INTRODUCTION

One of the criticisms of traditional valuation is that it fails to consider the value of intangible assets like technology, brand equity, etc. Hiroyumi Itami, in his book *Mobilizing Invisible Assets*, provides a summary of this criticism: "Analysts have tended to define assets too narrowly, identifying only those that can be measured, such as plant and equipment. Yet the intangible assets, such as a particular technology, accumulated consumer information, brand equity, reputation and corporate culture, are invaluable to the firm's competitive power. In fact, these invisible assets are the only real source of competitive edge that can be sustained over time."

"Brand equity" is a construct with so many facets that it defies a succinct, common definition. Accountants, marketers and consumers would tend to stress different aspects - and all of them would be right. But regardless of the definition used, it is clear that companies value high equity brands because they contribute to profits and consumers value high equity brands because they reduce uncertainty when buying.

Since the purpose of any business - and of any brand - is to make a profit, it is logical that brand equity traditionally has been defined in financial terms. The flurry of corporate buyouts and mergers in the 1980's made it necessary to quantify the financial "value" of brands, whether that value is expressed in terms of sales, share, price premiums or profitability.

Financial measures of brand equity are obviously important for companies to track, but they don't tell the whole story. They do not indicate why that equity exists or what a company should do in order to enhance it. Further, they provide little insight into the likely direction of future market changes.

In a general sense, most marketing observers agree that brand equity is defined in terms of the marketing effects uniquely attributable to the brand. Marketing Science Institute defines it as, "the set of associations and behaviours on the part of the brand's customers, channel members, and parent corporation that permits the brand to earn greater margins than it could without the brand name and that gives the brand a strong, sustainable, and differentiated advantage over competitors." David Aaker opines that it is "a set of brand assets and liabilities linked to a brand, its name and symbol that add to or subtract from the value provided by a product or service to a firm and/or to that firm's customers."[1]

Brand equity subsumes brand strength and brand value. Brand strength is the set of associations and behaviours of the brand's customers, channel partners and parent corporations that allow the brand to enjoy sustainable and differentiated competitive edge. Brand value is the financial outcome of management's ability to leverage brand strength via tactical and strategic actions in providing greater current and future profits and lowered risks.

Brand equity is defined as the differential effect of brand knowledge on customer response.
Successfully branded companies view brand as an asset that returns economic value.

Three elements of this definition need to be emphasized. The most critical element is differential effect, or "differentiation." Without this, a brand is not different from the next one, and therefore, it can never seek a premium.

[1] Aaker, David A., *Managing Brand Equity*, New York: Free Press, 1991.

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The next element is brand knowledge. Customers should know about the differentiation and what it is. They should be aware of it, and should appreciate that the differentiation is meaningful to them.

The last key element of this definition is customer response. Customers should respond favourably to this differentiation. This response should (hopefully) be reflected in their desire to demonstrate some loyalty towards the product, and in their willingness to pay a premium for their preference.

Why valuate brands?

It seems absolutely necessary for the increase of our sales that some means must be unremittingly made use of to keep up the attention of the world to the fine things we are making and doing for them.[2]

The statement above was supposedly made in 1779 by Josiah Wedgwood, to his partner in business Thomas Bentley. It serves to illustrate the point that the need of marketing has been around for a long time, basically as long as there has been a surplus of goods in the market place, i.e. when the supply is larger than the demand. This has been the case in individual, local market places from the beginning of time, or at least since the beginning of trade, but it is not until the days of industrialization and mass production that concepts such as advertising and branding have gained importance.

The quote also illustrates a key point in this context, namely that all the 'means unremittingly made use of' are done so with one goal in mind – to increase sales, and in the long run increase profitability. When attempting to analyze anything within the given framework, this primary assumption must at no point be forgotten or overlooked. This is a point to which I will come back later in this essay, so at the moment I will not dwell any further into the subject.

Wedgwood's statement also points out the very core of what brands are all about – keeping up the attention of the world to the fine things that are being made available, through purchase. In this particular case, the fineness of things that Wedgwood refers to probably means such traits as the good quality and fine craftsmanship of the pottery his company produced. However, there are many other aspects than those purely physical to consider when the market value of a product and/or service is determined.

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[2] Wernick, Andrew, *Promotional Culture: Advertising and Ideology in Late Capitalism,* SAGE Publications, London, 1991, p. 1.

