In this chapter, the review of literature is undertaken with a view to trace the evolution of the theoretical reasonings of organisation, not as a 'make or buy' choice as seen in the conventional analysis of vertical integration and disintegration but as a deliberate choice made in an array of options involving inter-firm cooperation. After all, industrial activity is not a simple dichotomy between the firm and the market but encompasses a dense network of cooperation and affiliations. Theoretical reasonings necessarily abstract from such inter-relationships, although this phenomenon is of considerable importance in the real world. However, the theoretical reasonings as put forth by Stigler, Coase, and Williamson, which give the arguments for the two extreme modes of organisation, viz., integration and disintegration, reveal that these are not rigid prescriptions. Instead as noted by Mead, in reality there is an array of options with varying degree of inter-firm cooperation as borne out in various empirical studies. This review is basically concerned with subcontracting which is a hybrid of the two polar extremes of organisational forms. Again,
subcontracting in conventional analysis is treated as just yet another form of disintegration, primarily as a mechanism for cost reduction. In the present study the focus of attention is on that particular form of subcontracting which can fructify into a form of quasi-integration as seen in the Japanese automobile industry. The Japanese style of vertical integration in the automobile industry has been studied in depth by Odaka. And based on close, critical, empirical observations, theoretical reasonings conducive for such a phenomenon have been identified. It is such a form of subcontracting whereby a conscientious choice was made by the vertically integrated firm, to farm out such stages of production involving manufacture of distinct products, which provides opportunity for growth to the subcontractor and yet remain, as an extension of the vertically integrated primary firm, which is the focus of attention in this thesis.

Vertical integration can be construed as a form of market structure, besides revealing certain behavioural
characteristics.\(^1\) One of the traditional reasons which explains the natural tendency towards vertical integration relates to technological factors.\(^2\) Technological interdependence is one of the simplest explanations provided for vertical integration. This is evident in industries having interdependent processes such as in steel production and petroleum refining. Apart from technological factors (such as thermal efficiency in steel industry) there are also significant gains in operating cost and transport cost under integration. For instance, in industries like steel, there would be considerable saving of fuel for re-heating metal at various stages and likewise

1) The term 'vertical integration' is used in two distinct ways in industrial economics. First, it relates to an existing state or organisational structure. In this sense it refers to the extent to which a single business unit carries on successive stages in the processing and distribution of product. In addition, however, the term is used to refer to behaviour or conduct. In this sense, it refers to the action of a firm in moving into another processing or distributing stage, either via vertical merger or by setting up new production or distribution facilities. Clarke R, (1985) 'Industrial Economics', Basil Blackwell, Oxford, pp. 172.

transport costs could be economised by organising the successive functions in an integrated plant.

However, technological factors combined with other economic factors also can give rise to vertical integration. This may be due to a) inability of arm's length contracts to cope with rigidities and irreversibility in the production process b) tendency to distort substitution decisions concerning those parts of the process that are flexible and c) the rigidity in production arising from fixed costs, when producers cannot recover the costs once investment has been made in highly specific equipment having no alternative use and scrap value. In such cases the firm is vulnerable to threats from its major customers to negotiate contracts on favourable terms. The natural solution would then be merger. Rigidity in production may arise from the use of continuous flow technology. The spill over effects of disruption of production can be considerable. Holding of sufficient inventories, although a possible solution involves high cost. Likewise forward purchase of inputs may be difficult to enforce. Here again backward integration is the only effective solution.
The possibility of substitution within the production process can be yet another reason for vertical integration. For instance in response to a sudden demand for a downstream output, given sufficient flexibility, workers from upstream stage may be diverted to downstream. This would not be possible in case there were independent producers. As such there would be a strong incentive to bring both stages of production under common control.

The operation of certain market power factors may also lead to vertical integration. Monopolists in practice seldom use marginal cost pricing and instead levy a mark-up on marginal cost. If the downstream purchaser is also a monopolist then monopolistic pricing will be further aggravated with a second mark-up on costs when the downstream output is sold to final buyers. Vertical integration can check such distortions.

A monopolist seeking to reinforce barriers to entry may attempt to deter entry at adjacent stages. By refusing to buy intermediate inputs from independent producers or selling intermediate outputs, the monopolist may
force new entrants to increase the scope of their operations to make themselves self sufficient in intermediate products. This strategy which can work only in a closed economy gives rise to a trade off between higher barriers to entry and higher costs of production. In such cases, where there is an overwhelming tendency towards vertical integration the possibility for effecting a choice from an array of options involving various disintegrated forms like sub-contracting would be minimal.

