

**“Improvement of Procurement Strategy of Wah Nobel
Chemicals Limited through Spend Analysis and Business
Process Redesign”**



By

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for the degree of Executive Masters in Business Administration

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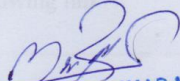
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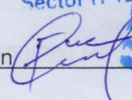
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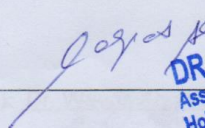
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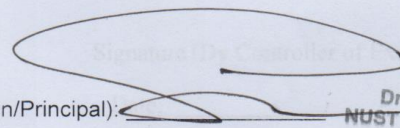
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Table of abbreviations

Acronyms	Abbreviations
WNCL	Wah Nobel Chemicals Ltd
MRO	Maintenance Repair Operations
Mil	Million
NOC	No objection certificate
HCL	Hydrochloric acid
UFMC	Urea Formaldehyde Molding Compound
RV	Received Voucher
IR	Inspection report
CST	Comparative statement
LC	Letter of Credit
M.D	Managing Director
ERP	Enterprise Resource Planning
PP bags	Polypropylene bags
PKR	Pakistani Rupees

1. Introduction

1.1 WAH NOBEL GROUP

Founded in 1962, Wah Nobel is a joint venture between the Wah Industries Limited, Saab (Sweden) and Almisehal Co (Saudi Arabia). Wah Nobel Group is a multinational group with six companies on its orbit. It is engaged in production of Commercial Explosives/Accessories, wide range of Industrial Chemicals and Acetates and has a presence in the Energy Sector (wahnobel.com).

Wah Nobel operates as a Commercial Subsidiary of POF on commercial frequency and wavelength. The shareholders of Wah Nobel are as under:

- *WIL, Pakistan 51.75%*
- *SAAB, Sweden 27.23%*
- *Al-Misehal Co, Saudi Arabia 21.02%* (wahnobel.com)

Wah Nobel (Pvt) Ltd The parent company of the group was set up in 1962 by Wah Industries Limited in collaboration with Bofors Sweden (Now Saab, Sweden) to meet the requirements of commercial explosives and accessories.

Wah Nobel Chemicals Ltd was established in 1982 and produces an impressive range of high-quality Industrial Chemicals like Formaldehyde, Urea Formaldehyde, Glue, and Raisins which have diverse applications in numerous industries.

Wah Nobel Acetates Ltd was established in 1998 keeping in mind the company's policy of constant evolution and expansion. The Company caters to various industries. The company produces Butyl Acetate, Ethyl Acetate, and Acetic Acid.

Nobel Energy Ltd is engaged in development of Solar Power Projects. Presently, it is developing 2 Solar Power Projects and pursuing a Large Hydro Power Project.



Figure 1.1 Wah Nobel Chemicals Plant

1.2 Industry background

Formaldehyde is the most commercially important aldehyde. Production of urea, phenol and melamine formaldehyde resins (UF, PF, and MF resins) accounts for nearly 70% of world consumption of formaldehyde in 2020. Construction and remodeling activity, vehicle and furniture production, and original equipment manufacturer (OEM) account for most world consumption of formaldehyde. Demand for these markets is greatly influenced by general economic conditions. As a result, demand for formaldehyde largely follows the patterns of the leading world economies (S&P Global, 2021). Formaldehyde resins are used in the wood products industry predominantly as adhesives. Mainland China is the single-largest market for formaldehyde; other markets with large markets include the United States, Germany, the Netherlands, Spain, Italy, Belgium, Poland, Russia, India, South Korea, Japan, Brazil, and Canada. In Pakistan Key players of formaldehyde are Wah Nobel Chemicals Ltd, Dynea Pakistan and Super Asia Industries. Its products are used in wood-based panels, decorative surfaces, and tableware.



Figure 2.1 Formaldehyde Plant

1.2.1 Product Mix

Wah Nobel Chemicals Ltd is engaged in the manufacture and sale of formaldehyde, Formaldehyde glues, urea/melamine formaldehyde Compound and melamine glazing powder.

