EqipTech

**Heavy Earth Moving Machinery Business Analysis:**

*A stepwise study on Country level to Industry level to Firm level (Chapter –I)*

*Home Country – Japan , Host country – India (Chapter – One)*



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- ***Abstract :***

*This study is made to analyse various level of business overview of Heavy Earthmoving Machinery. Since past many decades, Japanese firms are showing advanced engineering excellence for this segment apart from American & European manufacturers. And India as an emerging economy with rich reserve in natural resources became lucrative market for Global technology provider/manufacturers. Therefore, we considered "Japan" is the home country Or, the country of origin for the technology provider and "India" is the host country which mainly beneficiary of these technology/product/services from the home country "Japan". The overall report has been made in two different parts, e.g; Country and Industry level analysis (Group work) and Firm level analysis (Individual work). For firm level analysis, we considered two Japanese manufacturer, e.g; Komatsu and Hitachi construction machinery.*

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- **Introduction :**

HEMM is a specific segment under "Construction and Mining equipment" which covers a variety of machinery such as hydraulic excavators, wheel loaders, backhoe loaders, bull dozers, graders, cranes, off-highway dump trucks, drills, scrapers, rope shovels etc. They perform a variety of functions like preparation of ground, excavation, haulage of material, dumping/laying in specified manner, material handling, construction etc. These equipment are required for both construction and mining activity.

Prior to the 1960s, domestic requirements of mining and construction equipment were entirely met by imports. Countries like Japan, USA, UK were always first movers in Indian market for imported equipment. Domestic production began in 1964 with the setting up of Bharat Earthmovers Ltd.(BEML), a public sector unit of the Ministry of Defence, at Kolar Gold Field in South India to manufacture dozers, dumpers, graders, scrapers, etc. for defence requirements under licence from LeTorneau Westinghouse, USA and Komatsu, Japan. In the private sector, the Hindustan Motors' Earthmoving Equipment Division, was established in 1969 at Tiruvallur, near Chennai with technical collaboration from Terex, UK for manufacture of wheel loaders, dozers & dumpers. In 1974, L&T started manufacturing hydraulic excavators under license from Poclain, France. In 1980 and 1981, two more units, Telcon and Escorts JCB commenced manufacture of hydraulic excavators (under license from Hitachi, Japan) and backhoe loaders (under license from JCB, UK) respectively.

After first stage of penetration by Global MNC in to Indian market, the dynamics of their business strategy has been changed and the market has witnessed many merger & acquisition, subsidiary, Joint venture, collaboration towards establishing their operation in India as a host country. The Tiruvallur factory of Hindustan Motors has been taken over by Caterpillar for their Indian operations, Escorts JCB has been taken over by JC Bamford Excavators Ltd. U.K. in 2003 and is now called JCB India Ltd., Komatsu broke up their tie ups with BEML and formed JV with L&T, Telcon and Hitachi formed JV TATA HITACHI etc apart from new entry by many MNC like Volvo, Kobelco, SANY, Hyundai etc with more sophisticated and advanced technologies. The market became highly competitive and also a major export hub for nearby regions like ASEAN, Africa etc.

The friendship between India and Japan is a long relationship rooted in strong cultural and civilizational ties with the earliest documented direct contact between India and Japan dating back to 752 A.D. In the modern era, the two countries have sustained their strong relationship as evidenced by several high-level meetings and economic ties.