Stigler, had suggested a more rigorous explanation for vertical integration. His arguments take the analysis to the very root cause of integration, by linking the decision of the firm with the level of development of the industry viz., its size. The explanation is based on Adam Smith's well known dictum that the division of labour is limited by the extent of the market. According to Stigler, the division of labour within an

3) These aspects relating to integration have been discussed by Casson. Casson M, (1987), 'The Firm and the Market, Studies on Multinational Enterprises and the scope of the Firm'

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industry will vary with the size of the industry. As such, the extent of vertical integration in an industry will follow the life cycle of that industry. The degree of integration in a firm is therefore determined by the size of the industry. In the early stage of an industry's development, the market may be too small to support several independent producers of the various intermediate inputs. This would also be true of a new industry so that lack of knowledge and other market imperfections force firms to undertake a number of disparate activities. However, as the scale of the industry expands, it may be possible for these various activities to be taken up by independent firms with the attendant advantages of economies of scale and specialisation. Ultimately, there would be a large number of relatively small firms each performing a separate role in the production process. Such a relation would require a common location, in order to keep transport costs low. This type of regional 'swarming' is said to be obtained in the automobile industry. The principle of increasing specialisation via division of labour thus has a wider implication in terms of the inter-relationships between functional structure of an industry and its geographical
structure. Stigler's hypothesis would appear to fit the conditions obtained in developing countries where the general level of industrialisation is low. Odaka has attempted to test this hypothesis in an empirical study of automobile parts producers in East and South East Asia, which will be discussed later in this chapter.

In analysing the reasons for the emergence of a firm undertaking several activities, a novel interpretation was given by Coase in terms of transaction costs. While the price mechanism is the coordinator of economic activity in the market, it is replaced by entrepreneurial coordination within a firm. According to Coase, the market is superseded by the firm when the cost of market transactions is high. This explanation for the first time rivets attention to issues relating to integration as a deliberate choice rather than as a datum governed purely by factors like technology. A firm will take on additional activities up to the point where the cost of coordinating the next activity within the firm just equals the cost of transaction. Vertical integration will result due to costs of discovering market prices and negotiating costs in arriving at
market contracts. Conversely, the efficiency of the entrepreneur is the limiting factor for integration. As more functions are taken up efficiency in allocation and coordination of tasks within the firm decreases.

Williamson, elaborating on Coase's work has developed a transaction cost theory to explain the organisational structure of a firm. Williamson's analysis which highlights the complex problem of entering into a transaction is of direct relevance to a complex industry like the automobile which involves enormous problem of obtaining several hundreds of components at the right price, in right quality and on right time for final assembly. According to Williamson, the standard economic explanations like technological factors are also subsumed under the transaction cost explanation.\(^{(4)}\) Instead, certain elementary human

4) "The technological interdependence argument is both the most familiar and the most straightforward processes which, naturally follow immediately in time and place dictate certain efficient manufacturing configurations, these in turn are believed to have common ownership implications. Such technical complementarity is probably more important in flow process operations (chemicals, metals and so forth) than in separable component manufacture. The standard example is the integration of iron and steel making, where thermal economies are said to be contd.
attributes together with environmental factors are used to explain market failure which results in vertical integration. The human factors are opportunism (i.e. the tendency to take advantage of profitable opportunities with guile) and bounded rationality (i.e. human inability to cope with large decision making problems). These human factors interact with environmental factors, such as uncertainty and small number of parties to a transaction, resulting in market failure. Vertical integration then takes place instead of market coordination. Williamson also derives another concept 'information impactedness' (5) from these four factors. 4) contd.

available through integration. It is commonly held that where 'integration does not have this physical or technical aspect - as it does not, for example, in integrating the production of assorted components with the assembly of those components, the case for cost savings from integration is generally much less clear'. I submit, however, that were it possible to write and enforce a complex contingent claim contract between blast furnace and rolling mill stages, the integration of these activities, for thermal economy reasons, would be unnecessary. The prohibitive cost of such contracting is what explains the decision to integrate. Williamson O E, (1975) ibid pp. 83-84.

5) 'Information impactedness is a derivative condition that arises mainly because of uncertainty and opportunism though bounded rationality is involved as well. It exists when true underlying circumstances relevant to the transaction, or related set of transactions, are known to one or more parties but cannot be costlessly discerned by or displayed for others.' Williamson O E, (1975) ibid pp. 31.
which results in vertical integration. By this term, Williamson, implies that information regarding potential markets, production technology sources of raw-material, or finance is often highly personalised. As such knowledge is 'impacted' in firms or in people, it becomes difficult to have transactions outside the firms.

Williamson's approach, moves Coase's analysis further in the direction of long-term and short-term contracts that has to be entered into by the firm with suppliers under integration. This analysis brings out the importance of the cooperative element in inter-firm transactions. A major problem with long-term contracts is that it is prohibitively costly to enter into a comprehensive contract anticipating all possible contingencies. Ambiguities may therefore arise which would result in opportunistic behaviour. On the other hand, under short-term contracts, it is possible to enter into a sequential decision making thereby circumventing the problem of bounded rationality. But, then where such transactions are not an one-off occurrence but a continuous one, it may be a disincentive to make long-term investment as in the
case of component industries. Williamson also refers to the problem of 'first mover' advantage, whereby the early contract winners acquire specific cost advantage over their competitors which gives them a monopolistic advantage. Due to the interplay of these human and environmental factors, a firm finds it advantageous to be vertically integrated. Within the organisation of a firm, cooperative behaviour replaces antagonism and even when disputes arise they can be settled with greater ease. Such cooperation, along with efficient internal control machinery and sequential decision making may make vertical integration an appropriate choice. Williamson's emphasis on the behavioural approach to integration serves as a reminder that the approach to issues relating to integration is not a mechanistic one.

