. Training new people becomes a major problem. With VTR you can standardize the repetitive portions of the training program. Several companies have been using VTR for years to train new salesmen. They have a studio scene where the new salesman is taped explaining the company's product live to a prospective customer, various selling techniques of course, have been taught. His job now is to put them into practice. A video tape recording can be made of

his sales call and the instant replay can show his faults and his weaknesses. He can then practice his call again and make improvements.

The impact a video tape can make on the trainee is a significant factor. For the person who has never seen himself on tv or has never had cause to be made aware of his individual personality, a great deal can be learned from this first experience with the video tape recorder. Training specialist have know for years that the audio-visual training impact is much more significant than a straight audio impact, a straight video impact, or even a written text impact. Interest span is much longer and the material can be presented in many different ways. One of the most significant facts of video tape recording is the ease with which a person or group of people can make a presentation. If the scene is not done right the first time, all the operator has to do is merely push the erase button and re-record the scene until it is done correctly. Ever since the early 1920's there have been literally hundreds of companies involved in producing films for training purposes. And the cost of producing films is at least three to four times expensive as the cost to produce this same

amount of material on a video tape. If the scene is shot poorly and has to be redone, all the film that has been exposed is wasted. Additionally, the cost to develop the film is wasted again if the scene is bad. There is no way to get instant replay to see if you have shot the scene correctly the first time. There is the time delay of having a training film made and then previewing the exposed film to determine its correctness. With video tape you merely push the rewind button and instantly play back the scene you've just shot. The flexibility the video tape machine gives you is tremendous. You know you have a good recording before the performers leave the premises.

The next area I would like to discuss is the home entertainment market. This market without a doubt holds the most promise of all the various uses of video tape that is under consideration. Many people proclaim that it is the next color tv market in terms of dollar volume. The amount of money spent for home entertainment makes it one of the largest industries in the United States. Over two billion dollars is spent for records, stereo records, and stereo tape cartridges. Nine to ten billion dollars is spent for color television, portable television, radios and phonographs. Additionally these markets

provide a source of continuing revenue for the companies who have penetrated them by the release of new hits, new artists, new television programs, new models and various electronic advances that make them easier to use or give better quality. Imagine, if you will, the system of the future that will provide stereophonic music while providing an image of the record artist performing his nightclub routine. This could easily supplement many hours spent listening to stereo records and many hours spent in front of the television set being entertained. This market potential, more than any other, is what hundreds of thousands of people are waiting for -- to be free from advertising and to be free from watching a program at a specified time of day or night. What they want to do is to be able to buy their own entertainment programs and play them back at their convenience. Just as they do with records or books or other types of personal relaxation. A device that would allow this flexibility and be within their economic range also will provide them with the medium to further several other home activities. Prominent among these would be cultural activities, educational activities, home study courses, even such things as keeping abreast of your profession.

For instance being able to see new medical techniques if you're a doctor. In other words, buying them from the AMA and playing them back on your home video tape machine. Or, buying a monthly series of video cassette tapes from the National Education Association. This series brings to the teacher new developments in the education field, instruction techniques, classroom techniques, and other information in the education scene. The average American right now spends three hours a day in front of the television set. He's used to it and he continues to do it even though he complains of its shortcomings. He would find no trouble at all adapting to a system that allows him to see what he wants to see when he wants to see it. The home entertainment market is no longer satisfied to be split into three groups. There are over 200 million Americans and you can't segment 200 million people into those who watch ABC, those who watch NBC and those who watch CBS. Their tastes are too varied for a simple allocation of three groups.

The fourth market use of the video tape system of the future that I'd like to discuss is the home movie market. You'll notice that I've used the word movie even though the medium that we are suggesting as the system for the future is indeed not movies, because movies imply film. None the less this is the market

that the video tape machine of the future will challenge. Here we have another billion dollar industry dominated in the United States by Kodak, Polaroid and Bell & Howell. The techniques of home movie production has progressed significantly over the last twenty years but still lacks the thrill of instantaneous playback. Only in still snapshots do we find any type of similarity to what the video tape recorder can do. And the cost is so expensive that to provide the same amount of exposed time on Polaroid is vastly more costly than today's video tape. Few people realize this, of course, and as the future develops this will be one of the strongest points in favor of the video tape industry. It should be pointed out, however, that the quality of the playback picture is not as good as what can be accomplished on film, particularly in color. However, technically, this is all feasible and given the proper amount of time and capital investment video tape equipment can be made to provide the same quality that home movies provide. The point we'd like to emphasize, however, is the instant replay capability of the video tape recorder. Imagine, if you will, the father with a small hand-held tv camera video taping his daughter's or his son's first Christmas, seeing all the thrills and