- **FORMALDYE – FA 37 %** Application: General purpose formalin suitable for Tanneries, Poultry and Sugar Industries.
- **GLAZING POWDER:** Application: Used for coating of Dish Ware
- **UREA FORMALDEHYDE CONCENTRATE 63% – UFC 63:**
Application: Used in the manufacturing of molding compounds.
- **FORMALDEHYDE CONCENTRATE 85% – UFC 85**
Application: Used as anti-caking agent in Urea (granular) manufacturing process. Also suitable for manufacturing U.F. Glue.
- **UREA FORMALDEHYDE GLUE – KR 50:** Application: Suitable for the production of Chipboard
- **UREA FORMALDEHYDE GLUE – KR 3000**
Application: Used as abrasive binder in the manufacturing of sand paper.
- **UFMC:** Application: Used in the manufacturing of Dish ware and Electrical accessories.

1.2.2 Material Mix

Raw materials are mostly imported from Saudi Arabia, China, Russia and Taiwan. Methanol is the basic raw material in production of formalin which is imported directly from SABIC Saudi Arabia. It is like blood of Production plant. Hexamine, Melamine and Wood Pulp are also regular basis raw materials of UFMC & Glazing powder imported in large quantities from multiple sources in China, Saudi Arabia and Europe. Urea is basic raw material in Glues and UFMC which is sourced from Fertilizer Company on contractual basis.

Some local raw materials e.g. HCL are NOC Based items for which license is required. Sea salt is also procured on regular basis is also main ingredient in production of finished products. Firewood is the basic fuel for Boiler to produce steam which is required in production process. Polypropylene bags required for packaging of finished products are also sourced locally from multiple vendors in Pakistan.

Table 1.1 Material Mix of Imports & Local Raw Materials

Imported Materials	Quantity (MT)	Local Materials	Quantity(MT)
Methanol	22000	Caustic Soda	100
Phenol	180	Formic Acid	5
Hexamine	360	HCL	60
Melamine	900	Sea salt	1200
Softwood Pulp	3000	Urea	9600
Zinc Stearate	72	Zinc oxide	22.5
Titanium dioxide	80	Polypropylene bags	28000 nos
PTSA	10	Firewood	1200
DSP	10		
Fluorescent Brightener	18		

1.2.3 Supply Chain Map

Wah Nobel chemicals ltd supply chain is stable and closely aligned according to demand and supply needs and interests of suppliers, manufacturer, distributor and customers. It focuses on efficiency and cost management ensuring throughput at any cost. Supply chain of Wah Nobel Chemicals is designed in such a way that it is adaptable to change in demand, adaptive, reactive and visibility of information to all stakeholders. Suppliers of core raw materials are mainly from Saudi Arabia, Russia, China, Europe and Pakistan. SABIC is key supplier of Methanol which is imported from Saudi Arabia while Hexamine is procured from Chemanol Saudi Arabia. Similarly, another core raw material Softwood pulp is sourced from European paper mills like UPM, Sodra, and Heinzl.

Warehouses are located in Karachi Hub and Wah Cantt. Material that is cleared at Karachi port is stored in Karachi hub and later transported to Wah Cantt. To clear goods at Karachi sea port services of clearing agent is taken from Kaikobad Pestanjee Kakalia (KPK) and Khurram Brothers. The manufacturing plant is located in Wah Cantt. The two third party logistics Indus logistics and Islamabad Transport companies are engaged by Wah Nobel to transport raw materials to from Karachi warehouse to Wah Cantt.