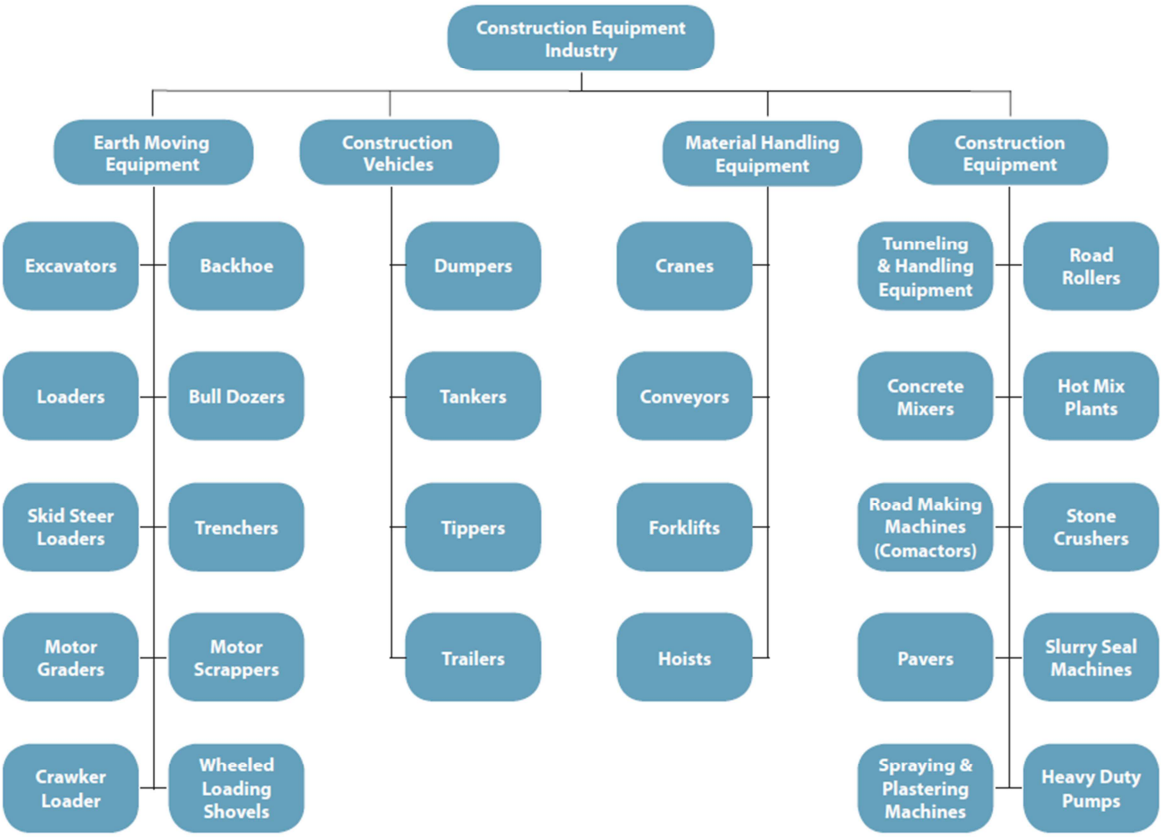
In this study we picked up two firm's strategy from Japan (Komatsu & Hitachi) followed by their home country level and Industry analysis. By the help of this study, we have tried to identify their various strategies like entry, competition, sustenance, control and lead. We analysed their different steps through various strategy framework and tried to visualise their future move for the host country "India".

The industry has made substantial investments in the recent past for setting up manufacturing bases, global sourcing destination, global technology/R&D centre etc to cater International market along with Indian market. Example- Catterpillar parent company is sourcing engine and other critical items from it's Chennai plant, Tata Hitachi exports from Kharagpur plant, Komatsu exports from it's Komatsu India plant etc. Therefore, analysis of overall International Business Strategy adopted by

Global MNC in India is a prime objective for preparing this report and we have selected two Japanese firm Komatsu and Hitachi in this regards.

Many factors in India like present policy, market demand etc are also analysed to identify & recomend their further strategy. Like present “make in India” initiative favors domestic firms and discourage imported equipment and assemblies for getting entry into Indian market.

- **Market classification :**

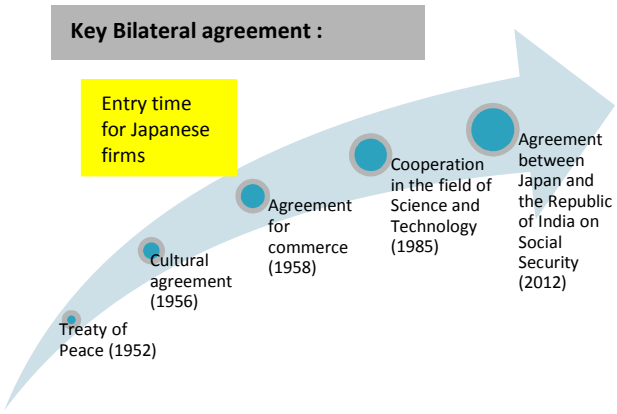



- **Country level Analysis :**

Massive mechanisation in earthmoving & construction works happened in India just after independence. After world war II, Japanese manufacturers were started targeting India as a potential market place. Ever since the establishment of diplomatic relations, the two countries have enjoyed cordial relations. In the post World War II period, India's iron ore helped a great deal Japan's