joys, the movements that a child goes through, and being able to provide instantaneous replay with sight and sound. As you think about this, there is undoubtedly hundreds of other scenes that you can imagine that you'd like to recapture for personal pleasure. Also one of the big uses for movies, for films that is, is to make detailed study for competitive athletics. It is no secret that all the college teams and all the professional teams trade scouting films to study style and technique, strength and weaknesses of the opposition. As well as to have a replay of last Saturday's performance so that the individual athlete can inspect his own techniques. Because it is so costly and because the time delay is so long, this very valuable device is not used for training sessions or for practice sessions. But with a VTR, using the same type of camera, a professional team or a college team or even a high school team can make recordings of a practice session and apply the proper techniques the next day or even the same day. They don't have to wait one week or two weeks in between each preview of the movies.

Before I discuss the fifth major use of the video tape machine I'd like to make it clear that this list is not meant to be inclusive. There are so many uses

imagined for the video tape system with its instant replay capabilities, its record capabilities, its playback capabilities, its erase capabilities and the inherent values of having an audio-visual projection that we cannot possibly define its uses into five neat applications. With that explanation I'd like to define what is meant by communication between parties.

The printed word, without a doubt, is the most widely used means of communicating between two distant parties. The most widely used method of communicating with close associates is a personal confrontation. Therefore we reason that if everyone were readily accessible, and that if time, distance and economics did not prevent it, a person would rather communicate with another person by personally presenting himself to him or her. On the other hand, certain uses of communication are meant for documentation. In other words, you want to have committed to some sort of document the message that you want to communicate whether it be confidential financial material or if you want to make clear the point of an agreement or contract. This obviously has to be recorded or documented for future reference. Therefore what we find we have is a preference for personal confrontation and at the same time

a desire to maintain a record of what transpired. This is stretching a point a bit, perhaps, but it can be answered that video tape or video transmission provides the answer to both these preferences. The biggest problem that video tape system faces, of course, is the economic comparison between a typewritten page, a recorded message, or a personal visit. Simply because it may fill the needs more specifically it certainly has to be competitive from an economic standpoint - at least in the utility-theory approach. In other words, if it does cost more, what advantage does it give. If the advantages that it gives are not enough to outweigh the additional cost, it will not be a system that will be adapted. Some market niches can already be seen in the use of video tape as a communication tool. The most obvious is the use of this system to provide mass communications. There has been a great deal of emphasis on seminar type meetings, group sales meetings, and such things as to require people to come from remote locations to one central area for a presentation of a new product or presentation of new methods used for a particular profession. Video tape can compete effectively today against the economics of such a mass communication need. Indeed, one of the most significant uses found today is what the Singer Corporation is doing.

The Singer Corporation is heavily involved in introducing a major new product monthly for all of 1970. Through its Friden Division they are introducing a new computer, or a new calculator, or a new product that fits into the office machine industry. The timing of this is so critical that very often they simply cannot get weekly meetings of two to three hundred salesmen to give them the vital information needed to make their presentation on the new product. Therefore for their 180 sales offices they send out weekly a video tape that shows the new product, demonstrates it, provides selling techniques, explains its comparative advantages, reviews and outlines the particular strategy. It also announces what various advertising will back up the product, how it will fit into the product mix, and why the company has chosen to introduce it. Quite often the engineering department has just completed its final design change shortly before introduction. A video tape of the product can be made the day of the announcement and distributed within a matter of days. There would simply not be enough time to send out samples to each of the 180 sales offices and then back it up with a complete package of brochures, advertising literature, and the other traditional ways associated with a new

product presentation particularly the most widely used method, that of making a presentation to a group of corporate salesmen or corporate executives.