Distribution network is mostly followed in Gujranwala and Sargodha region while remaining areas are focused on direct selling strategy by Sales team. The Customers are mainly in B2B and B2C Sector. B2B customers are mainly ZRK Group, Premier Industry, Frontier group, Chenab Particle board etc. while B2C model is followed in Gujranwala and Sargodha regions

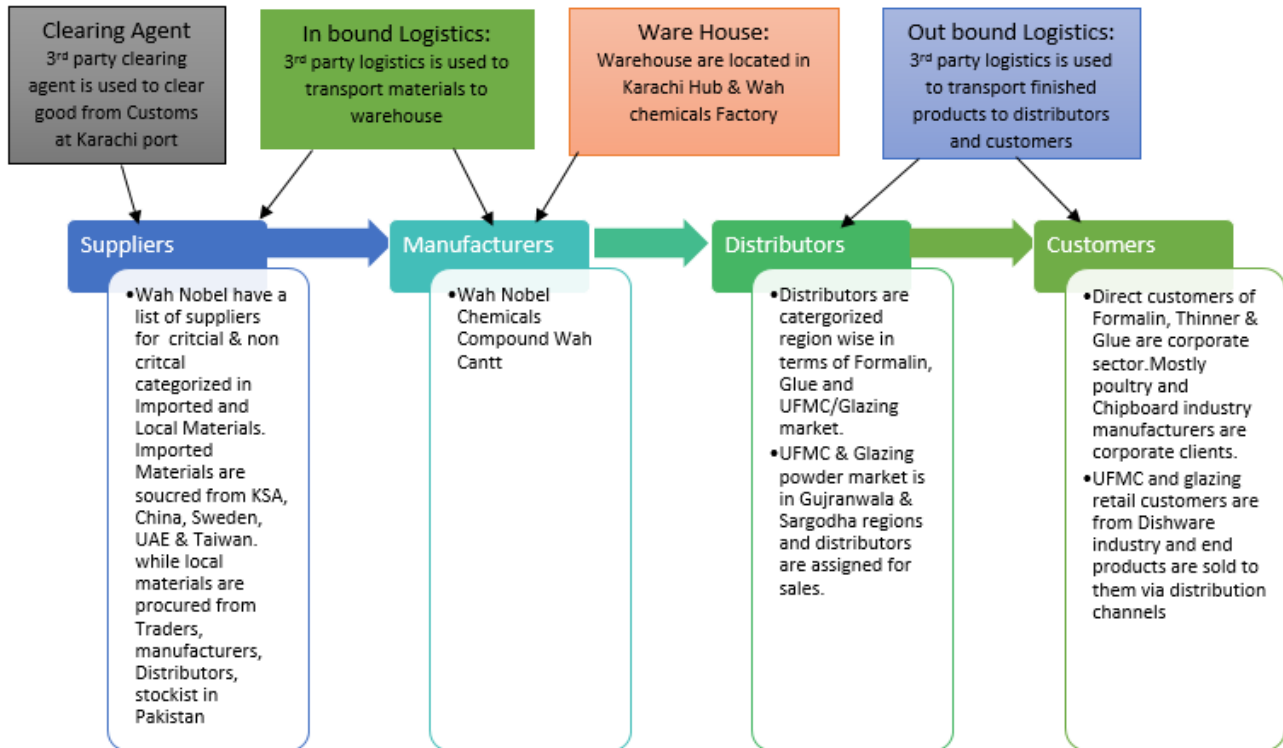


Figure 3.1 Supply Chain Map

1.2.4 Procurement Process

Introduction:

This procedure describes the process in procuring material, goods and services for Wah Nobel Chemicals. It also ensures that the requirements of all materials, goods and services are clearly and adequately defined on procurement order.

Scope:

This document defines the procedure for ordering items to be used in manufacturing WNCL products.

Procedures:

Local Procurement-Normal:

The initiating department will prepare the procurement requisitions (PR). The original plus one copy will send to the procurement department. On receipt of the PR at least three tenders/ quotations will be obtained and C.S.T will be prepared indicating the price. The item lowest in price and conforming to prescribed specification recommended by the procurement department, audited by Internal Auditor will be put up for Managing Director's approval.

Procurement order will be placed on the lowest vendor for procurement /supply of request item approved by Managing Director however a procurement order is not necessary for cash procurement. The items received from the vendors will be sent to store department of the factory concerned under a store forwarding note. On receipt of material in stores. Plant manager will ensure that inspection is carried out within a maximum of three days of the physical receipt of good in the stores. This time limit should be observed for all goods received in the stores, whether locally procured or imported.