Managing brand equity

Figure 1 shows, brand equity rests on a solid foundation of brand vision and brand identity.

FIGURE 1: MANAGING BRAND EQUITY[3]

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Given a strong foundation, brand knowledge can be built. Important dimensions of brand knowledge include brand awareness and brand image. Finally, brand equity results in superior performance, that is, the ability to earn long-term economic profits. Two key indicators of a brand's ability to earn economic profits over the long run are brand loyalty and the ability to command a price premium.[4]

Brand vision

Superior brands have a clear vision. They stand for something important and relevant to their target audiences, and they do so consistently. Managers should establish the leadership values for their brands with clarity and consistency.

Brand identity

Brand identity includes all elements by which the brand communicates with the world around it. Our discussion focuses on the three integral components of brand identity—brand name, logo and slogan.
The hoped-for result of a brand identity program is an image that is consistent with the brand's vision and aspirations.

Brand awareness

Brand awareness connects a brand to its product category. If consumers are unable to place a brand in its appropriate purchasing context, then the advantages of recognition and recall are greatly diminished.
Much stronger brand awareness is indicated where a consumer is able, without assistance, to name the brand as a member of the product category (unaided recall). At the lowest level, brand awareness is a consumer's ability to identify a brand as a member of the product category when provided with a list (aided recall). Although this is a minimal level of brand awareness, it can still make a difference, particularly in low involvement purchase situations where brand choice is made at the point of sale.

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[3] Kohli, C. and L. Leuthesser, *Brand Equity: Capitalizing on Intellectual Capital*, Ivey Business Journal, March-April, 2001,pp.74-78.
[4] Keller, Kevin L., *Strategic Brand Management – Building, Measuring, and Managing Brand Equity,* Prentice Hall, 1998.

Conventional wisdom dictates that brand awareness (and therefore, brand equity) can be built only through repetitive advertising.

Brand image

A brand's image is a set of associations organized to produce a global impression. In other words, brand image isn't simply an enumeration of all of the brand associations that an individual may hold; rather, it is a highly generalized synthesis of, typically, a subset of them. The association to the underlying brand image will be stronger with a larger number of brand-related experiences or exposures to communications. They will also tend to be stronger where they are consistent with, and reinforce, each other.

Brand loyalty

Brand loyalty is a measure of how often a customer is inclined to choose the same brand when buying from a certain product class. If most customers are indifferent to brand names, and buy primarily on the basis of features, price and convenience, then very little brand equity exists. If, on the other hand, they continue to purchase a brand even in the face of competitive brands with superior features, price and convenience, substantial brand equity exists. Brand loyalty is not simply present or absent; it is present in varying strengths. Nearly all customers, no matter how loyal, have some propensity to at least "take a look" at other brands from time to time. And even the most loyal customers will switch brands if their preferred brands fail them.

Brand loyalty is the most important indicator of brand equity. Without brand loyalty, there can be no brand equity. Any brand that aspires to even second or third-tier market status will require significant brand loyalty. Brands that are market leaders almost always have the highest brand loyalty. And, if we view niche brands as really being market leaders in narrowly defined markets, the loyalty-leads-to-market share rule is essentially absolute. If brand awareness and brand image do not translate into brand loyalty, much of the effort and expense that have gone into building awareness and image will have been wasted.

Price premium

Most brands that have positive equity should be able to command a premium price. These brands should compete on dimensions other than price. If a brand does not command a price premium, the whole equity exercise would be futile. It is important to differentiate between the ability to command a price premium versus a premium price. While the latter suggests following a high-price strategy, the former implies being able to command a premium over and above what an equivalent product would receive without the benefit of a brand name. Superior brands with a value proposition would also fall under this category.

In the words of David Ogilvy - **a brand** is the "**consumer's idea of a product**". When seen from this viewpoint, a brand is a schema or semantic network which the consumer has acquired through a process of learning. Names and symbols are thus only seen as triggers of what the brand actually stands for. This view is appropriate when it comes to providing an explanatory model for the generation of brand equity through a psychological process. As a notion in the consumer's mind we define the concept of 'brand' as the sum of associations that are evoked by names or symbols. Its scope, however, should not be limited to associations with the product. By the same token, associations with the firm behind a TV set brand, information on the dealer of a specific brand of car, or the consumer's ability to memorize the telephone number of a pizza delivery service, are also part of the brand and may consequently also function as important sources of brand equity.

