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The failure of a wine closure
innovation: A strategic Marketing
Analysis.

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The Failure of a Wine Closure Innovation: A Strategic Marketing Analysis

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Abstract

In the wine closure industry cork remains the dominant bottle sealing technology with a market share of around 90 per cent. Our research analyses the screw cap wine seal's development and original introduction within Australia in the 1970s. It identifies the fundamental reasons for its initial commercial failure.

The Australian wine industry played a leading role in recognizing the commercial potential of a French prototype screw cap seal. Local piloting and testing occurred followed by a market launch. Unfortunately for screw cap change agents, the screw cap seal was largely a failure.

Rogers' (1995) innovation diffusion model identifies several underlying factors responsible for the customer's rejection of the new screw cap seal. In particular, these were the failure to effectively demonstrate the relative advantage of the screw cap seal to consumers and to address the complexity and incompatibility of the seal with established user traditions. The industry was therefore unable to achieve a 'critical mass' of adoption.

The additional application of Moore's (2001) adaptation of the technology adoption life cycle model reveals that the failure of the screw cap was also attributable to a lack of an effective industry marketing strategy that would overcome this identifiable consumer resistance. In particular, it lacked a strategy to manage the transition dynamics between the early and mainstream markets.

We conclude that a theoretically informed understanding of the nature of the innovation and thus the adoption hurdles would have significantly aided the diffusion of this innovation.

Introduction

The cork manufacturing industry is a significant industry. It is estimated that the annual production of cork wine stoppers is nearly 13 billion per year and generates approximately \$1 Billion (Eurodollars) for cork manufacturers each year. Portugal and Spain control over 80 per cent of the world's production of cork, with Amorim being the largest producer at about 3 Billion corks per year. Wine corks are the most profitable of the numerous products derived from the cork oak tree (Natural Cork Quality Council, 2002). In contrast, the screw cap wine seal has a small percentage of the wine seal market, largely in catering (such as airlines) and lower priced wines (Leahy, 2000).

While cork is a marvellous natural product, it does have some inherent deficiencies, particularly cork taint. So how common is the problem of cork tainting? It seems that it depends on who you ask:

According to the cork manufacturers, the figure is 1.5-1.7%; Stephanie Toole of the Mount Horrocks winery in Clare Valley believes 5% of her Riesling is severely tainted and a further 10% slightly spoiled. Professor Christian Butzke of the Department of Enology and Viticulture at U.C.Davis in California estimates that five percent of US wine is tainted with TCA from natural cork. Steve Pannell of the big Australian wine company BRL Hardy (the firm behind such brands as Nottage Hill, Chateau Reynella, Houghton and Leasingham) puts the figure at 8%. The organisers of the San Diego National Wine Competition recorded an incidence of 2.5% in 1997 and 1998 and 3% in 1999. (Corkwatch, 2002)

The inherent weaknesses of cork provided the opportunity, as outlined below, for innovators to develop a superior wine seal.

Section 1: A New Technology Emerges - the Screw Cap

History of the Stelvin Seal

The opportunity to develop a technically superior wine closure to the cork was recognized by a French closure manufacturing company, Le Bouchage Mecanique (LBM). LBM began research in the late 1950s on a metal closure to replace cork closures. Their Stelcap closure had already gained widespread acceptance in use over aperitifs, spirits and liqueurs. LBM aimed to modify the Stelcap and develop a quality table wine closure that would completely replace the cork stopper.

LBM's oenologists were able to demonstrate that during the first few months following bottling, the cork stopper allowed diffusion of a few tenths of a millilitre of air into the bottle for the first few weeks, then a few hundredths during the next four months. However, this was the average rate of air diffusion. They discovered that the rate of diffusion was extremely variable according to the quality of the cork and even between corks with the same quality rating. As their researchers emphasised, while it is known that 'oxygen maketh the wine', it is also known that 'too much oxygen spoileth the wine'(ACI, 1980). LBM decided that their new closure must provide sufficient oxygen to permit the wine to age in the traditional way,

but at the same time eliminate the variability in oxygen diffusion which was characteristic of the cork stopper.

By the late 1960s L.B.M. had developed the "Stelvin" that was claimed to be at least comparable and in many respects superior to the traditional cork product. The Stelvin was made of aluminium, was corrosion resistant, and had a treated and chemically inert wad facing that was completely compatible with wine.

The Stelvin appeared to be a major breakthrough. It delivered two major benefits - it eliminated the problem of oxidation and the risk of cork tainting. And, importantly, it claimed that it allowed the wine to develop over time.

