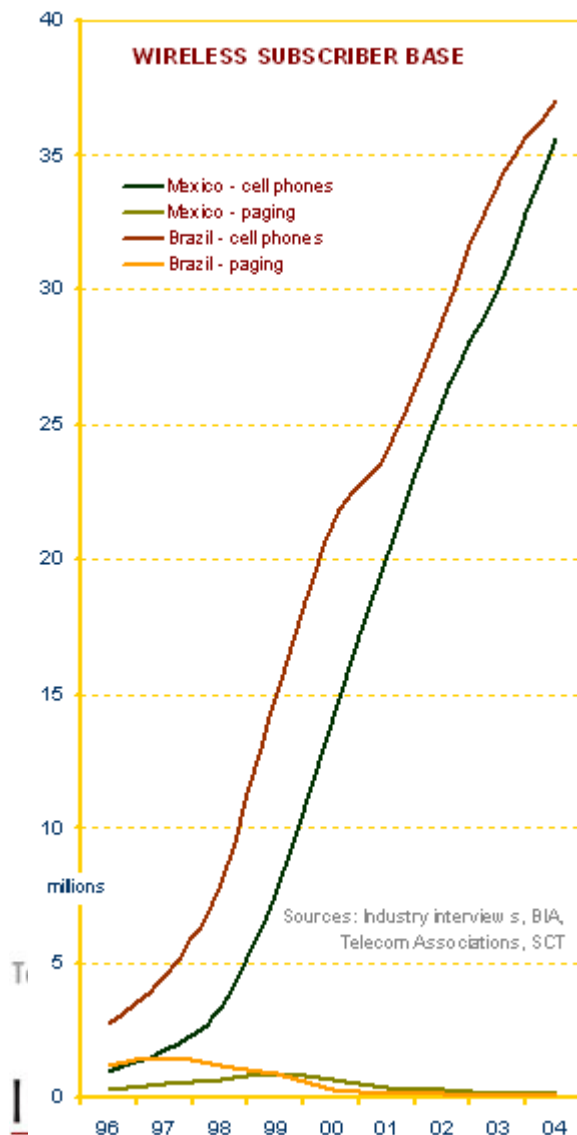


Paging: One-way or another, It Hopes to Survive

Consumer Goods and Services

Author: John Price



In 1998, analysts valued Skytel's Mexico operations at close to \$150 million, with sales growing at more than 40 percent annually over the previous three years. In Latin America's wireless market, that was a lifetime ago. Since the market peaked in 1999, Skytel's customer base has dropped by half, margins have shrunk, and today the company's one-way paging business would fetch no more than \$20 million ... if they could sell it.

El que llama paga ... y pega

The decline of one-way paging is a global phenomenon but it has been most dramatic in Brazil and Mexico where "caller pays" cell phone service has overwhelmed the paging industry. The introduction of "el que llama paga" mobile telephony allows consumers to own a cell phone but incur no air-time costs as long as they keep their cell phone turned on but never make a call - the equivalent of free one-way paging. Trunking phone service, dominated by Nextel, also competes directly with one-way paging, once considered the cheapest way to communicate. Brazil's creation of a highly competitive cell phone market in 1998 accelerated the demise of one-way paging. Mexico's caller pays cell phone program got started in 1999, the same year that one-way paging peaked. A dramatic drop in the price of a new fixed line in Brazil, combined with shorter waiting times for installations in both countries, also attracted customers who had

previously used paging as an alternative to a traditional phone line.

The market for one-way paging in both Brazil and Mexico will continue to shrink but it should plateau within two years, leaving a viable customer base for one or two carriers in each market. The last man standing will take some shots along the way, with shrinking ARPUs (average revenue per unit) and few options for financing. But one-way paging will continue to present opportunities in specific market niches:

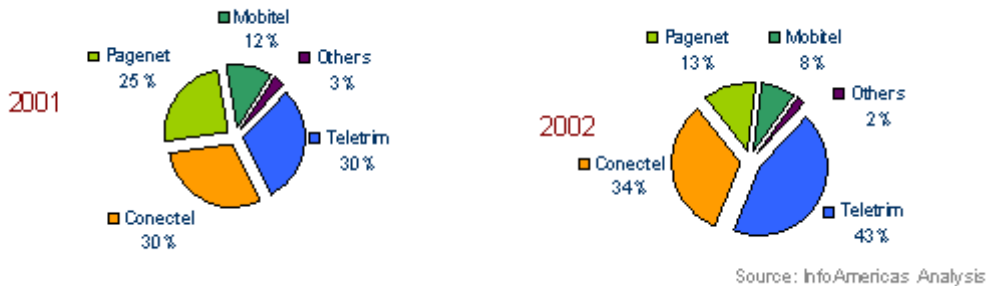
- A cost cutting complement to corporate cell phones - "Caller pays" cell phone calls cost up to \$0.25 per minute. Companies that call their own employees when they're out of the office can cut costs by sending outgoing messages to pagers and reducing cell phone airtime.
- Broadcast messaging - when one central voice wants to speak to many specific listeners at once, no medium is more efficient than one-way paging. Users include corporations, schools, media companies, and government programs.
- Vehicle Security Telemetry - Cars are often installed with a one-way pager wired to the ignition system that allows the owner to shut the engine off if the car is stolen, using a paging message.