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Benefits from Brand Equity

Customer-based brand equity occurs when consumer response to marketing activity differs when consumers know the brand from when they do not. The actual nature of how the response differs depends on the level of brand awareness and how favourably and distinctly consumers value brand associations, as well as the particular marketing activity under consideration. A large number of benefits can result from a strong brand, in terms of both greater revenue and lower costs. The factors creating financial value for strong brands can be classified into two categories: (1) factors related to growth (e.g., a brand's ability to attract new customers, resist competitive activity, introduce line extensions, and cross international borders),
(2) factors related to profitability (e.g., brand loyalty, premium pricing, lower price elasticity, and trade leverage) the benefits of having brands with a high level of awareness and a positive brand image can be summarized as:

Greater Loyalty
Less vulnerability to competitive marketing actions
Less vulnerability to marketing crises
Larger margins
More inelastic consumer response to price increases
More elastic consumer response to price decreases
Greater trade cooperation and support
Possible licensing opportunities
Additional brand extensions opportunities

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Measurement of Brand Equity

Companies across horizon have invested billions in building brands. Valuating a brand is not a one time task. It’s a continuous process. Companies have to invest huge amount of money to build brand equity and then to maintain it they really have to put in great efforts. Marketers have realised the increasing significance of brand being treated as a prime asset of any organisation. One of the various advantages of having a brand name is that firms can charge a premium for the same products leading to higher profits margins and higher revenues for the firm. The other driving motive behind brand valuation is to leverage the brand value in terms of buying and selling, scrutinizing, unlocking shareholder value or improving the state of the balance sheet. First ever brand valuation exercise was undertaken by Interbrand in the mid-1980’s for Rank Hovis McDougall Company[5].

Measuring brand value is a challenging task. It must deal with three main factors- factual information, qualitative information and skilled professional judgement. There are many brand valuation models, which can be divided into three main parameters- Business finance-oriented models, Behaviourally-oriented models, and Composite models.

Business Finance-Oriented Models

There are many Finance-oriented Brand Valuation approaches such as capital market oriented valuation approach, market-oriented valuation approach, cost-oriented valuation, brand valuation based on the concept of enterprise value, earning capacity-oriented brand valuation and customer-oriented brand valuation to name a few.

“The Market value-oriented brand valuation” approach is the method in which, the value of a brand is determined by referring to the fair market prices of comparable brands. The “capital market-oriented model, pioneered by Simon and Sullivan, defines brand equity as the present value of all future earnings attributable solely to branding. Thus, from the perspective of the financial markets, brand value can be calculated from a company’s stock market capitalisation or market value. But this model is applicable only for stock exchange listed companies.
In the case of a single-brand company, brand value will therefore consist of the company’s capitalised or realised market value. Brand value of a company is calculated by:

Brand Value = (Stock price X Number of Shares) – (Tangible Assets + All remaining intangible assets)

In the case of a multi-brand company the calculation is done pro rata for each brand’s share of total revenues or profits. Brand valuation can also be based on the idea of the *net asset value approach* that is frequently drawn upon in the field of corporate valuation, which is termed as “*cost-oriented brand valuation*”. In net asset value approach, the assets may be valued either at

[5] www.interbrand.com

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their historic cost or at replacement cost depending on the time perspective chosen. Brand valuation with the replacement cost method is done on the principle- what it would cost to today to build up an equivalent brand from scratch. Whereas historic cost assumes that brand is an asset-based on resources that have been invested in it. Not only net asset value but enterprise value is also seen as a base to value brand equity. It also involves the aggregation of marketing and R&D expenditure relating to a brand. This method is used by Cadbury Schwepps for brand valuation.

Another method to determine the brand value of well-known and respected brands is that firms can charge higher prices for the same products, leading to higher profit margins and thus to higher P/S ratios and firm value. The larger the price premium a firm can charge, the greater is the value of the brand name. The value of a brand name is thus written as:

Value of Brand name = (P/Sb – P/Sg) X Sales

where, (P/Sb) = Price/Sales ratio of the firm with the benefit of the brand name, and
(P/Sg) = Price/Sales ratio of the firm with the generic product. [6]

Sander, Crimmins and Herp have proposed models based on price premium. In price premium-oriented approaches, the brand is seen as generating an additional benefit for the customer, for which they are willing to pay a little more. Sander proposed “***Hedonic brand valuation method***”, which is based on hedonic price theory. It explains product prices in terms of various product characteristics, or rather the extent to which they are present. While Crimmins pointed out that there are three dimensions of brand value: actual health, brand breadth and content of brand value.

