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**Diffusionstheorie - Videotape Format  
War**

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## **Diffusionstheorie - Videotape Format War**

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## 1. Einleitung

Zu den bekanntesten und anschaulichsten Fallbeispielen für Netzeffekte zählt der Wettstreit im Bereich der Videotechnologien zwischen dem Format Betamax von Sony und VHS von JVC. Diese Fallstudie beschäftigt sich mit der Thematik des Entstehens, Durchsetzens und der aktiven Förderung von Netzeffekten.

## 2. Fallstudie<sup>1</sup>

### „Betamax vs. VHS“

#### Videotape format war

In 1974 Sony has finished the development of a new video tape recording format named Betamax, which is a small version of Sony's U-Matic video tape format. The U-Matic technology was in these days the world-wide standard for video cassettes but unlike U-Matic, the Betamax format allowed to build cheap and small enough cassettes and recording devices to create a new market, the home video recording market.

The videotape format war was a period of an intense format war of rival incompatible models of video cassette recorders in the 1970s and early 1980s. It has gone in marketing history as the classic example of this kind of market competition. Home video cassette recorders became available in the early 1970s, though the first system to be successful was Sony's Betamax. This was quickly followed by VHS (Video Home System) from JVC, and later by Video 2000 from Philips.

#### History

When Sony developed the Beta format, their goal was to make it an industry

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<sup>1</sup> Die Inhalte der Fallstudie sind teilweise den im Literaturverzeichnis aufgeführten Quellen entnommen.

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standard. In fact Beta was only a miniaturization of Sony's U-matic format, which was in these days the world-wide standard of video tapes. Still Sony knew that they could not make Beta a standard by moving alone, especially because they had not the manufacturing capacity to cover world demand. Therefore they tried to convince Matsushita and JVC, its main producing partners for U-matic in Japan, to adopt the Beta format. They approached as well RCA (Radio Corporation of America) for adapting Beta to cover the U.S. RCA cancelled its own ongoing development program of a VCR format because they had to acknowledge that Sony was way ahead in technology. However, RCA decided not to adapt yet Betamax because their own market studies in the U.S had shown that a minimum playing time of 2 hours was necessary for commercial success, whereas the Betamax prototype only offered 1 hour playing time.

Sony had demonstrated a prototype system to the other electronics manufacturers in 1974, and expected that they would back a single format for the good of all. But JVC in particular decided to go with its own format (despite Sony's appeal to the Japanese Ministry of Trade and Industry) and the classic format war began.

### **Competing technologies**

However, Sony did not plan to change the Beta format to support 2-hour playing time because the only way to do this was to trade-off video quality. Comparing the technologies at this time of 1976 shows that Betamax has the advantage of better video quality whereas VHS has twice the playing time. Although Betamax and VHS were both technological descendants of U-matic, they differed in just as much to be incompatible.

The original Betamax systems could record for a maximum of one hour, which was not enough for a whole feature film. VHS could manage two hours, due to larger cassettes and slower tape speed; Sony responded with the "Betamax 2" speed which allowed for longer recording time at the expense of recording quality, quickly replacing "Betamax 1" as the default speed. Thinner tape allowed both formats to increase still further, and by the early 1980s Beta could record for 3 hours and 15 minutes, compared to 3 hours for VHS. With Long Play (LP) technology (available by the mid-80s), a VHS cassette could run for up to 8

hours.

Betamax offered a slightly higher horizontal resolution (250 vs 240 lines for PAL), lower video noise, and less luma-chroma crosstalk than VHS, and was marketed as providing superior pictures to VHS. In practice however VHS picture quality was very similar to that from Beta, as the actual picture performance depended on other factors including the condition or quality of the tape, and individual video recorder models.

### Strategy

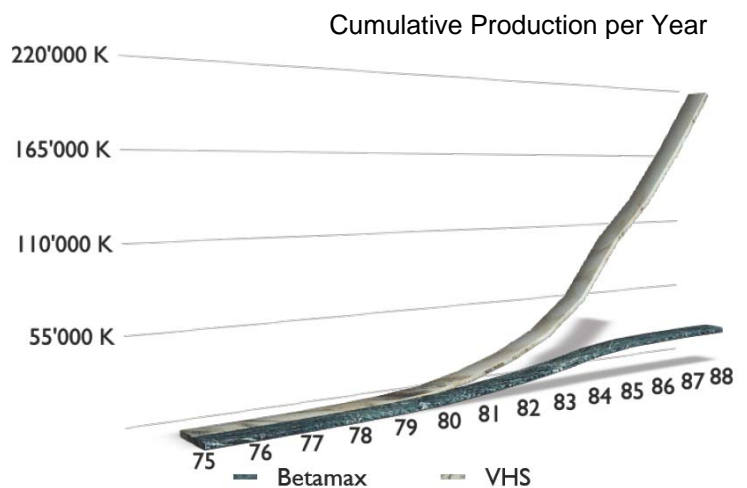
From the beginning Sony was an innovative company with the desire not only to introduce new products but to create entire new markets.