The Role of the Australian Industry in the Screw Cap's Development

It is generally recognized that several Australian wine companies played a leading role in identifying the potential for a screw cap wine closure and in the commercialization of the Stelvin wine seal. In particular, one Australian winery, Yalumba, was instrumental in the development, testing and introduction of this new style of screw cap closure into the Australian wine making industry:

Production Director, Peter Wall, originally approached Le Bouchage Mecanique in 1964 about an alternative sealing system for wine bottles. Peter Wall almost single-handedly drove the development of the Stelvin closure (Courtney, 2001).

ACI obtained the Australian rights to manufacture "Stelvin" in 1970 and began a testing and evaluation program in 1973 with the co-operation of the Australian Wine Research Institute in the areas of bottling, storing, testing and tasting of wines. Seven wine companies (McWilliams, Penfolds, Seppelt, Brown Bros., G.Sutherland Smith and Sons, S.Smith and Sons, and Chateau Tahbilk) provided nearly 3,000 bottles of red and white table wines, closed with "Stelvin" variants plus cork controls. A highly respected tasting panel met every six months to evaluate the wines. From the beginning significant differences were apparent between sealing systems. The panel consistently scored the wines stored under "Stelvin" higher. The "Stelvin" was introduced to the Australian Wine Industry in 1976. Between 1976 and the early 1980s approximately 20 million wine bottles were sealed with the Stelvin closure. (ACI, 1980, p.4)

By 1980 ACI was very positive about the progress of the Stelvin seal within Australia. After four years of commercialization, ACI's belief that the Stelvin was a success can be gauged from the following quote:

During this time we have seen an escalation of its use over the whole gambit of red and white, as well as many fortified wines. Market resistance to the concept of "Stelvin" has been minimal. Ease of opening of the premium image aluminium closure has been very favourably accepted by consumers. Pulling a cork certainly holds no mystique for the increasingly important female consumer in Australia.

This has resulted in "Stelvin" being regarded as THE closure of the present and of the future (ACI, 1980, p.4).

Supporting ACI's corporate view were the testimonials in the late 1970s from leading winemakers. The following extracts reveal strong support for the Stelvin seal, and an expectation that it would become a much more widely accepted and used alternative to the cork seal:

Customer convenience of Stelvin is obvious and Renmano will soon be releasing a new range of table wines using Stelvin. *I anticipate that most Australian dry whites will be using this form of closure within 5 years. (italics added)* G. Kraehe General Manager, Renmano Wines

The whole process of winemaking is an act of "quality control" based on the primary quality of the grape itself. The weakest link of the process often proves to be the closure of the container in which the product finally reaches the consumer. The natural variation in quality of the traditional cork closure remains the winemakers "Achilles' heel" in the sequence of the acts of quality control, which constitute the winemaking process....[the Stelvin seal] has proven to be a predictable, convenient and attractive closure. ...I only wish that the vintage weather pattern was as predictable. Brian Croser, Riverina College of Advanced Education.

After being involved in Stelvin testing over a period of three and a half years, I had no hesitation in recommending to Hardys its use in white wines where it is desired to retain the freshness and grapey flavour of the wine. An added advantage is that there is no risk of 'off' flavours from cork which are appearing more frequently in recent times. Peter Weste Chief Winemaker, Thomas Hardy & Sons Pty. Ltd. (ACI, 1980, p.3).

By the late 1970s over 30 well-known Australian wineries such as Lindemans, Wynns, Seppelts, DeBortoli's, Hardy and Berri were using the stelvin seal. The most common type of wine closed with the Stelvin seal was Riesling followed by Moselle (ACI, 1980, p.4).

However, most wine makers reverted to cork seals by the early 1980s. The upbeat expectations of ACI, with a strong commercial interest in the Stelvin seal, were clearly well off the mark. Fundamentally, mainstream consumers rejected the value proposition offered by the screw cap seal.

What Happened? Why didn't the Screw Cap Take Off?

Unfortunately for the Stelvin enthusiasts who could see the benefits of the Stelvin closure - it appeared to eliminate the problem of oxidation and the risk of cork tainting - the consumers overwhelmingly rejected it and by the late 1970s many winemakers were sworn off the Stelvin closure. As one wine industry expert put it:

The industry loved Stelvin: retailers could stand bottles upright on display shelves, as there was no cork to keep moist. Restaurateurs and events organisers loved Stelvin: a quick flick of the wrist and a bottle was open. Winemakers loved Stelvin because their wines aged slowly and gracefully without the risk of premature oxidation, which can occur when poor storage conditions allow the cork to dry out. And of course winemakers loved Stelvin as it eliminated the danger of cork taint. But consumers

hated Stelvin. They thought it looked cheap and, more importantly, there was no magical “pop” as the cork was drawn (Bourne, 2000, p.31).