recovery from the devastation. Following Japanese Prime Minister Nobusuke Kishi's visit to India in 1957, Japan started providing yen loans to India in 1958, as the first yen loan aid extended by Japanese government.

The people of India and Japan are guided by common cultural traditions including the heritage of Buddhism and share a strong commitment to the ideals of democracy, tolerance, pluralism and open societies.




India and Japan, two of the largest and oldest democracies in Asia, having a high degree of congruence of political, economic and strategic interests, view each other as partners that have responsibility for, and are capable of, responding to global and regional challenges.

Many Japanese manufacturers started take entry into Indian market after the Agreement of Commerce signed between India and japan on 1958.

During this time, M/s Komatsu entered into technology transfer agreement with India's Ministry of Defense to manufacture crawler tractors at an establishment in India.

- **Pressure to push for Globalisation :**

- **Downfall of domestic demand :**

  For the past 40 years, Japanese companies achieved global leadership by dominating their home market, but no longer. Japan's population is expected to fall from 127 million today to less than 100 million between 2040 and 2050. A declining population will almost certainly reduce the absolute level of private consumption, along with tax revenues and, potentially, overall GDP. Private consumption in Japan, at the end of 2008, stood at 220 trillion yen ($2.7 trillion), 59 percent of GDP. It is (optimistically) forecast to reach 293 trillion yen in 2040, with an underlying assumption of an absolute increase in GDP per capita of more than 50%.

- **Lagging productivity at Home country :**

  Japan has among the lowest labor productivity rates of any major developed country. Japanese companies are therefore generally less competitive and more vulnerable to foreign attackers at home. Japanese workers tend to be among the world's most diligent, but they are both collectively and individually inefficient—particularly those who do not toil in factories. This factor push them to outsource and setting up manufacturing set ups to their favorable nation destination like India.

- **Low return on Investment in Home country :**

  The interest rate in Japan is very low which enable the Japanese investors/companies to invest foreign countries. Better return from emerging economy like India is also encourages Japanese companies to invest in India.

- **Global competition :**

  In the HEMM & heavi engineering segment, the prime competitor for Japan is US and UK which are already having substantial market share in various home countries including India. Therefore, to lead & sustain in the Global market, it was a compulsion for Japanese manufacturer to penetrate emerging economies. In Asia and Africa, Japanese manufacturers are having some advantages over US/UK in Global Suppy chain, cultural similarities, favorable investment scenarios etc.

- **Market opportunity & emerging economy in host country :**

  Since past three decades many countries came under emerging economy's category which indicates rapid enhancement of GDP growth, per capita income, employment opportunities, Business easiness etc. Many of them are mineral rich countries with substantial reserve in natural resources which are needed to be explored for trade & commerce. Therefore, the requirement for HEMM has been picked up.

- **Sector wise potentiality :**

  - **Construction sector :**

  Construction sector in India is considered to be the second largest employer and contributor to economic activity, after agriculture sector. Construction Industry value is estimated to be more than $126 billion. In the 12th Five Year Plan, the government has earmarked approximately $1 trillion for infrastructure investment, with 40% of the funds to come from the private sector. In order to attract such investment, the Indian government has eased FDI norms for quite a few sectors of infrastructure development. This is likely to spur the demand for the earthmoving and construction equipment, and if the industry's full potential is realized, the result could be a $16 billion to $21 billion industry by 2020.

  - **Indian Urban Infrastructure**

    Over the next 20 years, it is estimated that US$ 650 billion investment is required in urban infrastructure. Of this, almost 45% is required for development of urban roads.

