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Ready Mix Concrete: An Industry Perspective on Challenges & Opportunities for Growth

Shailendra Chouksey

C-18, Sector 44, Noida, Dist. Gautam Budh Nagar, Uttar Pradesh 201301

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Concrete is most commonly used versatile modern day construction material. While the civil constructions may be as old as human civilization, yet in present day context, it is rather difficult to imagine any construction which does not use or does not require concrete.

What is concrete?

To put it very simply the concrete is nothing but a homogeneous mix of cement with stone aggregates, construction sand and water. Some construction chemicals such as plasticizers or admixtures may be added to this mix to impart certain properties and characteristics to the concrete. It is plastic & wet when freshly mixed and has no strength, but is very hard and brittle when it is dry.

The concrete is generally used with steel bar reinforcements, in which the flexibility or bending strength is provided by the reinforcements, and rigidity or compressive strength is provided by cement concrete.

How is concrete mixed and used?

Traditionally the history of concrete is as old as the history of Ordinary Portland Cement (OPC), when various ingredients to the concrete were measured in volume and were mixed manually at the construction site. This method of mixing is known as "Volumetric Mixing" and the cement concrete thus produced is called "Site Mix Concrete" or SMC.

"Ready Mix Concrete" or RMC as it called is mixed away from the construction sites by mixing ingredients by weights in automatic plants and is delivered to construction sites in truck mounted drum mixers called "Transit Mixers" or "Truck Mixers".

Early History of Ready Mix Concrete

This method of mixing concrete was first invented and patented by Germans more than 100 years ago in 1903. But for a few years this method did not become popular as there was no suitable method of transporting the concrete to construction sites. The first commercial delivery of concrete was made in 1913 in Baltimore, USA using a small drum type transit mixer and the first ready mix concrete plant was set up at Heathrow airport site in London in 1931.

Growth of Ready Mix Concrete

From its early days and till World War II, there were only six firms that were producing ready mix concrete in UK. Post war construction activities in Europe including UK provided the real boost to the growth of RMC industry. It is estimated that as on date there are more than 6000 companies that are engaged in manufacturing of RMC in whole of Europe. These companies put together deliver more than 300 million M3 of concrete annually to the construction site and account for more than 50% of total cement consumed.

Similarly in USA while in 1933, only 5% of total cement was utilized through RMC route, it is estimated that in early 1990s, RMC industry consumed nearly 2/3rd of the cement produced.

Elsewhere in Japan, though the first RMC plant was set up in 1949, but by end of 1980s, there were more than 4400 RMC plants which delivered more than 180 million tons of concrete every year.

We can consider Europe, America, and Japan as mature markets for RMC and a close analysis of the growth pattern in this market indicate that the growth of this industry can be divided into following three phases

1. Introduction Phase – i.e. phase in which the product is in early stages of introduction and adaption by the customers. Typically up to 10% of cement is consumed through RMC.
2. Growth Phase – There is rapid growth in consumption of cement through RMC and we can consider up to 50% of more of total cement consumption through RMC as part of this phase.
3. Consolidation Phase or maturity phase – Cement consumption through RMC plateaus and stabilizes at a level from where the growth is very nominal, say 1-2% in a year.

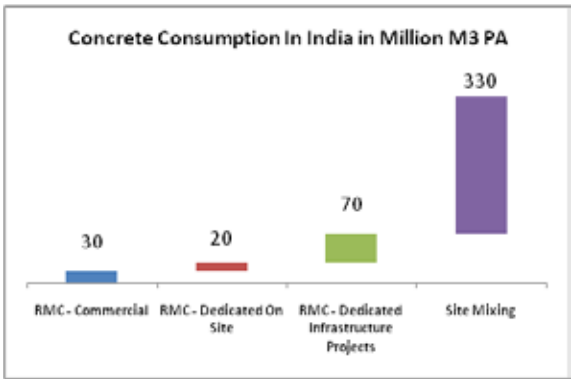
The growth history of RMC in different markets which we can consider as mature markets for RMC, show different growth patterns in terms of the number of years it took to reach a certain level of maturity. The table as below correlates the Growth Phases with Growth Patterns in different countries in history of RMC

Growth Pattern	No. of Years to reach maturity	Countries
Rapid growth	20 – 35	Greece, Finland, Japan, Germany, Switzerland etc.
Normal Growth	35 – 40	Spain, UK, USA, Austria, Australia, Sweden, etc.
Slow Growth	45 & above	Portugal, France, Netherlands, Denmark, etc.

Ready Mix Concrete in India

Though the history of modern cement in India is now approx. 100 years old, the first commercial RMC plant was set up in 1993 in Pune. Since then the number of commercial RMC plants in both organized and unorganized sectors have grown to more than 800, though the total number of automatic batching plants In India well exceed 2000, with rest being set up by the contractors and construction companies on the construction site itself. These are also known as dedicated plants for captive consumption.