If any material is rejected by the inspection department the stores officer will immediately convey the information to the procurement department. The store officer will extend full cooperation to the procurement department to enable to return the goods to the supplier. The store officer will also advise the procurement department of the quantity if any used by the inspection which is not possible to return.

Lead time for supply of local procurement is one month whereas for printing material is two months.

Local Procurement Urgent:

Procedure for emergent procurement is almost same as for normal procurement, except that it is made an urgent basis in view of some break down in plant in the factory or due to repair maintenance emergency operations.

In this case a committee is constituted by management which generally comprises following:

- Representative from procurement department.
- Representative from maintenance department.
- Representative from accounts department.

Approximate advance amount is granted by the management to procurement office for procurement of urgent items. Committee surveys the market and procurement the required item after inspection on spot by the maintenance department, representative. After procurement the items are sent to the concerned factory under a store forwarding note. Adjustment of the advance amount is sent to the account department with receipt of IR and RV for the store.

Cash Procurement:

Cash procurement is a procedure same as local procurement except that in this case payment is made in cash from the imprest amount or from the petty cash. Adjustment of the imprest amount or petty cash amount is submitted to accounts department as soon as IR and RV are received from the store department of the representative factories.

Foreign Procurement:

Procurement requisition is initiated by concerned plant manager through his store department and sent to procurement office. On receipt of PR tender/quotations are obtained from the foreign suppliers and CST is prepared indicating prices and specifications. The item lowest in price conforming to prescribed specification is recommended for audit by accounts department before approval of Managing Director.

The procurement requisition is sent back to the procurement department after approval of M.D. Finance concurrence is obtained from General Manager/Finance & Accounts before opening of letter of credit. Marine Cover Note is obtained from insurance company and bank is asked to establish letter of credit on

the bank prescribed form, indicating the price, specification of item, mode of shipment terms and condition of payment.

Normally three quotations are obtained for the procurement, but for proprietary item single quotation can be restored to, case in finalized on receipt of two quotations if no third quotation is received in spite of best efforts but it normally avoided. On receipt of L/C from bank, copy of L/C swift is sent to the beneficiary as well as one copy to the local representative of suppliers to arrange the shipment.

After shipment supplier send one set of non-negotiable documents to opener for information and necessary action for clearance of consignment. Whereas the negotiable set of documents is sent by the beneficiary to our bank for negotiation credit.

In case the L/C is opened on at sight basis, opening bank release the original documents against cash payment of L/C amount and if it is not credit basis original documents are released against the bill of exchange of credit amount of L/C. original documents are sent to clearing agent for clearance of consignment after payment of duties, taxes etc. The material after clearance is sent to the stores of concerned factory. The lead time for import material is four months.