The last man standing

One-way paging began to decline in Brazil two years before it did in Mexico. Brazilian paging companies responded with two principal strategies. One approach was to leverage one-way paging infrastructure by developing niche markets. The latest and most prominent example is vehicle security telemetry. Conectel, controlled by Acme Paging, invested US\$ 7 million in 2000 to create a remote blocking system for stolen cars, and sold 12,000 contracts. But while this approach does increase the subscriber base, message volume is practically zero, which limits the potential revenue gain. Another niche involves the use of pagers by businesses to notify customers when deliveries have arrived or have been shipped.

Other Brazilian paging providers have leveraged their investment in operators and telephone banks (used to dispatch pager messages), to diversify into the call centre business, where the market is growing at about 25% annually. In April 2000, Teletrim established a call center with 1,020 stations that accounted for 20% of its revenue in 2000, and a projected 50% this year. Teletrim plans to have 4,000 call centre stations in operation by 2004, generating revenues of some US\$ 100 million. Mobitel, owned by PT (Portugal Telecom), has invested US\$ 5 million in call centers, and plans to spend another US\$ 14 million in 2001.

BRAZIL ONE-WAY PAGING MARKET SHARE

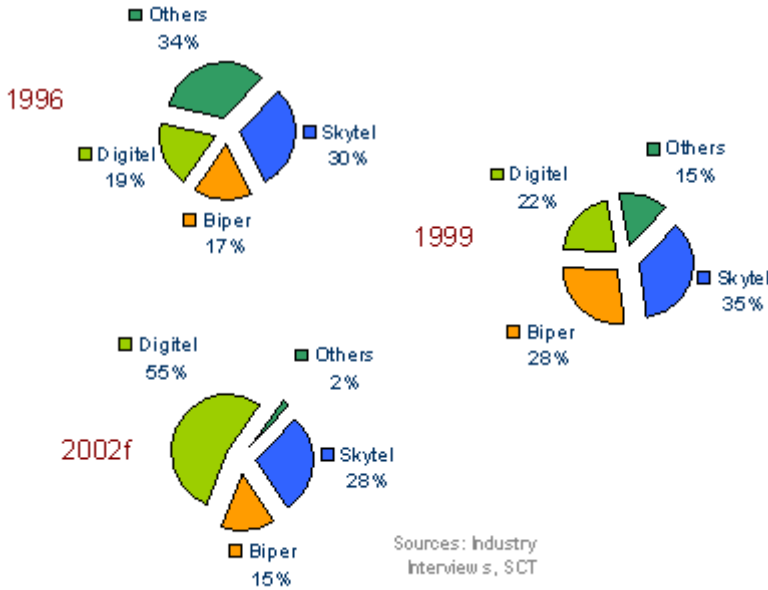


In Mexico, the mighty Skytel, which claimed almost 40% of the market when subscriptions peaked, is an aging cash cow. The company does little to replace any of its one-way customer churn, preferring to focus on two-way. Biper, which looked promising with a customer base of working class clients, was especially hard-hit by caller pays cellular.

Emerging as the only viable long-term one-way paging company is Digitel, still 51% Mexican owned. While the other paging companies belong to conglomerates that quickly dump their low performing assets, Digitel's owners have nowhere else to go and are actively acquiring smaller regional carriers in an effort to dominate the market. "We began as the first paging company in Mexico", says Luis Javier Galindo, Digitel's President and CEO, "and we are once again the market leaders".

Mexican paging companies have not followed their Brazilian counterparts into the call center business, although a few of them are considering this option. Mexico's call center business is more developed than Brazil's. Growth rates have flattened and competition is fierce. The introduction of voice over broadband IP solutions to Mexico over the next 12 months will enable Mexican call centers to service clients in the US Hispanic market and other parts of Latin America. This could open the door for new competitors like paging companies.