There are a few other methods like “customer-oriented brand valuation model”, which is based on customer contribution margins. “**Kern’s X-times-model**” which is based on earning capacity, establishes the monetary value of a brand by capitalising the value of potential earnings.

Behaviourally-oriented Brand Valuation Models

Both marketing practitioners and theoreticians have criticised the financial models on the ground that they relied heavily on quantitative factors, when a brand is not the only calculation of value in quantitative terms. Aaker defines brand equity as a set of assets and liabilities linked to a brand, its name and symbol that add to or subtract from the value provided by a product or service to a firm and /or to that firm customers. Customer-based brand equity involves consumers’ response to an element of the marketing mix for the brand in comparison with their reactions to the same marketing mix element attributed to a fictitiously named or unnamed version of the product or service.

Calculation of brand value based on Price Premium method compares the revenues of an unbranded competing product with the brand. Revenues of an unbranded competing product are deducted from the revenues of a comparable branded product to arrive at the premium revenue of the brand. This excess gives the value of the brand. Nike, United Colors of Benetton and Bata, for example, are able to command a higher price even when the product is outsourced. The suppliers

[6] Damodaran, A., “Damodaran on Valuation: Security Analysis for Investment and Corporate Finance”, John Wiley & Sons, Inc., pp. 254 – 258.

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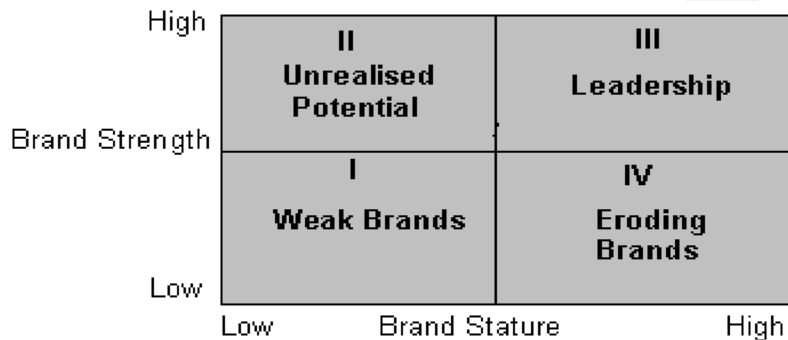
to these companies cannot charge the same price if they sell their products directly to the consumers.

Prominent among the 'Behaviourally-oriented' brand valuation models, the Young & Rubicam model which is based on the principles of behavioural science. The Young & Rubicam model, brand Asset Valuator (BAV) can be used as a diagnostic tool. The BAV model is the result of a large-scale study among 30000 consumers and 6000 brands done in 1993-94 in 19 countries. It is an attempt to value brands by breaking consumer connection into its two parts- brand stature and brand strength.
Brand Strength is a measure of brand distinctiveness that measures how distinctive the brand is in the marketplace and brand relevance measures whether a brand has personal relevance for the respondent. *Brand Stature* is a combination of brand esteem, which measures whether the brand is held in high regard and considered the best in its class and knowledge is a measure of brand understanding, which measures as to what a brand stands for.

Power Grid: Brand Strength vs. Brand Stature[7]



The Power Grid sets the strategic process by identifying the strength or weakness of a brand. On the vertical axis we plot the brand strength - its relevance and differentiation, while on the horizontal axis, the brand stature -esteem and knowledge.

Quadrant I: Weak brands that could not leverage their strengths.

Quadrant II: Here the brand managers have not been able to realise the true potential of the brand. The strategy should be to build the stature of the brand.

Quadrant III: The challenge for the brand here would be to continue being a leader.

Quadrant IV: The last quadrant spells "Danger" for the brand, an indicator of eroding potential. These brands have failed to maintain their Relevant Differentiation (their core strength). If unattended, their Stature will also begin to fall. Unless steps are taken to stimulate the differentiation and relevance, these brands will lose Esteem and could eventually fade from consumers' consciousness.

[7] Chevron, Jacques, "*Valuing Brands, on Paper and in Truth*", Brandweek; Jan 2000.