While many authors who have published articles on this industry do not consider captive batching plants as part of RMC domain, but to my mind it will be erroneous if the captive plants are ignored, because in terms of concept and functioning these plants are same as any other commercial RMC plants. However, these agencies ignore the benefits of outsourcing from RMC manufacturers who have developed core competency in this segment for producing optimum quality product suitable for their specific purpose.



The total annual concrete consumption in India is estimated at about 450 Million M3, this also includes the consumption of concrete in infrastructure projects which typically have dedicated weigh batching

plants. In addition there are many large building construction sites which have dedicated weigh batching plants. The breakup of the total concrete consumed between the concrete produced by dedicated weigh batching plants, commercial RMC plants, and volumetric site mixing can be seen from the following graphic

Therefore while commercial RMC may be just about 7 – 8% of the total concrete consumed in India, the concrete produced by weigh batching is above 25% of the total concrete.

Many authors on this subject tend to ignore the fact that the difference between the RMC and site mixing is not in who is doing it but is in how it is done. Hence taking this fact into consideration, the cement consumed through RMC in India is already in the range to 15 – 20% of total cement, which puts India at par with the rest of the world in terms of the growth of RMC.

The key difference between India and other countries is not in the fact that how the concrete is produced but is in the fact that where it is being produced, and this has more to do with the construction practices and industry structure that is unique to India.

Construction Practices in India

For the limited purpose of this article, practices in the construction involving use of concrete only have been considered. Barring infrastructure projects, these constructions typically involve multi – floor framed structures, in which the entire load of the building is on the column & beams which are of concrete. The roof is also cast in reinforced concrete.



Jurong-Mega Housing Project,Madhurawada. Sy.No: 394,395,396/p,397/p,Visakhapatnam-41.

As can be seen from the picture above, the casting of the concrete is done at the construction site, unlike in Europe or in mature markets where the majority of the construction involve use of pre cast concrete elements as shown in the pictures below


Construction of Railway Terminal Building in London Factory Building Construction

The constructions as above involve use of pre cast columns, beams, and roof panels, which are produced off the site and are simply brought and assembled at the construction sites.

This practice is still at its very nascent stage in India and is unknown to the vast majority of builders and contractors. Since the concrete is a perishable product and it loses its freshness and strength with delay in use, the preference is always for the concrete which is freshly mixed.

Why Customers have not fully adopted Commercial RMC?

In a few interviews with this author, some of the leading builders and contractors described following three reasons to not to use commercial RMC

1. Uncertainty about Quality – they do not trust RMC manufacturer who is producing concrete away from their construction sites
2. Uncertainty about delivery – they do not trust that the RMC manufacturer will deliver in time
3. Cost – site mixing is perceived to be less expensive

Based on above factors, any builder or contractor who has reasonable big construction project and has sufficient space at the construction site prefers to put a batching plant on the construction site itself, rather than depend upon any commercial RMC manufacturer to supply the concrete. This practice is more prevalent in North & East where the construction sites are reasonably large and space is not a constraint.

However, the big metropolitan cities in West & South like Mumbai, Pune, Bangalore, Chennai etc. are exceptions to the above due to following reasons

1. Construction sites typically in these cities are much smaller and hence setting up of onsite batching plant is not feasible
2. Municipal laws related to keeping of construction materials on site and the disposal of construction waste material are much more stringent and are enforced.
3. High rise construction demands use of concrete in higher grades which requires technical expertise
4. Difficulty in sourcing of construction materials like aggregates and sand in these cities

Hence it is in these cities, the commercial RMC is much more successful as compared to anywhere in India.

Is RMC business a natural extension of cement?

Globally, big cement companies have significant presence in RMC and significant portion of their sales is from this business. This can be seen from the following table

Cement Company	% of total Sales from RMC	% of cement through RMC
Lafarge	32%	8%
Holcim	37%	11%
Cemex	34%	10%

As is seen from the table that RMC not only contributes significantly to sales but it is also a channel for cement distribution. It should be noted here that these global cement giants have dominant share in cement market mostly in Europe and Americas, where the cement demand is already saturated and the construction practices involve use of precast concrete. Hence the strategy for these cement manufacturers in these market is first to supply cement in bulk to the manufacturers of precast products and then use RMC as distribution channel for their cement. The sales of cement in bags hardly constitutes 10 – 15% of the total cement.

This growth strategy of the MNC cement giants has successfully emulated by mid market cement company like Bursa Cement in Turkey, which produces pre cast products, supplies Ready Mix Concrete and thus consumes nearly about 60 – 70% of cement produced captively.

