Analysis of the concept of Public Private Partnership and Development of a model for Defence Industry of Pakistan to utilize its surplus capacity

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Abstract

The present financial condition of State owned public enterprises of Government of Pakistan warrants complete relook at economic viability of these outfits. Defence industry of Pakistan, one of the major sector which is rich in human resources and technical capabilities/expertise. However, it is not able to utilize/optimize its potential. This gap between capabilities and its utilization demands out of the box thinking to enable transformation into a profit earning enterprise. Currently Government of Pakistan is financially burdened due to low productivity/profitability in public sector organization specially in large scale manufacturing sector such as Pakistan Steel,, HMC and defense production enterprises. To enhance the productivity/profitability in public sector, and to reduce burden on government expenditure, a workable model of Partnership with Private sector is required to achieve the desired productivity/ efficiency. Public Private Partnership (PPP) means a commercial transaction between a private party and an institution by which the private party:-

- Performs an institutional function on behalf of the institution; and/or
- Assumes the use of public property for its own commercial purposes;

Detailed data was collected of HIT Factories' surplus capacity in terms of man and machine hours available after meeting its already assigned targets.

HIT is a defence sector make to order type organization which specifically cater for demands of defence forces of Pakistan.

From the data collected from the target industry, it has been observed that there is a

- Large surplus capacity available in terms of man and machine hours in HIT
- The man and machinery is partially utilized during a single shift of eight hours only, hence technical facilities can be utilized in evening and night shifts for commercial activity.
- PPP MODEL developed for HIT from this study has enhanced the productivity/ profitability tremendously. Developed PPP model can be successfully employed in public sector organizations with their arrangements.

Keywords:

Public Private Partnership, Public Sector, Defence Production, Heavy Industries Taxila.

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Zahid Maqsood

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CHAPTER # 1

INTRODUCTION

1.1 Introduction

A public–private partnership (PPP) is a government service or private business venture which is funded and operated through a partnership of government and one or more private sector companies (Spackman, 2002). These schemes are sometimes referred to as PPP. PPP involves a contract between a public sector authority and a private party, in which the private party provides a public service or project and assumes substantial financial, technical and operational risk in the project. Capital investment is made by the private sector on the basis of a contract with government to provide agreed services and the cost of providing the service is borne wholly or in part by the government (Quiggin, 1996). Government contributions to a PPP may also be in kind (notably the transfer of existing assets).

- **Public Private Partnership.** (PPP) means a commercial transaction between a private party and an institution by which the private party:-
  - Performs an institutional function on behalf of the institution; and/or
  - Assumes the use of public property for its own commercial purposes;
  - Assumes substantial financial, technical and operational risks in connection with the performance of the institutional function or use of the public property; and
  - Receives a benefit for performing the institutional function or from utilising the public property, either by way of:
    - Consideration to be paid by the institution from its budget or revenue; or
    - Charges or fees to be collected by the Private Party from users or customers of a service provided to them; or
    - A combination of such consideration and such charges or fees;

The Government of Pakistan have endorse the poor economic condition of itws public sector enterprises and has taken bold steps to improve and expand for the improvement of its economic and social development in its Medium Term Development Framework (2005-2010) (MTDF) such as better quality as well as services in health and education, water and power, transport and communications, sewerage treatment and logistics are some of its main domains.

Financial restrictions almost in all the countries have seen supreme in nature and innovative tactics for the infrastructure support and funding, in oppose to the traditional role of the Government seem to be the only infrastructure service supporter, and to add the expertise and finance of the private sector.

A great amount of investment in infrastructure can be fulfill specially in Pakistan can be obtained by public private partnerships (PPP) concept and PPP policy framework can be utilized as the basis for this concept in Pakistani public sector enterprises.

For the development of public sector enterprises and to enhance the participation of private sector in infrastructure development Government of Pakistan is framing and implementing policy reforms, incentives , financial investment plans to encourage private sector participation in public sector enterprises. For example in the beginning of 1990, Government of Pakistan has made reforms and policy guidelines in terms of public private partnership in telecommunication, power, logistics sanitation and water supply, waste management and social sectors, with their benefits and drawbacks. It has been learned from these reforms and policies, require a comprehensive policy backed by legal support, financial incentives and long term commitment by the Government can enhance the participation of private sector in public sector enterprises.

The Government of Pakistan has now shown strong commitment for framing a concise financial, legal and administrative reforms as well as the elimination of all the unfavorable environment for restricting private investments in public sector infrastructure and encourage to facilitate the public private partnerships.

1.2 Definition of Public Private Partnership

Public Private Partnerships (PPP) include the financing, development, operation and maintenance of infrastructure by the private-sector that is normally otherwise been established by the public sector. In fact public sector procure the capital asset and provide public service, on the other hand the private sector establish the asset through a well defined standalone business (mostly designed, financed, built, maintained and operated by the private sector) and ultimately delivers the service to the public sector enterprise in return for financial benefits which is linked to the performance of the enterprise. Hence the public sector can focus its efforts to more urgent social and economic issues. Public Private Partnership bring an equity joint venture between Government and the private sector enterprises (Harris, 1996).

The financial as well as operational expenses bear by the private party normally be recoverable through the PPP modality by sharing financial gains mutually for the service provided or through pre- fixed (or partly fixed) periodic payments released by the public sector in the interim period, or by a combination of both.

Public Private Partnership concept promulgates each party to focus on its strength that best suit their capabilities. In terms of public sector this means planning and identifying infrastructure service requirements

and target on the development of national, provincial and local sector-specific policies, and to look after these policies and to implement the Public Private Partnership agenda. In terms of private sector, the most important is key is to complete the infrastructure and facilities needed by the public sector and customers at the project level. In Pakistan some public sectors, for example power and communications, have already framed independent and effective policies, and these are expanding across other sectors. However, in this beginning, Public Private Partnerships Policies supported by contract facilitate PPP to go through on a project by project basis in other sectors as well.

By using PPP concept following advantages can be ascertained:

a) No cost or time overrun happens in the development of versatile infrastructure.

b) By including private sector in innovative design, and technology improve the international as well as local investors.

c) Project risk can be shared equally with private sector partners.

d) Quality of public sector services improved dramatically.

e) A good utilization and investment of public funds in terms of real financial benefits.

f) A good opportunity for increased employment as well as economic growth.

1.3 Problem statement:

Currently Government of Pakistan is financially burdened due to low productivity/profitability in public sector organization specially in large scale manufacturing sector such as Pakistan Steel,, HMC and defense production enterprises.

To enhance the productivity/profitability in public sector, and to reduce burden on government expenditure, a workable model of Partnership with Private sector is required to achieve the desired productivity/ efficiency.

1.4 Objectives:

The objectives of this research are:

(a) To ascertain applicability of the concept of Public Private Partnership in defence industry with special relevance to Heavy Industries Taxila HIT).

(b) To identify and determine the surplus capacity available with factories of HIT in terms of man and machine hours and potential for its utilization.

(c) To explore possible avenues where the surplus capacity can be utilized to generate commercial activity.

(d) To develop a model for implementation of Public Private Partnership concept to accrue financial benefits

1.5 Significance of Research

The present financial condition of State owned public enterprises of Government of Pakistan warrants complete relook at economic viability of these outfits. Defense industry of Pakistan, one of the major sector which is rich in human resources and technical capabilities/expertise. However, it is not able to utilize/optimize its potential. This gap between capabilities and its utilization demands out of the box thinking to enable transformation into a profit earning enterprise.

1.6 Research methodology

This research deals with describing an already existing concept and exploring its applicability on a particular sector. Firstly the researcher will describe the Public Private Partnerships in detail and then explore the applicability in particular areas which can accrue optimum benefits to HIT. Therefore, the study may be regarded as a descript to-exploratory study.

The researcher made use of existing theory to formulate the objectives. Same theoretical concepts will be used to devise an implementation model in the target organization.

1.6 Thesis structure

This Thesis focuses on the analysis of the concept of Public Private Partnership and development of a model for Defence Industry of Pakistan to utilize its surplus capacity. This thesis will provide an overview of the Public Private Partnership and how to practically apply it at a defence industry of Pakistan. This thesis outlines the most of the existing models for Public Private Partnership in Pakistani with a brief description of each of the concepts and models. Later a public sector defence industry will be analyze to determine the surplus capacity available in terms of man and machine hours. Keeping in view the surplus capacity availability a workable model will be develop to implement the concept of Public Private Partnership.

1.7 Audience

The key audience for this research thesis is the defence industry of Pakistan. This thesis will also be of interest to other public sector enterprises as well. Readers of this thesis are expected to apply developed model in this thesis and to continually improve the Pakistani defece industry performance and give suggestions for further improvement in the concept of Public Private Partnership.

Chapter # 2

Literature Review

2.1 Introduction

In the fast growing economy it is very difficult to define the boundaries between public and private partnership functions in the enterprises (Bentz et al, 2002). In this chapter, some theoretical concepts will be put forward and a brief on literature review regarding public private partnership will be explored. Firstly some of the general concepts of theoretical literature about privatization as well as some of the concepts from literature to clarify preliminary model of public private partnership will be clarified.

It is very primitive to distinguish between the theory of the firm and theory of privatization (Besley et al, 2001). Let consider two different firms X and Y. X might be a tank manufacturer and Y might be tank parts supplier. For example, it is necessary for X and Y to have a long term relationship that is they have to have a relationship-specific investment. For this relationship-specific investment, there are two possible types in which this relationship can be established. X and Y have been an arms-length contract, but they behave in as independent entities, however X and Y can also merge together and function like a single firm. However with regard to privatization, let X is the Government and Y is the firm, providing Government with some kind of services, Y may be Telecom Company. There may be two different ways in which this partnership may be executed. X and Y may have a contract, allowing Y as a private firm or the Government can buy (nationalize) Y. In these situations, the main difference is that Y is a telecom company and it may like to have direct relationship with customers irrespective of its relationship with Government. In this situation, the Government's contract with the private telecom company can be a kind of a attempt to regulate relationship with the customers. There seems to be no obvious analogy with respect to vertical integration. However, to private or to nationalize the company is normally seem as highly political, due the Government strong position in society, although decision related to vertical integration are normally highly economic (Ellman, 1999). Another aspect is that Government is usually has to promote social welfare of its public and not only run after towards earning profit. However, the situation described is less sharp than it is looks initially. There are number of firms as NGOs that works for the welfare of public than just to make only profit.

Although the distinction between these two exists, the concept of vertical integration as well as privatization has much more in common. Among these two, both are concerned about how to regulate a partnership via an arms-length agreement or via a transfer of ownership.

Knowing the situation, it is evident that latest literature on the theory of firms is not in complete form due to the fact that it is difficult to foresee and to have a contract about an uncertain future. Literature on privatization is taken as complete in terms of contracting scenario, although imperfections exist due to a symmetric information form and organization form as well as firm's ownership and its boundaries has no value, since the owner has not enjoy any extra ordinary power because all the terms and conditions are well defined in the contract. However, ownership of the firm effects when the contracts are not well defined and owner of the firm can take decisions on its own that best suit to him (King et al, 2001).

With respect to privatization, a comprehensive contract gives complete control to the firm. However in shape of not well defined contracts, Government has to take over the ownership in the residual control rights.

For example in terms of privatization, if Government purchase a power generating company, the major benefit is that few Government bureaucrat who are in a position to control will make more investment in terms of more ideas and entrepreneurial ship, however cost is that the working manager of the power generating unit – who was previously was used to be an owner is now working as an employee and as a result he or she will invest less. As a result- the Government employee will be entrepreneurial than an ownership manager (Schmidt, 1996).

There are usually two fundamental drivers for PPPs. Firstly, PPPs are claimed to enable the public sector to harness the expertise and efficiencies that the private sector can bring to the delivery of certain facilities and services traditionally procured and delivered by the public sector (Laffont et al, 1993).

Secondly, a PPP is structured so that the public sector body seeking to make a capital investment does not incur any borrowing. Rather, the PPP borrowing is incurred by the private sector vehicle implementing the project and therefore, from the public sector's perspective, a PPP is an "off balance sheet" method of financing the delivery of new or refurbished public sector assets (Holmstorm et al, 1991). National Commission for Human Development (NCHD) and Pakistan Human Development Fund (PHDF) is a unique public private partnership model for social sector

development in Pakistan. Under this public private model, the two organizations have been established simultaneously in 2002 i.e. NCHD AND PHDF.PHDF receives funds for the programs of NCHD along with overseeing its operations and program implementation. While NCHD, working as statutory autonomous federal body, is mandated with implementation of basic education and basic health programs for human development in Pakistan.

2.2 Types of PPP Agreements

2.2.1 Build-and-Transfer (BT):

A contractual arrangement whereby the private party undertakes the financing and construction of an infrastructure project and after its completion hands it over to the Government Agency. The Government Agency will reimburse the total project investment, on the basis of an agreed schedule. This arrangement may be employed in the construction of any infrastructure project, including critical facilities, which for security or strategic reasons must be operated directly by the Government Agency (Hart, 1995).

2.2.2 Pros and Cons of BT:

This type of PPP agreement is beneficial only when a new project is to be planned or started not for the existing running public project.

2.2.3 Build-Lease-and-Transfer (BLT):

A contractual arrangement whereby the private party undertakes the financing and construction of an infrastructure project and upon its completion hands it over to the Government Agency on a lease arrangement for a fixed period, after the expiry of which ownership of the project is automatically transferred to the Government Agency (Bennett et al, 2002).

2.2.4 Pros and Cons of BLT:

This type of PPP agreement is beneficial only when a new project is to be planned or started not for the existing running public project.

2.3 Build-Operate-and-Transfer (BOT):

A contractual arrangement whereby the private party undertakes the financing and construction of an infrastructure project, and the operation and maintenance thereof. The private party operates the facility over a fixed term during which it is allowed to collect from project users' appropriate tariffs, tolls, fees, rentals, or charges not exceeding those proposed in the bid or negotiated and incorporated in the PPP agreement, to enable the private party to recover its investment and operating and maintenance expenses for the project. The private party transfers the facility to the Government Agency at the end of the fixed term that shall be specified in the PPP agreement (Shleifer, 1998).

2.3.1 Pros and Cons of BOT:

This type of PPP agreement is beneficial only when a new project is to be planned or started not for the existing running public project.

2.4 Build-Own-and-Operate (BOO):

A contractual arrangement whereby the private party is authorized to finance, construct, own, operate and maintain an infrastructure project, from which the private party is allowed to recover its investment and operating and maintenance expenses by collecting user levies from project users. The private party owns the project and may choose to assign its operation and maintenance to a project operator. The transfer of the project to the Government Agency is not envisaged in this arrangement. However, the Government Agency may terminate its obligations after the specified time period (Moszoro et al, 2008).

2.4.1 Pros and Cons of BOO:

This type of PPP agreement is beneficial only when a new project is to be planned or started not for the existing running public project.

2.5 Build Own-Operate-Transfer (BOOT):

A contractual arrangement similar to the BOT agreement, except that the private party owns the infrastructure project during the fixed term before its transfer to the Government Agency (Barlow et al 2013).

2.5.1 Pros and Cons of BOOT:

This type of PPP agreement is beneficial only when a new project is to be planned or started not for the existing running public project.

2.5.2 Build-Transfer-and-Operate (BTO):

A contractual arrangement whereby the Government Agency contracts out an infrastructure project to the private party to construct it on a turn-key basis, assuming cost overruns, delays and specified performance risks. Once the project is commissioned, the private party is given the right to operate the facility and collect user levies under the PPP agreement. The title of the project always vests in the Government Agency in this arrangement (Zheng et al, 2008).

2.6 Pros and Cons of BTO:

This type of PPP agreement is beneficial only when a new project is to be planned or started not for the existing running public project.

2.7 Contract-Add-and-Operate (CAO):

A contractual arrangement whereby the private party expands an existing infrastructure facility, which it leases from the Government Agency. The private party operates the expanded project and collects user levies, to recover the investment over an agreed period. There may or may not be a transfer arrangement with regard to the added facility provided by the private party (S Raju, 2011).

2.8 Pros and Cons of CAO:

This type of PPP agreement is beneficial only when an existing project is required to be expanded on a lease basis but not the economic revival of the existing public defense sector as in our case.

2.9 Develop-Operate-and-Transfer (DOT):

A contractual arrangement whereby favorable conditions external to an infrastructure project, which is to be built by the private party, are integrated into the PPP agreement by giving it the right to develop adjoining property and thus enjoy some of the benefits the investment creates such as higher property or rent values (World bank, 2007).

2.10 Pros and Cons of DOT:

This type of PPP agreement is beneficial only when a new project is to be planned or started not for the existing running public project.

2.11 Rehabilitate-Operate-and-Transfer (ROT):

A contractual arrangement whereby an existing infrastructure facility is handed over to the private party to refurbish, operate and maintain it for a specified period, during which the private party collects user levies to recover its investment and operation and maintenance expenses. At the expiry of this period, the facility is returned to the Government Agency. The term is also used to describe the purchase of an existing facility from abroad, importing, refurbishing, erecting and operating it (Burnett, 2007).

2.12 Pros and Cons of ROT:

This type of PPP agreement is beneficial only when an existing project is handed over to a private party to rehabilitate it and after acquiring the invested capital hand it over back to government which is also not feasible for the defense industry.

2.13 Rehabilitate-Own-and-Operate (ROO):

A contractual arrangement whereby an existing infrastructure facility is handed over to the private party to refurbish, operate and maintain with no time limitation imposed on ownership. The private party is allowed to collect user levies to recover its investment and operation and maintenance expenses in perpetuity (Gonzalez, 2006).