Although there are certain theoretical conditions which favour vertical integration, in the real world there are limits to the extent to which vertical integration can be carried out. "The tenet that productivity increases with scale of operation is true only within certain limits. A large firm can perform a number of activities that give it definite advantages over small
producers. It can operate more efficient production runs, afford to use larger and more modern equipment, buy in larger quantities at more favourable prices, obtain highly skilled management, marshall greater resources for investment or expansion purposes - in other words, it can obtain greater economies of scale. This consideration and the desire to achieve greater economic power have been the main reason for expanding vertical and horizontal integration. Yet there comes a point beyond which it is not advisable to expand. Beyond a certain size there is waste in many forms - excess capacity, an over burdened cost structure and mismanagement. The over-extended firm may be confronted with decreasing returns to scale. Output at this stage may become more costly, on a per unit basis, than when the firm was smaller. Many large firms recognise that separate units can sometimes produce more efficiently than integrated plants.

A secondary factor has been the corrective action industrial firms have taken in response to pressure from the Government to end monopolies. Comprehensive antitrust legislation has been adopted in the United States and anti-cartel regulations in Europe.\(^{(6)}\)

In fact, the various theoretical explanations in respect of vertical integration, give the reasonings for vertical dis-integration as well. Technological factors under certain conditions may result in diseconomies of scale. For instance, in a closed economy when the scale of production is different in upstream and downstream activities, the scale of operation of the enterprise as a whole must be equal to the lowest common multiple (LCM) of the efficient scale at each stage. It is quite possible that the LCM may be so large as to exceed the market size and even if it does not, the problem of generating investor's confidence to finance an operation of that scale would be immense. Stigler's hypothesis explains more lucidly the advantages of having non-integrated production. For instance, with the expansion of the industry the functions within a firm, which are subject to increasing returns will lead a new firm to take over this function. The new firms will not remain a monopoly for long as with the growth of the industry, more firms will enter creating competitive conditions. This new industry in turn will in due course abandon certain functions to a new set of specialist firms. Likewise in the case of functions subject to increasing
costs, as the industry grows, the original firm instead of giving up this function may manufacture a part of its own requirements and purchase the remaining from outside suppliers. Stigler also states that though the functions within a firm could be independent in most cases they are competitive especially in a managerial sense. Under such conditions, the firm will normally increase its rate of output of the final product when it abandons a function.

The transactions cost approach, according to Williamson can explain the reasons for the two extreme modes of organisation.\(^{(7)}\) While there are transactional costs in market relations, the organisation of activity within a hierarchy also suffers from certain disabilities. Thus Williamson notes that, "Although the existence of market failure constitutes a presumptive basis for internalising transactions, the 'defects' associated with market exchange may need to exceed a nontrivial threshold before internal organisation

\(^{(7)}\) 'The approach is comparatively value free—it is biased neither for nor against unfettered market modes of organisation.'
offers a clear cost advantage."\(^8\) One of the internal distortions mentioned by Williamson relate to decisions concerning internal procurement. While in a market transaction, reciprocity is limited to commodity trade, under internal procurement, this may be perpetuated even where it becomes non-economic because of other subtle forms of internal reciprocity.\(^9\) Transactional disabilities within a firm also takes place. Once investment is undertaken within the firm, at least in the short-run there is no alternative source of supply, functional managers may therefore try to take advantage of this. As a result, internal opportunism takes the form of managers pursuing their individual or collective interest. Williamson's analysis is a refreshing departure from conventional reasonings of cost to the behavioural attributes of the parties to a transaction in determining the organisational form.

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9) "The opportunities for reciprocity are simply more extensive internally (I buy from your division, you support my project proposal or job promotion and so forth) than in the market, where reciprocity is mainly limited to commodity trades that are a matter of record."
Williamson O E, (1975) ibid pp. 119.
It would be erroneous to conclude that as a firm encounters a "buy or make" decision it would mean that the options available are either vertical integration or market relation. The complementary activities within a firm/industry requires considerable coordination both quantitatively and qualitatively. Such coordination can be achieved by direction, cooperation or through market transaction. Direction implies unitary control under a coherent plan as obtained in vertically integrated structure. Market transaction on the other hand is spontaneous and comes about "without benefit of either direction or cooperation or indeed any purposeful intent, as an indirect consequence of successive interacting decisions taken in response to changing profit opportunities."[10] Richardson describes the pure market transaction as the limiting case under cooperation. In reality, however, we are confronted with a "continuum passing from transaction such as those on organised commodity markets where the cooperative element is minimal, through intermediate areas in which there are linkages of traditional connection and goodwill, and finally to those complex

10) Richardson G B, (1972) ibid.
and inter-locking clusters, groups and alliances which represent cooperation fully and formally developed."(11) A firm may comprise activities which are complementary but dissimilar. Due to the dissimilarity of the activities they cannot be left entirely to the firms, nor can they be entrusted to the market, since it "requires not the balancing of the aggregate supply of something with the aggregate demand for it but rather the matching, both qualitative and quantitative, of individual enterprise plan."(12)

Disintegration can therefore be regarded as a choice over a spectrum of contractual arrangements.(13) While the approach to such a contractual arrangement may be in terms of ownership of structure, it is the allocation of managerial responsibility as reflected in the structure of control which is more important. One of the strategic issues relate to proprietary advantage