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The value of a brand depreciates if there is no continuous value addition. This is critical for the brand to be a source of competitive advantage. The task of a marketer is to go beyond measuring and leveraging the value of the brand and add perceptible value continuously.

Walker and Chip in their paper, "*How strong is your brand*", discusses brands with high familiarity and high esteem.

Brand Value = f {[brand strength (differentiation, relevance)] and [brand stature (esteem, knowledge)]}

McKinsey defines the three Ps of the brand and gives a function "**Quantitative brand strength elements = f (performance, personality, presence of the Brand)".** This method for determining brand value operates on the assumption that brand strength is definitively quantifiable. But this method does not determine aggregate brand value, but rather quantifies as target values for individual benefit components of brands from a brand management perspective and can be viewed as a model based on behavioural science only in terms of the drivers of the three P's of the brand.

Interbrand Consulting firm's brand value system considers an earnings-based approach. The Interbrand model seeks to estimate the risk and inflation-adjusted benefits- the current and future earnings or cash flows – flowing from brand ownership. Under this model, the value of a brand is a function of two factors: its earnings and its strength. While the brand's earnings are a measure of potential profitability, the brand's strength is the measure of its reliability of its future earnings. The greater the brand's strength, greater is the reliability of its future earnings and lesser is the risk. Since it is difficult to attribute all the earnings to the brand *per se*, adjustments need to be made to the earnings estimates.

In this model first of all the unbranded profit i.e., earning that would have accrued on a basic unbranded versions of the product is eliminated and the historical profit at present day value is restated and adjusted for taxes. To calculate the actual brand earnings the profit attributable to other intangible associated with the business of the brand is deducted. It calculates the brand value by multiplying brand earnings with the brand strength multiple. This brand strength multiple is a function of multiple factors like leadership, stability, market, internationality, trend, support and protection. These factors are evaluated on a scale of 1 to 100 to calculate the Brand multiplier. But this approach is widely used in the context of mergers and acquisitions; it suffers from the lack of accounting focus. This stems from the desire to ensure that the value arrived at its auditable. Further from a marketer's perspective, the Interbrand approach does not explicitly measure consumer's perception of the brand, which is critical for marketing decision-making, especially on brand extension.

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THE INDIAN CEMENT INDUSTRY[8]

Background and Development

The Indian cement industry has historically been a Government-controlled sector. During the over-eight decades of existence since 1914, it has experienced many policy changes on the regulatory front before emerging today as a totally decontrolled, market-driven industry. The important milestones in the decontrol process are as depicted below.

Indian Cement Industry—The Road to Deregulation

1958-69 Three-tier pricing mechanism. Control on distribution in all years except during 1966-67.
1969-79 Single pricing mechanism. Full control on distribution. Prices fixed on the basis of guaranteed return on capital employed during 1975-77. From 1977, prices (for new units and expansion of existing units) fixed on the basis of guaranteed return on net worth.
1979-82 Single price for new units. Three-tier pricing for existing units. Full control on distribution. Return on net worth used as the basis for price fixing.
1982-89 Partial control on pricing. Units allowed to sell 33.3% of production in open market. Full control on distribution. Minicement plants freed from price and distribution controls. Capacity fixed at 200 tonnes per day (tpd).
1986 Capacity limit of mini-cement plants increased to 300 tpd from 200 tpd.
1987 Capacity limit of mini-cement plants increased to 600 tpd with levy obligation on incremental production above 300 tpd at the rate of 15% of actual production.
1985-86 New plants allowed to sell 50% of their output in the open market.
1987-88 Open market sales allowed up to 70% from the earlier level of 33.3% (50% for new units).
1989 Full decontrol effected.
1991 Industry delicensed.

Broadly, the Indian cement industry has undergone three phases so far:
Phase1: Period of Total Control (lasting till 1982)
Phase2: Period of Partial Control (1982-1989)

[8] This section of the report has been prepared with inputs from the ICRA website, www.icraindia.com and reports on the Indian Cement Industry published by Kotak Securities Limited, through Mr. V. Chakravartti, Associate VP, Kotak Securities Limited, Calcutta.

Phase3: Period of Total Decontrol (after 1989)

During the period of total control, both price and distribution of cement were under Government control. Further, the prices fixed by the Government were often insufficient to cover the cost of production. Consequently, there was a nominal growth in capacity addition. Subsequently, with the initiation of decontrol measures in 1982, a number of cement manufacturers entered the sector. Accordingly, cement capacity (as well as production) in the country has experienced a four-fold growth since 1982.