2.14 Pros and Cons of ROO:

This type of PPP agreement is beneficial to boost the defense industry while keeping its own control over the operational and administrative issues and after its revival taken over back its facility and infrastructure.

2.15 Benefits of PPPs

In this fast moving world, more and more expectations, huge demands from public and budgetary restrictions, most of the Governments are realizing that they have to improve the infrastructure of public sector organizations like railways, bridges, roads, hospitals, power plants, as well as defense industry. However, many countries financial requirements need extra ordinary resources availability. To fulfill these requirements is a great task for the development of existing infrastructure. Budgetary restrictions as well as incredible performance of private sector, most of the governments are finalizing contracts to accelerate the inclusion of private sector in government projects and adopting public private partnership models so that they can fulfill the needs of its public in a better way as well as reduced the burden on its exchequer (Schmidt, 1996).

2.16 Advantages of Public Private Partnership

- Infrastructure developed through the PPP, have much more better quality, (Minnow et al, 2009).
- Infrastructure mostly completed on time and within budget, (Minnow et al 2009).
- Applying PPP concept, a more disciplined as well as more commercial approach may be achieve, (Moric 2009).
- Overall strategic control remains with the Government, (Onses, 2003).
- Applying PPP concept, risk of performance is shared or transferred to private sector, (Quiggin, 1996).
- PPP focus not only initial investment but it covers whole life cost of the project as well as its sustainability, (Monbiot (2000).
- PPP allows private funds to improve services quickly, (Industry Commission, 1996).
- Using PPP, expertise as well as experiences of private sector improves innovation process causing shorter delivery time and more value addition, (EPAC, 1995).
- Government debt is reducing drastically by using PPP concepts, EPAC, 1995).
- Tax rates are reduced due to finance of private partner, (Abu Baker, 2013).
- A good value for money can be ascertained through PPP concept, (UN Report, 2012).
- By using PPP concept, a better risk analysis is done by both the parties, (Chinchilla, 2006).
- Using PPP concept, a better efficiency and working relationship developed among both parties, (Nazar et al, 2008).

CHAPTER # 3

Methodology

This research deals with describing an already existing concept and exploring its applicability on a particular sector. Firstly the researcher will describe the Public Private Partnerships in detail and then explore the applicability in particular areas which can accrue optimum benefits to HIT. Methodology

Therefore, the study may be regarded as a descript to-exploratory study.

The researcher made use of existing theory to formulate the objectives. Same theoretical concepts will be used to devise an implementation model in the target organization.

The study relies on primary as well as secondary data. Secondary data about the trucking industry in Pakistan and around the globe was collected using internet sources. Care was exercised to gather information from sources that are reliable. Primary data was directly collected from all the stakeholders of trucking industry including manufacturers, fleet operators, logistic companies and end users. Data was also collected from government entities like Engineering Development Board (EBD) and Bureau of Statistics.

Primary data was collected through human resource department from the concerned industry as well as personal face-to-face interviews relating to industry and products. The survey mostly contained close ended questions for trucks, prime movers and dumper manufacturers as well as for fleet managers, individual owners and drivers. Both quantitative and qualitative approach was used in compiling data for this study. Focus groups and interviews were conducted in Islamabad, Karachi and Lahore to evaluate the perceptions, opinions, beliefs, and attitudes of audience towards the products.

To cross-check the findings from our secondary research, primary data was directly collected from all the stakeholders of the proposed PPP for trucking industry including manufacturers, fleet operators, logistic companies and end users. Primary data was collected through personal face-to-face interviews as well as directly from human resource department covering industry and products. The survey mostly contained close ended questions for trucks, prime movers and dumper manufacturers as well as for fleet managers, individual owners and drivers. Both quantitative and

qualitative approach was used in compiling data for this study. Focus groups and interviews were conducted in Islamabad, Karachi and Lahore to evaluate the perceptions, opinions, beliefs, and attitudes of audience towards the products.

IPDF team performed extensive primary and secondary research designed to increase our understanding of industry dynamics and future market development.

Work plan and methodology was developed to attain the objectives of this research. The study relies on primary as well as secondary data. Secondary data about the trucking industry in Pakistan and around the globe was collected using internet sources.

Care was exercised to gather information from sources that are reliable. The study process began with a thorough set of market-specific information derived from the secondary data about the trucking industry in Pakistan and around the globe. The team analyzed a number of reports, articles, and websites from a variety of industry sources. Secondary search sources included Engineering Development Board (EDB), Pakistan Bureau of Statistics (PBS), Manufacturers, Importers, Fleet Managers and Logistic Companies.

- Interviews with more than 10 truck end users to access preferences and estimated demand for next four years;
- Interviews and meetings with 21 industry representatives, manufacturers, fleet managers, and other stakeholders that could represent potential sources of demand for trucks, prime movers and dumpers
- Research and analysis of truck market conditions and forecasts from IPDF and industry sources

Data was also collected from government entities like Engineering Development Board (EBD) and Bureau of Statistics.

I would like to highlight here primary data collection was a tedious and time taking task. Furthermore, there is variation in data collected from different sources and such variation at times is significant. Care was exercised to remove such biases.

CHAPTER # 4

Data Collection

Primary data was collected from the concerned industry. Detailed data was collected of HIT Factories' surplus capacity in terms of man and machine hours available after meeting its already assigned targets. HIT is a defense sector make to order type organization which specifically caters for demands of defense forces of Pakistan. Data collected is shown in appendix –A and appendix=B A short brief about heavy industries taxila is shown in figure 4.1 to 4.5 as follows:

Figure No. 4.1 Mission & Capability of HIT

Figure No. 4.2 Commercial Products of HIT

Figure No. 4.3 Organizational Structure of HIT

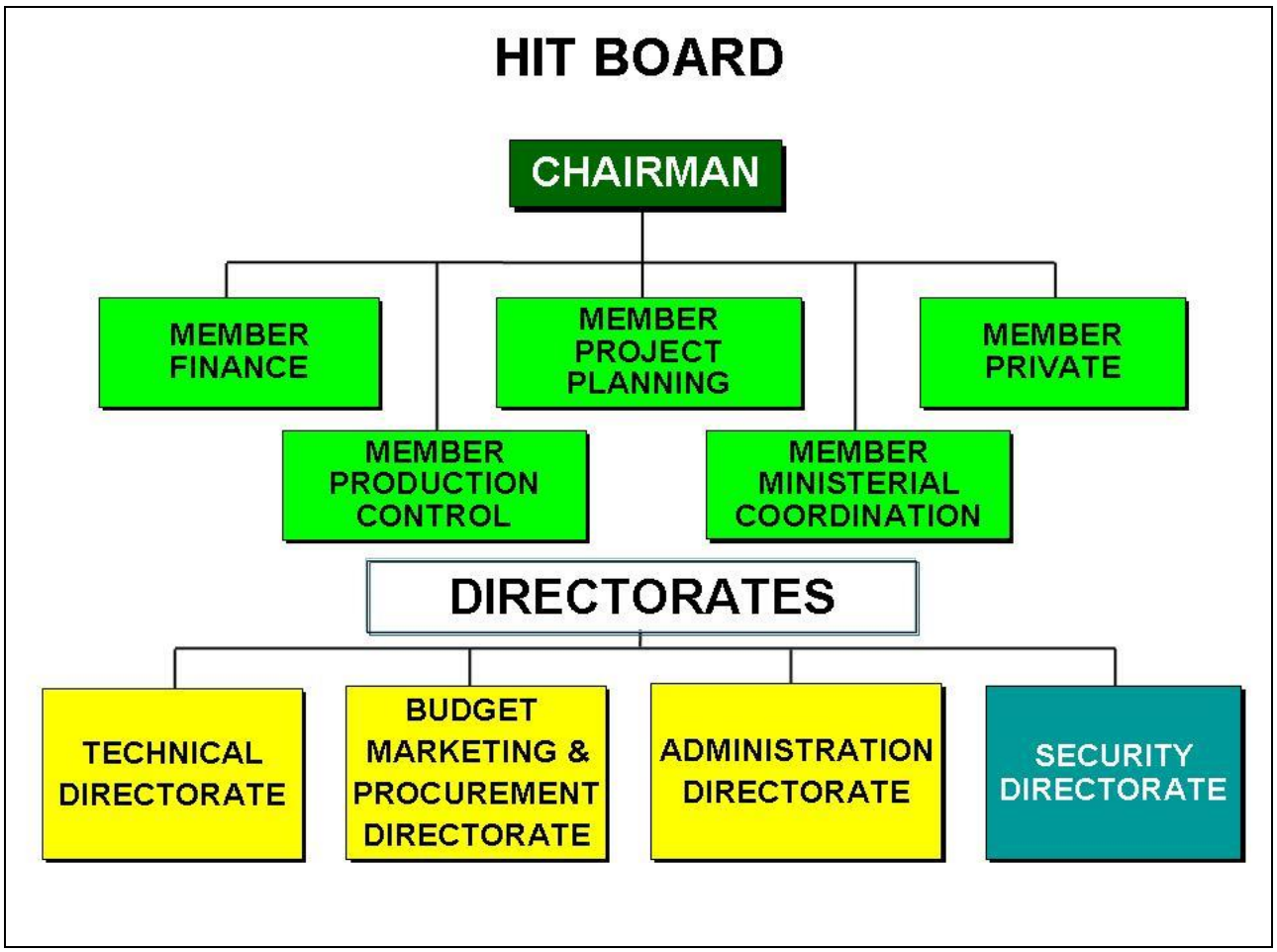
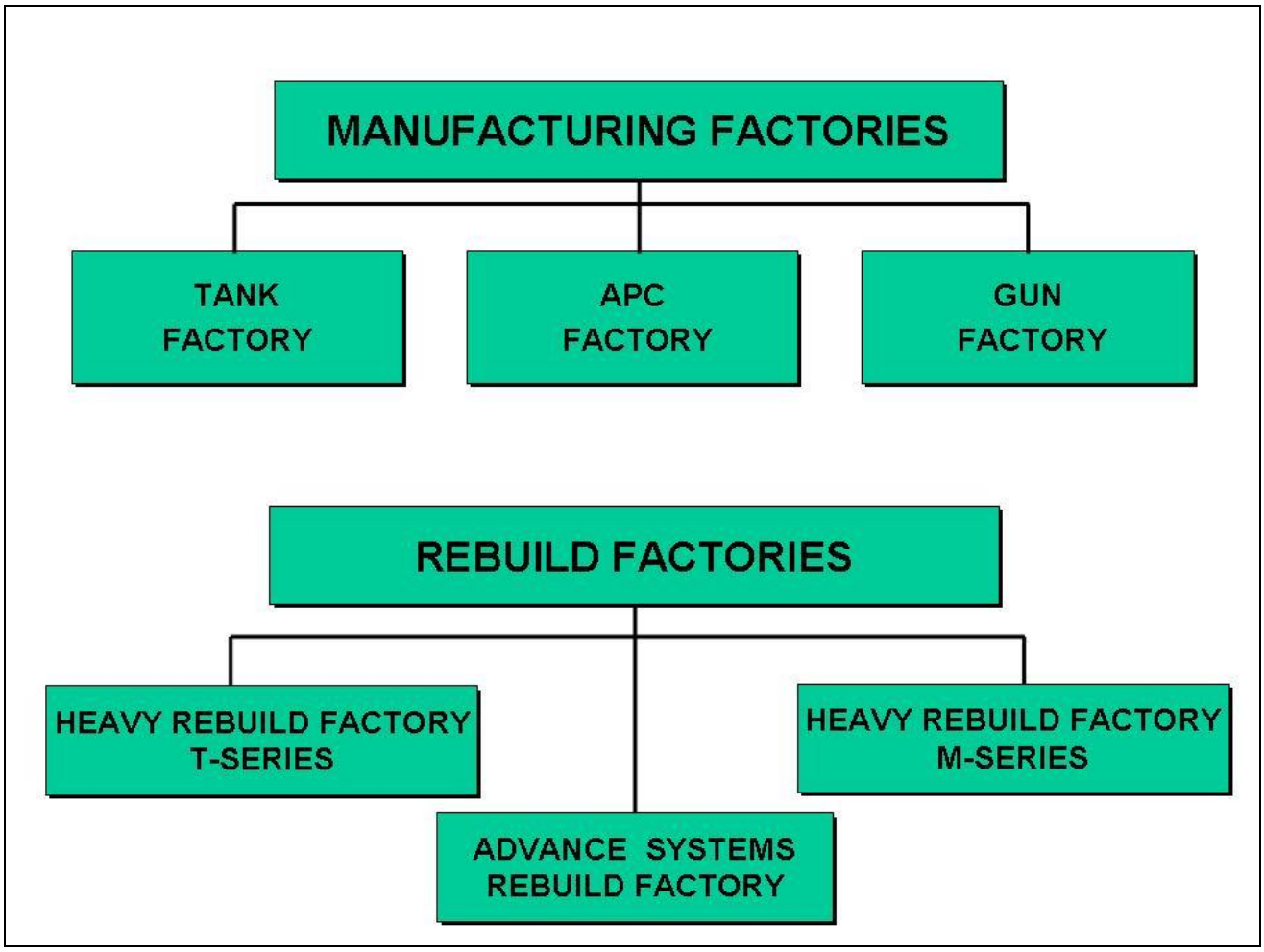
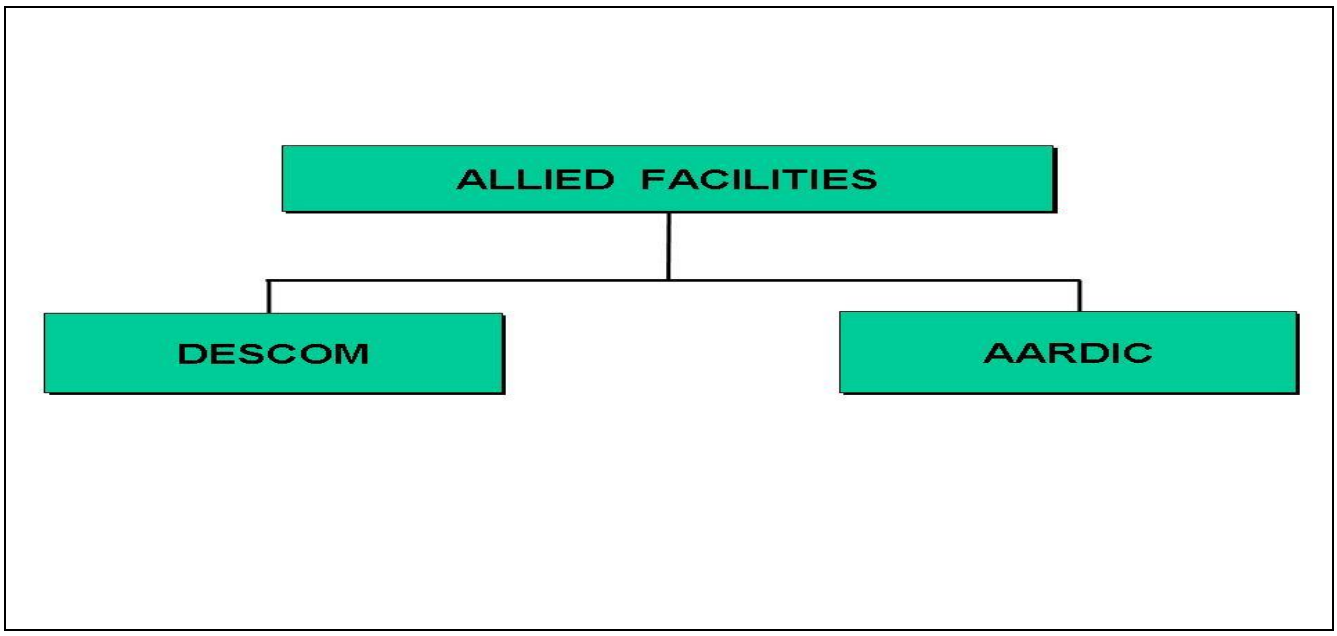


Figure No. 4.4 Manufacturing, Rebuild and Allied factories of HIT





Chapter # 5
Data Analysis

From the data collected from the target industry, it has been observed that there is a large surplus capacity available in terms of man and machine hours in HIT

The man and machinery is partially utilized during a single shift of eight hours only, hence technical facilities can be utilized in evening and night shifts for commercial activity**.**

5.1 Conceptual Model Formulation

- PUBLIC PRIVATE COLLABORATION FOR DEFENCE PRODUCTS
  - MODEL - I
  - MODEL - II
- PUBLIC PRIVATE COLLABORATION FOR COMMERCIAL PRODUCTS
  - REVOLVING FUND MODEL
  - PPP MODEL
  - PPP PROJECTS
- RULES AND LEGAL SUPPORT ISSUES