Most of the marketing therefore focussed on introducing this markets, generate the desire for their products and make it uncomely to switch to competitors products. Sony had the attitude that it decided what the people needed and

what are the standards. In addition, Sony continuously introduced new versions of their products (transistor radio, television) and steadily expanded its knowledge and core competencies. Sony more and more focussed on the aspect, that just writing Sony on a product will lead to a market success.

In order to win the format war, the formats should meet the customer needs. But Sony had a special attitude towards customer needs respectively market research to know the customer needs. They did not do any market research for Betamax.

A famous citation of Akio Morita reflects perfectly Sony's attitude those days: "We don't believe in market research for a new product unknown to the public... so we never do any. We are the experts."



After the 1974 meetings with RCA, Matsushita and JVC, Sony started to develop the second Betamax format which would support 2-hour playing time. Because Sony had all the manufacturing for the first Beta version already in place and running, they decided to keep on going with it but to decline any further licensing requests of other partners until the revised Beta format was ready. They started the production of the first 1-hour Betamax VCR named SL-6300 in April 1975, however, they did not deliver OEM machines to other interested companies for the simple reason that this did not match their strategy. To quote Akio Morita: "Sony is not an OEM manufacturer."

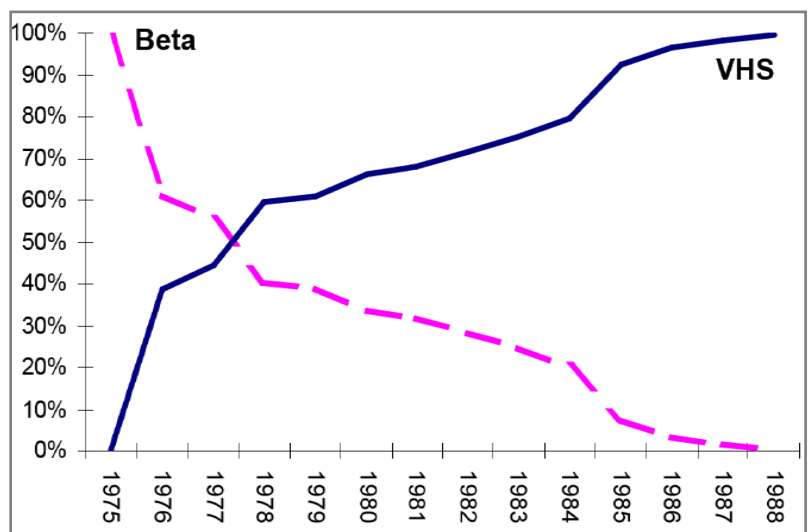
In the meanwhile JVC developed its VHS standard further and already began to sign licensing and OEM contracts with companies that were previously refused by Sony.

Note: Suppliers indicated by initials (J = JVC, Ma = Matsushita, H = Hitachi, Mi = Mitsubishi, T = Tokyo Sanyo, S = Sony, To = Toshiba, Sa = Sanyo, P = Philips, G = Grundig)

Japan	U.S.	Europe
	<b>VHS GROUP (40)</b>	
JVC	Magnavox (Ma)	Blaupunkt (Ma)
Matsushita	Sylvania (Ma)	Zaba (J)
Hitachi	Curtis Mathes (Ma)	Nordmende (J)
Mitsubishi	J.C.Penny (Ma)	Telefunken (J)
Sharp	GE (Ma)	SEL (J)
Tokyo Sanyo	RCA (H)	Thorn-EMI (J)
Brother (Mi)	Sears (H)	Thomson-Brandt (J)
Ricoh (H)	Zenith (J)*	Granada (H)
Tokyo Juki (H)		Hangard (H)
Canon (Ma)		Sarolla (H)
Asahi Optical (H)		Fisher (T)
Olympus (Ma)		Luxer (Mi)
Nikon (Ma)		
Akai Trio (J)		
Sansui (J)		
Clarion (J)		
Teac (J)		
Japan Columbia (H)		
Funai		
	<b>BETA GROUP (12)</b>	
Sony	Zenith (S)*	Kneckerman (Sa)
Sanyo	Sears (Sa)	Fisher (Sa)
Toshiba		Rank (To)
NEC		
General (To)		
Aiwa		
Pioneer (S)		
	<b>V-2000 (7)</b>	
		Philips
		Grundig
		Siemens (G)
		ITT (G)
		Loewe Opta (G)
		Korting (P)
		B&O (P)