Another major user of video tape for mass communication is found by looking at Investors Diversified Service of Minneapolis, Minnesota. This company has made a name for itself in providing investments in areas not normally found through the stock brokerage firms. Again, there are approximately 150 to 200 sales offices concerned. Each office receives at least once a month, and more frequently if needed, a video tape of various investment opportunities available through IDS. A preview of the investment package showing such things as the investment package, the return expected, associated risk, and a background of the prospectus, to a group of institutional investors. The impact is indeed significant and gives them something more than just a printed page to sink their teeth into. They can graphically see the investment opportunity and it can be explained with the use of voice while a pictorial presentation is made. It would take IDS weeks if not months and thousands of dollars to send a man around to all 180 offices or to have representatives come from all 180 offices to Minneapolis to have explained the various

advantages of the new investment package. One of the additional features of the IDS communications program is the equipment each office has. With its own camera it can make programs that are sent back to the home office. Also the home office may call upon the branch office to make a special report if the investment opportunity is associated with their geographical market. For instance perhaps IDS wants to include in their portfolio a recommendation to purchase Chrysler stock. The Detroit office can use their video tape equipment to make on-the-scene tapes of activities involving Chrysler Corporation.

We have reviewed the history of video tape recording and have discussed some of its current uses and potential uses and the markets that it logically will penetrate. We now turn to what the competitive strategy appears to be from the companies who have committed to a video system of the future.

What we should keep in mind as we look at these potential competitors is that our primary objective in so doing is to find a common denominator that will isolate us from reliance on any one piece of equipment or system. To do so at this early stage with technology

changing daily would invite financial disaster. Another goal that we have in mind as we review the major competition is to try to find a marketing void common to all systems. Therefore, we could capitalize upon the areas being overlooked by today's developers.

We should add that the only analysis in depth that we can do concerns what the big, major companies are doing. We would have preferred to include an analysis of what several smaller companies are doing but information is not available. We do foresee literally hundreds of companies becoming a part of this industry. They will come from all phases of current business; movie makers, photography, music publishers, audio-visual producers, television manufacturers as well as a host of new companies.

In the United States the strongest company developing video tape systems for the future is the Ampex Corporation. Ampex has a long history of developing high quality professional type electronic equipment. Primarily using magnetic tape as the source of sound or sight. They are strong financially and through their research and development facilities are able to bring to the market products of exceptional quality and reliability. Traditionally because of these strengths they have developed and sold products to the professional markets;

that is radio stations, recording studios and other nonconsumer oriented applications of magnetic tape. Therefore it is not surprising to find them behind the Japanese in the development of these products for the home consumer market. Ampex, for instance, still markets two inch and one inch video tape recorders. These are big tape recorders requiring a wide band width of tape and moving at a very fast speeds. The picture reception is indeed excellent but the economics of producing the equipment and making it small enough for consumer adaption are well outside of what the consumer can afford to pay and what he would be willing to buy to put into his living room, family room or recreation room. Ampex has stated publically that they do not see a consumer market until a camera and video tape recorder playback can be marketed for under \$1,000 and they also stated that the equipment is still well above this range. However, prices are quoted openly on the market now well below the \$1,000 price so using Ampex criteria there already is the potential for a home consumer market.

I stated earlier that the United States was about to be left at the starting block by the Japanese industry in the development of a home video market. However, I'd like to clarify two points: Number 1 - Ampex is a formidable

competitor. They have shown over the period of the last fifteen years an exceptional expertise in the development of magnetic tape products. They are far away the leader in several categories of professional products. Secondly, and more importantly, they have traditionally developed products for the professional market, not the consumer market. For instance, their video tape system was conceived and developed for the broadcast industry not for the consumer. And the same is true for their audio lines. Additionally they have announced recently several products that deal with the computer industry. Therefore, we can see that Ampex has tended to develop products for the professional or industrial user not the consumer user. This they have probably done wisely because it takes a great deal more money and risk to tackle the consumer market than it does to develop a specialized product for a professional or industrial customer. Also if you can find a niche in this professional-industrial area, competition is less likely to occur and profit margins remain higher. Thus it seems to us that Ampex is content to be the leader in the professional field and let other companies capitalize upon their basic inventions and develop a consumer market. Then they may choose to enter the consumer market with their professional image and capture a portion of the

market that can be won. Thus avoiding the risk of developing the consumer industry. This may not be all bad. It has worked for Ampex in the past and they certainly have proved to be a very successful company.

In review we see Ampex's strategy as the same one they've used in the audio recorder field - that's to be the leader in the broadcast area and develop a reputation of high professional quality. And when the consumer market and the mass communication market becomes more defined and has been penetrated by several other companies they will then rely on their professional image to move in and establish a portion of that market segment for themselves.