Figure 5.2 Conceptual model of PPP for Defense Industry

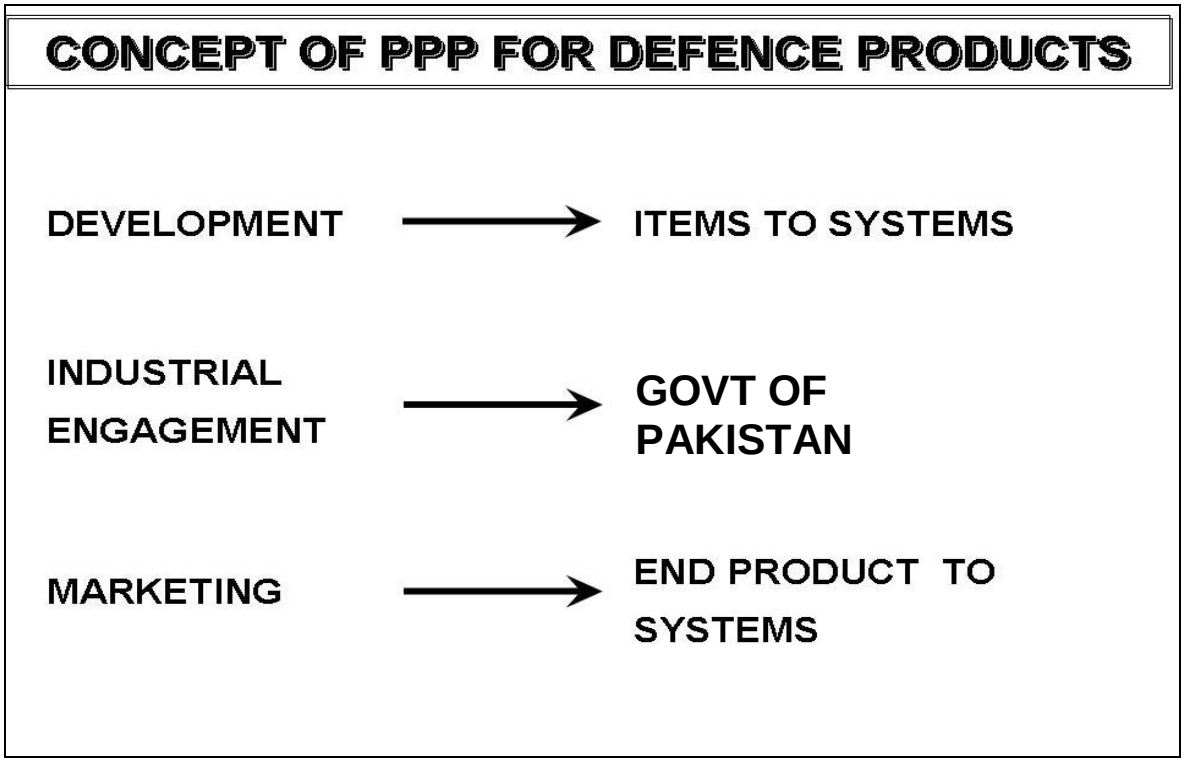
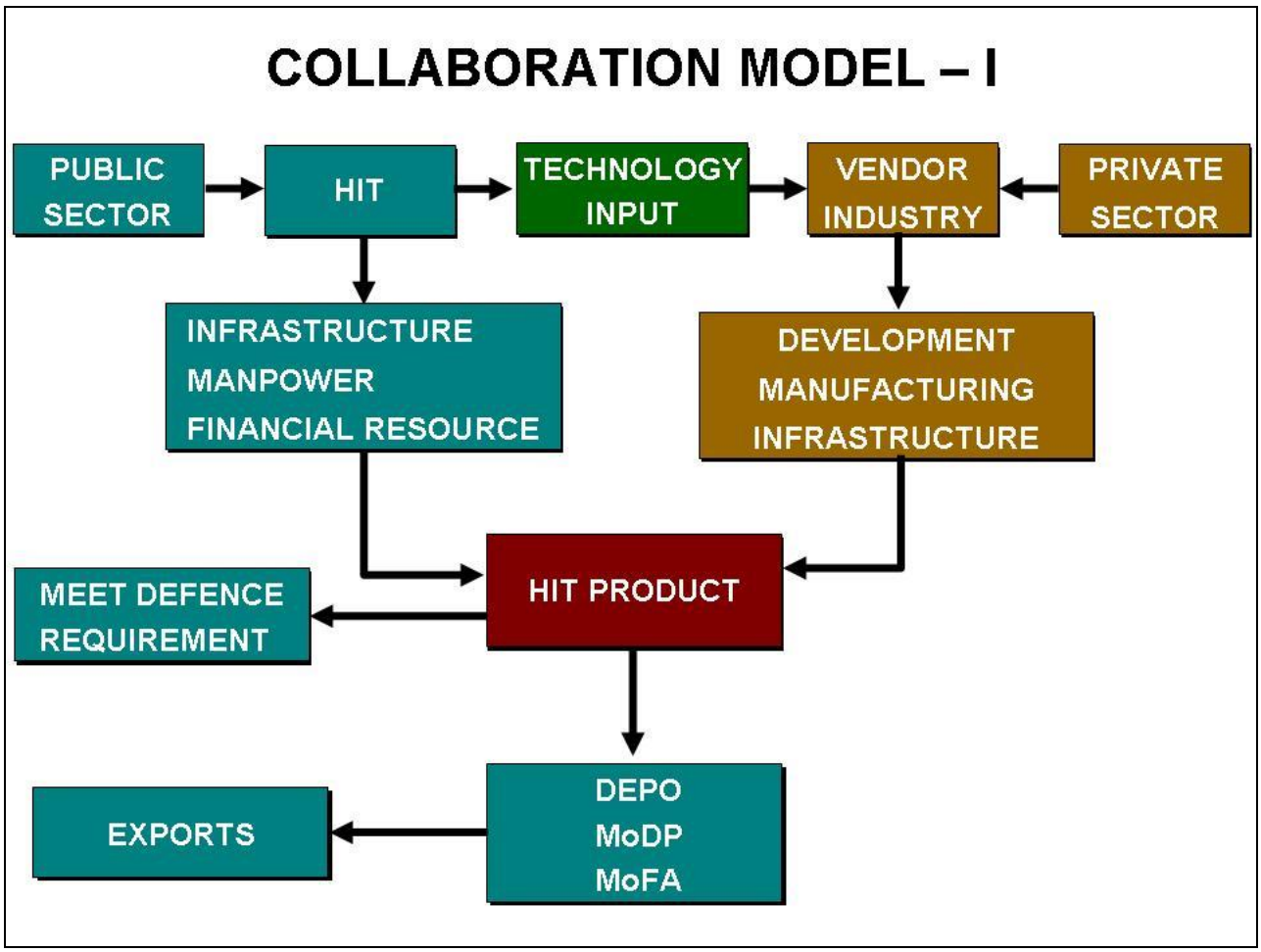
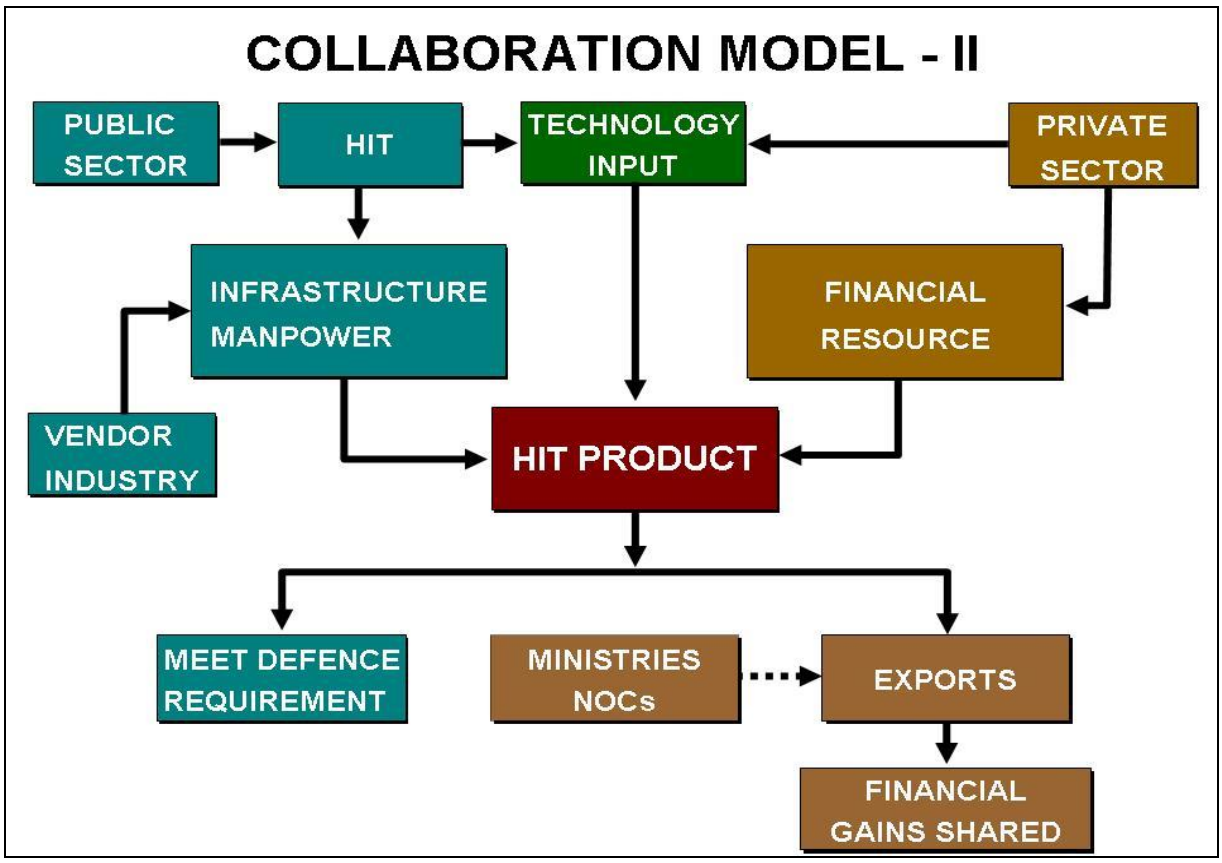


Figure 5.3 Proposed PPP for HIT





APPLICATION OF THE MODEL
SAAD PROJECT

INFRASTRUCTURE & MANPOWER	→	HIT
BENEFICIARY	→	ARMY / PP / HIT
TECHNOLOGY	→	COASTAL UAE DUMA BELGIUM
INVESTMENT (EXPORTS)	→	COASTAL UAE
INVESTMENT (DEFENCE REQUIREMENT)	→	GOVT OF PAKISTAN

5.2 Application of Model

Heavy Industries Taxila (HIT), National Logistics Cells (NLC) and North China Industries Corporation (NORINCO) have signed shareholder and joint venture agreement by virtue of which they intend to establish a manufacturing / assembling plant for trucks, prime movers and dumpers in Pakistan. In this regard, a special purpose company, PAKNOR is in the process of being established which would manufacture trucks and prime movers under the name Power Star Local Sales and Market Shares. Table below lists year by year sales of vehicles of all major brands. This information has been collected mostly from manufacturers.

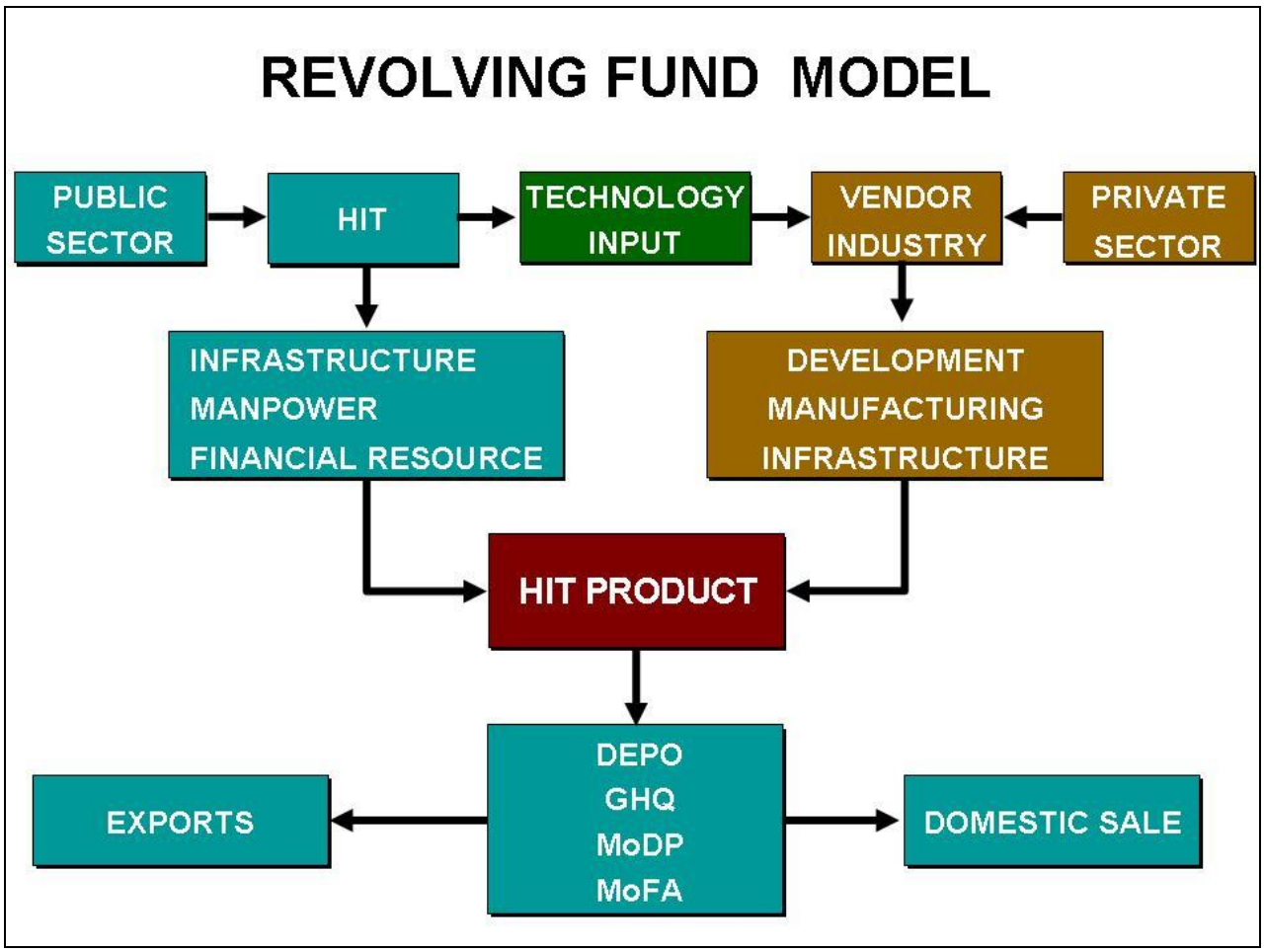
5.3 Application of Model

At present the market is divided into customers whose needs fall into one of the following three categories:

- Trucks/Prime Movers with 120 to 180 HP;
- Trucks/Prime Movers with 200 to 240 HP; and
- Trucks/Prime Movers with 260 to 320 HP

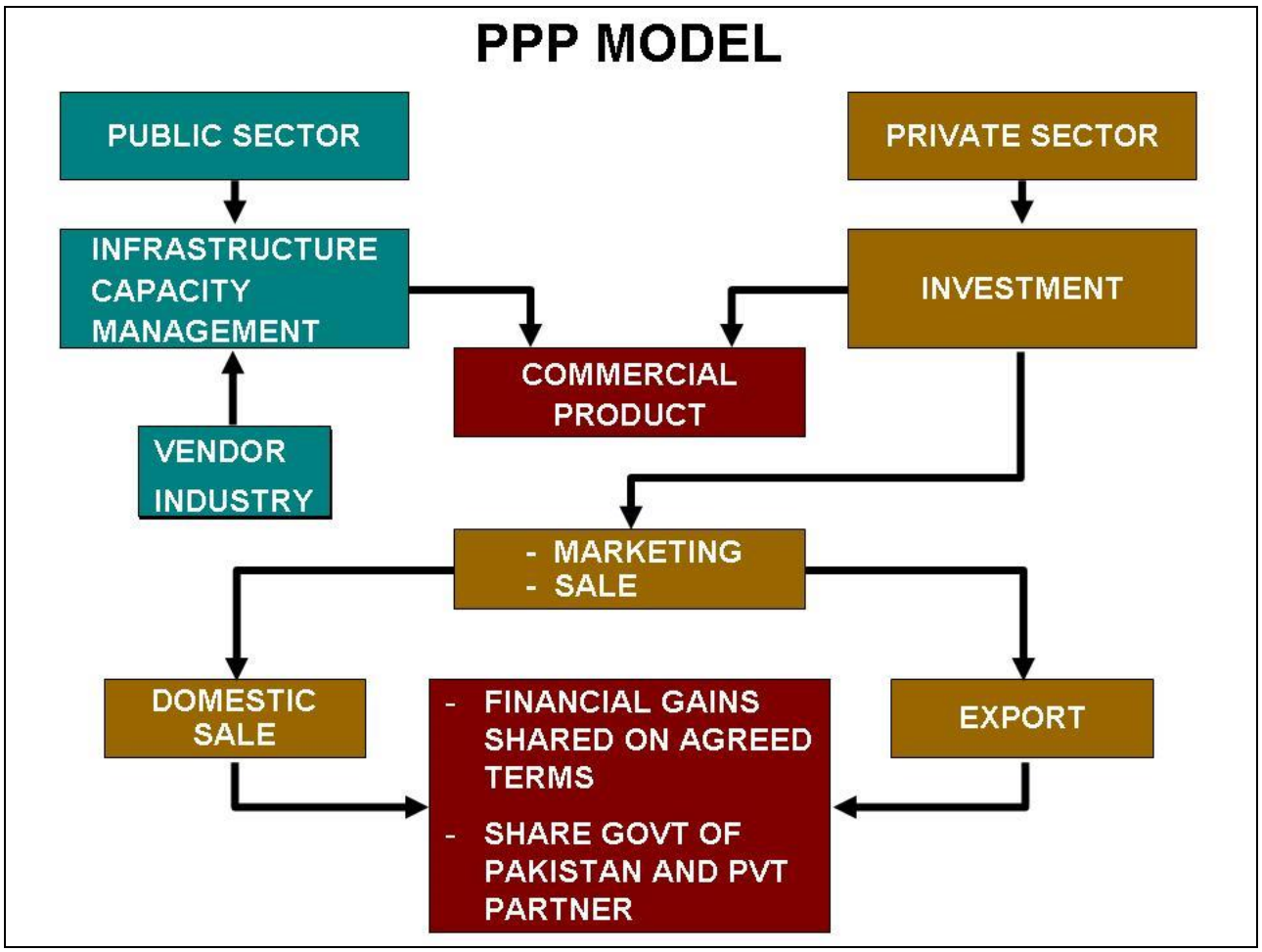
Table – Local Sales of Prime Movers

Manufacturers	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Hino	2,655	1,700	2,070	1,307	1,237	768
Ghandhara Nissan	926	567	515	469	228	208
Master	590	384	490	655	712	648
Ghandhara Industries (Isuzu)	822	481	350	379	420	299
Afzal Motors	166	108	236	155	126	123
Al-Hajj FAW motors	0	0	890	1100	1290	750
Grand Total	**5,293**	**3,313**	**4,551**	**4,066**	**4,013**	**2,796**



Heavy Industries Taxila (HIT), National Logistics Cells (NLC) and North China Industries Corporation (NORINCO) have signed shareholder and joint venture agreement by virtue of which they intend to establish a manufacturing / assembling plant for trucks, prime movers and dumpers in Pakistan. In this regard, a special purpose company, PAKNOR is in the process of being established which would manufacture trucks and prime movers under the name Power Star.