However, in India the same strategy adopted by some of the leading cement manufacturers is yet to be proved to be successful as

1. Captive consumption of cement through Ready Mix Concrete is just hovering around 3-4% of the total cement produced.
2. The capacity utilizations are in the range of just 30 – 40%, indicating severe underutilization.
3. The operating margins are in the range of 4 – 6% and ROCE for the most of cement companies in RMC business is negative.

What cement companies in RMC business can do to make the business grow and profitable?

There are many articles and studies which argue that it is only matter of time that the RMC in India shall grow and RMC penetration in India shall reach to the levels as has been seen in the mature markets. However key to this shall largely be dependent on the ability of RMC players to increase the universe of RMC users and converting current non users into users.

The graph below shows the growth patterns of key players in RMC business in last 4 years

What we see is either static or very low growth for a player in RMC business in an industry where the use of RMC is seeing a CAGR of nearly about 20 – 25%. This clearly highlights the point that the leading players in this business have failed to create any position for themselves in this space. While there are more and more users who need RMC for their construction activity but the proportion of these wanting to buy from any RMC player is decreasing.

A key aspect of the RMC market in India is that it is a predominantly low grade or medium grade concrete market, where the users producing it themselves in own captive batching plants do not see as any major technological challenge.

Any player in this business focussing on the ordinary or medium grade of concretes is likely to face tough customer resistance that will force it to compete on prices like any other commodity market and hence result in lower returns.

High grade of concrete like M45 or above require stringent process control and technical expertise, which may not be available with all the customers. Yet this as an area of opportunity is ignored by most players in this business, even when the operating margins in these grades are nearly 3 times than the operating margins in low or medium grade concretes.

Grade of Concrete	Approx. Operating Margins per M^3
Low – M10 to M20	400 – 500
Standard or Medium – M25 to M40	600 – 800
High – M45 to M55	1000 – 1200
Very High – M60 & above	1500+

There is also a significant chunk of customers, who still continue use traditional volumetric mixing by manual methods. These customers are mostly Individual House Builders and Small Builders & Contractors, who cannot set up dedicated batching plants because of small volumes and are also ignored by those who set up batching plants for commercial sales of RMC.

Hence in nut shell commercial RMC manufacturers on one hand ignore the market which need then, ignore products which can get higher value; and on other side they run after the customers who do not need them and focus on products which cannot be differentiated. End result is a "Red Ocean" fight for market share of a limited market and this fight invariably leading to price cuts, extended credits etc. finally resulting into bad debts and loss of profit for the business.

The need for the commercial RMC manufacturers to make this business profitably grow is create a "Blue Ocean" demand by focussing on entirely new set of customers who need them and on new products. Using BOS framework the four actions needed for profitable growth can be summed up as follows

Eliminate	Raise
• Non Profitable Customers • Non Profitable Products	• Market share with customers to whom RMC is relevant • Share of high grade concrete in total volumes
Reduce	Create
• Consumption of materials through better mix design • Cost	• New differentiated products

Emerging Opportunities

Till now the concrete is being looked upon as something that is very basic to construction and fulfils functional needs.

However the recent technological advances, process controls, and product innovations have made it possible for this product to move beyond traditional functionality boundaries and fulfil inspirational needs of architects and house builders.

Today concretes can be used to create floor finishes which can completely eliminate the need for any tile work or any other work that is needed to finish the floor. Some of the examples of such floor finishes such as "Acid stained concrete floor" or "Stamped Concrete with wooden floor look" can be seen in the pictures below



Acid Stained Concrete Floor Stamped Concrete with wooden floor look

These decorative concretes can not only be used in interiors but are extensively used in exteriors as well.

In addition there concretes like porous concretes which when used in pavements allow the rain water to seep into the ground and recharge underground water reservoirs. Light weight foam concretes are used for insulation and reduce electricity consumption in HVAC systems.

Likewise there are many other ways in which the concrete can be innovatively used to create value for the customer as well as protect the environment.

Conclusions

The importance of concrete as modern day construction material cannot be denied. In fact the innovative use of concrete can only add to its importance in coming time.

For RMC business to increase its commercially viability in India and its relevance as growth strategy for a cement company, the players in this market need to look beyond the traditional boundaries defined by existing market segments and product offering. Globally cement companies like Lafarge, Holcim, and Cemex etc. are investing in innovation through concrete and are focussing on high end products and market segments. Holcim looks at 8% operating profit margin from this business, which would approx. translate to about 15 - 16% ROCE and make this business comparable to the core business of cement in terms of the returns to share holders.

In our view the growth of RMC usage in India is unstoppable. However, for commercial RMC to register same type of growth they would have to tweak their strategies in order to increase the proportion of concrete users buying from commercial RMC plants.

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