The poor response of consumers to the Stelvin seal was a big blow for wine makers. The effect on Pewsey Vale, one of Australia's premium Riesling producers, was severe:

Pewsey Vale Riesling sales took a hiding and the move to Stelvin almost killed the brand as a prestige product. Bowing to consumer pressure, the 1984 Pewsey Vale Riesling was returned to cork and remains so packaged today (Bourne, 2000, p.31).

What do innovation theories have to offer to allow us to understand the forces at work and why Stelvin failed in the 1970s?

Section 2: “Diffusion of Innovation” Theory

Why do new products or technologies fail despite their promises? According to Rogers (1995), who has played a critical role in developing the theory of innovation diffusion since the early 1960s, there is a great deal of interest in this question and innovation diffusion because "getting a new idea adopted, even when it has obvious advantages, is very difficult" (p.1). Technological superiority is not enough for a product to be successful - the new product must be perceived to be superior by the potential innovation adopter:

A strong belief in the relative advantage of the new idea often leads technocrats to assume that existing practices are so inferior that they need not be considered at all. ...Change agents frequently overlook the fact that almost every innovation is evaluated by clients in terms of their prior experience with something similar. The innovation may be “new wine”, but it is poured into old bottles (that is, the clients’ existing perceptions) (Rogers, 1995, p. 241).

The following analysis utilizes two key frameworks developed by Rogers. The first framework is the Nature of the Innovation and the second framework is the Technology Adoption Life Cycle.

The Nature of the Innovation

In considering new ideas, Rogers argues that there are five key attributes of a new idea that will be critical in determining the rate of its adoption. These attributes are: Relative advantage, Compatibility, Complexity, Trialability, and Observability. We also briefly address the need to gain a critical mass of adopters in the innovation diffusion process.

Relative advantage: *To what extent is the new idea perceived to be better than the one it seeks to replace? Relative advantage may be economic in nature or it may be less tangible benefits such as ease of use, convenience, or prestige.*

While the technical features were perceived by some wine makers to provide a relative advantage most consumers did not value features such as ease of use and were not aware of the ‘problem’ that the screw cap sought to solve (oxidation and taint). Rogers emphasizes that one of the key motivations for many individuals to adopt an innovation is the desire to gain

social status (Rogers, 1995, p. 214). It appears that most consumers were not prepared to risk a potential loss of social status associated with purchasing wine not sealed with a cork.

Compatibility: *To what extent is the new idea perceived by the target market to be compatible with their values, customs, and past experiences?*

The screw cap had a major hurdle here – it was incompatible with the values, customs, and past experiences of the mainstream market wine consumer.

Complexity: *To what extent is the new idea easily understood and readily taken on board? Rogers argues that the more complex an idea is perceived to be by consumers the less likely it will be rapidly adopted.*

While the screw cap is not complex in its usage (a simple twist), understanding the underlying technical benefits of the screw cap (reduced incidence of oxidation and taint) is complex. These technical benefits were not easily understood and readily taken on board by most consumers. This is a key reason why the innovation was not rapidly adopted.

Trialability: *To what extent can the new idea be trialed or tested before committing to purchase? Rogers argues that the ability to conduct an experiment or test run a new idea increases the rate of adoption.*

The screw cap was not readily amenable to trialing or testing by consumers before committing to purchase. Accordingly, the inability to conduct an experiment or test run the new idea decreased the rate of adoption.

Observability: *To what extent are the benefits of the new idea visible to others? Visibility stimulates peer discussion of a new idea.*

Many consumers were not aware of the key benefits of reduced oxidation and taint, and the most visible benefit became the convenience or ease of use of the screw cap. Thus the discussion stimulated with peers focused on the convenience of the Stelvin seal.

In addition, Rogers emphasizes the need to gain a ‘critical mass’ for innovation diffusion. A critical mass occurs at the point at which enough individuals have adopted an innovation that the innovation's further rate of adoption becomes self-perpetuating (Rogers, 1995, p.313). Accordingly, efforts should be focused on the early adopters of an innovation after the initial innovators have introduced the new idea. Early adopters are often opinion leaders, and act as role models for many other members of the social system. Early adopters are instrumental in the innovation reaching the point of critical mass, a precursor to the successful diffusion of an innovation:

The critical mass is thus a kind of tipping point or social threshold in the diffusion process. After the critical mass is reached, the social system encourages further adoption by individual members of the system (Rogers, 1995, p.319).