PRIME MOVER

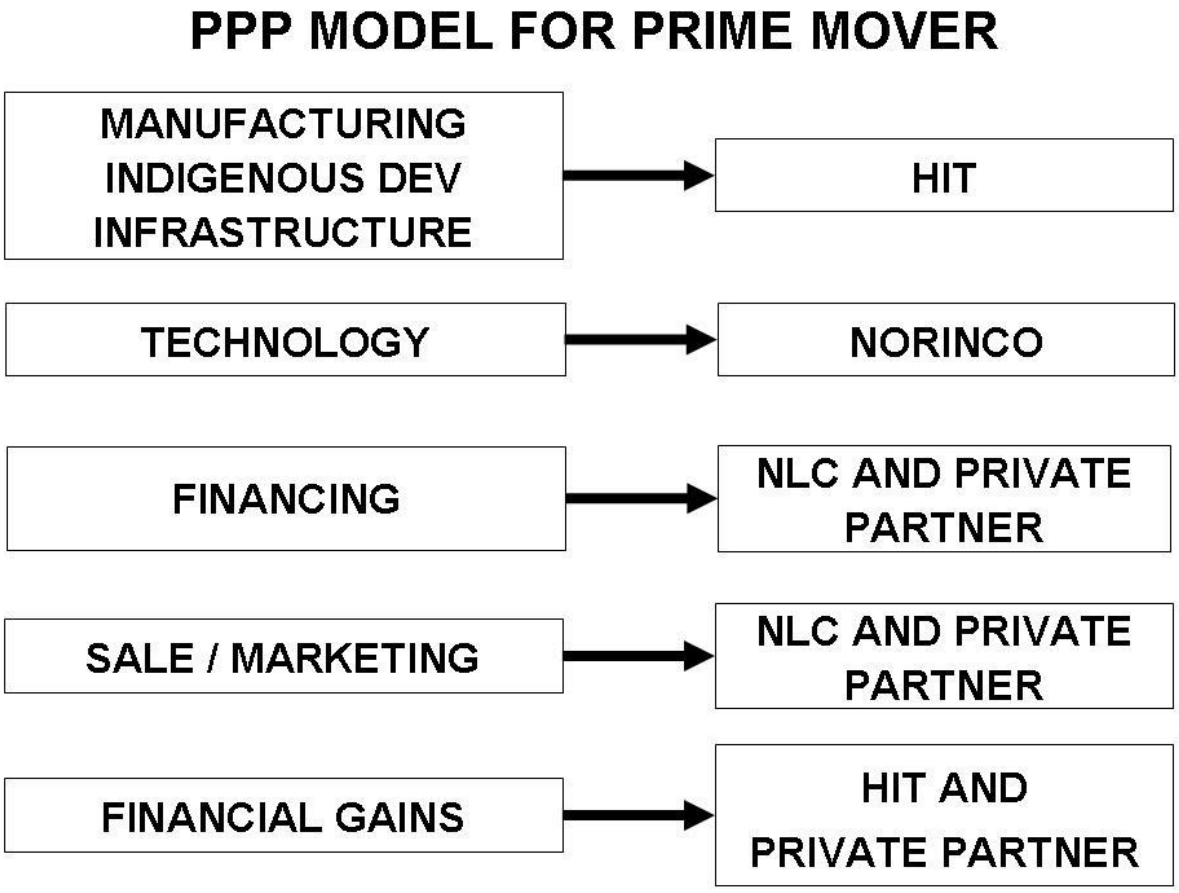


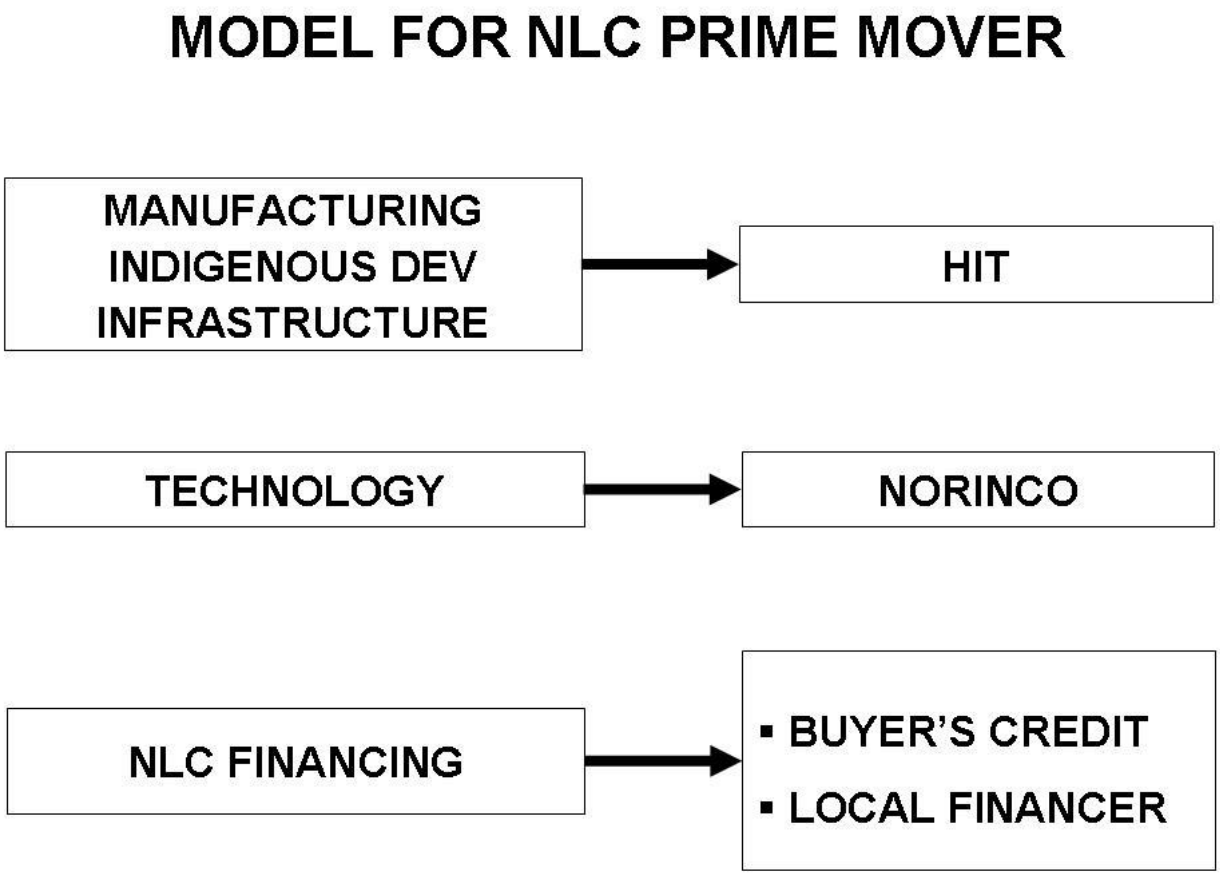
Local manufacturers have witnessed a growth of 36% during the first half of the current fiscal year when compared with same period of the previous fiscal year. This increase paints a positive picture and industry outlook. According to EDB, local manufacturing facilities have remained under utilized for the last decade. This under-utilization was primarily because of imported old/used prime movers and trucks as well as general economic conditions in the country. According to the figures submitted to EDB for the fiscal year 2012-13, industry capacity utilization was about 10%. This is a misleading figure because the demand was fulfilled by old/used imported and locally fabricated trucks and prime movers. According to EDB, 2,135 trucks/prime movers were imported in 2012-13. However, industry sources indicate that the number of trucks/prime movers imported during the same period was 539 units. To eliminate industry biases, we believe that data indicated in EDB statistics as more accurate and reliable. EDB also estimates that approximately 30,000 trucks/prime movers were inducted in the fleet during the last five years. Out of these approximately 40% were completely built units, while the rest were fabricated from imported spare parts. This number could not be independently verified or authenticated.

It is important to carefully define competition for this new joint venture. The truck/prime mover manufactured at HIT is not only going to face competition from local brands as well as imported brands and locally fabricated trucks/prime movers. At present imported/locally fabricated trucks and prime mover command about 41% market share and the rest of the market share has been captured by new locally manufactured trucks and prime movers. The entire competition can be divided into two main segments, namely:

- Imported and locally fabricated trucks/prime movers: This segment covers old/used trucks and prime movers imported as completely built units and units that are fabricated in Pakistan from imported spare parts of the trucks and prime movers. It is worth mentioning here that trucks/prime movers are fabricated at various unregistered workshops in Gujranwala and Lahore. As the parts used in fabrication of trucks/prime movers at these unregistered workshops are imported as scrap on minimal duty of 8%, they get an edge over locally manufactured new trucks/prime movers. The duty structure on Completely Built Unit (CBU) and Semi Knocked Down (SKD) kits is much higher. Please note that import of only three-year old/used trucks and prime movers is allowed.
- Locally assembled/manufactured trucks and prime movers: Major competition in this segment comes from ten assembly plants that have a combined capacity of around 30,000 vehicles per annum. The eight operational OEMs are listed below:
    1. Hinopak Motors Limited;
    2. Ghandhara Nissan (now acquired by Volvo)
    3. suzu Ghandhara Industries Limited;
    4. Al-Hajj FAW Motors;
    5. Master Motor Corporation Limited;
    6. P. M. Auto Industries
    7. Afzal Motors; and
    8. Daewoo Motors Limited.

With the exception of Afzal Motors and Daewoo Motors, all other companies named above are members of Pakistan Automobile Manufacturers Association. It may also be mentioned here that Ghandhara Nissan has been acquired by Volvo and the company has temporarily closed down its operations. It is expected to be back online by end of this year with a new product line under Volvo brand name. Furthermore, four the following four plants are presently closed:


PPP MODEL FOR PRIME MOVER
MANUFACTURING
INDIGENOUS DEV
INFRASTRUCTURE
HIT
TECHNOLOGY
NORINCO
FINANCING
NLC AND PRIVATE
PARTNER
SALE / MARKETING
NLC AND PRIVATE
PARTNER
FINANCIAL GAINS
HIT AND
PRIVATE PARTNER



5.4 Major Manufacturers

Among the major manufacturers/assemblers mentioned above, the first five companies hold an overall market share of 53% of market share. The market share also takes into consideration imported trucks/prime movers. The proceeding paragraphs give an overview of the four of the five companies mentioned above. The company brief does not include Ghandhara Nissan as the company has been acquired by Volvo and temporarily closed down its plants. At the time of closure their market share was 7%. They are expected to launch trucks and prime movers with the Volvo brand name by the end of the year.

Isuzu Ghandhara Industries Limited: IGIL is also owned and run by the Bibojee Group of Companies. The plant has an annual capacity of 3,000 vehicles and carries a market share of 6%. The company assembles and supplies Isuzu trucks with loading capacity of 9 to 40 tons approximately. They also manufacture buses. M/s Bibojee Services (Pvt) Ltd acquired it under

privatization policy of the government. The major business of the company comprise of manufacturing, assembling and marketing of Isuzu trucks and Bus chassis and fabrication of busload bodies. The plant has annual truck manufacturing capacity of about 3,000. Isuzu is offering a number of Trucks and Prime Movers with different specifications and the details can be found in the report.

Isuzu claim to provide 3s services in all major cities and national highways of the country. Isuzu is offering 150-180, 200-240, 260-320 HP trucks and prime movers. IGIL considers Hinopak as their main competitor.

Al-Haj FAW Motors: AHFM was incorporated as a Private Limited Company in October 2006 and is the sole distributor and manufacturer/assembler of FAW heavy commercial vehicles, light commercial vehicles and passenger cars in Pakistan. Al-Haj FAW Motors first Product-line was launched in 2006 and since then it has captured about 9% of the market in trucks and prime movers segment. The local production of FAW vehicles started in August 2011 and the plant has annual production capacity of approximately 4500 Trucks, Prime Movers and Dumpers with single shift.

FAW has its own leasing company and are selling their products on installments. FAW has very interesting business model, starts from manufacturing and goes to fleet management, which will be thoroughly discussed in report. They don't have large network of workshops but they are keenly working to develop an after sales service network. FAW`s product range is from 1 to 3 axle but FAW is the only manufacturer in Pakistan who is using Euro II technology. Their marketing strategy is primarily focused on targeting end users and then logistics companies (fleet managers). Armed forces and government institutions are at the last in their marketing strategy. FAW also organize road shows on their new product launch as well as they are providing products on trial basis to their customers.

Master Motor Corporation Limited: MMCL, established by Master Group of Industries, Pakistan in 2004 is engaged in production of light duty trucks of 3.5-6 tons capacity. It has 8% market share. Recently the company has also entered into an agreement with Mitsubishi Fuso Truck and Bus Corporation Japan for the assembling and marketing of heavy-duty Fuso Canter trucks, buses and prime movers in Pakistan with an installed capacity of 8500 units per annum. It's market share is close to 8%.

5.5 Market Segmentation

At present the market is divided into customers whose needs fall into one of the following three categories:

- Trucks/Prime Movers with 120 to 180 HP;
- Trucks/Prime Movers with 200 to 240 HP; and
- Trucks/Prime Movers with 260 to 320 HP.

The customers can be grouped into categories according to the sophistication of business operations. The first segment comprises of fleet management/logistics companies that are organized corporate entities.

Second segment consists of medium size fleet management/logistics companies that have not implemented stringent operating and governance procedures. Third segment consists of individual trucks owners. The proceeding paragraphs describe the three segments.

Large Fleet Management & Logistic Companies: This segment includes fleet management/logistic corporate entities that are very well organized and follow stringent operating procedures. Their annual accounts and statements are published and are normally audited by one of the big four accounting firms.

Main companies operating in this segment are TCS logistics, ITC, Agility, Shaheen logistics, MTN, Capital fleet management, etc. Their clientele mostly includes mobile operators, oil marketing and exploration companies as well as fast moving consumer goods (FMCGs). Typically their fleet has more than hundred trucks and prime movers. Each year about 5 to 15 new vehicles are added as replacements of existing old vehicles or cater for operational/ expansion needs. Their requirements and preference for trucks/prime movers include single, double and triple axle in 220 to 260 HP category. However, in a rare case they also consider prime movers with horsepower between 260 and 320. While this segment buys new trucks/prime movers, it is price sensitive and gives considerable weightage to after sales service of vehicles. General opinion of his segment is that prices of trucks/prime movers are not competitive. They repeatedly quoted Hinopak as prime example of a company that is known for its excellent after sales service. Outside armed forces and NLC, this segment is expected to be the primary target market for PAKNOR. This segment commands 47% of the total market share.

Small to Medium Size Fleet Management & Logistic Companies: Second segment consists of fleet management/logistics companies that are not well organized and don't record of complying with

trucking policy especially related to vehicle overloading. Prominent companies in this segment are Shahzad Niazi Good Forwarding Agency, Al-Haram Goods Forwarding Agency, etc. Their main business is freight forwarding and a significant portion of their business comes from providing services to large fleet management and logistics companies as third party contractors. Their fleet size ranges between 20 to 30 trucks, prime movers and mini trucks. Every year about 2 to 5 new vehicles are added as replacements of existing old vehicles or to cater for operational/ expansion needs. Their requirements for vehicles include single and double axle in 120 to 240 HP categories. Generally they prefer reconditioned (old/used) imported Japanese vehicles because of huge price difference between imported and locally assembled new vehicles.

A critical factor in decision making is vehicle's fuel efficiency and resale value. This segment is greatly inclined towards Japanese vehicles and its favorite brand is Hino due to good resale value. This segment commands 34% of the total market share.