Industry Structure

Large Cement Plants

With an installed capacity of about 135 million tonnes per annum (mtpa), large cement plants accounted for 92% of the total installed capacity in India at end-FY2002. The structure of the industry is fragmented, although concentration at the top is increasing. The fragmented structure is a result of the low entry barriers in the post decontrol period and the ready availability of technology. However, cement plants are capital intensive and require a capital investment of over Rs. 3,500 per tonne of cement, which translates into an investment of Rs. 3,500 million for a 1 mtpa plant.

The installed capacity is distributed across 120-odd large cement plants owned by around 50 companies. The cement industry has witnessed substantial reorganisation of capacities during the past couple of years. Some recent examples of consolidation include: Gujarat Ambuja picking up a 14% equity stake in The Associated Companies (ACC); Gujarat Ambuja taking over DLF Cements and Modi Cement; India Cements taking over Raasi Cement and Sri Vishnu Cement; Indian Rayon’s cement division merging with Grasim; Grasim taking over Sri Digvijay Cements and acquiring a 10% stake (subsequently raised to 14.15%) in Larsen and Toubro (L&T). Multinational cement companies have also taken the acquisition route in the Indian cement market. Lafarge, the French cement major, has acquired the cement plants of Raymond and Tisco in the recent past, while Italy-based Italcementi has acquired a 50% stake in the K.K. Birla-promoted Zuari Industries' 1.7 mtpa cement plant in Andhra Pradesh. L&T (including subsidiary Narmada Cement) and ACC (including subsidiary Damodhar Cement and Slag Ltd.) have emerged as the joint largest players in the Indian cement industry with capacities of around 16 mtpa each. The Gujarat Ambuja Group is the third largest player with a capacity of about 13 mtpa followed by Grasim with a capacity of 12.4 mtpa (which includes 1.08 mtpa of Shree Digvijay Cement).

If one takes into account the strategic alliance between Grasim and L&T, and between ACC and Gujarat Ambuja, one finds that ACC-Gujarat Ambuja is the largest player with an installed capacity of 29.07 mtpa followed by Grasim-L&T with an installed capacity of 28.44 mtpa. These two groups of companies account for 42.6% of the total installed capacity for cement in India. This, in fact, is a pointer to the increasing trend of consolidation in the Indian cement industry.

Declining Role of Public Sector

Historically, cement has been one of the most important manufacturing sectors for India’s private enterprise. Unlike much of the heavy industry and utilities sectors, cement was not deemed to be the exclusive preserve of State enterprise in the post-Independence development strategy.

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Besides, cement was also the industry of choice for many corporates diversifying away from the traditional but troubled areas of jute and textiles.

Over the years, the share of the public sector in cement production has only declined. In FY2002, while the private sector (large companies) accounted for about 92% of the total installed capacity for cement, the share of public sector companies had declined to about 8% from around 11% in FY1996. The production share of the public sector was even lower at less than 2% in FY2002 as compared with 6.5% in FY1996.

Among cement public sector undertakings (PSUs), Cement Corporation of India (CCI), a central PSU, is the leading player. It has 10 cement plants with a total installed capacity of 3.85 mtpa as at end-FY2002. Other PSU companies manufacturing cement include State entities such as the UP State Cement Corporation (three units with a total capacity of 2.59 mtpa); IDCOL, an Orissa State enterprise (capacity of 0.96 mtpa), and Tamil Nadu Cement (two plants with a total capacity of 0.9 mtpa).

Given the extent of losses being incurred by most of these plants, restructuring and revival through privatization appear imminent. Already, CCI's Yerraguntla (Andhra Pradesh) unit has been taken over by India Cements (since FY1998) even as the three units of UP State Cement Corporation are lying closed since early 1998. Grasim Industries has recently expressed interest to acquire the Chunar and Dalla units of UP State Cement Corporation.

The Mini-Cement Industry

The main attraction of the mini-cement plant (with capacity less than 0.198 mtpa) concept is the lower capital costs per tonne of capacity as compared with large plants. Against the requirement of Rs. 3500+ per tonne capacity for large plants, the capital costs for mini-cement plants work out to Rs. 1400-1600 per tonne. This reduces, to a large extent, the fixed cost per tonne of cement produced. Also, as the main market is in the vicinity of a mini-cement plant, savings on transportation costs are large.