11) Richardson G B, (1972) ibid.
12) Richardson G B, (1972) ibid.
13) Casson notes the number of contractual arrangements that can be devised is limited only by the imagination and ingenuity of the entrepreneurs. Casson M (1987) ibid.
in knowledge. Preserving this advantage under disintegration would imply need for greater control such as in the case of a subsidiary or joint venture. An additional risk in non-equity contractual arrangement is that any subsequent improvement in technology generated by production experience may not accrue to the parent firm. Yet another risk to the parent firm under contractual arrangement relate to effective control over quality. Decentralisation may be compatible with efficient quality under certain conditions, these relate to: 1) costs of enforcing rights through courts, 2) uncertainty of the user about the proportion of defective items that will on the average be supplied by him, 3) the ease with which a supplier can switch to other customers in the event of a disagreement with an existing user and 4) random variations in quality of supplies over time.

Casson notes that even in the absence of a legally enforceable commitment, there are circumstances under which it pays the supplier to honour the commitment voluntarily. Likewise even in case of uncertainty the supplier may still voluntarily compensate the user, in
order to retain his goodwill and to secure future contracts. However, the ease with which suppliers may switch over to other customers can make subcontracting inefficient relative to integration especially if it occurs in conjunction with the other two factors viz., difficulty in enforcing guarantees of quality and uncertainty about quality. The last factor relates to random variations in the quality of suppliers. Such variations become significant when each transaction involves just a few units of that product, so that average quality varies significantly between successive transaction. This can impair the production process whose efficient operation depends on the continuity of flow. Hence the choice of the form of contractual agreement relate to the degree of control required.

This dilemma of making a most appropriate choice is seen most clearly in the case of the automobile industry, which is a complex assembly of a vast array of products with a predilection towards integration. This industry is "characterised by the cooperation of a large number of firms supplying or assembling interchangeable parts or performing certain processing services, and a relatively small number of final
assemblers producing the finished product from components supplied by the first group and internally. This structure reflects the fact that the industry is a discrete process industry, with a set of independent, well defined production processes. Moreover any machine product may be decomposed into a finite number of machine elements. By virtue of these hardware properties, automobile production is amenable to a vertical division of labour among many production units. *(14)*

Of all the various explanations given for vertical integration/disintegration, it is Stigler's reasoning of linking the firm's decision to the size of the industry which is particularly relevant for this study. The choice of integration vs. disintegration is an overwhelming factor of importance having wide ramifications in the developing countries. In developed countries like the USA, where the basic industries like machine tool was well developed, the industry succeeded in remaining highly integrated. However, in developing countries, where the level of technology is low, there

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are problems surrounding the very establishment of the industry. It may be prima facie argued that in such cases vertical integration is inevitable. In fact, Branson’s analysis of the difficulties surrounding the establishment of the automobile industry veers to this view. According to Branson, the production of automobiles poses difficulties arising from the low level of industrialisation, small domestic market, besides the very complexity of manufacture which requires a high degree of technological and managerial capability besides vast resources. For instance, the manufacture of engine and other major components besides body pressings constitutes about 60% of the cost of a vehicle. Major mechanical items like engines and transmissions require heavy initial investment and are highly automated with low amounts of direct but technically skilled labour. There are several problems associated with the development of local suppliers. For instance the volume of technical knowledge that has to be transmitted is enormous.\(15\)

\(15\) "The volume of technical knowledge that has to be transmitted in the form of process sheets, blueprints and manufacturing specifications is governed by the complexity and technical tolerances of the transplant. Typically hundreds of small details involving manufacturing anomalies or difficulties must be worked contd."
Although domestic manufacture was intended to achieve autarky this was not possible as foreign collaboration was inevitable especially for obtaining technology. Branson has analysed in considerable detail the problems associated with the commencement of automobile production in developing countries, under an import substitution strategy. These relate to an inbuilt obsolescence because of the nature of the technology transferred besides high cost of production.\(^{(16)}\)

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15) contd.

out. These include precise instructions on how to operate certain equipment, machine a particular part or handle particular materials. Included are machine speeds and tolerances, minimum standards for finished parts and detailed material specifications. "

Branson J (1971) ibid. pp. 11

16) "--- policies aimed at progressive autarky have fostered a seller's market which has undermined technical standards throughout the economy. These policies have also contributed to a widening of the technological gap between the developing and more advanced economies. Product designing and production techniques for the small scale protected markets lag behind latest development because of the high conversion costs or low volume production. These technologies have a built in obsolescence and are rarely able to compete in world markets --- Protectionist and import substitution policies have contributed to the high costs and inferior quality that often characterise procurement and production in developing countries. Industrial firms are compelled by domestic content regulations to duplicate too broad a spectrum of manufacturing capabilities, a task that becomes progressively difficult in proportion to the sophistication of the transplant and its dependance upon special capabilities and skills".

Another problem encountered in developing countries is the difficulty in developing local suppliers. Branson notes that higher percentage of in-plant production intensifies the diseconomies of small scale production. Hence the burden of developing industrial capabilities in basic materials, semi-finished parts (like castings and forgings) and the wide range of finished components falls heavily upon the vehicle manufacturers.