**Market share**

October 1976, JVC launches commercial sale of VHS in Japan with a 2-hour tape. At this point Sony has already produced and sold approximately 200'000 pieces of its 1-hour Betamax SL-6300 VCRs, and thus holds a VCR market



share of 100%. The launch of VHS is the public begin of the format war.

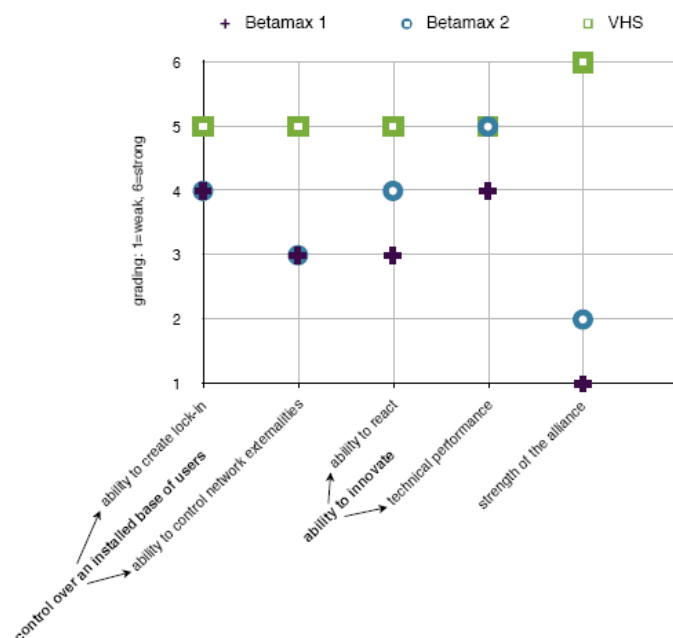
When home VCRs started to become popular in the UK, the main issue was one of availability and price. VHS machines were available through the high street rental chains such as Radio Rentals and DER, while Beta was seen as the more upmarket choice for people who wanted quality and were prepared to buy it. By 1980, out of an estimated 100,000 homes with VCRs, 70% were rented, and the presence of two competing formats meant that rental was an even more attractive choice, since one didn't have to worry about spending a fortune (about £2000 in today's prices) on a system which was going to become obsolete.

Within Europe there were three choices by 1980, with the arrival of the Video 2000 format from Philips and Grundig. Although featuring technology that was ahead of its time, V2000 took longer to develop and arrived late on the scene. Players were found to be less reliable than their VHS and Beta counterparts, and the format never gained substantial market share. V2000 was cancelled in 1985, the first casualty of the format war.

By the time Betamax machines became easier to rent, VHS had already claimed 70% of the market.

At the same time tape rentals were beginning to become popular, and for a while it seemed that every little shop on the street-corner had a rack of tapes. In Britain the famous "video nasties" - films which were deemed too violent or gruesome for general release - were also highly sought, since they couldn't be seen anywhere else but on video.

Yet again Sony missed the boat, being reluctant to sign licensing agreements with studios to have films made available in Betamax. Betamax's combination of