The promoters of the Stelvin innovation (ACI and the enthusiastic supporters of the Stelvin among wine makers, wine consumers, wine retailers and the wine media) were not able to convince enough consumers that they had a problem that needed addressing and thus a ‘critical mass’ of adopters was not reached.

In summary, the nature of the innovation was problematic on several criteria, particularly that of relative advantage, complexity and compatibility. The Stelvin seal promoters and early adopters were not effective as opinion leaders, and were not sufficiently effective as role-models for many other members of the social system. Early adopters were not able to get the innovation to the point of critical mass, and hence, to successfully diffuse the innovation.

Rogers' (1995) theory provides us with a significantly enhanced understanding of the underlying reasons for the failure of the screw cap innovation to diffuse.

Section 3: The Technology Adoption Life Cycle

One important adaptation of Rogers' (1995) theory resulted from Moore's experience and work in the hi-tech sector of Silicon Valley, United States. According to Moore (2001), "virtually all contemporary thinking about high-tech marketing strategy has its roots in the technology adoption life cycle" (p.265). The technology adoption life cycle model was developed from research in the 1950s of how communities respond to 'discontinuous innovations' (Rogers, 1962, 1976). A discontinuous innovation, such as the Stelvin seal, requires the marketplace to change its past behaviour in some significant respect with the promise of gaining some new benefits.

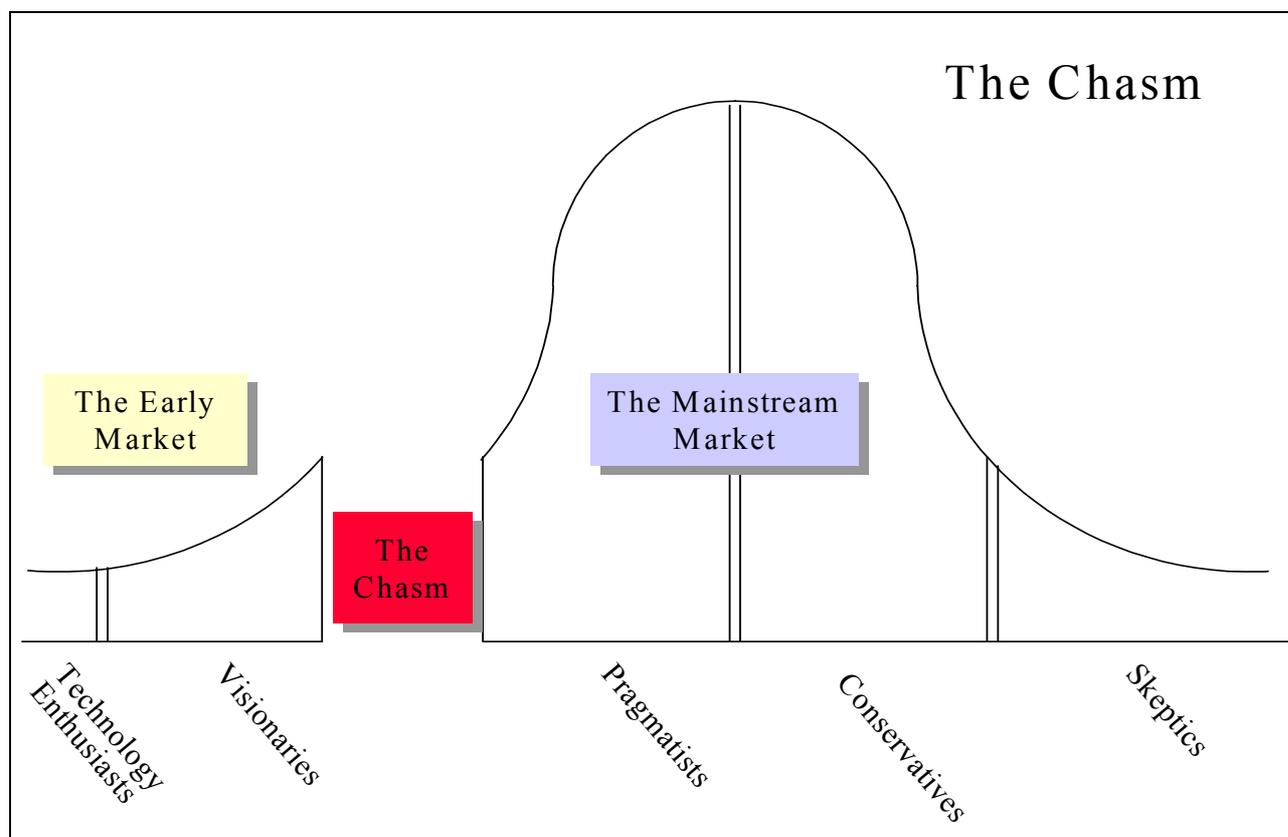
Although the introduction of the Stelvin seal has not previously been analysed from the perspective of being a discontinuous, high-technology innovation, we have found that such an analysis gives additional insights that have not previously been identified. This new type of investigation produces these outcomes due to two primary reasons.