The structure of the automobile industry in developing countries has been influenced by various factors. Unlike in the developed countries, where the industry had evolved through various technological developments in the machine tool and related industries, there was a considerable technological lag. This has been described by Branson as a problem of transition from craft industries to machine culture.\(^{(17)}\) However, Odaka's

\(^{(17)}\) "In newly industrialising countries much time and effort are required to introduce the concept and use of process sheets, production standards, machine-load studies, machine control and other plant engineering and production control procedures. When adopted techniques are rarely applied in a systematic and comprehensive way and the results are invariably bottlenecks, shortages and idle capacity while machines or labour or materials wait for one another. Too often, contd."
study which has attempted to test Stigler's hypothesis provides some interesting evidence that integration is not merely the result of the law of market but can be overcome by human factors. Odaka had inquired into the underdeveloped character of the auto parts producers in six Asian countries viz. Indonesia, Malaysia, Thailand, Phillipines and Korea. The economic conditions obtained in these countries especially in terms of size of market, cost penalty etc., in the late 1970's is considered by Odaka to be roughly comparable with that of Japan in the 1950's. (18) The study showed that in the selected countries, the auto parts manufactured were those requiring simple technology. Items subject to large scale economies would also need huge capital outlay and would be inappropriate for local production where the market is small. This would seem to vindicate Adam Smith's law, although in a negative sense, that the absence of a market is a deterrent for

17) contd.
managers in newly industrialising areas view rigorous production planning and control as an exaggerated fetish on the part of foreign engineers or as systems inapplicable to their own environments ".

18) The other similarities noted relate to the industrial policies of the governments in these countries to promote the production of automobiles including parts.
vertical disintegration or division of labour. However Odaka, notes that Adam Smith’s theorem does not provide a full explanation for the underdeveloped status of the auto parts producers in his study. He notes from comparison with the Japanese experience that "fragmentory and incomplete as the results are, one feels that perhaps the most crucial factor needed for further development of domestic machinery production is progress in human embodied technology. This encompasses such factors as entrepreneurship, improved management methods, engineering skills and organisational and institutional arrangements. Capital embodied technology can be purchased and doing so has called relatively little difficulty, except for the problem of financing it. But for just that reason - the ease with which it is obtained -such an approach has done little to help upgrade the industry or the economy, as distinguished from simply contributing to output growth. Ultimately, for the automobile and machinery industries to succeed in the selected countries, investment must be made in human skills."(19)

While Branson’s analysis brings into sharp focus the

imperfections in the market which are more pronounced in the developing countries, Odaka's emphasis on human endeavour, brings some relief. According to Lall, there are three possible solutions to imperfections, "first, vertical integration, by an enterprise itself undertaking (by setting up new facilities or taking over an independent firm), the production of a related product, second, extra-market linkages which bypass some of the shortcommings of 'pure' market relations but stop short of complete internalisation, and third, government intervention to replace (by some planning mechanism) the market altogether. Vertical integration and government planning are manifestations of 'complete' market failure as far as the ability of the market to coordinate the particular inter-firm transactions are concerned. The esatblishment of linkages on the other hand, leads to the retention of both the market mechanism and the identity of the original units: it is a manifestation of 'partial' market failure."(20)

Lall notes that linkage solution to market failure has

not received sufficient attention in the literature. Linkages refer to the "direct relationships established by firms in complementary activities which are external to 'pure' market transactions (i.e., anonymous buyers and sellers exchanging goods in discrete transactions at prices determined in competitive markets." (21) He argues that while such linkages are essential to the functioning of any normal industrial market, it has a special significance for developing countries. The establishment of such linkages can "stimulate the development of linked activities and industrial diversification of LDCs." (22)

The market imperfections which give rise to linkages have been analysed by Lall in a study of truck manufacturers in India. In technologically similar activities (e.g., automobile engines and pistons are based on large scale mechanical engineering), while vertical integration would be more feasible, there are limits to internalisation because of likely loss of scale economies in production and also loss of

specialisation, especially if advanced technology is involved. Technical problems can be resolved through linkage by bringing about close coordination and monitoring of input quality specifications, testing and also future development.

By forging linkages, opportunitistic behaviours of independent suppliers who may renege on contracts (a la Williamson) can be avoided. The suppliers cooperation is especially of immense significance for an industry like the automobile. (23) Lall, notes that where uncertainty arises from factors outside the suppliers control (eg. raw material shortage) or from lack of

23) "Although management may appear to be concerned only with methods and systems, it is concerned basically with people, and it is because vehicle manufacture involves so many people with different skills and responsibilities that the manager is faced with so many problems. All too often it is assumed that a stream of identical cars comes off each assembly line when in fact there is tremendous variation. The variety involves the need for close liaison between a large number of departments and suppliers, and imposes considerable burden on the operators. Overall, therefore the business for motor vehicle management involves controlling a large number of people, a large number of departments and a large number of components."

market information (i.e. current production plans) the
buyers can step in to provide the missing elements
themselves. Here, the buyers may even have to assist
the establishment of such suppliers, who simply do not
exist in sufficient numbers. Besides obtaining their
goodwill, alternative sources of supply can also be
developed.