The next company that we would like to discuss for competitive strategy is the Sony Corporation. This company is the leader in the development of mass-produced low cost video tape recorders. They have led the way into the beginnings of standardization. It is through their leadership that seven companies have recently announced standardization for both current half inch tape recorders and the anticipated introduction of the video cassette in 1971. This company has grown from nowhere in the early 1950's into a multi-million dollar company. They got their first start by producing a high quality transistor radio at low cost. They then moved

into other home consumer electronic items such as tape recorders, stereo receivers, and phonographs. They then moved into television sets concentrating on the small portable desk-top models. They were the first to correctly see a big market for the second tv set. They do not have to play second fiddle to any United States manufacturer in the engineering and development of their products. They have excellent quality and their marketing strategy seems to be more in tune with what the American public wants than old-line United States companies such as Admiral and Philco. They are currently spending huge sums in the research and development of consumer uses for video tape. Probably more so than any other company in the world. Faced with competition of the highest magnitude in television sets, radios, phonographs and tape recorders, Sony properly sees a declining market filled with more and more competition. Therefore they have turned their engineering talent to the development of a better line of video tape recorders and as the market opens up they hope to be a leader in the consumer use of these products.

There are several other companies that are doing research work and product development work in home consumer video tape recorders. Among them I'd like to mention the Matsushita Electric Company which markets under the name of Panasonic and Concord in the United States. I'd also like to mention the Phillips Company

of Holland, the Telefunken Company of Germany and Shibaden of Japan. All of these companies are following the basic concept of Sony which is to build and market a product that has as much utility and flexibility as possible. In other words a machine that records, plays back, erases, plays through the tv set, records from the tv set, records with a camera, is portable, light-weight, easy to maintain and easy to operate. Basically what they want to do is build a piece of hardware that has many uses and can serve hundreds of thousands of people. All these companies have banded together to work out standards to insure consumer acceptance.

At this point I would like to make a distinction between those companies which we feel are hardware oriented and those that we feel are software oriented. Ampex, Sony and the other companies I've just mentioned are what we would call hardware oriented. They are trying to build the best piece of equipment that they can and offer it at an attractive price. They are concerned with the uses of these machines only so far as it serves to sell more machines. Now referring to those companies which are software oriented we find companies who are more interested in selling what is played on the machine than in selling machines. And this is why we have such

companies as CBS and RCA developing players that they can use to market material that they prepare and make a profit on. As previously noted, CBS has announced the EVR system, Electronic Video Recording, which is a low cost, economical way to project a film image yet still has two audio tracks on each side of the film for stereophonic recording. (Appendix A) A company like CBS makes 70 to 80 per cent of its revenue from selling tv shows and the balance from selling records under the Columbia Records name. This is obviously a company interested in maintaining its market position of selling programmed or pre-recorded information or entertainment. They are not primarily concerned with building and selling a lot of players. As proof of this position CBS has licensed the manufacturer of the EVR player to Motorola for exclusive world-wide manufacturing rights. Motorola will manufacture the player under license from CBS and distribute it directly through their own distribution channels. It is not known what royalty, if any, CBS will get from the player sales. What they are interested in is selling the software material that is played on these machines and they certainly have a wealth of it. They have all their years and years of

old tv programs right from "I Love Lucy" up to current "Andy Williams Show". They also have one of the finest repertoires of stereo music recorded by some of the world's greatest record artists. Each record artist could just as easily be recorded with video tape instead of audio tape and therefore they could produce their EVR packages with Barbara Streisand singing her latest hit as well as performing in person. These cartridges would then be sold for playback on the Motorola built EVR machine. The main advantage that CBS has is that they are about twelve months ahead of the Japanese low cost video tape recorders and the RCA Selectavision system.

Now turning to the RCA system, Selectavision, which was also conceived for the same purpose that CBS announced their EVR system. That is to provide RCA with a method of selling all their recordings and television shows to the consumer market or the educational market. RCA has not announced as yet who will build the players and the exact time that they will become available. The players operate on a halography principle. Halography is the etching of sight and sound onto an inert surface. Because almost any type of surface can be used for this method of recording it is possible to reproduce copies very inexpensively. This type of recording has been made possible by the development and improvement of lasers. It takes a laser with its exacting specifications and

ability to carry trillions of bits of information, both audio and video, in order to make a holographic sketch onto an inert surface. RCA has announced that they will license the principle of making a recording to interested companies. The Magnetic Video Corporation has made initial contact with RCA and negotiations are underway to become a licensee of their patented system of reproducing holographic images.