All these benefits, however, are negated by other factors like the diseconomies associated with small-scale operations, significant competition from large-scale units, and rising cost of production. The mini-cement plants rely almost entirely on the State Electricity Boards (SEBs) for power supply, since captive generation is uneconomical, given their small size. Primarily, the mini-cement plant concept was conceived to utilize isolated limestone deposits too small to support a large cement plant. Strategically, the policy makers may have viewed them as a counter weight against concentration, both in terms of output and as a means of reducing the threshold entry barrier.

Demand- Supply Scenario

It has been observed that cement consumption increases along with a rise in per capita income in developing countries. Thereafter, once all the major developmental projects are in place and the country has a per capita income comparable with that of the developed nations, the demand for cement stagnates/declines. Accordingly, the per capita cement consumption also stagnates/declines. Growth in population density is a minor (but steady) driver of demand growth for cement in all countries. Cement consumption has a strong co-relation with growth in a country's gross domestic product (GDP). High GDP growth leads to high cement consumption and vice versa. The cement intensity of GDP (i.e. rate of growth of cement consumption relative to GDP growth) is different for different countries. For an under-developed country, the cement

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intensity of GDP is very low. It rises with the progress in economic development, reaches a peak level, and then starts declining once all the developmental projects are in place and the country has achieved a very high level of economic growth. Future drivers of cement demand growth in India would be the ongoing reconstruction activity in Gujarat, road projects (especially the Golden Quadrilateral project in which over 1,600 km of roads are supposed to be made of concrete) and housing projects (the Government is targeting construction of 2 million housing units per annum: 1.3 million in rural and 0.7 million in urban areas). The road projects by themselves are expected to boost cement demand by about 4 mtpa.

The National Highway Development Project

Project	Total Length (km)	Route	Already Completed (km)	Under Implementation (km)	Contracts to be awarded for (km)	Completion Target
Golden Quadrilateral	5846	Delhi-Mumbai-Chennai-Kolkata-Delhi	1159	4551	136	Substantial completion by December 2003
North-South and East-West Corridors	7300	• Srinagar – Kanyakumari • Silchar-Saurashtra	800	688	5812	December 2007
Connectivity to 10 major ports	363	Kandla, Jawaharlal Nehru, Mormugao, Mangalore, Cochin, Tuticorin, Chennai, Ennore, Vizag, Paradip, Haldia	56	113	194	December 2005
Others	653		136	179	338	December 2007

Source: Ministry of Road Transport and Highways

Housing demand in India is expected to remain robust over the medium term because of factors such as low real estate prices, tax relief against interest cost on housing finance, low interest rates, increasing competition in housing finance, and availability of housing finance for duration as long as 30 years.

The demand-supply projection for cement shows that at the current level of capacity utilisation, in the base case, there would be a surplus on an aggregate basis during the next three years. A region-wise analysis reveals that while the Northern and Eastern regions are likely to show a balanced/marginal deficit situation, the Southern and Western regions would have a surplus. This pattern is likely to have implications for cement companies in the Southern and Western regions in terms of:

a. restrictions in incremental capacity addition. Cement companies have been adding incremental capacity either through the debottlenecking route or by manufacturing blended cement. The future may see lesser of such capacity additions;

b. decline in capacity utilisation level; and

c. targeting of export markets and/or deficit regions in the domestic market.

Future demand growth, capacity utilisation levels, and incremental capacity additions (through debottlenecking/manufacturing blended cement) remain critical variables affecting the demand-supply balance in the domestic cement market. Further, significant improvement/deterioration in the international markets may impact the volume of cement exports and hence would have an effect on the domestic demand-supply position.

Financial Performance

The Indian cement industry witnessed an impressive volume growth during the first five months of FY2003. During this period, while cement production was higher by about 11.6% over the corresponding previous, the dispatches were higher by 11.2 %. The corresponding growth figures for the first five months of the previous year were much lower at 2.8% and 3.4% respectively. The recent demand growth in cement is attributed to the implementation of the Government-mandated road projects and the increase in the demand for housing following the decline in interest rates and the provision of other fiscal incentives.