Individual Owners: Third segment consists of individual truck owners. They work directly with retail/wholesale markets like fruits and vegetables markets (mandi), small and medium enterprises as well as with the fleet managers. Majority of their business is generated from customers who want freight/goods to be delivered to nearby towns/localities (short distances) or within the same city – they normally do not handle long haul or intercity/inter provinces movement of goods. For this segment, it is not easy to raise financing for purchase of new trucks and prime movers. Unlike the first two categories, trucks and prime movers of individual owners find it hard to get insurance. They are extremely price sensitive and prefer to buy reconditioned trucks and prime movers due to low prices. Their other concerns while purchasing new trucks and prime movers are fuel efficiency, availability of spare parts and resale value. Their requirement in trucks is from 120 and 180 horsepower. This segment commands 19% of the total market share.

5.6 Factors influencing Decision Making Process

For corporate as well as individual customers, the three most important factors in the decision making process on future purchases of trucks/prime movers are:

- Fuel efficiency of vehicles;
- Availability of the parts;
- After sales service.

These three factors are instrumental in increasing resale price (of the truck, prime movers and dumpers), which is considered to be the fourth most important factor in the decision making process. Individual trucks and prime movers owners as well as small to medium size logistic companies consider resale price prior to price, horsepower, and others features.

5.7 Projected Demand

While the outlook for the industry and future demands looks positive, it is difficult to predict demand for trucks/prime movers/dumpers. The future demand is mostly a function of general economic growth, mega infrastructure projects, prices of new/used trucks/prime movers, government policies and business\ outlook. It is expected that these factors would translate into demand for 47,000 new locally manufactured/assembled trucks, prime movers and tippers over the next five years. The major reasons for increase in demand are discussed in the proceedings paragraphs.

Economic Growth*:* Government has taken a number of initiatives, which is expected to have a positive impact on the economic indicators. Economic growth in GDP for the first quarter of this fiscal was 5%. The SBP in its first quarterly report for 2013-14 released late last month linked maintaining growth prospects on the implementation of structural reforms in the fiscal and energy sector - the two areas in which government has initiated structural reforms.

Replacement/modernization of Existing fleet*:* Road transport/trucking industry's performance is far below international best practices and standards. According to the World Bank challenges faced by the trucking industry include obsolete, underpowered and polluting vehicles. As a result the average travel speed of trucks on national highways is half of truck speeds in Europe. The inefficiencies of the trucking industry has resulted in long travel times, increased cost of transportation and reduced reliability. It has affected Country's competitiveness in exports and is constraining its ability to integrate into global supply chain.

Bilateral Trade between Pakistan and Its Neighbors*:* The government of Pakistan is actively pursuing bilateral trade agreements with its neighbors. The government is pursuing an ambitious plan of connecting Chinese markets directly with Gwadar port. This 2,500 Km road is expected to increase trade volume through Pakistan many folds. This is expected to have a positive impact on demand for trucks/prime movers. On the other hand Pakistan and India are seeking to boost bilateral trade and have decided to have a non-discriminatory market access (NDMA) program.

Mega Infrastructure Projects*:* Initiation of mega infrastructure projects like motorways (Gwadar to Khunjrab Pass, Karachi – Lahore Motorway, M9, rehabilitation of M2, Karakoram Highway), construction of dams and hydro power projects in Northern Pakistan, new airports, Gwadar Power Park and Jetty, etc will have a positive impact on the demand trucks/prime movers/dumpers. The government has already taken practical measures towards starting these projects on ground. These projects are expected to increase demand for cement and other construction material that will be transported through trucks and prime movers.

Requirement of Armed forces and Law Enforcement Agencies*:* At present Pakistan Army have about 10,000 light and heavy transport vehicles. It can be safely assumed that each year Pakistan armed forces replace and add new trucks and prime movers to cater to existing as well as new demand and requirements.

Government Policies*:* EDB is serious on implementing Pakistan Trucking Policy especially enforcing retirement age/age limits of trucks/prime movers on roads. However, there are some practical issues like resistance from unorganized fleet managers and individual truck/prime mover owners. This resistance is a serious threat to local industry. The manufacturers support implementation as it is expected to increase demand for new vehicles.

5.8 Products and Price

Products and price range is given in the Table 4.1. The average price for the products in range 150-180 HP is Rs 3.25 million, in range 200-240 HP is 7.06 million and 260-320 HP is 9.231 million.

Table 5.8 Products and price range

Model	Series	Horsepower	Axle Configration	Ex-Plant Price Rs mil
WU-640 Truck chassis	300	105 (4009cc)	4x2	2.700
WU-720 Truck chassis	300	105 (4009cc)	4x2	3.350
FG1KPB Truck chassis	500	207 (7961cc)	4x2	6.550
FL1RPA Truck chassis	500	210 (7961cc)	6x2	8.000
FM1JNPD truck chassis	500	260 (7961cc)	6x4	9.000
FG1DPT Prime Mover	500	207 (7961cc)	4x2	6.625
SG1JDPA Prime Mover	500	260 (7961cc)	4x2	8.425
FM1JKPT Prime Mover	500	260 (7961cc)	6x4	9.150
FM2PKPA Prime Mover	500	320 (10520cc)	6x4	10.350

5.9 Production and Production Capacity

The plant's capacity utilization has gradually declined over the last few years as can be seen in Table 4.2 below. Please note that the capacity utilization figure does not account for vehicles assembled/ manufactured for export mostly to Arab states in Middle East. As those numbers were not disclosed, the capacity utilization may not represent an accurate state of affairs. The production figure for the year 2013-14 is based on 9 months data and has not been annualized. As a result capacity utilization numbers appear to be low.

Table 5.9 Plant's capacity utilization

Fiscal Years	Trucks and Prime Movers Production	Buses Production	Capacity	Capacity Utilization
2008-09	1,700	515	6,500	34%
2009-10	2,070	484	6,500	39%
2010-11	1307	394	6,500	26%
2011-12	1237	468	6,500	26%
2012-13	768	420	6,500	18%
2013-14	610	348	6,500	14%

5.10 Business Model

AHFM has very interesting business model as depicted in Figure 1 on the next page. Al-Haj FAW has its own trucks, leasing and logistic setup. They lease their own products to individual truck drivers through its leasing company and at the same time ensure that trucks and prime movers have sufficient business to make timely payments. This arrangement works well for AHFM. It ensures that leasing payments are made on time and at the same time they have managed to raise fleet to support their cargo/freight forwarding company. Please note that Al-Haj group's freight forwarding company has agreements with other companies for providing transportation services to them. It is

worth mentioning here that logistic and fleet managers have huge concerns of the security of the vehicles and products they carry. However, if the drivers have ownership of the vehicles they would take care of the vehicles and products they transport.

5.11 Marketing Strategy

Al-Haj FAW`s marketing strategy is primarily focused on end users and logistics companies (fleet managers). At present sales to armed forces and government institutions is not a high priority for them. FAW also organize road shows on their new product launch as well as they are providing products on trial basis to their customers.

5.12 Services offered

Al-Haj FAW claims large network of workshops and mobile workshops around the country. Depending upon the vehicle, the Company is offering warranty between 4 to 5 years. They also provide free check up services during the road shows. However, our research revealed that clients are not happy with their durability of spare parts as the parts have limited operational life. Our survey also indicates that AlHaj FAW's service centers are far and few. And as a result need to improve on their dealership network.

5.13 Al-Haj FAW Motors Business Model

Al-Haj FAW quickly earned the reputation in the market for producing light, medium and heavy vehicles. Al-Haj FAW vehicle are known for fuel efficient and low pricing in the market.

It may be mentioned here that majority of the Truck and Prime Mover users believe that Japanese products are more reliable than the Chinese. The belief has been further strengthened by Al-Haj FAW customer's complaints about limited operational life of spare parts.

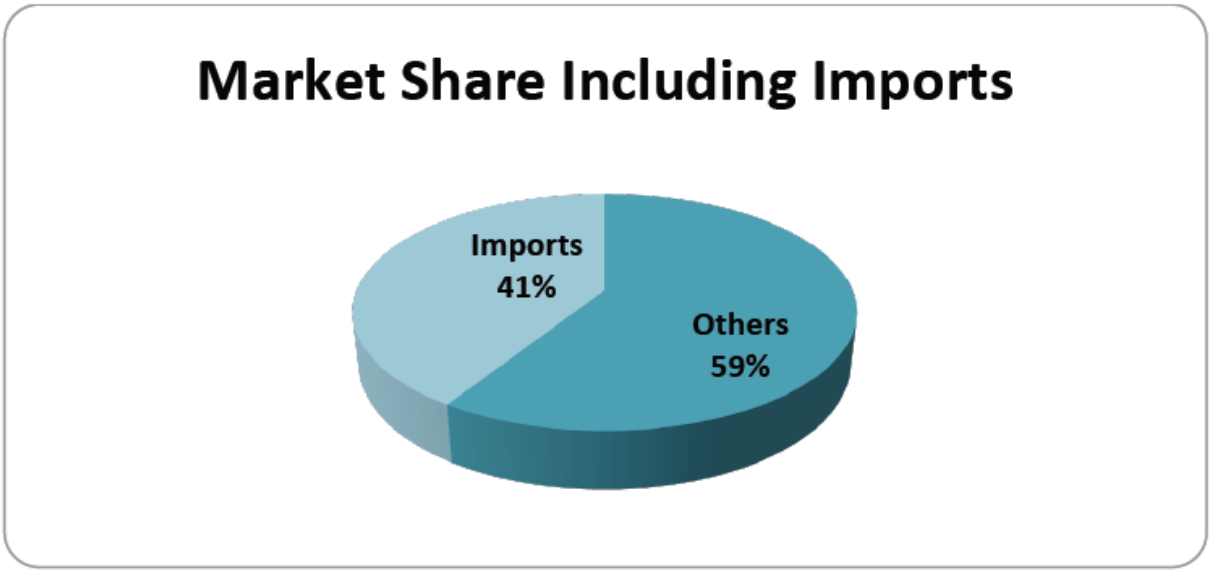
5.14 Import/Local Fabricators

Import of worn out and used trucks and prime movers is an enormous concern of all truck manufacturers. Government is charging low duty on worn out vehicles that encourages import of parts of trucks and prime movers. Fabrication and customization of the old and used imported trucks through local unregistered fabricators provides an inexpensive vehicle to the market which reduces demand for new locally assembles/manufactured vehicles. Such vehicles are mostly bought by individual truck drivers or small to medium size freight forwarders.

According to EDB, 2135 trucks and prime movers were imported in 2012-13 and according to Hinopak the number of imports of trucks and prime movers is 539 in 2012-13.

It is important to carefully define competition for this new joint venture. The truck/prime mover manufactured at HIT is not only going to face competition from local brands as well as imported brands and locally fabricated trucks/prime movers. At present imported/locally fabricated trucks and prime mover command about 41% market share and the rest of the market share has been captured by new locally manufactured trucks and prime movers

Figure 5.14 Market Share of Imported and Locally Manufactured Trucks/Prime Movers



5.15 Market Segmentation

Market Overview

At present the market is divided into customers whose needs fall into one of the following three categories:

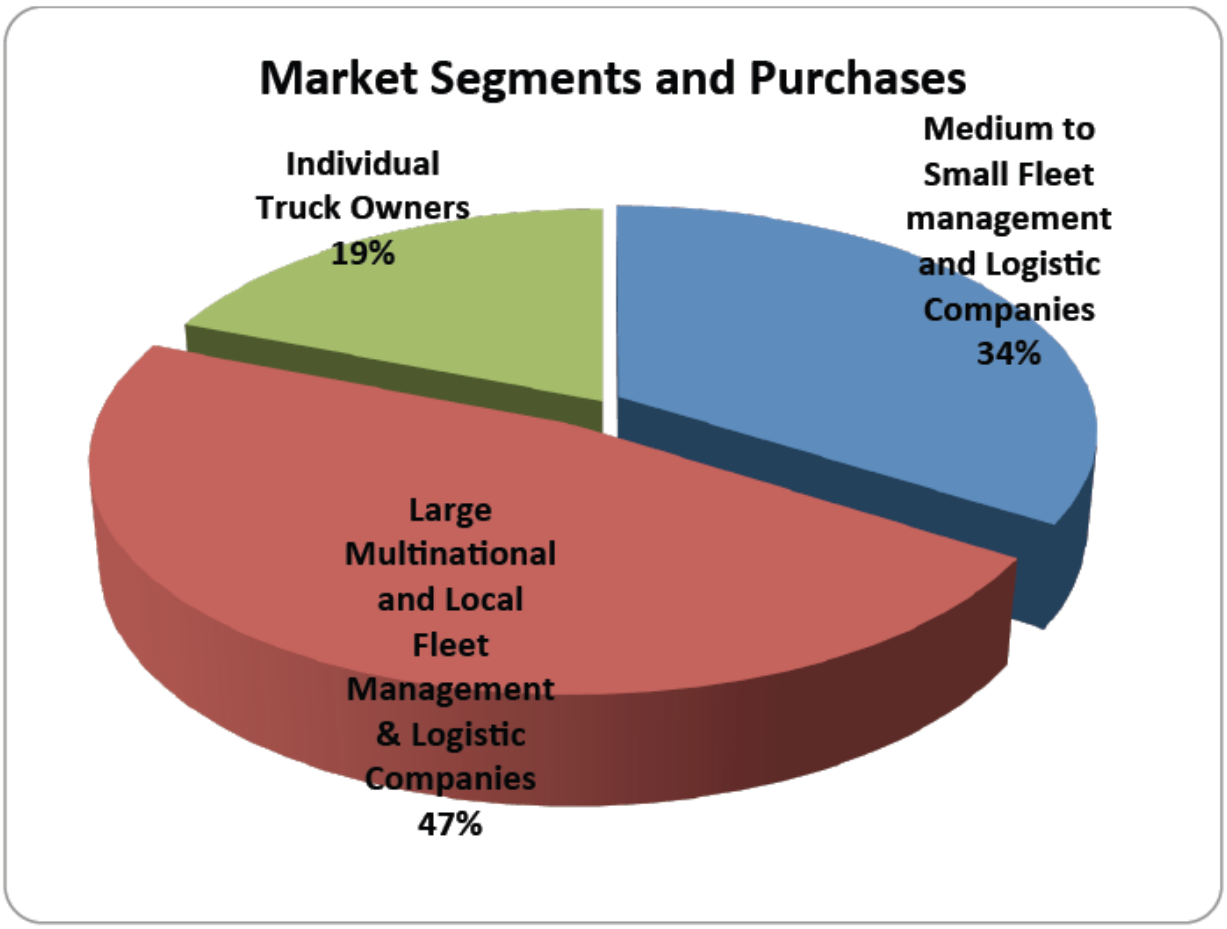
- Trucks/Prime Movers with 120 to 180 HP;
- Trucks/Prime Movers with 200 to 240 HP; and
- Trucks/Prime Movers with 260 to 320 HP.

This classification has been done on the basis of information obtained directly from fleet managers and end users about their past and projected purchases over the next five years through meetings and interviews. This segmentation also complements customers knowledge of the product, business

outlook and decision making factors. As a result, customers falling into above mentioned categories can be regrouped into the following three segments:

- Large local and multinational fleet management/logistics companies which are organized and follow certain procedures with necessary paper work.
- Small to medium size local fleet management / logistics companies which are not organized but they are doing good business.
- Third segment consists of individual truck owners.

Figure 5.15 Segments and Respective Market Share on New Purchases from OEM

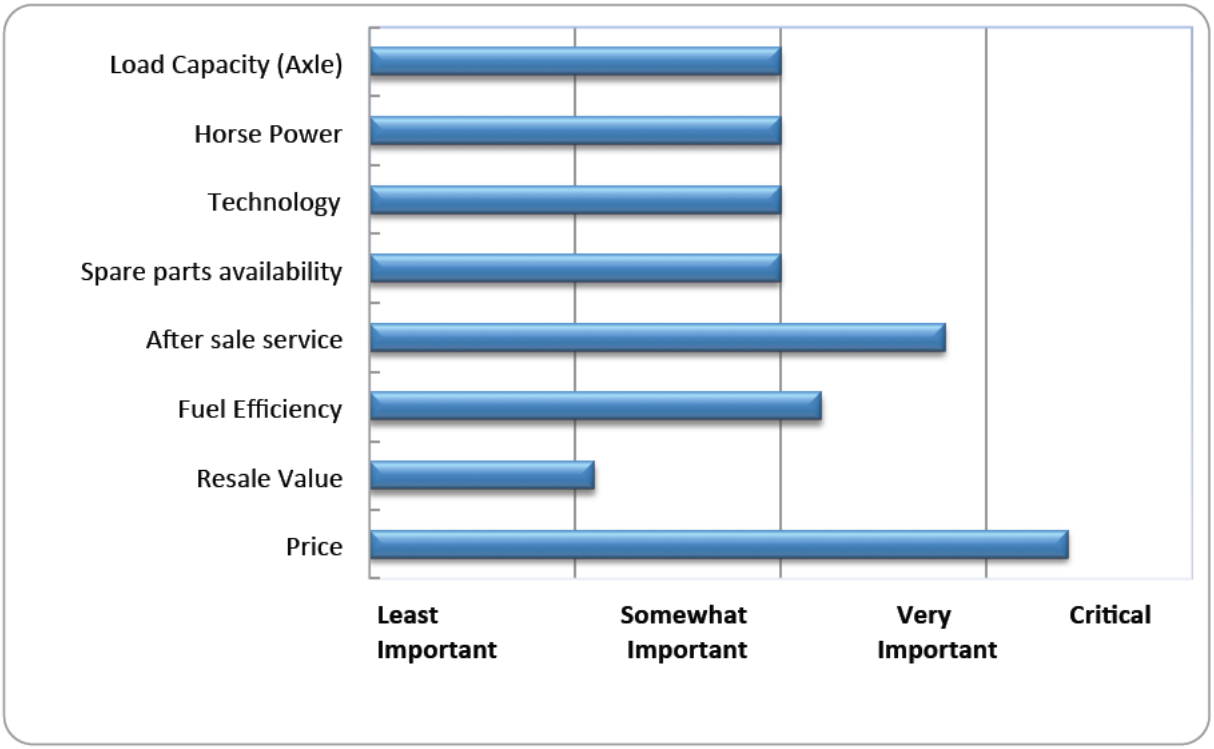


5.16 Large Fleet Management and Logistic Companies

This segment, *Large Local/multinational Fleet Management & Logistic Companies*, includes multinational and local fleet management/logistic corporate entities with written operating procedures and rules. Such entities adhere to government policies and regulations. Their annual accounts and statements are published and are normally audited by one of the big four accounting firms. This segment represents 47% of the total new purchases made from original equipment manufacturers (OEM).