A review of both CBS and RCA systems point out these facts. Number one, both systems were conceived to be a method of selling software material. They apparently saw a threat by the inroads video tape recordings were making towards a home consumer entertainment device. What they foresaw was each home making their own half hour or hour entertainment programs. Or, if not making it themselves, recording directly off the tv set or from another video source. Thereby eliminating the need to buy programs of the type currently offered by RCA and CBS. Therefore both of these companies would lose their major source of incomes and go the way of the movie maker. The market that we see for the CBS and RCA systems are limited towards home entertainment for high multiple volume of reproduced copies of the first master. For obvious reasons they avoid the

record feature and therefore will not take part in the instant home movies or other markets where the record feature is necessary. As to which system will be the winner it is very hard to determine. Assuming they all cost the same and have comparable quality one would have to assume that the Ampex, Sony group, etc. would have more appeal to the consumer. However, at this point it is not known if video tape can be made to be reproduced as cheaply as halographic recording or even the CBS EVR system. Discussing this record principle with the RCA and CBS people they are quick to note that what they see in the future are two systems. One is a video tape system and two is their own system. Both these huge entertainment complexes are content to let the video tape industry dominate the training and education industries and even the home movie or home video tape market. However, Sony and the other Japanese manufacturers are not content to give up the home pre-recorded segment and confine themselves entirely to training and education application of video tapes. They will be striving month to month to reduce the cost and improve the quality of their machines so that they can compete on an economical basis with the RCA and CBS systems.

Reviewing the press releases, product announcements, and industry pronouncements about the future we become impressed with the huge sums of money being invested by these giants of the communication industry. CBS's belief in their video playback systems has led them to create an internal company complete with a President and a score of Vice Presidents a year in advance of product availability. Additionally, they have concluded licensing agreements in all the so-called advanced countries. Being a small company currently active in the audio magnetic tape industry we obviously see the handwriting on the wall and view the developments in video cartridges as a new opportunity.

A significant factor that we find evident is that as these machines become widely used there will be a heavy demand upon publishers, educational institutions, Hollywood film producers, television producers, sporting events promoters, and everyone else concerned with distributing software to build a huge library of material that the consumer can select to play back on his machine. Also there will be a very significant amount of business for the company that makes the basic raw material such as the magnetic tape or the film that will be used on these future machines.

The Magnetic Video Corporation sees a great many areas for opportunity in this market. We have discussed in the past the development of certain pieces of hardware that will be needed to round out the product line for this industry. We have discussed and defined several types of software material that will be in high demand and we have also discussed various types of services that will be needed to help supply the hardware and software manufacturer. Chief among these services is a leasing plan. Most industrial users and even the majority of the educational users of video tape products prefer to lease this type of equipment rather than buy it. This they would rather do because the equipment tends to obsolete itself every two to three years and therefore the industrial or educational user can keep his equipment up to date by using a lease plan rather than a purchase plan. This is the principle upon which the Leasco Corporation was built and we all know the success story of that operation. Before we attempt to define specific market areas that Magnetic Video Corporation should concern itself with we should outline its constraints and comment upon its proven capabilities. For the purpose of this study we are going to assume that

the company must limit itself to its current financial capitilization. That is to say it will not seek further equity funding or heavy debt financing in order to embark upon a defined product mix over the next three years. It is realized that management in the future may decide to explore these possibilities but at this time it would make this paper extremely lengthy if we assumed there were no financial barriers because we would have to define and discuss each product and product line that could be adapted and then discuss alternate courses of financing. The company has a capital base of \$300,000. Additionally it has short term financing available through normal banking relations and investor line of credit. This amount of capital structure certainly is not big enough to allow research and development into hardware items for the consumer video tape industry. The investment required for this type of a product line, in the magnitude we envision, would require two to three million dollars for investment purposes. Therefore we can quickly rule out developing a proprietary hardware line. Most of the areas of software development and accessory product lines and associated services are within the capital

capabilities of the company. These types of products have low capital intensities and rely almost primarily upon the management abilities and creative talents of the individual employees of the company. Our most obvious strength is in the market penetration that we have made in magnetic tape duplicating by producing cassettes and cartridges for record companies and education oriented companies. We have established a market position as a contract audio cassette duplicator. The future of contract duplicating for the video tape industry is indeed promising. There will be literally thousands of companies that will want to sell their software products to the home video or the educational user, and they will need manufacturing sources to make the multiple copies. We have the established market position and the technical staff to operate such a facility. Therefore this must be considered one of the prime market areas for our consideration. However, this does not give us a proprietary position in this promising industry. As any job type shop or company that provides services to the prime user will tell you he wishes he had his own proprietary product line. This buffers him from the competitive position of quoting for various jobs. His