PROCUREMENT PROCESS OF WAH NOBEL CHEMICALS

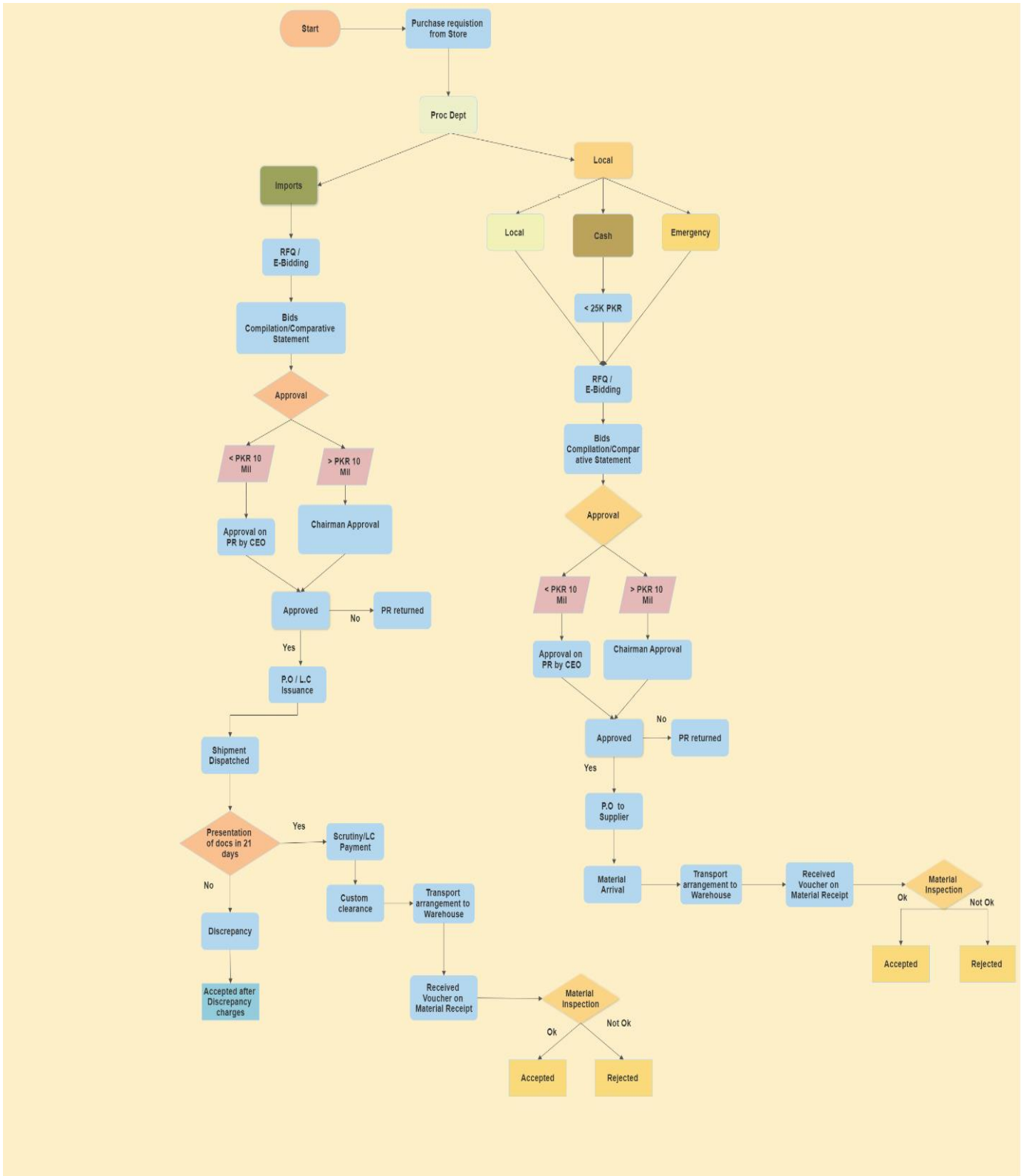


Figure 4.1 Procurement process

1.3 Problems/Challenges

After the emergence of Covid-19 there were disruptions in supply chain of Wah Nobel Chemicals as major part (80%) of raw materials are imported.