Main companies operating in this segment are TCS logistics, ITC, Agility, Shaheen logistics, MTN, Capital fleet management, etc. Their clientele mostly includes mobile operators, oil marketing and exploration companies as well as fast moving consumer goods. Typically their fleet has more than hundred trucks and prime movers. Each year about 5 to 15 new vehicles are added as replacements of old vehicles or cater for operational/ expansion needs by each company in this segment. Their requirements and preference for trucks/prime movers include single, double and triple axle in 220 to 260 HP category. In a rare case they also consider prime movers with horsepower between 260 and 320.

Figure 5.16 Decision Making Factors



Market survey also inquired about the decision making and selection process for new purchase of new trucks/prime movers. The factors and their importance is depicted in Figure 3-2 above. The

graph indicates that fleet managers are price sensitive and give considerable import to after sales service. They repeatedly quoted Hinopak as prime example of quality after sales service. General opinion of this segment is that prices of trucks/prime movers are not competitive.

It is our considered opinion that this segment should be the primary target market.

5.17 Small to Medium Size Fleet Management & Logistic Companies

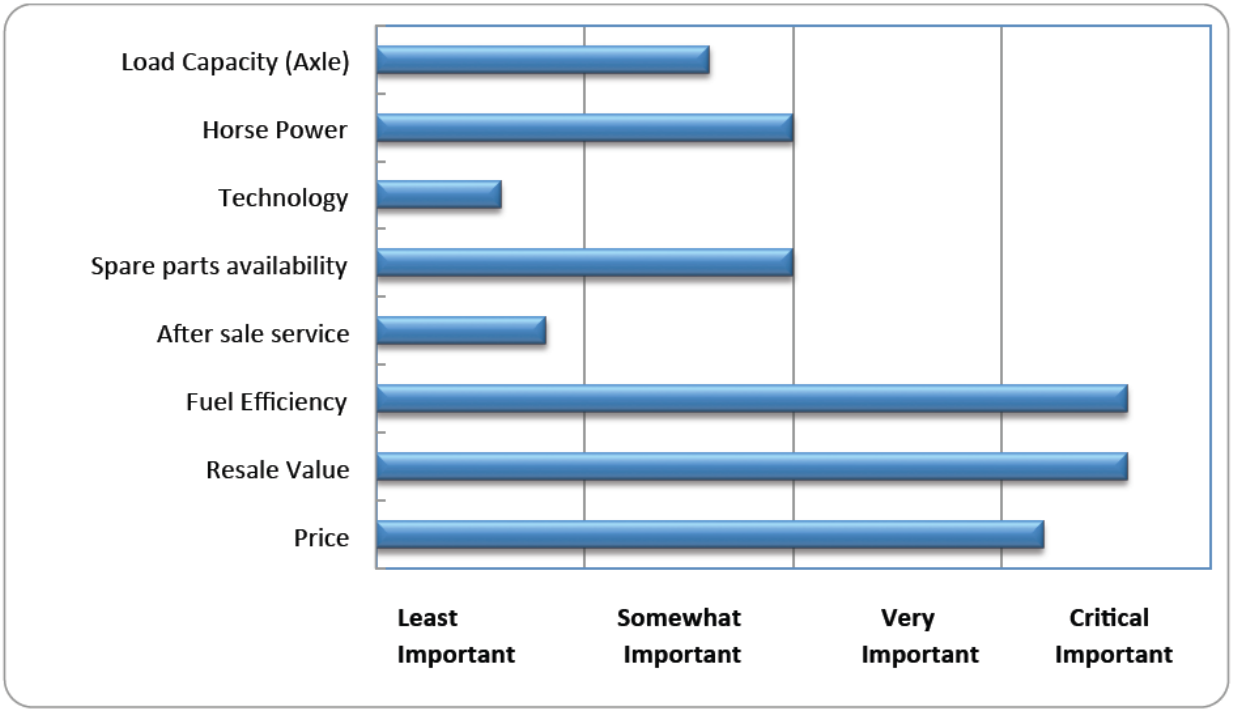
This segment, *Small to Medium Size Fleet Management & Logistic Companies*, consists of local fleet management/logistics companies that are not well organized and don't follow stringent operating and governance procedures. They generally have poor track record of complying with trucking policy especially related to vehicle overloading. Prominent companies in this segment are Shahzad Niazi Good Forwarding Agency, Al-Haram Goods Forwarding Agency, etc. This segment commands 34% of the total market share.

Their main business is freight forwarding and a significant portion of their business comes from providing services to large fleet management and logistics companies as third party contractors. Their fleet size ranges between 20 to 30 trucks, prime movers and mini trucks. Every year about 2 to 5 new vehicles are added as replacements of existing old vehicles or to cater for operational/ expansion needs by each company in this segment. Their requirements for vehicles include single and double axle in 120 to 240 HP categories. Generally they prefer reconditioned (old/used) imported Japanese vehicles because of

huge price difference between imported and locally assembled new vehicles.

As mentioned above, market survey also inquired about the decision making and selection process for new purchase of trucks/prime movers. A critical factor for this segment in decision making is vehicle's fuel efficiency and resale value. Price is also important. This segment is greatly inclined towards Japanese vehicles and its favorite brand is Hino due to good resale value. The responses to our questions during survey from this market segment are shown in the Figure 3-3 below.

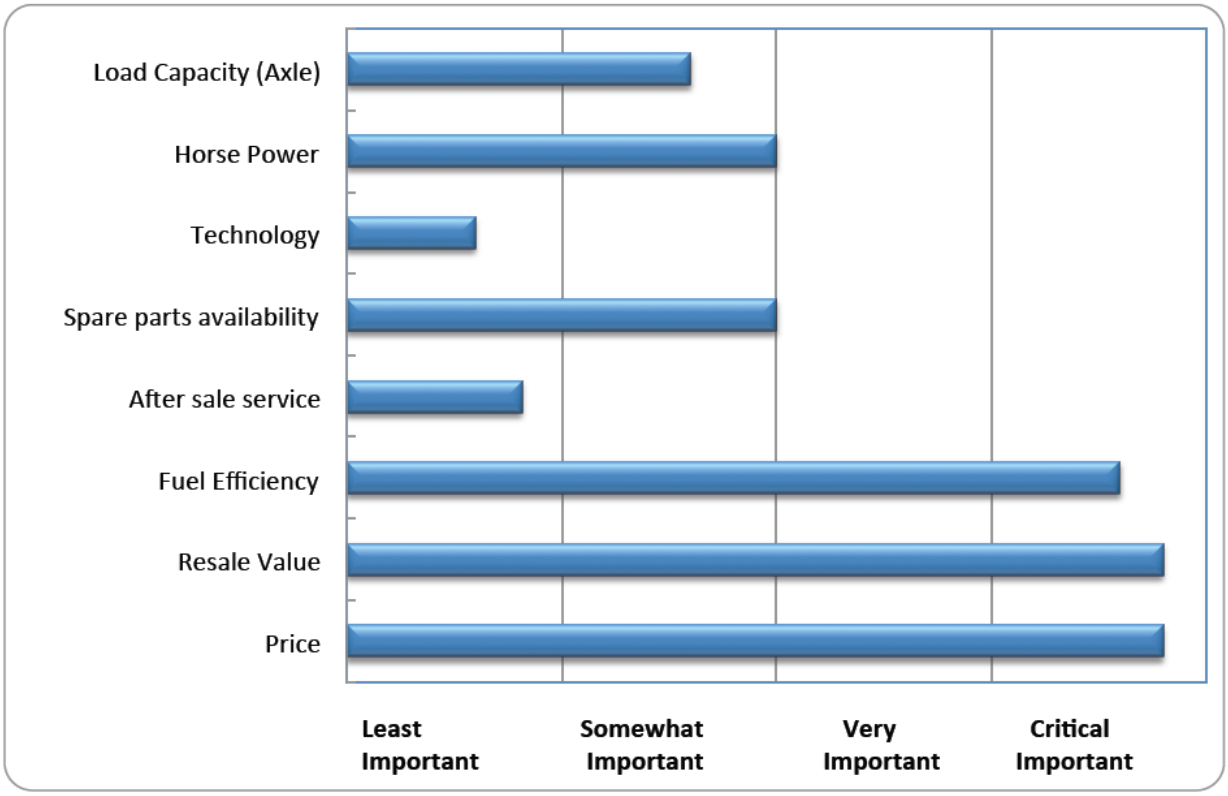
Figure No. 5.17 Decision making Factors for Small to Medium Freight Forwarders



5.18 Individual Trucks and Prime Mover Owners

***Individual Owners**:* Third segment consists of individual truck owners. They work directly with retail/wholesale markets like fruits and vegetables markets (mandi), small and medium enterprises as well as with the fleet managers. Majority of their business is generated from customers who want freight/goods to delivered short distances or within the same city – they normally do not handle long haul or intercity/inter provinces movement of goods. For this segment, it is not easy to raise financing for purchase of new trucks and prime movers. Unlike the first two categories, trucks and prime movers of individual owners find it hard to get insurance. They are extremely price sensitive and prefer to buy reconditioned trucks and prime movers due to low prices. Their other concerns while purchasing new trucks and prime movers are fuel efficiency, availability of spare parts and resale value. Their requirement in trucks is from 120 and 180 horsepower. This segment commands 19% of the total market share. The responses to our questions during survey from this market segment are shown in the Figure 3-4 on the next page.

Figure 5.18 Decision making Factors Individual Owners



5.19 Current Market Position

Production and Market Shares

Market share is the most important metric that can be used in order to judge the effectiveness of the company. In this study market share has been calculated by taking the company's sales over the period of 6 years and dividing it by the total sales of the industry over the same period.

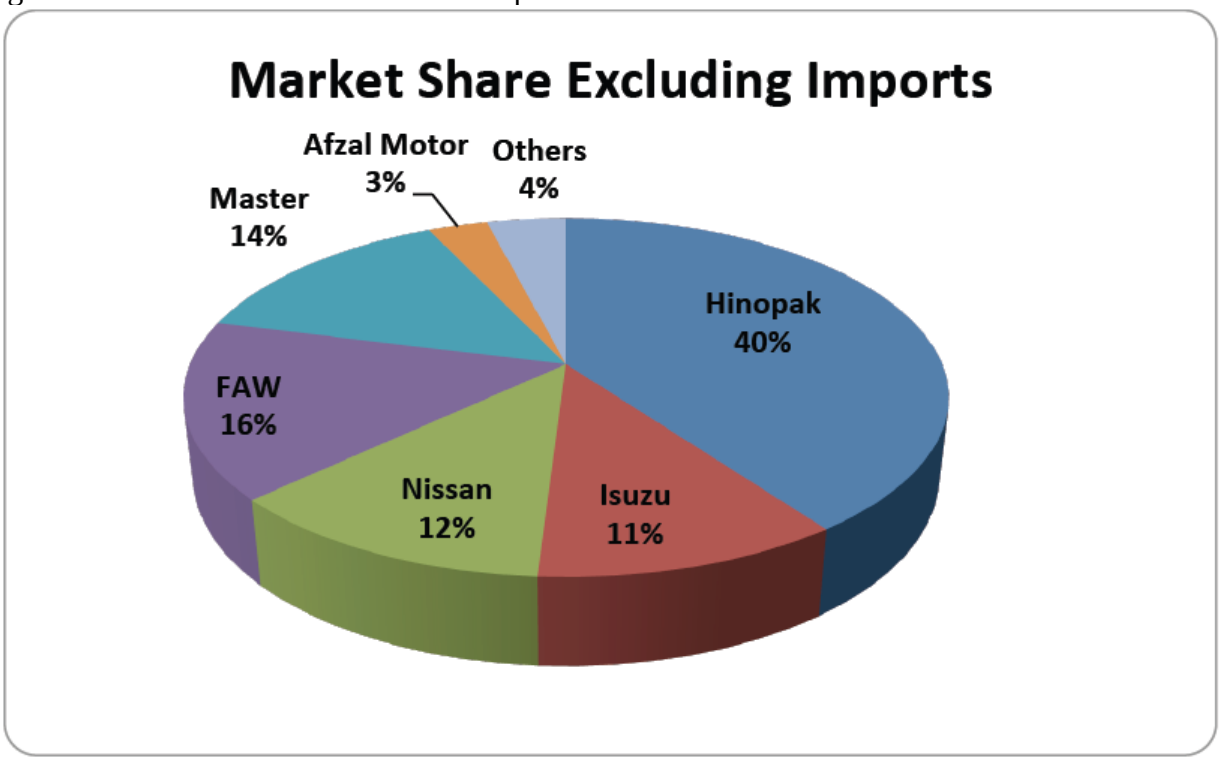
5.20 Local Sales and Market Shares

Table 4.3 below lists year by year sales of vehicles of all major brands. This information has been collected mostly from manufacturers.

Table – 5.20: Local Sales

Manufacturers	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Hino	2,655	1,700	2,070	1,307	1,237	768
Ghandhara Nissan	926	567	515	469	228	208
Master	590	384	490	655	712	648
Ghandhara Industries (Isuzu)	822	481	350	379	420	299
Afzal Motors	166	108	236	155	126	123
Al-Hajj FAW motors	0	0	890	1100	1290	750
Grand Total	**5,293**	**3,313**	**4,551**	**4,066**	**4,013**	**2,796**

Figure No. 5.20 Market Share without Imports



Imports and Market Shares

Number of imported trucks and prime movers are listed in Table 5.21 below.

Table – 5.21: Imports

Year	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Imported Vehicles	1,916	1,392	3,262	7,209	1,305	2,135

Pie chart Figure 5.22 below is pictorial description of impact of imports on local manufacturing.

Figure No. 5.22 Pie Chart: Market Share with Imports

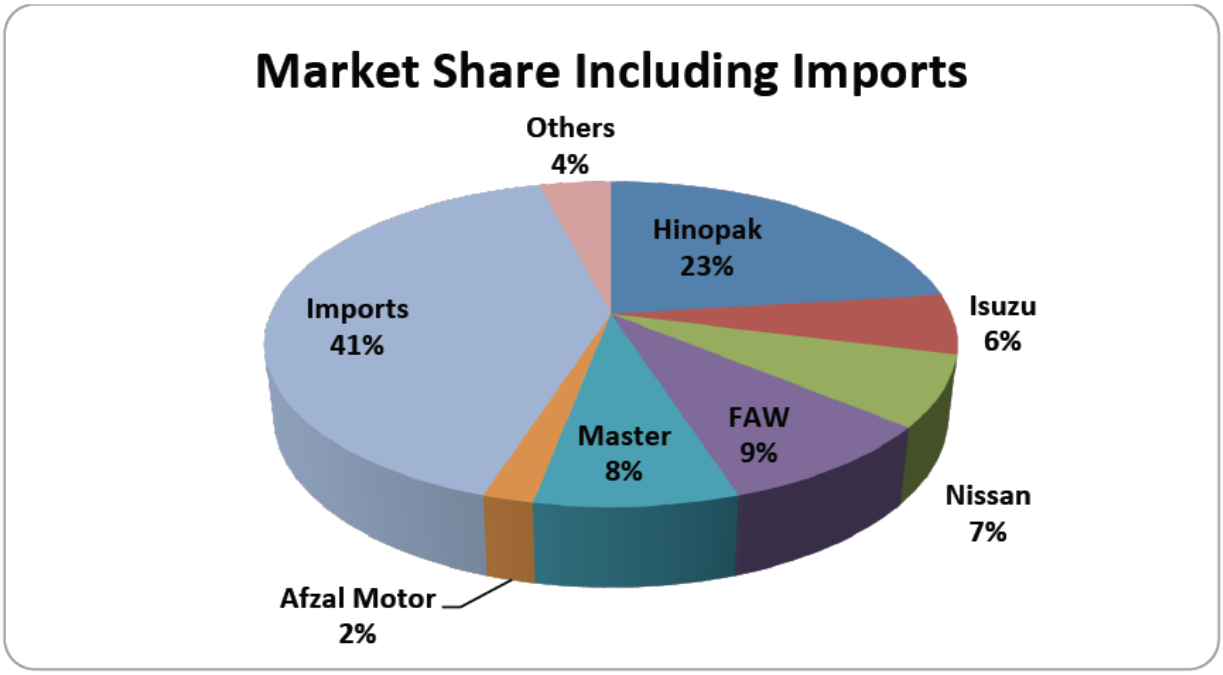


Table summarizes the impact of imports on different manufacturers over the last six years. All major brands have suffered due to imports. The most significant of the impact has been on Hino and FAW. Hino's market share dwindled by 17% and FAW's by 7%. It is believed that imports have been able to make inroads mainly because of price difference between imported or fabricated trucks/prime movers and locally assembled/manufactured trucks/prime movers.