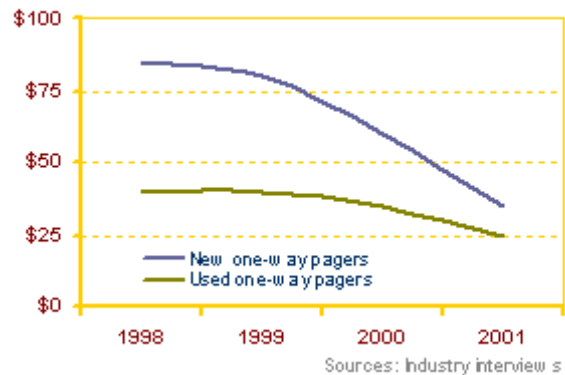
MEXICO ONE-WAY PAGING MARKET SHARE



US pager production and R&D curtailed

Another harbinger of the slow-down in one-way paging is the abandonment of R&D and production of pagers and related infrastructure by leading US manufacturers. Both Motorola and Glenayre have pulled out of one-way paging. Pagers come increasingly from Chinese manufacturers with brand names owned in the Orient. Average prices have declined sharply. Increasingly, one-way pagers are given away free as part of promotional campaigns by content providers (media companies) and wireless distributors that handle paging and cellular products.

PAGER WHOLESALE PRICING



Two-way messaging - the shrinking window of opportunity

Back in 1996, the Yankee Group predicted that between 8 and 15 million Americans would spend \$25 per month on two-way messaging services in 2001. These services were seen as the cost effective way to read your email on the road. Today, less than 2 million two-way messaging devices operate in the US market, and there are fewer than 50,000 in Latin America. That's one two-way pager for every three luxury-class Mercedes on the road in the region. The opportunity for paging companies to grab the mobile email market still exists, because American cell phone technology is three years behind the Japanese and two years behind the Europeans. But 3rd generation cell phones will soon compete more directly with two-way paging's ability to handle data. So time is running out, even before the untapped market in Latin America is exploited.

Finger pointing for the missed opportunity begins with Motorola, which fell more than a year behind schedule with the development and production of the now popular T900 two-way messaging pager. Paging companies rely completely on Motorola's Reflex as the preferred platform software. Two-way carriers that invested millions in network infrastructure could not deliver a cost effective messaging product until the T900 came out. A lack of affordably priced two-way devices also hurt product acceptance by consumers. The lack of adequate volume caused by product launch delays now throws Motorola into a quandary. Should it continue to invest in developing future generations of two-way messaging when 3rd generation cellular will soon compete in the Americas with data-capable smart phones?

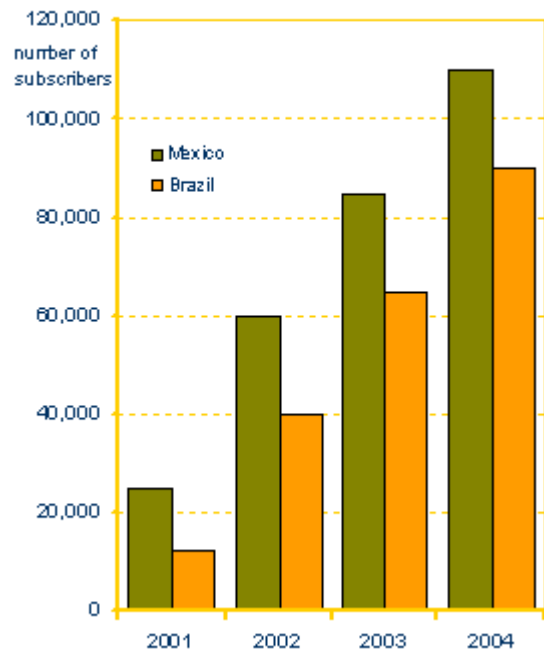
TWO-WAY PAGER PRICING

| | 2000 | 2001 | 2002 | 2003 |
|-----------------|-------|-------|-------|-------|
| high-end | \$415 | \$300 | \$200 | \$150 |
| low-end | \$225 | \$125 | \$75 | \$60 |

Source: Industry Interviews

Sharing the blame for two-way's slow start are the paging companies themselves. Up until 1999, paging companies enjoyed rich valuations of their publicly traded shares and borrowed heavily to finance the great promise of two-way messaging. They were left in the lurch when the launch of two-way technology was delayed, while their one-way market fell much faster than anticipated. Investors and lenders have treated paging like a pariah

TWO-WAY MESSAGING MARKET SIZE FORECASTS



Source: InfoAmericas Analysis

since 1999, hurting the prospects of emerging markets like Mexico and Brazil.