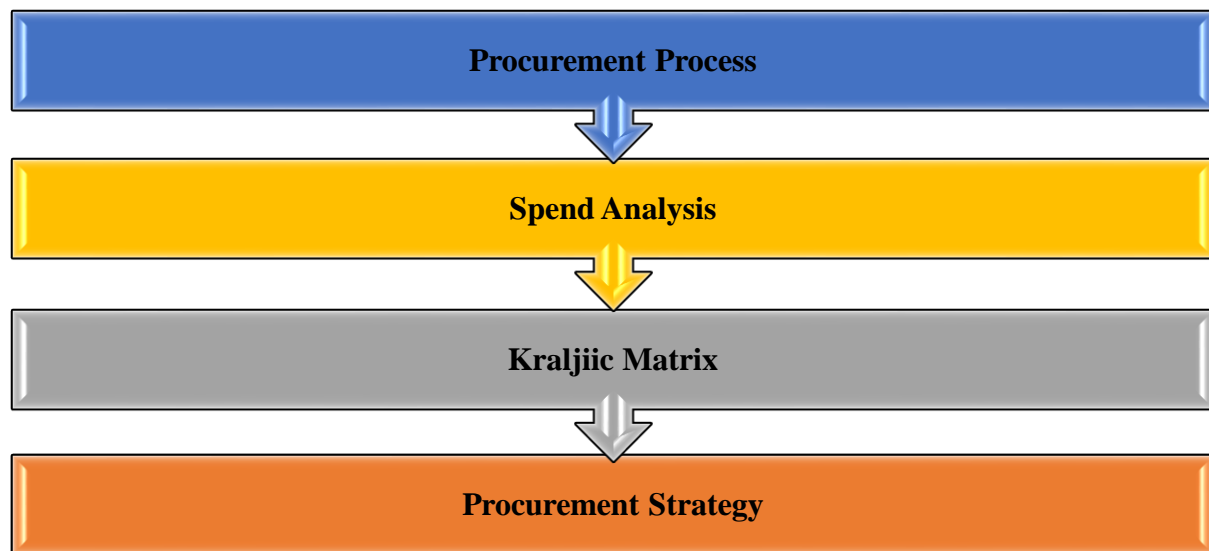
There is lack of visibility/transparency of procurement spend due to which maverick purchasing occurs. There is also need for improvement in procurement strategy in terms of cost saving, supply risk and supplier relationship management.

Hence purpose is develop and improve a comprehensive procurement strategy based on spend analytics. Current devaluation of rupee against US dollars has further hampered the raw material costs hence there is need to develop a comprehensive long-term strategy for procurement of raw materials by bridging gaps.

1.4 Objectives

- i. To improve the visibility of procurement spend
- ii. To improve procurement strategy based on spend analytics

2. Methodology



2.1 Procurement Process

Procurement process of Wah Nobel Chemicals is electronic procurement bidding. Procurement and Store department are closely aligned. Reorder levels/Minimum order levels are pre-defined on which basis purchase requisitions are initiated to procure materials. Once stock levels reach to its reordering level store managers issue purchase requisitions in favor of procurement managers which can initiate RFQ/tenders to approved suppliers. Quotations are received on which basis approval note is made to be approved by board. Internal audit, finance and MD approves the case after which Procurement order is issued to Supplier. Letter of credit is issued to supplier in case of imported material while PO is issued in local procurement. Material is received by store on which it issues received voucher (RV) and material inspection report (IR) which is forwarded to Accounts and Procurement dept.

2.2 Spend Analysis

Spend analysis is the method to review procurement spend data to reduce extra cost, increase efficiency and develop better relationship with supplier. It is the process to collect, refine, organize, cleanse, classify and analyze spend data through statistical analysis techniques or third party dedicated software's. It is one of strategic tools for procurement managers use to proactively identify cost saving areas, mitigate risk and optimize their negotiation and buying power. It is regarded as fundamental tool of supply chain in current era where prices are volatile and demand supply fluctuations are common. Results retrieved from spend analysis can improve visibility, transparency, drive performance improvement, contract compliance and cost savings.

Spend analysis data can be used as a baseline to track and measure improvements and also provide reliable data to decide and establish strategies to achieve goals i.e. cost saving, reduce risk etc. The process of spend analysis involve retrieving historical data to asses organizational expenditures.

2.3 Kraljic Matrix

Kraljic Matrix is a strategic tool of supply chain which helps to identify and minimize supply risks. Using the matrix supply chain professionals can classify the importance of supplier's products and services to highlight and develop short term and long-term strategy to reduce supply disruption and weakness in supply chain. It helps in identifying the type of relationship between supply risk and supply's impact on financial results and help in minimizing it.