Lall notes that in very narrow markets, only the direct
exchange of information on future plans through
linkages will ensure that investment capacities are
matched to requirements. Further, if linkages have to
be successfully established, it has to be ensured that
sufficient surpluses are left to the independent
enterprises to enable their growth. An inequitable
sharing of revenue would result in reverting to
internalisation.

Lall has evaluated the costs and benefits of linkage
creation based on a case study conducted in respect of
two truck manufacturers in India. He concludes as far
as suppliers are concerned the effect depends upon the
size and technological nature of the firm. For
instance, there is a definite trade off in respect of small firms in technological related areas. While they receive considerable technical and other assistance from their principals, sometimes even owing their existence to them, yet, they do not do well on the pricing front and other distributional linkages. Lall notes that it is most likely that any rents that arise from their activity are probably exploited by the buyers. However, Lall concludes, that overall, the benefits outweigh the costs as it is doubtful whether the suppliers would have realised higher profit in open markets, while it is certain, that they would receive much less technical assistance.

In so far as the buyers are concerned, the linkages are beneficial to the extent that they surmount market deficiencies and enable the realisation of greater specialisation, stability, planning and innovation. However, there are costs arising from the launching, training and monitoring of small suppliers and the monopolist price advantage enjoyed by certain large suppliers. Lall notes that the costs in respect of small suppliers, although quite high in initial stages, are offset in the long run by the lower production costs of
small firms. However, costs arising from monopoly advantages are not so easily resolved. In his case study in India, Lall observes that this condition has arisen from the licensing policies of the Government.

To the economy as a whole, certain benefits may arise due to these vertical inter-firm linkages. Lall notes that had the principals internalised component production (rather than farming it out and ensuring efficiency by means of various linkages), costs of production would be higher because of higher wage costs and the use of more capital intensive techniques, less employment would be generated, industry would be more concentrated and technical progress less widely diffused. If they resorted to importing these components, employment and "learning" opportunities would be lost to the economy. The experience of Japan illustrates well the various advantages which the promotion of strongly linkage based industrialisation yield.

One of the well known forms of such linkages is industrial subcontracting, which has received the
support of many governments in developing countries, besides international institutions, as a strategy of industrialisation.\(^{(24)}\) Mead has listed the reasons given in the literature as to why subcontracting takes place. These reasoning relate to "cost and the circumstances under which it may be cheaper to hire an outside producer to undertake a particular activity rather than arranging to have it done within the firm. These reasons relate to input prices, specialisation in supplier firms and response to fluctuations in output." \(^{(25)}\)

Differential wage rates is one of the well-known reasons given for subcontracting, so much so that vertical disintegration in complex production systems even take the form of international subcontracting,

\(^{(24)}\) "In developing countries where the basis for subcontracting exists, the large firms, as everywhere else, make the decisions. However, the Government will have a most important role to play in creating conditions that will induce large firms to place more orders with small enterprise. Some instruments of promotion, such as the subcontracting exchanges which are operated by private groups (employers federation) in most industrial countries will probably need to be sponsored by government agencies in the developing countries."

UNIDO (1974), ibid. pp. 34.

whereby industrially developed countries take advantage of lower labour costs in certain developing countries.\(^{(26)}\)

Small subcontractor firms may be able to achieve cost savings not available to larger firms, especially in the production of simple items where a high degree of precision is not critical. Lower wage-rate is one of the well known factors of cost saving. Owing to the existence of segmented labour markets subcontractors may be able to evade the institutional pressures (government regulations, trade union etc.) on wages. But lower wage rates can be offset by differences in labour quality and productivity and thus does not necessarily result in lower cost. Besides expenses on overheads and burden of taxation may be lower in subcontractor firms, the latter due to government

\(^{(26)}\) Owing to competitive pressures, transnational corporations which integrate their operations on a regional basis could be expected to push them to seek world wide for low - cost sources of supply for materials, parts components and even final products for profitable use anywhere in their international networks. For a mature industry as the motor industry with well established techniques of production and more or less standardised products, that is what is predicted by the Product Cycle Theory. Maxcy G, (1981) ibid. pp.154, 155.
policy towards the small sector.

Specialisation and the benefits of economies of scale can also be obtained under subcontracting. Longer production runs would result in lower unit costs. Further production of a small range of products justifies the purchase of specialist machinery, brings about greater familiarity with existing technologies and enables the firm to make progress on the technological front. In case of pure assembly operations, the assembler can maintain diversified product range without necessarily sacrificing economies of scale since economies of scale are more important in manufacturing than in assembly operation.