Firstly, the unusually long lifetime of the current sustaining technology, that is cork seals, meant that all consumers in Australia in the 1970's had only ever purchased table wine sealed with a cork. In fact, it was virtually the only closure system for nearly 400 years. Secondly, wine, until quite recently, has been marketed as a traditional product where heritage and maintaining the customs and practices of the past have been associated with virtually all differentiated wines. The positioning of premium wines relied upon traditional, almost artisan practices, inextricably permeating their value propositions. Given these influences the new closure system, although not particularly radical from a 'technical' standpoint, was in fact both discontinuous and confronting to existing norms from the consumer's perspective.

The model, which is depicted graphically in Exhibit 1 below, suggests that when customers are offered an opportunity to switch to:

a new infrastructure paradigm - from typewriters, say, to word processors - customers self-segregate along an axis of risk aversion, with the risk-immune *innovators* moving to the forefront, asking - even demanding - to be first to try out the new opportunity, while the risk-allergic *laggards* retreat to the rear of the line ... In between, the model identifies three additional communities - the *early adopters*, *early majority*, and *late majority*. (Moore, 2001, p. 266).

Exhibit 1: Technology Adoption Life Cycle



Source: Moore, G.A. 2001, 'Crossing the Chasm – and Beyond', in *Strategic Management of Technology and Innovation*, eds Burgelman, R.A., Maidique, M.O., and Wheelwright, S.C., 3rd edition, McGraw-Hill, Boston, p.269.

According to the technology adoption life cycle, the first two groups are the innovators and early adopters, and together they form the 'early market'. By nature the early market consists of individuals who tend to be contrarian, break away from the pack, take risks and seek what is possible. The life cycle theory suggests that once the early market has accepted the discontinuous innovation, the early majority will follow in sequence. In contrast to those consumers that make up the early market, consumers in the early majority category tend to be conformist and stay with the herd (Moore 2001, p.268).

In summary, Moore's (1994, 1995) theory separates customers into five categories, along which the cycle of new technology adoption proceeds. Moore renames the five categories, and adapts the model based on his experience in hi-tech industries. Following is a description of the five categories with Rogers' original categories shown first, followed by Moore's nomenclature shown in italics:

1. Innovators - *technology enthusiasts* who are by nature committed to new technology on the grounds that sooner or later it will improve their lives.

2. Early Adopters - *visionaries* and entrepreneurs who want to use the innovation to make a break with the past. (Groups 1 and 2 form the 'early market')
3. Early Majority - *pragmatists* who buy only when there is a proven track record of useful productivity improvement.
4. Late Majority - *conservatives* who are very price sensitive and pessimistic about the added value of the product; they buy only when technology has been commoditized.
5. Laggards - *skeptics* who are very difficult to capture; goal is not to sell to them, but work around their criticisms.

Unfortunately, in practice the transition from the early adopters to the early majority is a difficult one and may not occur. It is the problems and dynamics of this transition from the visionaries to the pragmatists that represents a new fundamental insight attributable to Moore. The more conservative and cautious nature of the mainstream market (consisting of the early majority and the late majority) is such that the technology may be rejected. Indeed, a key contribution to innovation diffusion theory by Moore was that he highlighted that the visionaries do not necessarily influence the early mainstream pragmatists. Moore (2001) refers to this failure to make the transition from the early market to the early majority as falling into the 'chasm', in which sales begin to fall rather than take off:

The Chasm, [is] a time of great despair, when the early-market's interest wanes but the mainstream market is still not comfortable with the solutions available (p.272).