2.4 Strategy Development Using Kraljic Matrix

After conducting spend analysis on each category long term strategy of each spend can be developed. The decision making to develop long term strategic partnerships, contract agreement, Joint ventures, seeking new suppliers, reengineer towards substitute, negotiate aggressively, develop bargain buyer power can be done keeping in view of risk of supply and cost impact.

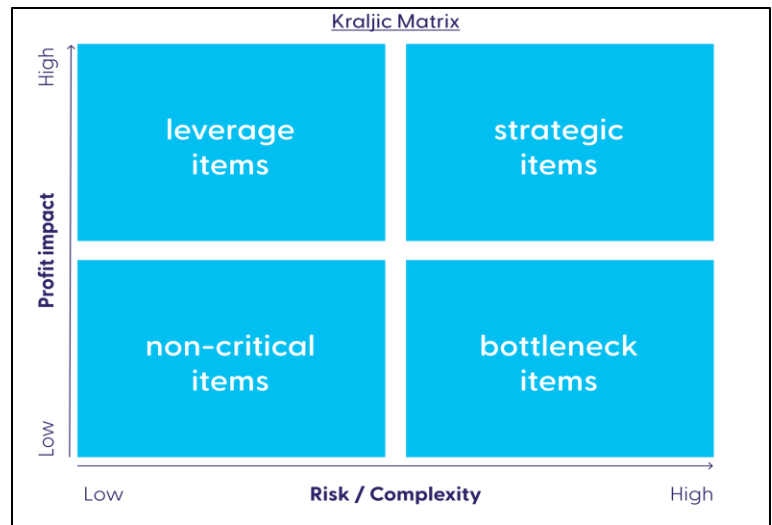


Figure 5.1 Kraljic matrix

3 Results & Discussion

3.1 Data

Procurement data is taken for whole financial year 2021-2022 and categorized into spending categories i.e. Imports, Local, Fuel, Packaging, Admin, Spares and MRO. Material/item, Supplier and total invoice value is taken from ERP after which category is defined. Data is collected, cleansed, organized, filtered and categorized after which statistical analysis technique will be applied on excel to get desired results

3.2 Results of Spend Analysis

After data is taken statistical analysis is applied on excel for spend analysis. This category wise spend analysis exhibits total spend of Wah Nobel Chemicals Procurement for Financial year 2021-22. Analysis is done on excel and results are shown using pivot table. Categories of spending are divided into imported

raw materials, local, Printing/packaging, Fuel, Admin supplies, spare parts and Maintenance/Repair items. This demonstrates that annual procurement of WNCL is PKR 2624 Million. This will help management to develop effective strategy and cost management of each procurement category.

Total spending of each category is PKR 2624 Million. While highest spending is done in Imported Raw Materials E.g. Methanol, Softwood pulp, Melamine, Hexamine etc. which nearly accounts to PKR 2253 Mil. Local raw materials like Urea, HCL, Sea Salt, Zinc oxide etc. Local raw material spending is 267 Mil PKR. Similarly spending in printing/packaging material is PKR 45 million. Spending in fuel category i.e. Firewood is PKR 42 Million .Company also a significant figure in admin supplies e.g. stationary, uniforms, ration items which accounts for PKR Mil 1.67.

Table 2.1 Spend Analysis of all Categories

Row Labels	Sum of Total Invoice Value
Admin Supplies	PKR 1,679,126
Fuel	PKR 42,285,277
Imported Raw Material	PKR 2,253,674,531
Local Raw Material	PKR 267,179,816
MRO	PKR 5,933,041
Printing & Packaging	PKR 45,804,165
Spare parts	PKR 7,980,000
Grand Total	PKR 2,624,535,956

Sr No	Category	Category%	Supplier %
1	Imports	85.87	20.75
2	Local	10.18	8.18
3	Fuel	1.61	20.75
4	Printing & packaging	1.75	12.58
5	MRO	0.23	28.3
6	Spare parts	0.3	0.63
7	Admin suppliers	0.06	8.81
		100	100

Figure 6.1 Spend Analysis results

3.3 Pareto Chart Analysis (80/20)

A Pareto chart is a visual representation of the relative importance of different factors or categories in a given dataset. In the context of procurement, a Pareto chart can be used to identify the categories of spending that account for the majority of the procurement spend. This information can be used to prioritize procurement activities and focus resources where they will have the greatest impact.