Subcontracting also allows greater flexibility by enabling the firm to adjust to fluctuations in demand. Thus suppliers may be dropped during a downswing and sought out when there is an unexpected increase in demand. In case of assembly operations, the product composition can be changed, rapidly in tandem with market fluctuations. This flexibility may be difficult under in-house manufacture. Thus subcontracting
provides a cushioning effect against market forces. The subcontractors may be willing to accept such orders if they have slack capacity or because it is easier for them to adapt their productive capacity to demand conditions such as by hiring or firing workers. When a final product consists of a wide range of parts and components, coordinating the procurement and assembly tasks becomes extremely difficult. A fully integrated unit would require a wide range of skills, equipment and raw-materials, creating enormous organisational difficulties. These problems can be simplified by subcontracting.(27)

While these explanations are traditional ones, Mead, instead of focussing on costs places emphasis on the fact the subcontracting may be necessitated when the firms do not have the skills, either technical or managerial or the requisite finance to carry out all the functions themselves. In developing countries,

27) These aspects have been discussed by Hill. Hill Hall (1981) \textit{"Subcontracting and Technological Diffusion in Phillipine Manufacturing", Discussion paper, School of Economics, University Phillipines.}
there would be additional obstacles to subcontracting other than that envisaged in theory. For instance, Mead applying Williamson's transactions cost theory to subcontracting in developing countries, observes that enforcement of contracts would be more difficult due to a complex and antiquated legal system and cumbersome and time consuming procedures. The prospect of subcontracting would therefore depend on the market structure in a subcontracting relationship.

When subcontracting is based on relationships between independent producers but with highly unequal market power it results in a hierarchy which according to Mead does not have much growth potential. This is obtained in the typically cost reducing type of subcontracting. Mead notes that while this type of arrangement can provide additional incomes to large numbers of people in labour surplus regions or countries, it has limited long-term growth potential. A second type of relationship consists of many buyers and sellers with the result that the contract outcomes reflect a balance of competitive force, which curbs opportunistic behaviour on either side. Here apart from cost advantage, the benefit of specialisation is also
secured. Yet another pattern is possible where subcontracting arises as the firms desire to shift responsibility for financing or managing certain activities to other producers. This factor is considered to be especially relevant for third world countries. In fact one of the reasons for wide-spread subcontracting in Japan is stated to be due to a shortage of capital.\(^{(28)}\) However, Mead views this third pattern as essentially a one-to-one situation, which may result in a bilateral monopoly-monopsony situation.

Organisations are not static, hence it is conceivable that there are likely to be different responses by big firms to vertical integration/disintegration as the economic environment changes. As Mead observes, it is "important to look how systems of subcontracting evolve to explain why some systems may be integrated at one

\(^{(28)}\) "--- several other factors made Japanese machinery manufacturing dependent on subcontracting more heavily than their counterparts abroad. One of them is the very low level of capital accumulation in Japanese industries. --- this made it necessary for major firms to concentrate their production on the core production processes (processes where up-to-date technologies were the key to survive and win competition) and to rely on subcontractors for the rest." Watanabe S, (1978) ibid.
point in time and disintegrated at another. More work is needed to determine how effectively disintegrated systems have responded to changing markets and technologies. Inter-firm relationship based on complex network of linkages may be quite effective in dealing with stable situations, where specifications of both the activity to be undertaken and appropriate rewards for work done are reasonably standard and commonly agreed on, but they be less satisfactory if all these things are rapidly changing. Even more important, one would like to know how the degree of vertical integration is related to the capacity of the system to initiate change. One can see reasons why vertically disintegrated systems might be quite dynamic, enabling firms to overcome their own limitations by moving into new markets or into more complex production patterns which surpass their own internal management capabilities. Some firms may then take an active role specialising in product or market development, contracting with others to handle some or all of the production and marketing activities. More research is needed on pattern of relationships which are most effective in instituting changes along these
Considerable interest centres around subcontracting in developing countries as a strategy for industrialisation suited to the factor endowments which is abundant in labour but poor in capital. Such interest has been sparked off by the experience of Japan which has obtained maximum mileage through subcontracting. Even the smallest enterprise has subcontractors and as a result division of labour could be carried to the furthest extent. It is on account of the perceived advantages of subcontracting that it has generated considerable interest among policy makers. These advantages are stated to accrue to the contractor, the subcontractor and to the economy as a whole. Production by subcontractors leads to considerable cost saving.\(^{(30)}\) As such the contractor can


\(^{(30)}\) a) Labour costs are often lower in small enterprises than in large firms, b) Most subcontractors have less equipment and machinery and simpler workshops than large firms, and their depreciation costs are lower, c) Subcontractors spend little on research and marketing which also reduces their costs.

contd.
use his capital more efficiently in particular by avoiding excess capacity through the use of the capital investment of his subcontractors. To the subcontractors who are mostly small firms, there is stability of orders. This would enable the subcontractor to undertake specialised activities. The economy benefits by broadening its industrial base. But there are certain negative aspects of subcontracting as well. To the contractor, problems may arise due to technical and managerial weakness of the subcontractor which may result in problems of quality, meeting delivery dates etc. The disparate bargaining power can create oppressive conditions so that the subcontractor is reduced to a status of 'captive firm'. However, the prominence given to subcontracting has not diminished. This is because, "the problems created by subcontracting especially the undesirable social effects may be nothing more than the usual problems created by industrialisation in any society. They

30) contd.

d) Subcontractors have more flexibility, management can take decisions more quickly and production programmes may be changed or adjusted more easily,

e) Subcontractors, especially when highly specialised, can often produce certain items more efficiently and cheaper than contractors.

represent potential undesirable side effects of a larger, more important element, the growth in industrialisation. Such problems can be corrected and often prevented, through both government and private action." (31)