Although there was a volume growth in the industry, price realisations were under pressure across all regions (except the Eastern region where prices started rising in the second quarter on the strength of a relatively superior demand-supply situation) because of oversupply.

Key Success Factors

Competitive forces in the Indian cement industry have forced it to take internal steps and manage external control factors as well. The internal measures include making changes in process technology, achieving higher economies of scale through higher capacities, and implementation of technological innovations/process improvements for increasing operating efficiencies. The external measures include taking effective steps to manage critical issues, with external variables—such as, coal, power and freight—affecting operations.

The following as the key issues that decide the profitability of a cement company:

Location
Cement being a high bulk and low-value commodity, outward freight accounts for close to one-fifth of the total cost. In addition, for every tonne of cement produced, close to 1.7 tonnes of raw material (including coal) have to be transported. In this scenario, the location of a cement plant assumes crucial importance. While deciding on the plant location, a trade-off has to be made between proximity to raw material sources and nearness to the consuming markets. A split-location cement plant can be a good compromise between the two options. Besides these, there are other locations issues such as logistics (evacuation of cement by rail, road or waterways), power availability in the region, and availability of materials (limestone, coal, slag, etc).

Energy Efficiency
Energy (coal and power) accounts for over 32% of the total cost of cement production and is the single largest cost component. The issue here is the technology used (dry versus wet process), fuel efficiency (efficient use of coal/lignite/any other material used for burning) and power efficiency (power availability, unit power consumption, cost and availability of captive power). The most efficient cement companies can achieve power consumption of less than 90 kwh/tonne and fuel consumption of less than 800 kcal/tonne. The scope for cost reduction through better energy efficiency may now be limited for better performing companies since they have already reached the best feasible levels.

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However, for new companies, the issue of energy efficiency will always be very important.

Size
As in the case of any commodity industry worldwide, economies of scale are becoming important in the cement industry as well. With the consolidation of capacities, the top five companies currently account for 48.5% of the total industry capacity. A green-field cement plant is viable today only with a capacity of well above 1 mtpa. Acquisition of existing cement companies (especially when they are available at cheaper valuations), rather than setting up a new plant, is the preferred mode of growth now.

Access to Capital
There are no apparent entry barriers in the cement industry. But as has been witnessed in the past, the entry of new players is getting restricted. During the last five years, only four new companies, namely, Prism Cement, DLF Cement (now Ambuja Cement Rajasthan Limited), Indo Rama Cement (grinding unit) and Binani Cement, have added capacity of 5.9 mtpa (17% of capacity addition) out of a total capacity addition of 34.5 mtpa during the period. The rest of the capacity addition has come from existing players.

Since the capital intensity of a new cement project is high, access to capital has become a significant entry barrier. Existing players have managed to access capital either through strong accruals during the boom years (pure cement companies like Gujarat Ambuja, Madras Cement) or through cash coming from other businesses (diversified players like Grasim, Indian Rayon, Larsen & Toubro).

Outlook

Cement demand in India is likely to witness a healthy growth in the medium term. While improvement in economic conditions is expected to be an important driver of demand growth in cement, the road and housing sector projects envisaged (and under way) are expected to be the other key dictators of volume offtake. While the current demand-supply position in the domestic market does not warrant any significant price improvement in the immediate term, the growing concentration in the industry may push up price realisations in the medium term. Such price appreciation would be aided by any improvement in demand fundamentals, given that no significant capacity additions are in the pipeline.

On the cost side, Indian cement plants face the problem of increasing manufacturing costs, as they do not have control on the external cost elements, such as energy and freight. Accordingly, the future would see a greater focus on cost control and efficiency improvement (use of alternative fuel, setting up of split-location plants, addition of balancing equipment, and enhancement of captive power generation facilities). Such measures would seek to ensure that the cement companies are in a better position to face economic troughs.

During the past few years, increased concentration in the Indian cement industry has improved the understanding among major cement players and given them significant pricing power. Accordingly, intermittent oversupply in the market is not a matter of serious concern any more and is likely to be overcome through the control of domestic despatches and/or tapping of export markets. The future would also see greater consolidation, and the fragmented structure of the Indian cement industry is likely to give way to a more consolidated one. Only players with deep pockets, who increasingly focus on enhancing operating efficiency, have high economies of scale,

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are not dependent on few regional markets, have good distribution logistics and possess a good brand name, are likely to survive in the long run.

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