Table – 5.23: Impact of Imports

Manufacturers	Market Share without Imports	Market Share With Imports	Impact of Imports
Hino	40%	23%	(17%)
Ghandhara Nissan	12%	7%	(5%)
Master	14%	8%	(6%)
Ghandhara Industries (Isuzu)	11%	6%	(5%)
Afzal Motors	3%	2%	(1%)
Al-Hajj FAW motors	16%	9%	(7%)
Others	4%	4%	-
Imports	NA	41%	41%
Total	**100%**	**100%**	-

5.24 Products Comparison

Table 5.24 below summarizes different products that are currently sold in market in different categories. As mentioned in Chapter 3, the research/market study indicates that 53% of the products sold were in the range 120 to 240 and 47% were in the 220 to 260 HP category. The Table 2.4indicates that 16 models out of 36 models of different manufacturers are outside this range.

Table – 5.24: Product Comparison

Vehicle Category	Gross Vehicle Weight /Gross Combination Weight Range	Model	Axle Configuration	Engine Displacement (Cubic Cm)	Output	Gross Vehicle Weight (Tonnage)
Pickup Trucks	Less than 5.0 Tons	Toyota Hilux	4x2	2500	98 ps	2.87
		Hyundai Shezore	4x2	2600	85 ps	3.00
		Master Highland	4x2	2540	62 ps	3.78
		Mitsubishi L200	4x2	2477	100 ps	2.55
		Nissan Pickup	4x2	2389	150 ps	2.50
Light Commercial Vehicle	5 - 9 Ton	JAC HFC1020K	4x2	2771	77 ps	5.5
		Hino Dutro Jr.	4x2	4009	105 ps	5.1
		Isuzu NKR	4x2	2771	80 ps	5.2
		Master Forland	4x2	3298	85 hp	3.0
		JAC HFC1048K	4x2	3856	110 ps (T)	8.0
		JAC HFC1061K	4x2	3856	120 ps (T)	9.5
		Isuzu NPR66PU	4x2	4334	120 hp	8.8
		Hino DUTRO	4x2	4009	103.5 hp	8.9
		Mitsubishi Canter	4x2	3907	120 ps	8.9
		FAW Tiger	4x2	3200	120 ps	9.5
Medium	15 - 35 Tons	Isuzu FTR33K - T)	4x2	8226	200 hp	16.8

Duty Trucks		Hino FG1J - (T)	4x2	7961	210 ps	18.0
		Nissan PKD411 – (T)	4x2	6952	220 ps (T)	18.0
		FAW J5M –220 (T)	4x2	6557	220 hp	18.0
		Isuzu FTR33K – (PM)	4x2	8226	200 hp	35.0
		Nissan PKD 411E – (PM)	4x2	6925	220 ps (T)	35.0
		Hino FG1J – (PM)	4x2	7961	210 ps	35.0
		FAW J5M220(PM)	4x2	6557	220 ps	35.0
Heavy Duty Trucks/ Tractors	21 - 60 Ton	Hino FL1J – (RT)	6x2	7961	210 ps	27.5
		Hino FM1J – (RT)	6x4	7961	260 ps (T)	28
		FAW J5M-260 – (RT)	6x4	7127	260 ps (T)	32.5
		Daewoo MT2BF – (PM)	4x2	8071	225 ps (T)	40
		FAW J5M260 – (PM)	4x2	7127-T	260 ps (T)	40
		Hino FM1J - (PM)	6x4	7961	260 ps (T)	49.5
		Hino SG1J – (PM)	4x2	7961	260 ps (T)	40
		Daewoo M2T6F – (PM)	4x2	11051	340 ps (T)	50
		Hino FM2P – (PM)	6x4	10520	320 ps (T)	58.5
		FAW (J5P-330) – (PM)	6x4	8600	330 ps (T)	60
		Mitsubishi FUSO – (PM)	6x4	11945	340 ps (T)	60
		Daewoo V3T6F – (PM)	6x4	11051	340 ps (T)	60
		Kamaz 6460 – (PM)	6x4	11760	360 ps (T)	60

The Table 5.24 above would not only help the PAKNOR in indentifying competitors and the different models and vehicles, it would also help them in selecting product range and category.

5.25 Demand Analysis

Future Demand and its Drivers

The future outlook for the trucks/prime movers is extremely positive. Depending upon the following factors, we expect that the demand for locally manufactured trucks/prime movers can be up to 80,000 over the next five years. Local manufacturers are expected to grab 59% market share representing 47,000 vehicles and imported/fabricated trucks and prime movers are expected to be around 33,000.

The demand can vary and variation can be significant if the factors listed below are not favorable:

- General economic situation/condition of the economy;
- Bilateral trade with neighbors;
- Mega infrastructure projects;
- Requirement of Armed Forces and Law Enforce Agencies;
- Implementation of government policies (Pakistan Trucking Policy);
- Price of vehicles and availability of financing; and
- Favorable resolution of industry concerns.

The proceeding section briefly describe below.

5.26 Economic Growth

Government has taken a number of initiatives, which is expected to have a positive impact on the economic indicators. Economic growth in GDP for the first quarter of this fiscal was 5%. The SBP in its first quarterly report for 2013-14 released late last month linked maintaining growth prospects on the implementation of structural reforms in the fiscal and energy sector - the two areas in which government has initiated structural reforms. If we link last few years to production data to GDP growth, it is expected that 5% GDP growth would lead to production of about 3,800 trucks and prime movers.

5.27 Replacement of Existing Fleet

The Table 5.27 below gives historical trend of trucks being registered as well as trucks on road. Statistics for the last 13 years indicate that on average 4% new trucks are registered and the same number is taken off from roads each year. On the basis of this data it can be assumed that about 8,000 trucks would be added to the fleet each year. However, this number would be higher if trucks taken off-road are considered. On average, 10% of the registered trucks have remained off-road during the period under consideration.

Table –5.27: Trucks Registered and On---Road

Fiscal Year	Trucks Registered	Increase in Registration (%)	Trucks on Road	Increase in Trucks on Road (%)	Obsolete / Off-Road Trucks	Trucks Off-Road as % of Regist'd Trucks
2000-01	148,600	NA	132,300	NA	16,300	11%
2001-02	155,800	5%	145,200	10%	10,600	7%
2002-03	169,300	9%	146,700	1%	22,600	13%
2003-04	177,500	5%	149,200	2%	28,300	16%
2004-05	179,700	1%	151,800	2%	27,900	16%
2005-06	182,500	2%	151,800	0%	30,700	17%
2006-07	190,000	4%	173,300	14%	16,700	9%
2007-08	199,400	5%	177,800	3%	21,600	11%
2008-09	202,600	2%	181,900	2%	20,700	10%
2009-10	210,900	4%	200,500	10%	10,400	5%
2010-11	216,100	2%	209,500	4%	6,600	3%
2011-12	225,100	4%	212,300	1%	12,800	6%
2012-13	234,700	4%	220,500	4%	14,200	6%
Average All Years		**4%**		**4%**		**10%**
Average Excluding Outliners		**3%**		**2%**		**10%**

It may be mentioned here that the exact reason for trucks being taken off-road could not be ascertained. Possible reason could be low demand, end of useful life/obsolete, high maintenance costs, accidents, etc. Furthermore, it is important to mention here that road transport/trucking industry's performance is far below international best practices and standards. According to the World Bank challenges faced by the trucking industry include obsolete, underpowered and polluting vehicles. As a result the average travel speed of trucks on national highways is half of truck speeds in Europe. The inefficiencies of the trucking industry has resulted in long travel times, increased cost of transportation and reduced reliability. It has affected Country's competitiveness in exports and is constraining its ability to integrate into global supply chain.

5.28 Bilateral Trade between Pakistan with its Neighbors

The government of Pakistan is actively pursuing bilateral trade agreements with its neighbors. According to an article published in SBP Research Bulletin (Vol 1, No 1, 2005) trade potential between India and Pakistan ranges between US$ 10 billion to US$ 15 billion. Most of this trade will be through road on trucks and prime movers. Pakistan and India are seeking to boost bilateral trade and have decided to have a non-discriminatory market access (NDMA) program. The government is also pursuing an ambitious plan of connecting Chinese markets directly with Gwadar port. This 2,500 Km road is expected to increase trade volume through Pakistan many folds. This is expected to have a positive impact on demand for trucks/prime movers.

5.29 Requirement of Armed Forces and Law Enforcement Agencies

At present Pakistan Army have about 10,000 light and heavy transport vehicles. While we do not have data to access useful life of these trucks and prime movers and annual requirement of armed forces, it can be safely assumed that each year Pakistan armed forces replace and add new trucks and prime movers to cater to existing as well as new demand and requirements. Considering a useful life of 12 years, annual requirement can reach up to 800 vehicles. As part of armed forces, it would be relatively easy for PAKNOR to make inroads to capture most of this demand.

5.30 Government Policies

At present the Pakistan Trucking Policy (PTP) has not been implemented. While EDB is serious on implementing Pakistan Trucking Policy especially enforcing retirement age/age limits of trucks/prime movers on roads, there are some practical issues like resistance from unorganized fleet managers and individual truck/prime mover owners. This resistance is a serious threat to local industry. The manufacturers support on implementation of trucking policy is expected to increase demand for new vehicles. For this study we have assumed that the Government may not be able to seriously implement PTP over the next five years.

5.31 Stakeholder Concerns

Local manufacturers as well as fleet/logistic managers and vehicle have serious concerns about industry and its current state of affairs. Amicable resolution of these concerns can have a positive impact on the local truck/prime movers manufacturing industry.

5.32 Scrap Import

Import of scrap is a major concern of every local manufacturer. As the parts used in fabrication of trucks/prime movers at these unregistered workshops are imported on minimal duty of 8%, they get a price edge over locally manufactured new trucks/prime movers. The duty structure on Completely Built Unit (CBU) and Semi Knocked Down (SKD) kits is much higher. For this study we have assumed that scrap import will continue and its market share will remain around 41%.

5.33 Age Limit

Age limit is another major concern of the sellers and that is also linked with the scrap imports. If the government (EDB) successfully implemented its policy by not allowing 10 year older vehicles on the road, it would have a great effect on the sale of new vehicles. Under present conditions and circumstances, age limit may not be enforceable.

5.34 Infrastructure

Roads are not supportive for large axle trucks and prime movers. They are not wide enough for prime movers with heavy loads to move easily.

5.35 Sales Tax

General Sales Tax at 17% has increased the price of trucks/prime movers tremendously. The manufacturers have found it difficult to pass on this entire burden to the buyers.

5.36 Fuel

Euro III and above technologies are not supported by fuel currently sold by petroleum marketing companies in Pakistan.

5.37 Quality and Availability of Spare Parts

This is a prime concern of fleet operators and truck drivers. The spare parts for locally manufactured products are less reliable and usually breakdown even before useful life and have increased demand of Japanese used/imported products.

5.38 Financing / Insurance

Financing and insurance is not easily available particularly for unregistered fleet managers and individuals. Availability of financing can increase demand for trucks and prime movers. However, it is not clear how PAKNOR can help them in arranging financing.

5.39 Conclusion and Recommendations for Shareholders

PPP MODEL developed for HIT from this study has enhanced the productivity/ profitability tremendously. Developed PPP model can be successfully employed in public sector organizations with their arrangements.

Revolving fund instructions require following flexibilities

- ✦ Autonomy to HIT board in decision making and its acceptance by ministries and financial authorities including audit
- ✦ Deviation from Public Procurement Rules (PPRA)
- ✦ Increase in present ceiling of accounts of revolving fund
  - ● FE US$ 100 Million To 500 Million
  - ● LC RS 500 Million To One Billion

Application of PPP models shall require new set of government rules and legal frame work suitably formed for corporate approach. Following issues need to be addressed.

- ➢ Deviation from government procurement rules
- ➢ Handling of financial arrangement through private investment
- ➢ Private Auditing
- ➢ Legal support through corporate legal consultant
- ➢ Monetary benefits to HIT employees
- ➢ Competency TO HIT board for implementation
- ➢ Autonomy to HIT board for application of PPP model
- ➢ More flexibility in revolving fund utilization
- ➢ Approval of the concept and the way forward

Pakistan trucking industry has huge potential for growth. Based on the market study there is a plenty of room for new market entrants. However, the challenges are still there which need to be overcome through a superior product and innovative marketing strategy.

The success of the new market entrant would greatly depend upon competitive pricing, availability of spare, resale value of the trucks and prime movers. The product range for open market should complement target audience requirements in 120 to 260 HP categories. Furthermore, the demand alone should not be looked at while reaching a decision to establish new trucks and prime movers

manufacturing plant, rather a holistic view covering entire product lifecycle should be taken into contemplation.

PAKNOR is strategically placed because two of the three shareholders are part of and/or operationally in control of the armed forces. Therefore, PAKNOR has an edge over others manufacturers and market entrants because of direct access to decision makers in armed forces. At the same time, it is in a position to adopt business model that has been tested and shown positive results.

Moving forward, we would like to recommend the following strategies and initiatives to capture a reasonable market share by PAKNOR:

- Making an effective and targeted marketing strategy would be the most important stage for the new company. Currently, very few manufacturers are advertising on TV channels and newspapers. They are more convinced in doing the road shows in the markets to focus the end users, individuals and small fleet operators. Joint shows and printed brochures with fleet operators are in practice that gives the publicity to the fleet operators and manufacturers at the same time.
- The market strategy should be developed in such a manner that it promotes development of product's brand name. Price, fuel efficiency, availability of spare parts and after sales services should be highlighted.
- A different marketing strategy is required for catering to the demands of each customer segment. So far the manufacturers do not give priority to armed forces and government institutions. Search has indicated manufacturers consider such as least important and place it after the three segments mentioned in this report. PAKNOR should keep sales to armed forces and government institutions as a first priority to gain competitive advantage.
- PAKNOR should create close ties with mechanics and workshops. They may want to consider training maximum number of mechanics form all around the country so that trucks/prime movers and even dumpers can be serviced on the spot. This support mechanism should be in addition as well as complement mobile workshops. It is advisable that workshops along the motorways and highways should be trained and given the authority to market themselves as authorized mechanics. It is also recommended that list of such mechanism along with addresses and contact details should be published and customer be informed as well as suggested to contact these mechanics for appropriate response.

- In Pakistan, there are not significant trucks and prime movers driving training centers for drivers. Providing such training through training centers would build a relationship with the customers. This would have build a better relationship with end users of the company's products
- Product range should complement product requirements of the target customer base. It is easy to convince customers if key decision making factors as mentioned in Section 3 Market Segmentation have been catered.
- Armed forces and other institutions associated with it have a huge demand of trucks as per manufacturing companies in Pakistan. PAKNOR can make direct sales to Armed forces and associated institutions. If PAKNOR gets success in satisfying the requirements of Armed forces with its products, it will not only help PAKNOR in increasing its sales numbers but also elevate its reputation in the market place as the favorite and tested manufacturer of Army, which will strengthen the brand name of PAKNOR and lead to the increase in re-sale value.
- PAKNOR should develop a business model similar to FAW with the support of NLC and a local financial institution. PAKNOR can provide its products on lease to sub-contractors of NLC and can ensure that payments to sub-contractors are routed through financial institution after clearing of lease payments.
- Autonomy to hit board for application of PPP model
- More flexibility in revolving fund utilization
- Approval of the concept and the way forward

5.40 Conclusion

- PPP model developed for HIT from this study can enhance the productivity / profitability tremendously.
- Developed PPP model can be successfully employed in other public sector organizations under similar arrangements.
- Pakistan trucking industry has huge potential for growth. Based on the market study there is a plenty of room for new market entrants. However, the challenges are still there which need to be overcome through a superior product and innovative marketing strategy.

5.41 Future Work Guidelines

PPP concept may be needed to be further tested in declining production organizations with their required modifications.