In fact, the Japanese experience in the automobile industry shows, subcontracting, was a pragmatic response by the industry, whereby a conscientious choice was exercised to fashion this system as a dynamic factor for the growth of both the parent firm and the subcontractor. The difficulties which the large firms in developing countries faced were encountered in Japan also. But there were countervailing factors. (32) This was made possible due to the operation of certain favourable theoretical conditions as well as the behaviour of the firms, both the contractors and the


32) "The problems were the same as those facing today's developing countries poor quality products, unreliable delivery date and high costs. To overcome them, the Government introduced a number of measures the most important of which was the encouragement of potential subcontractors in non-urban areas to group themselves into industrial associations to act as contracting bodies with the Army and Navy as well as with large enterprises." Watanabe S, (1971) ibid.
subcontractors, as seen from the study of ancillary firms by Odaka. Odaka's study is highly original in its approach to sub-contracting. Technological factors are inextricably woven with economic factors as seen in the overriding importance given to subcontracting under product specialisation vis. a vis. process specialisation. Again such a choice is not merely due to engineering characteristics but has a strong economic reasoning viz. advantages of economies of scale. Above all the behavioural attributes of the parties to subcontracting is of tremendous significance in this selection.

However, in order to take advantage of this unique form of subcontracting, certain theoretical conditions have to be fulfilled. These factors which have been listed by Odaka, include favourable market factors, technological capability, managerial skills and appropriate government intervention. The market factors which deter subcontracting in this industry are market fragmentation, resulting from excessive product specification, besides the limited size of the spares market. In fact, standardisation of products which enhanced the inter-changeability of parts and
components is one of the factors which had contributed to the spread of subcontracting. A market factor which favours subcontracting are the prospects of an expanding market such as the opportunity to supply to more than one group of industries or to export their products. The possibility of developing new type of products that is not only sufficiently attractive to create a domestic market but is also shielded from international competition is also cited as a favourable market factor by Odaka.

Technological capability is necessary under subcontracting. The technological sophistication attained in the products subcontracted however, is related to demand. Yet, in the initial stage, the ability to adapt technology (which is invariably imported in the case of developing countries) to local factor endowments, can be a significant contribution for the development of the industry and the subcontractors. Managerial capability refers not merely to the role of specific individuals, but the administrative practices of the firm as a whole as it undergoes the process of organisational growth. Lastly, government policies also influence the course of
subcontracting. For example, the government has to ensure that any protection or concession given to the industry does not prove to be a fetter. This was seen in the case of the import substitution policy adopted by Japan which did not fall into the all too familiar trap of high cost industrial structure.

It would, however, be naive to presume that exactly the right type of theoretical conditions would be obtained for facilitating subcontracting. Here, the conduct of the firms assumes considerable significance. This is fully borne out by the study of ancillary firms in Japan by Odaka. In a vertical inter-firm relationship, where the principal contractor is the large assembler as in the case of the automobile industry, the market for the subcontractor's product, which is an intermediate component, may encounter difficulties in terms of stability of orders, restrictions on supply to other firms/markets etc. Even if this is not the case and there is continuous flow of orders, it may still lack dynamism. Such dynamism can be infused by the primary producers by allowing their subcontractors to grow. Obviously, the primary producers would themselves be an important beneficiary of such growth in terms of
advantages of scale economies besides specialisation. Thus almost every form of linkage that is forged with the subcontractors can through the conduct of the integrated firm result in their effective functioning as a vertically integrated firm, although organisationally independent. Here, the conduct of the subcontractors is of equal importance. Subcontractors who behave opportunistically for instance switching buyers, would hamper their long-term prospects. In fact, much of the difference under subcontracting in Japan and other countries can also be traced to the differences in perceptions towards subcontracting. In a study of the Fillipino automobile industry for instance, Watanabe found that the technical cooperation between assemblers and the subcontractors was weak in comparision to Japan. (33) Watanabe, however,  

(33) "--- technical cooperation between the assemblers and other parent firms (i.e. major component manufacturers on the one hand and their subcontractors, which is the most important means of technological upgrading of smaller firms in Japan, is not so prominent in the Fillipino industry." Watanabe S, (1979)'Technology and Employment Programme: Technical cooperation between large and small firm in the Fillipino automobile industry", Working paper, World Employment Programme, International Labour Office, Geneva.
interprets the existence of weak linkage to the limitations of the 'Japanese model', in terms of its applicability to developing countries. These limitations arise from the small size of the market and the limited prospects of its expansion, besides the inefficiencies within the industry. As a result, subcontractors had 'partial' or floating relationships rather than a stable one with the parent firm.

However, subcontracting, as the Japanese experience in Odaka's study shows is not merely a contract for purchase and sale. It is a comprehensive relationship, where the vertically integrated firm in their own enlightened self-interest farm out functions among their subcontractors in such a way that it is mutually beneficial, reinforcing their structural independence and facilitating mutual cooperation. This once again underlines the importance of subcontracting as a market structure in the behavioural sense. Here one finds a fine blending of the advantages of both vertical integration and disintegration while eschewing some of its limitations. It is against this backdrop of the experience of the Japanese automobile industry that the
case study on subcontracting in the Indian automobile industry has been dealt with in this thesis, as may be seen from the succeeding chapters.