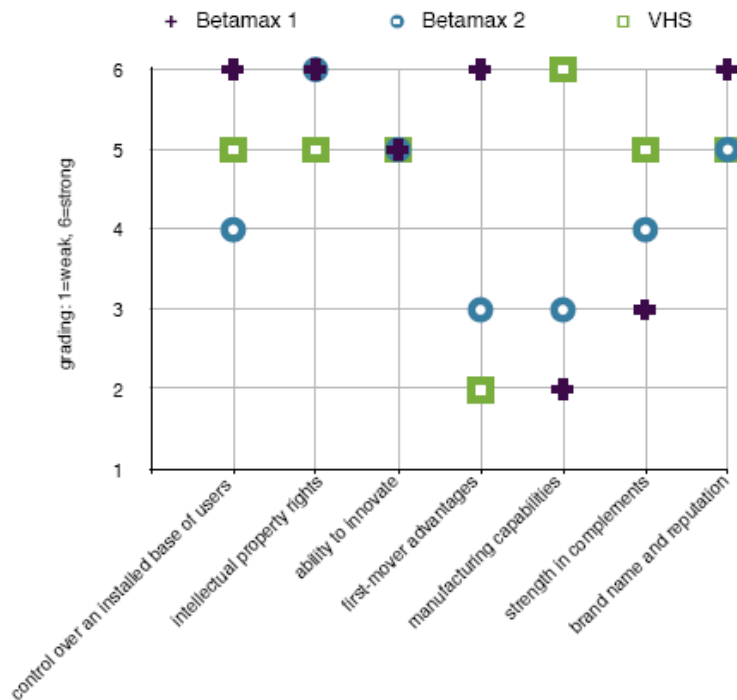




lower market share and a lack of software both strengthened VHS's hand, and gradually the public turned away from Beta. In 1983 the top selling video recorder in the UK was the Sanyo Beta VTC5000. 1984 was Beta's best year with a 25% market share, but by 1986 it was down to 7.5% and the writing was on the wall.

### The End of Betamax

Sales dwindled away and VHS emerged victorious - despite being the least sophisticated of the three main rivals. VHS however benefited from continuous development from multiple manufacturers (including Sony) over the years, and innovations such as high speed picture search, Hi-Fi stereo sound and fast-



load tape mechanisms saw it keep pace with and eventually surpass Betamax, making the format war largely academic by the turn of the 1990s.

In 1988 Sony began to market their own VHS machines, and despite claims that they were still backing Beta, it was clear that the format was dead -- at least in Europe and the U.S.. In parts of South America Beta continued to be popular, and in Japan the format was developed into ED-Beta and SuperBeta, and was still produced up to the end of 2002. The rise of DVD finally took away the Japanese niche market that Betamax had survived in during the 90s, giving the home format a total lifespan of 27 years.

Today, the only remaining aspect of the Betamax system is the slang term 'Betamaxed', which, predictably, indicates something that had a brief shelf life and was quickly replaced by the competition.

## 3. Aufgabenstellung

### 3.1 Netzmärkte

Beschreiben Sie zunächst die grundlegenden Eigenschaften von Märkten mit Netzeffekten. Welche Merkmale fördern das Zustandekommen eines Lock-In? Beschreiben Sie diese mit Ihren eigenen Worten kurz. Stellen Sie die Ausgangssituation und das Endergebnis des Marktes von Videorekordern aus dem Fallbeispiel in einer Potenzialdarstellung dar. Beschreiben Sie die Zeichnung für das spezifische Fallbeispiel.

### 3.2 Netznutzen

Worin sind die Ursachen für das Scheitern der Technologie Betamax zu sehen, die anfänglich 100% Marktanteil besaß? Beziehen Sie sich bei der Beantwortung der Frage zum einen auf die Nutzenentfaltung von Videorekordern bei den Konsumenten und beschreiben Sie andererseits Nachfragerwiderstände. Geben Sie abschließend ein Fazit, wie VHS zum Marktstandard geworden ist.

(Tipp: Was versteht man unter Systemtechnologien? Beschreiben Sie den Ausbreitungseffekt bei dieser Art Technologie bezogen auf die Nutzer. Welche externen Effekte entstehen? Um welche Art Netzwerktechnologie handelt es sich bei Videoabspielgeräten? Auf welche Weise wird hier ein Nutzen generiert? Welche strategischen Entscheidungen waren ausschlaggebend? Was verstehen Sie unter Nachfragerwiderständen und was sind Formen von Nachfragerwiderständen?)

### **3.3 Diffusionsförderung**

Welche 2 strategischen Instrumente stehen einem Unternehmen zur Verfügung, um die Diffusion von Systemtechnologien zu fördern? Hätte eine nutzergruppenspezifische Preisdifferenzierung Sony einen Wettbewerbsvorsprung vermitteln können?

### **3.4 Standardisierung**

Um welche Form der Standardisierung handelt es sich im Fallbeispiel? Welche Form des Wettbewerbs um Standardisierung tritt im Fallbeispiel auf? Welche wettbewerblichen Strategien wurden von den Anbietern/Herstellern des VHS-Systems verfolgt? Welche Fehler hat Sony in diesem Zusammenhang begangen?

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