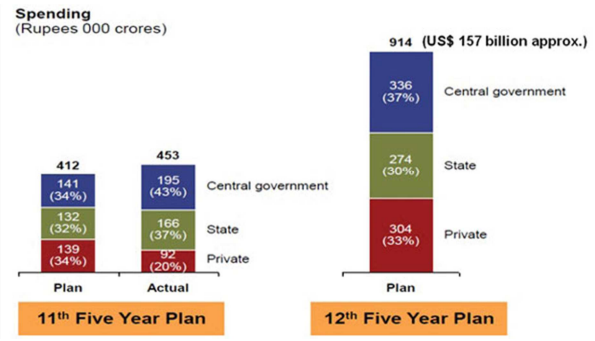
To boost urban infrastructure across the country, the government has initiated numerous measures and has allocated almost US$ 2 billion under Jawaharlal Nehru National Urban Renewal Mission (JNNURM). The government has also launched the Urban Infrastructure Development Scheme for Small and Medium Towns with an outlay of US$ 1 billion to address infrastructure needs of small towns and cities.

Additionally, there is a renewed push towards Public Private Partnerships (PPP) in the sector. Delhi - Mumbai Industrial Corridor (DMIC) is an ambitious Infrastructure programme conceptualized with Japanese government and aiming at developing new industrial cities as "Smart Cities" and converging next generation technologies across infrastructure sectors. Projects worth investment of US$ 200 Billion have already been approved under DMIC. Success of DMIC has prompted many similar corridors including Bangalore Chennai corridor etc.

- **Roads**

India has one of the largest road networks in the world, behind only the United States and China. And to improve the country's road infrastructure, the Indian Government estimates that over US$ 27 billion private investment is required during the 12th FYP (FY12-17).

So far under NHDP (which started in early 2000s), 33,500 kms are developed or are under the implementation phase with balance 21,000 kms are yet to be awarded. Extensive contribution of the private sector is being utilized for implementation of NHDP through contracting and Public Private Partnership (PPP).




- **Airports:**

There are a total of 454 airports in India, out of which around 90 are open for commercial services and 16 are designated as international airports. Delhi and Mumbai are by far the busiest airports in India, carrying almost 2.5 times traffic as the next busiest airport.

The growth so achieved has put tremendous pressure on current airport infrastructure in the country. The Indian Government has projected that an investment of around US$ 12 billion in the next five year plan will be needed to help cope with additional demand, and

private sector participation is expected to play a key role. 75% of the investment envisaged in the next five year plan is expected to be contributed by private sector.

- **Railways**

Railways have continued to be another large focus area for developing transportation infrastructure. The Government has earmarked about Rs.5,19,000 crores for railways during the 12th FYP, of which about Rs.95,000 crores are targeted for investment in dedicated freight corridors on eastern and western routes. In the current five year plan, 3,343 kms of New Railway track have been created till December 2013 to give a big boost to infrastructure industries.

- **Ports**

For ports, the 12th FYP budgets investment worth Rs.1,98,000 crores, of which around 85% is expected to be fulfilled by private players. Till December 2013, 217.5 milliion tonnes of capacity per annum in our ports have been created to give a big boost to infrastructure industries. The capacity of ports in India by the end of the 12th Five-Year Plan is targeted to touch 2,493.10 million tonnes per annum (MTPA) as against 1,245.30 MTPA at the end of the 11th Five-Year Plan (2007-12).

- **Key Challenges for Infrastructure and Construction Equipment Industry :**

**Land acquisition delays:** Across infrastructure projects, delays as a result of land not being acquired by the time projects are awarded have affected many projects both before and after they start. For example, land clearance issues held up the Trivandrum-TamilNadu border road project, though the tender was awarded in 2010. Country-wide regulations on land acquisition have been enforced in a non-uniform fashion, causing delays. Even lenders are unwilling to support projects unless clearances are available and 100% right of way has been secured.