In Brazil, two-way messaging licensing was delayed until 2001 and eight companies are testing the market under temporary licenses that expire within a year. None of them have so far committed to a full operating license. It is expected that some will do so by the end of the year. Across Latin America, two-way messaging should see impressive growth rates (from a low starting point) through 2004. At that point, third generation cellular will be operational and will compete head to head with paging.

Telemetry - the last great hope

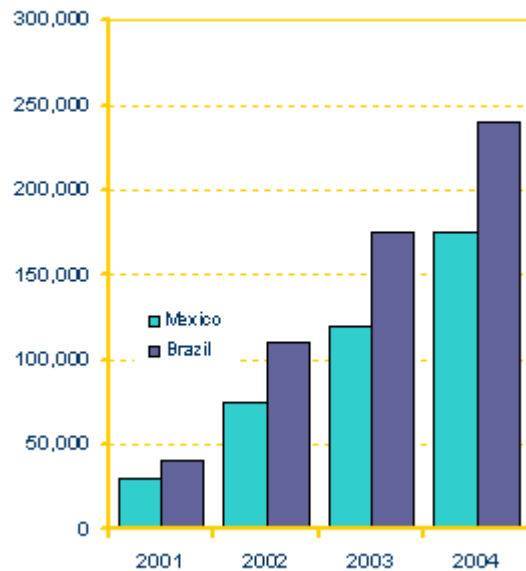
It is the stuff of science fiction: the ability to turn your car motor off with a phone call, to unlock your house by email, to notify the cola supplier when the vending machine is empty. Converting physical events into data and sending it over the airwaves to another machine has limitless uses. The big question that remains is how this data will travel - over paging networks, cellular networks or some other medium. Telemetry in Latin America could eventually outgrow the market in the US or Europe because of the lack of hard-wired infrastructure to connect machines. Very few "smart" buildings are constructed in Latin America with intelligent connections in every wall. Wireless technology therefore provides a simpler and cheaper way to connect machinery, appliances, and other devices than adding new phone or cable lines.

In Mexico and Brazil, the most interesting opportunity lies in car safety. Not coincidentally, these countries are not only home to the most rapacious car thieves in the world, but also boast two of the most sophisticated security technology markets. By leveraging existing national one-way networks, paging companies can eke further cash out of their existing infrastructure. More sophisticated methods utilize GPS technology, enabling customers to locate their stolen vehicle.

The use of two-way paging technology to communicate between people and machines or between machines and other devices makes telemetry practical for a myriad of other applications. Courier personnel punch in the status of a shipment when they complete delivery, and the data is uploaded to a central office and then to the customer service website within minutes. The same device can receive new pick-up orders, including those entered by customers on the website, potentially bypassing all human contact between the customer and the courier. Similar systems used to dispatch taxis could make dispatchers a thing of the past.

Despite the possibilities and potential cost savings, implementation in Latin America will be slow. Educating the marketplace requires lengthy analysis of each customer's business, painstaking proposal preparation, then hefty upfront expenses before cost savings recuperate the investment. The market is therefore limited to a few thousand, mostly multinational, enterprises that are sophisticated enough to explore this field in Latin America. The paging carriers are anxious to sell telemetry applications, but they often lack the analytical skills needed to provide value-added service to finicky clients. The industry needs more third party telemetry resellers that can offer a wide variety of solutions including, but not limited to, paging delivery. It also needs players with deep enough pockets to enter the market with an amortized pricing solution that lowers technology entry costs and brings more mid-size clients on board.

TELEMETRICS MARKET SIZE FORECAST



Source: InfoAmericas Analysis

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Since telemetry services are sold mostly to businesses rather than to consumers, branding is less of a sales factor than customer service and price. That fact will help to draw many sellers into the market and keep margins low.

Telemetry delivered by one-way paging can beat cellular on price thanks to the well-developed national networks in both Brazil and Mexico, but two-way telemetry will likely favor cellular over paging. Today, cellular coverage in both Mexico and Brazil is extensive, even reaching rural communities. Two-way paging is available only in major city centers and will not reach national coverage without further financing and/or consolidation. Motorola, the leader in telemetry software development will probably bet its future on cellular, further handicapping two-way paging as a telemetry medium.

Paging missed out on the two-way messaging boom. It cannot afford to miss the telemetry bus as well. Challenged by a common enemy in cellular, paging companies must now unite to coordinate the establishment of two-way networks and to lobby software makers to keep developing paging solutions. With sufficient coverage and scale, paging can compete with cellular on price and even more so on reliability as the preferred telemetry medium.

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