APPENDIX=A

HEAVY REBUILD FACTORY (T-SERIES)

Ser	Rank / Category	BPS	No of Posts		Total
			Military	Civilian	
1	Brigadier (EME)	20	1		1
2	Colonel (EME)	19	1		1
3	Lieutenant Colonel (EME)	19	2		2
4	Superintendent Workshop / Principal Research Officer	19		1	1
5	Major (EME)	18	3		3
6	Major (Ord)	18	1		1
7	Works Manager / Senior Research Officer	18		3	3
8	Personnel Officer / Adminstrative Officer	18		1	1
9	Captain (EME)	17	8		8
10	Assistant Works Manager / Research Officer	17		7	7
11	Assistant Budget & Accountant Officer	17		1	1
12	Subedar Major (EME)	16	6		6
13	Foreman	16		9	9
14	Officer Superintendent	16		2	2
15	Data Control Officer	16		1	1
16	Store Holder	16		1	1
17	Accountant	16		1	1
18	Stenographer	15		1	1
19	Subedar (EME)	14	4		4
20	Subedar (Ord)	14	1		1
21	Assistant Foreman	14		18	18
22	Assistant Store Holder	13		1	1
23	Naib Subedar (EME)	12	20		20
24	Chargeman	12		25	25
25	Head Clerk	12		2	2
26	Stenotypist	12		2	2
27	Data Control Supervisor	12		1	1
28	Supervisor-II	11		44	44
29	Assistant	11		6	6
30	Havildar (EME)	10	35		35
31	Havildar (Ord)	10	6		6
32	Havildar (Engr)	10	3		3
33	Highly Skilled Mistry	10		54	54
34	Highly Skilled Mistry (Tank Commander)	10		2	2
35	Senior Clerk	9		6	6
36	Senior Godown Keeper	9		5	5
37	Data Entry Operator	9		2	2
38	Senior Draftsman	9		1	1
39	Data Clerk	8		1	1
40	Naik (EME)	7	60		60
41	Naik (Ord)	7	14		14

42	Naik (ASC)	7	4		4
43	Naik (Engr)	7	4		4
44	Naik (AD)	7	1		1
45	Naik (Arty)	7	1		1
46	Naik (Sig)	7	1		1
47	Supervisor-I	7		18	18
48	Highly Skilled -I	7		92	92
49	Draftsman	7		1	1
50	UDC	7		10	10
51	Lance Naik (EME)	6	18		18
52	Lance Naik (Ord)	6	9		9
53	Highly Skilled-II	6		96	96
54	Godown Keepr	6		6	6
55	Craftman / Sepoy (EME)	5	56		56
56	Sepoy (Ord)	5	9		9
57	Skilled	5		225	225
58	LDC	5		10	10
59	Driver / Gunner / Operator (AFV / APC)	5		7	7
60	Crane Operator	5		1	1
61	Tracer	5		1	1
62	Semi Skilled-I	4		30	30
63	Driver (MT)	4		9	9
64	Semi Skilled-II	3		72	72
65	Labour Unskilled	2		16	16
66	Daftary	2		1	1
67	Qasid	2		1	1
68	Labour Unskilled Manual	1		45	45
69	Naib Qasid	1		19	19
70	Mali	1		6	6
71	Cook	1		1	1
72	Water Carrier	1		1	1
73	Sweeper	1		10	10
Total			**268**	**876**	**1144**

HEAVY REBUILD FACTORY (M-SERIES

Ser	Rank / Category	BPS	No of Posts		Total
			Military	Civilian	
1	Brigadier (EME)	20	1		1
2	Colonel (EME)	19	1		1
3	Lieutenant Colonel (EME)	19	1		1
4	Superintendent Workshop / Principal Research Officer	19		1	1
5	Major (EME)	18	2		2
6	Works Manager / Senior Research Officer	18		1	1
7	Captain (EME)	17	3		3
8	Captain (Ord)	17	1		1
9	Assistant Works Manager / Research Officer	17		3	3
10	Boiler Engineer	17		1	1
11	Assistant Personnel Officer / Assistant Administrative Officer / Welfare Officer	17		1	1
12	Assistant Budget & Account Officer	17		1	1
13	Subedar Major (EME)	17	1		1
14	Foreman	16		7	7
15	Officer Superintendent	16		2	2
16	Data Control Officer	16		1	1
17	Accountant	16		1	1
18	Stenographer	16		1	1
19	Subedar (EME)	15	2		2
20	Subedar (Ord)	14	1		1
21	Assistant Foreman	14		8	8
22	Naib Subedar (EME)	14	10		10
23	Naib Subedar (Ord)	12	1		1
24	Chargeman	12		12	12
25	Head Clerk	12		1	1
26	Stenotypist	12		1	1
27	Cashier	12		1	1
28	Data Control Supervisor	12		1	1
29	Supervisor-II	12		20	20
30	Assistant	11		3	3
31	Havildar (EME)	11	12		12

32	Havildar (Ord)	10	2		2
33	Highly Skilled Mistry	10		19	19
34	Highly Skilled Mistry (Tank Commander)	10		1	1
35	Senior Clerk	10		4	4
36	Senior Godown Keeper	9		1	1
37	Data Entry Operator	9		1	1
38	Data Clerk	9		1	1
39	Naik (EME)	7	16		16
40	Naik (Ord)	7	5		5
41	Supervisor-I	7		5	5
42	Highly Skilled -I	7		24	24
43	Draftsman	7		1	1
44	UDC	7		5	5
45	Lance Naik (EME)	7	11		11
46	Lance Naik (Ord)	6	2		2
47	Highly Skilled-II	6		41	41
48	Godown Keepr	6		2	2
49	Craftman / Sepoy (EME)	6	31		31
50	Sepoy (Ord)	5	2		2
51	Skilled	5		58	58
52	LDC	5		6	6
53	Driver / Gunner / Operator (AFV / APC)	5		2	2
54	Crane Operator	5		2	2
55	Semi Skilled-I	5		15	15
56	Fork Lifter Driver	5		2	2
57	Driver (MT)	5		6	6
58	Semi Skilled-II	5		35	35
59	Labour Unskilled	3		10	10
60	Daftary	2		1	1
61	Labour Unskilled Manual	2		14	14
62	Naib Qasid	1		8	8
63	Mali	1		3	3
64	Cook	1		1	1
65	Water Carrier	1		1	1
66	Sweeper	1		8	8
Total			**105**	**344**	**449**

ARMOURED PERSONNEL CARRIER FACTORY

Ser	Rank / Category	BPS	No of Posts		Total
			Military	Civilian	
1	Brigadier (EME)	20	1		1
2	Colonel (EME)	19	1		1
3	Lieutenant Colonel (EME)	19	2		2
4	Superintendent Workshop / Principal Research Officer	19		1	1
5	Major (EME)	18	4		4
6	Works Manager / Senior Research Officer	18		4	4
7	Captain (EME)	17	4		4
8	Captain (Ord)	17	1		1
9	Assistant Works Manager / Research Officer	17		5	5
10	Assistant Personnel Officer / Assistant Administrative Officer / Welfare Officer	17		1	1
11	Assistant Budget & Account Officer	17		1	1
12	Assistant Programmer	17		1	1
13	Subedar Major (EME)	16	1		1
14	Foreman	16		5	5
15	Officer Superintendent	16		2	2
16	Data Control Officer	16		1	1
17	Store Holder	16		1	1
18	Accountant	16		1	1
19	Stenographer	15		1	1
20	Subedar (EME)	14	3		3
21	Assistant Foreman	14		5	5
22	Assistant Store Holder	13		1	1
23	Naib Subedar (EME)	12	3		3
24	Chargeman	12		8	8
25	Head Clerk	12		1	1
26	Stenotypist	12		1	1
27	Head Draftsman	12		1	1
28	Cashier	12		1	1
29	Data Control Supervisor	12		1	1
30	Supervisor-II	11		14	14
31	Assistant	11		4	4
32	Havildar (EME)	10	17		17

33	Havildar (Ord)	10	2		2
34	Highly Skilled Mistry	10		18	18
35	Highly Skilled Mistry (AC)	10		1	1
36	X-Ray Camer Operator	10		2	2
37	Senior Clerk	9		3	3
38	Senior Godown Keeper	9		1	1
39	Data Entry Operator	9		1	1
40	Senior Draftsman	9		1	1
41	Data Clerk	9		1	1
42	Naik (EME)	8	16		16
43	Naik (MIB)	7	5		5
44	Highly Skilled-I	7		23	23
45	Draftsman	7		3	3
46	UDC	7		5	5
47	Lance Naik (EME)	7	5		5
48	Highly Skilled-II	6		34	34
49	Godown Keepr	6		4	4
50	Craftman / Sepoy (EME)	6	27		27
51	Skilled	5		39	39
52	LDC	5		5	5
53	Storeman	5		4	4
54	Driver / Gunner / Operator (AFV / APC)	5		2	2
55	Crane Operator	5		5	5
56	Semi Skilled-I	5		27	27
57	Fork Lifter Driver	4		4	4
58	Driver (MT)	4		7	7
59	Semi Skilled-II	4		39	39
60	Labour Unskilled	3		12	12
61	Labour Unskilled Manual	2		18	18
62	Naib Qasid	1		8	8
63	Mali	1		3	3
64	Cook	1		1	1
65	Water Carrier	1		1	1
66	Sweeper	1		5	5
Total			**92**	**338**	**430**

TANK MANUFACTURING FACTORY

Ser	Rank / Category	BPS	No of Posts		Total
			Military	Civilian	
1	Brigadier (EME)	20	1		1
2	Colonel (EME)	19	1		1
3	Lieutenant Colonel (EME)	19	2		2
4	Superintendent Workshop / Principal Research Officer	19		1	1
5	Major (EME)	18	3		3
6	Major (Ord)	18	1		1
7	Works Manager / Senior Research Officer	18		3	3
8	Captain (EME)	18	5		5
9	Captain (Ord)	17	1		1
10	Assistant Works Manager / Research Officer	17		4	4
11	Assistant Personnel Officer / Assistant Administrative Officer / Welfare Officer	17		1	1
12	Assistant Budget & Account Officer	17		1	1
13	Subedar Major (EME)	17	2		2
14	Subedar Major (Ord)	16	1		1
15	Foreman	16		5	5
16	Officer Superintendent	16		1	1
17	Data Control Officer	16		1	1
18	Accountant	16		1	1
19	Stenographer	16		1	1
20	Subedar (EME)	15	3		3
21	Risaldar (AC)	14	1		1
22	AFM	14		11	11
23	Assistant Store Holder	14		1	1
24	Naib Subedar (EME)	13	10		10
25	Naib Subedar (Ord)	12	2		2
26	Chargeman	12		13	13
27	Head Clerk	12		1	1
28	Stenotypist	12		1	1
29	Cashier	12		1	1
30	Data Control Supervisor	12		1	1
31	Supervisor-II	12		24	24
32	Assistant	12		2	2
33	Havildar (EME)	11	25		25

34	Dafedar (AC)	11	1		1
35	Havildar (Ord)	10	2		2
36	Highly Skilled Mistry	10		28	28
37	Highly Skilled Mistry (Tank Commander)	10		2	2
38	Senior Clerk	10		2	2
39	Senior Godown Keeper	10		2	2
40	Data Entry Operator	9		1	1
41	Data Clerk	9		1	1
42	Naik (EME)	9	21		21
43	Lance Dafedar (AC)	8	1		1
44	Naik (Ord)	7	2		2
45	Supervisor-I	7		5	5
46	Highly Skilled-I	7		39	39
47	Draftsman	7		1	1
48	UDC	7		5	5
49	Lance Naik (EME)	7	20		20
50	Acting Lance Dafedar (AC)	7	2		2
51	Lance Naik (Ord)	6	1		1
52	Highly Skilled-II	6		93	93
53	Godown Keeper	6		8	8
54	Craftsman/Sepoy (EME)	6	9		9
55	Skilled	6		88	88
56	LDC			10	10
57	Driver / Gunner / Operator (AFV / APC)	5		5	5
58	Crane Operator	5		7	7
59	Semi Skilled-I	5		20	20
60	Fork Lifter Driver	5		4	4
61	Driver (MT)	5		7	7
62	Semi Skilled-II	4		25	25
63	Labour Unskilled	4		11	11
64	Daftary	4		1	1
65	Labour Unskilled Manual	3		13	13
66	Naib Qasid	2		7	7
67	Mali	2		3	3
68	Cook	1		1	1
69	Water Carrier	1		1	1
70	Sweeper	1		6	6
Total			**117**	**470**	**587**

GUN FACTORY

Ser	Rank / Category	BPS	No of Posts		Total
			Military	Civilian	
1	Colonel (EME)	19	1		1
2	Lieutenant Colonel (EME)	19	1		1
3	Superintendent Workshop / Principal Research Officer	19		1	1
4	Major (EME)	18	3		3
5	Works Manager / Senior Research Officer	18		3	3
6	Captain (EME)	17	3		3
7	Captain (Ord)	17	1		1
8	Assistant Works Manager / Research Officer	17		3	3
9	Assistant Personnel Officer / Assistant Administrative Officer / Welfare Officer	17		1	1
10	Assistant Budget & Account Officer	17		1	1
11	Foreman	16		5	5
12	Officer Superintendent	16		1	1
13	Data Control Officer	16		1	1
14	Store Holder	16		1	1
15	Accountant	14		1	1
16	Subedar (EME)	14	2		2
17	Assistant Foreman	13		7	7
18	Assistant Store Holder	12		1	1
19	Naib Subedar (EME)	12	8		8
20	Naib Subedar (Ord)	12	1		1
21	Chargeman	12		13	13
22	Head Clerk	12		1	1
23	Stenotypist	12		1	1
24	Data Control Supervisor	11		1	1
25	Supervisor-II	11		10	10
26	Assistant	10		2	2
27	Havildar (EME)	10	14		14
28	Havildar (Ord)	10	1		1
29	Havildar (All Arms)	10	1		1
30	Highly Skilled Mistry	9		15	15
31	Senior Clerk	9		1	1
32	Senior Godown Keeper	9		2	2

33	Data Entry Operator	8		1	1
34	Data Clerk	7		1	1
35	Naik (EME)	7	18		18
36	Naik (Ord)	7	5		5
37	Naik (All Arms)	7	1		1
38	Supervisor-I	7		7	7
39	Highly Skilled-I	7		27	27
40	Draftsman	7		1	1
41	UDC	6		4	4
42	Lance Naik (EME)	6	8		8
43	Lance Naik (Ord)	6	3		3
44	Lance Naik (Arty)	6	2		2
45	Highly Skilled-II	6		21	21
46	Godown Keeper	5		4	4
47	Craftsman/Sepoy (EME)	5	47		47
48	Sepoy (Ord)	5	2		2
49	Sepoy (Arty)	5	1		1
50	Sepoy (All Arms)	5	3		3
51	Skilled	5		70	70
52	LDC	5		2	2
53	Crane Operator	4		1	1
54	Semi Skilled-I	4		22	22
55	Driver (MT)	3		3	3
56	Semi Skilled-II	2		24	24
57	Labour Unskilled	2		10	10
58	Daftary	1		1	1
59	Labour Unskilled Manual	1		11	11
60	Naib Qasid	1		3	3
61	Mali	1		2	2
62	Cook	1		1	1
63	Water Carrier	1		1	1
64	Sweeper			4	4
Total			**126**	**293**	**419**

DEVELOPMENT ENGINEERING SUPPORT & COMPONENT MANUFACTURE

Ser	Rank / Category	BPS	No of Posts		Total
			Military	Civilian	
1	Brigadier (EME)	20	1		1
2	Colonel (EME)	19	2		2
3	Lieutenant Colonel (EME)	19	2		2
4	Superintendent Workshop / Principal Research Officer	19		1	1
5	Major (EME)	18	3		3
6	Works Manager / Senior Research Officer	18		5	5
7	Personnel Officer / Administrative Officer			1	1
8	Captain (EME)	17	5		5
9	Captain (Ord)	17	1		1
10	Assistant Works Manager / Research Officer	17		10	10
11	Boiler Engineer	17		1	1
12	Assistant Budget & Account Officer	16		1	1
13	Subedar (EME)	16	2		2
14	Foreman	16		20	20
15	Office Superintendent	16		2	2
16	Maintenance Engineer (Computer / CNC Machines)	14		1	1
17	Data Control Officer	14		1	1
18	Store Holder	13		2	2
19	Accountant	12		1	1
20	Stenographer	12		1	1
21	Subedar (EME)	12	2		2
22	Assistant Foreman	12		20	20
23	Assistant Store Holder	12		2	2
24	Naib Subedar (EME)	12	4		4
25	Naib Subedar (Ord)	11	3		3
26	Chargeman	11		40	40
27	Head Clerk	10		2	2
28	Stenotypist	10		1	1
29	Head Draftsman	10		1	1
30	Cashier	10		1	1
31	Data Control Supervisor	9		1	1

32	Supervisor-II	9		81	81
33	Assistant	9		5	5
34	Havildar (EME)	8	23		23
35	Havildar (Ord)	7	4		4
36	Highly Skilled Mistry	7		37	37
37	Senior Clerk	7		9	9
38	Senior Godown Keeper	7		5	5
39	Data Entry Operator	7		2	2
40	Senior Draftsman	7		1	1
41	Data Clerk	7		1	1
42	Naik (EME)	6	15		15
43	Naik (Ord)	6	16		16
44	Naik (All Arms)	6	8		8
45	Supervisor-I	6		16	16
46	Highly Skilled-I	6		104	104
47	Draftsman	5		2	2
48	UDC	5		21	21
49	Lance Naik (All Arms)	5	10		10
50	Highly Skilled-II	5		98	98
51	Godown Keeper	5		15	15
52	Craftsman/Sepoy (EME)	5	9		9
53	Skilled	5		245	245
54	LDC	4		23	23
55	Carpenter	4		1	1
56	Crane Operator	3		1	1
57	Tracer	2		1	1
58	Semi Skilled-I	2		35	35
59	Driver (MT)	1		12	12
60	Semi Skilled-II			86	86
61	Labour Unskilled			22	22
62	Labour Unskilled Manual			41	41
63	Naib Qasid			17	17
64	Mali			7	7
65	Cook			4	4
66	Sweeper			14	14
Total			**110**	**1021**	**1131**

APPENDIX-B

LIST OF MACHINES AVAILABLE / UNDER UTILIZED

1. 3 Axis CNC Machines
2. Horizontal Boring Machines
3. Vertical Boring Machines
4. Argon Welding Plants
5. Wire Cut CNC Machines
6. Water Jet Cutting Machines
7. Milling machines
8. Routers
9. Auto Welding machines
10. Auto Cutters
11. Lathes machines
12. Surface treatment plants
13. Heat treatment Plants
14. Casting Facility
15. Forging Facility
16. MIG Welding Machines
17. TIG Welding Machines
18. Gantry Mill
19. CNC Die Sinking Machine
20. CNC Jig Grinding Machine
21. Plastic Molding Machines

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