**Clearance delays:** Delays related to forest and environment clearance are also impacting many infrastructure projects. Clearance policies are often not used objectively, providing different rationale for clearances on different occasions. Not only does this impact the speed of clearances, it also sends uncertain signals to investors—and often leads to pullback of investments. For example, the contractor for the Kishangarh-Udaipur-Ahmedabad six-lane highway has terminated the project because environmental clearance failed to materialize. Similarly, lack of clearance from the state water department held up the Chennai Port-Maduravoyal road project.

In addition to addressing infrastructure challenges, the ECE industry achieving its full potential will hinge on addressing challenges in three areas of the ECE ecosystem:

**Financing**

- Original equipment manufacturers (OEMs) in India offer limited financing options, and payment terms for first-time users are often unfavorable. The result is that access to financing prevents many prospective users from buying.
- Renting is a good option for users with an eye on limiting their large capital expenditures. However, renting penetration in India is much lower (7 to 8%) than in other large ECE

markets (65% in the United States and 35% in China) because of a tax regime that makes moving equipment across states unviable.
- India's secondary market for used equipment is underdeveloped.
- Recovery is a big challenge for non-bank finance companies, the major providers of ECE financing for whom regulations pertaining to defaulters and bad debts are not very favorable.

**Unavailability of Skilled Manpower**

- As the ECE industry rapidly grows, the need for trained operators and mechanics will increase proportionately. Availability of skilled workers is likely to be an issue. Multiple entities from the government, ECE companies and industry bodies are working to solve the skill gap issue, but coordination among these agencies can be improved.
- Most construction-equipment users are small players who prefer on-the-job training for operators and mechanics and are unwilling to pay a premium for qualified workers.
- Specialized courses on construction equipment operations are not a part of vocational training at industrial training institutes because the high cost of equipment makes hands-on training expensive. ECE training institutes run by OEMs tend to be expensive for low-income groups.
- There is a lack of uniform national guidelines for safety and quality. On-the-ground enforcement is a challenge because of the fragmented nature of the industry. (Small contractors make up about three-fourths of the industry.)

**Components**

- There is a high variability in OEM demand owing to market fluctuations, which makes capacity planning difficult for component providers.
- India is a market where component suppliers tend to focus on items at the lower end of the technology spectrum, while relying on imports for high-tech items. Consequently, there is a gap in terms of technology adoption at the supplier end, where the market demand for higher connectivity and compliance to fuel economy regulations is not met with indigenously manufactured components.
- Suppliers are also constrained for operating margins because the market is very price and value conscious.

- **External Environment:**

**Scan and access External Environment:**

**Societal:**

- During 2012-14, construction market in India registered sluggish growth owing to low confidence amongst investors resulting in delay in construction projects coupled with clearance issues and land acquisition delays, thus affecting overall demand for construction equipment.
- The government approved a significant number of SEZs across the country for the engineering sector.
- Government of India launched the Make in India plan in 2014 with the aim of enhancing the

manufacturing facilities and employability in India.
- The government has eliminated tariff protection on capital goods

Task:
- India's Construction Equipment Market is an import driven market, especially in higher-tonnage load capacity segment.
- Threat of China-low cost operations and equipments
- Threat of new competitors in market like Volvo, Hyundai, Kobelco etc.

- **Porter's Diamond: (Macro Environment Analysis)**

1. Factor conditions:

   - Strong human resource base in India – young generation with technical capabilities
   - Growing Indian economy, giving boost to infrastructure manufacturing, favourable for utilities sector.
   - Raw materials availability is still an issue.
   - There has been cumulative FDI inflow of USD24.28 billion in earth-moving machinery between April 2000 & December 2016

2. Demand conditions:

   - Huge demand for heavy machineries in road utilities sector. Ever increasing demand in railways and defense.
   - Large domestic as well as international market for niche equipments.
   - Equipment rental & leasing business in India is small relative to developed markets & has a strong growth potential

3. Related and supporting Industry:

   - Service/maintenance industry as well as spare parts industry have been set up in India for supporting utilities and infrastructure sector
   - Land acquisitions, pollution clearances, transport in rural areas etc are some of the concerns