destiny is more his own fate if he markets his own products. Again we are in an excellent position to develop and program our own software products. In the area of cassettes we have an established leadership in proprietary educational recordings. The subject matter of our educational recordings can be readily adapted for video recordings and we could sell them to the same market that we are currently selling our audio cassettes. Therefore this also should be prime consideration for our future development. Our management staff is oriented around three types of expertise. Number one is the production of high volume cassettes. Number two is the script writing and recording of educational material in cassette cartridges. Number three the sales of video tape equipment to industrial and educational users. All this seems to add up to the development of a proprietary line in the software area with particular emphasis towards the industrial and educational user. That is identifying the various uses for these future video systems and then programing material for their release to the end user. This would put us into all of the future projected uses with the exception of home recordings. Home recordings will be

a market for the hardware manufacturer and the basic material manufacturer. There is one big market potential that we see in the hardware line that I would like to comment on simply because of its anticipated demand in the future. This is a machine that would have the capability of making multiple copies similar to the machine that was referred to in the cassette area in the beginning of this paper. There will be many companies, schools, and individuals using these video tape recorders to make their own programs. They will have a need to make multiple copies in short runs with speedy service required. This type of a function will not normally be available from a video tape duplicating plant. So again we think that a significant business could be established by developing and marketing a machine that not only could record and playback but also could make additional copies of the original material. Based upon our success in bringing an audio cassette copying machine to market we should then consider the joint development of a video copying machine with a Japanese manufacturing source. For further clarification a listing of the market segmentation as it now appears is given:

1. Hardware - cameras, recorders, tv monitors.
2. Instrumentation - high speed video tape duplicating equipment, low cost copying machines.
3. Raw materials - tape, film, plastic cartridge cases, display and packing materials.
4. Duplicating service - high volume processing of video recordings. For instance 10,000 copies of the hit musical "Hair".
5. Software - Creating video programs for special purpose audiences. For instance a monthly review of developments in medicine or law or education. The list of programs that will be needed will be more varied than all the various L.P. records, movies, plays, tv broadcasts, and personal performances put together.

RECOMMENDED PLAN

Based upon the current stage of market development and our past experience the following specific recommendations are submitted.

1. Hardware - Because of our lack of financial and R&D resources this opportunity area is considered beyond our capabilities. The only activity recommended is to attempt to locate an interested manufacturer that would

produce private labeled products for our Copy-Corder concept. We also should continue to monitor the hardware scene for possible additions to our equipment. distribution to industrial and educational accounts.

2. Instrumentation - Again because of the significant funds required and expertise in R&D that is needed this area should be left to other firms such as Ampex. Our concern here is that this is where the equipment will come from that will be utilized by our duplicating facility. Therefore, we must keep ourselves abreast of developments. We will be looking for the system that can make the tape cartridges in high volume at a competitive price and be relatively maintenance free.

3. Raw materials - This area generally is dominated by the chemical industry. If magnetic tape is used companies like 3M and BASF will be involved. If film is used Kodak and Du Pont will be involved. If plastic is used Du Pont, Celanese and Dow will be involved. Again we are not prepared to butt heads against these firms.

4. Duplicating service - This segment of the industry logically appeals to us. It is technical enough to scare away the promoters that typically crop up when a new industry begins. It is within our financial

capability and offers a quicker return on equity than any of the other five market segments. The major targeted customers will be found among the television program producers, Hollywood film producers, record companies, and Broadway producers. Additionally thousands of customers will be found among publishers, communication firms, educational markets, industrial trainers, and etc.

5. Software - The major advantage of software is low capital intensity and potentially high profit margins. Currently our software audio cassettes sell for about \$5.00 each. The cost to produce these is about \$1.50 each. In a few select cases the selling price is \$8.00. The cost to produce a video cassette is expected to range from \$2 to \$10 and the selling price from \$10 to \$50 for a forty minute recording. The key to success in this area is selection of the subject and presentation techniques. We have three staff members with advanced degrees in Instructional Technology and Communication Skills. This plus our current position in the industry support our strong entry into video software.

In conclusion it is recommended that this plan be adapted for policy matters only at this time. The dynamic environment presents too much risk to justify capital expenditures today. Internally our task is

to monitor the industry closely and update this report every three months or sooner if the situation merits.

POST SCRIPT

After this paper was completed the following news items were published in trade magazines.