Moore emphasises the importance to individual firms of crossing the chasm:

Whenever truly innovative high-tech products are first brought to market, they will initially enjoy a warm welcome in an *early market* made up of technology enthusiasts and visionaries but then will fall into a *chasm*, during which sales will falter and often plummet. If the products can successfully cross this chasm, they will gain acceptance within a *mainstream market* dominated by pragmatists and conservatives. Since for product-oriented enterprises virtually all high-tech wealth comes from this third phase of market development, crossing the chasm becomes an organizational imperative (Moore, 1995, p.19).

The way to cross the chasm according to Moore is to establish a beachhead or niche foothold in the mainstream market where there are 'compelling' customer needs (Foster, 1986, similarly emphasises the importance of gaining a beachhead). Once this group has accepted the new technology it is much easier to persuade other segments within the mainstream market to follow. Thus Moore's adaptation of the life cycle model differs from standard diffusion-of-innovation theory (Rogers, 1995) by postulating different dynamics in the progression between phases or segments.

The thesis inherent in Moore's interpretation of the technology adoption life cycle is that the strategy of the developers of the new technology needs to change at each stage in the cycle, particularly to make the transition from early adopters to early majority. To what extent does this model help understand the failure of the Stelvin in the 1970s?

Those consumers in the 'early market' who purchased wine sealed with the Stelvin in Australia in the 1970's could see the benefits of the technology. Wine makers believed that the increased product reliability would create greater customer satisfaction and loyalty. For the early adopters this was the compelling reason to make the switch from cork. However, the

conservative nature of the early majority (more cautious wine consumers) meant that it would always be difficult to convince them of the merits of the change to Stelvin. In particular they were concerned about how friends, peers and family would respond.

The attempt to capture the mainstream market - to leap from early adopters to early majority-without a beachhead or a niche is a key reason why Stelvin faltered in Australia. The Stelvin enthusiasts, ACI, the Australian Wine Research Institute, and the lead group of winemakers who supported the Stelvin trial in the 1970's, believed their work was done once it was scientifically demonstrated that the Stelvin was a technically superior product.

While the technical superiority of the Stelvin was enough to convince the risk taking 'early market' to make the switch away from cork, the more conservative 'early majority' rejected the new technology. Wine consumers rejected the Stelvin partly because it lacked the 'romance' and tradition of the cork (incompatibility). However, a further significant factor was that the 'observable' benefit was focused on the convenience of the screw cap and not on the arguably more important benefits of product reliability. As a result, consumers were not convinced that the screw cap gave them a 'relative advantage'. In addition, the innovation as marketed was too complex and difficult to trial.

The lack of adequate 'observability' was further compounded by a poor product launch strategy. Inherent in marketing the screw cap to the mainstream wine consumer market from the initial product launch was the risk that promoters of the product would lose control of the product roll out - how the product would be accepted and by whom it would be accepted. Subsequently the Stelvin became established in two niches – low priced table white wines and wines served on airline flights in economy class. The experience of the 1970s stamped the image of the Stelvin as a 'cheap' product in the minds of most consumers. A theoretically informed strategic marketing approach to product launch would have recognized these potential pitfalls and planned to avoid them.

Conclusion

The nature of the Stelvin seal innovation was particularly problematic on several of Rogers' innovation diffusion criteria: relative advantage, compatibility, complexity and observability. The Stelvin seal promoters and early adopters were not effective as opinion leaders and were not able to get the innovation to the point of critical mass, and hence, to successfully diffuse the innovation.

Although the technology adoption life cycle model as refined by Moore (2001) was developed from his work in hi-tech markets, it has relevance and provides insight in understanding why consumers rejected the screw cap seal in the 1970s in Australia. Our analysis demonstrates that the promoters of the screw cap in the 1970s lacked an appropriate marketing strategy to make the transition from the early adopters to the mainstream market. The demonstrable superiority of the Stelvin seal technology was clearly insufficient to cross the chasm and become successfully adopted by the mainstream market. While the screw cap established a beachhead, it was the wrong beachhead from a strategic marketing perspective from which to penetrate the mainstream market.

Fundamentally, the promoters did not have a framework that allowed them to identify the key adoption hurdles inherent in the 'nature of the innovation'. Thus no collective strategy was

evident and the key stakeholders (screw cap manufacturers, wine makers and wine retailers) allowed the screw cap to become associated with cheap wine and economy airline travel.

This analysis highlights the importance of having a deep understanding of the nature of the innovation and thus the adoption hurdles, the need to have a united and collective approach by key stakeholders, and finally the need for a well developed strategy to make the transition from the early adopters to the mainstream market.

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