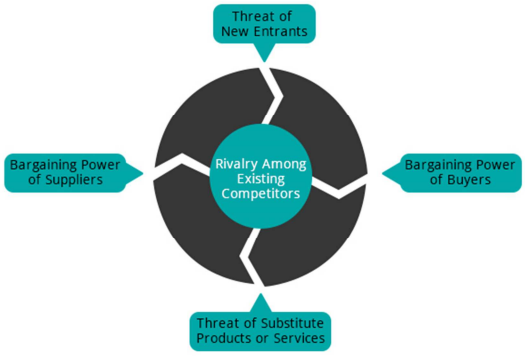
4. Firm strategy, Structure and Rival:

   - Companies today emphasize on mechanization to suit the needs of changing Indian mining industry.
   - In order to move up the value chain and become a one-stop shop, companies form JVs with international players for technology transfer
   - Government has regulations set for power sector.
   - Few major players due to capital intensive nature of the sector. So quite high rivalry.

5. Government:

- The material handling equipment industry is de-licensed & 100 per cent FDI is allowed under direct route
- 'Make in India' pitch to boost investments

Porter's Five Forces:




Threat of New Entrant(Low)

- Threat is low due to the capital intensive nature of the industry
- High maintenance and distribution costs are other barriers
- Need High EOS to recover fixed costs
- A new comer to the industry would face difficulty in assessing distribution channels.

Threat of Substitutes(Low)

- Limited number of substitutes
- Maintenance and up gradation requires long term contract with the firms.

Bargaining Power of Suppliers(Low)

- High price sensitivity
- Low switching cost for buyers
- Volume is critical to suppliers
- Well established supplier base with adequate capabilities

Bargaining Power of Buyers(High)

- Product is important to customer
- Few constructions and mining companies do majority of bulk buying which gives them an edge
- High growth in demand across segments
- Low dependency on distributers

Competitive Rivalry(High)

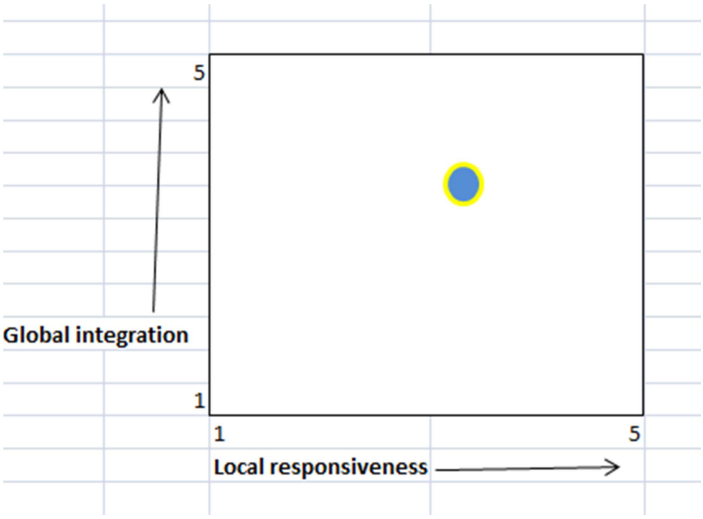
- Big firms have intense competitive rivalry as all major world players operate in the same market
- Competition is very intense as all players compete with each other on quoted price to win a contract amid high price sensitivity
- Low switching costs from buyers increase competition.

Positioning a business on the Global Integration/Local Responsiveness Grid:

| | | | *1* | *2* | *3* | *4* | *5* | *Total Score* | |
|---|---|---|---|---|---|---|---|---|---|
| | **GLOBAL FACTORS** | | | | | | | | |
| A | To what extent customers have similar demands for functionalities and design across countries | **Very different** | 1 | | | | | 1 | **Not similar** |
| B | To what extent products or services have a high proportion of standards components across countries | **Low proportion of standard components** | | | 3 | | | 3 | **High proportion of standard components** |
| C | To what extent customers (or distributors) are themselves operating in different countries and are buying centrally your products or services | **Buying locally** | 1 | | | | | 1 | **Buying centrally** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| D | To what extent significant economies of scale in your industry are important for the cost of the product (i.e. one needs very high volume to obtain low cost) | **Low economies of scale** | | | | 4 | | 4 | **High economies of scale** |
| E | To what extent the speed of introducing new products worldwide is important for competitiveness | **Speed is not that important** | | | | | 5 | 5 | **Speed is very important** |
| F | To what extent the sales of your product or service are based on technical factors or alternatively on cultural factors | **Highly cultural** | | 2 | | | | 2 | **Highly technical** |
| G | To what extent experience gained in other courtiers by a 'sister' subsidiary can be successful if applied in other countries | **No great benefits** | | | | | 5 | 5 | **Yes, highly beneficial** |
| H | To what extent competitors in your industry operate in a 'standardised' way across countries and we successful in doing so | **Competitors are localising** | | | | | 5 | 5 | **Competitors are successful in standardized approaches** |
| I | To what extent customers 'behave' the same way across countries | **Customer behaviour is very different** | | | | | 5 | 5 | **Customer behave in the same way** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| J | To what extent innovative activities (R&D, design) require concentration of expertise in order to be effective (critical mass) | **Low critical mass** | | | 3 | | | 3 | **High critical mass** |
| **GLOBAL INTEGRATION SCORE :** | | | | | | | | | |
| **Sum of A to J / 10 =** | | **3.4** | | | | | | | |
| K | To what extent pricing can be different from country to country without introducing dysfunctionalities | **Pricing has to be coherent across borders** | 1 | | | | | 1 | **Pricing can be very different** |
| L | To what extent distribution channel management differs from country to country | **Not so different** | | 2 | | | | 2 | **Yes, very different** |
| M | To what extent business regulations and contexts differs from country to country requiring a high degree of local practices | **Not too different** | | | 3 | | | 3 | **Highly different** |
| N | To what extent products or services require a high degree of interaction with customers (customization) | **Low customisation** | | 2 | | | | 2 | **High customisation** |
| O | To what extent transportation costs or customer interface are such that local operations are needed | **Not so different** | | | | | 5 | 5 | **Local operations are essential** |
| **LOCAL RESPONSIVENESS SCORE :** | | | | | | | | | |
| **Sum of K to O / 5 =** | | **2.6** | | | | | | | |




Heavy earth moving and construction machinery can improve the quality of production and increase project efficiency, cost savings, profitability and safety at any job site. Customers have very specific set of demand for functionalities since very country has a different set of requirements depending on ground/soil conditions as well as climatic conditions. For example the soil and overall terrain at jobsite and nearby surroundings define what sort of machinery should be used. At the same time climatic conditions such as presence of strong winds, visibility level also affect the decision process. The customers prefer buying the products locally but those products have high proportion of standard components across geographies. Construction and mining machinery are always very costly. So, standard equipments which are manufactured in large numbers by various manufacturers and whose spare parts are easily available are preferred by companies.The versatility of the equipment whether it can perform more than one function, the adaptability for future use and the interaction with other equipments also effect the sales demand since here the sales are influenced by technical aspects.

Pricing can be one of very important issues which might guide the purchase decision of the customers. As there are many global as well as local brands in this sector so price has to be set at par with competitors in the market. The pricing strategy normally tends to be same similar across geographies. The size of the equipment is also an important factor. The bigger the equipment, the more the investment considerations. So, companies should carefully analyze depending on local factors like projects at hand, time to deliver etc before going for purchase decision. Distribution channels in mining and construction machinery sector is very similar across geographies and are very intensive which provides a wide extensive coverage. Business regulation across countries might be bit different but its not adverse and that is why a large number of global heavy equipment have a combination of local and global business regulation. Also, the products and services in this sector

doesnot require high degree of customization since the base product and function ability is almost similar in this sector.

**Conclusion :**

On the basis of above research we have concluded that there exists a great diversity between India and Japan but India being a developing country and available human resource in abundance, gives it a opportunity to coexist with the developed nation like Japan for the mutual benefit of both. Also we can say that current governments for both countries is working on the same lines to bolster the India-Japan global and strategic relations which will transform geo-political and geo-economic scenario of Asia as a whole.

In this report, we studied the Country and Industry level analysis. However in chapter 2 and 3, we will be talking about firm level analysis.