By using a Pareto chart in procurement, we can identify valuable insights into spending patterns and identify opportunities for cost savings and process improvements as in Wah Nobel Chemicals procurement Imports accounts for maximum value and there is need to rationalize it.

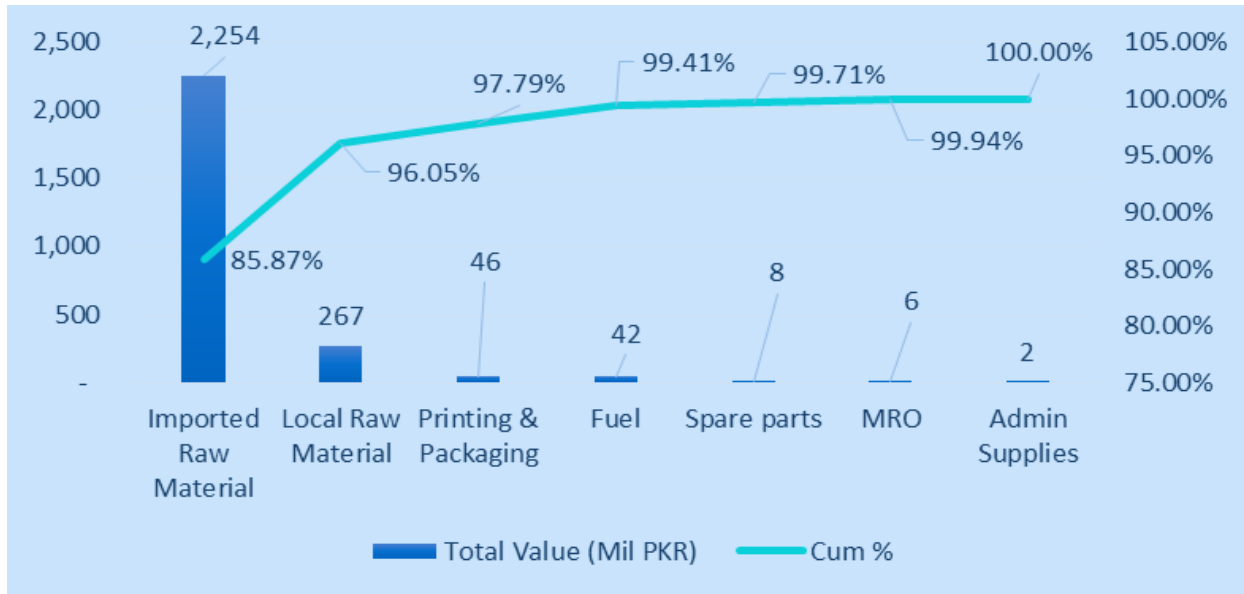


Figure 7.1 Pareto Chart Analysis

3.4 Category & Supplier wise Spending

I. Imported Raw Materials Category Supplier Spending results

Imported raw materials are the major part in procurement spending of Wah Nobel Chemicals Ltd more than 75%. Among which the highest spending is with SABIC which provides Methanol from Saudi Arabia. Nordcell Sweden which provides Softwood Pulp from Europe region accounts for PKR 436 Million. Melamine which is core component in glazing powder is mainly procured from Henan Xinliaxin Int. China which accounts for PKR 104 Mil.

Table 3.1 Spend Analysis of Imports

Imported Raw Material	Total Invoice Value in PKR 2,253,674,531
TNN development	PKR 32,453,438
Belike Chemicals	PKR 33,896,250
Chang Chung Plastics Co Ltd	PKR 7,605,000
Chemanol	PKR 73,061,719
Elof hansen AB Sweden	PKR 193,218,750

Guangxi Blue Star Dahua Chemicals	PKR 11,756,250
Henan Xinliaxin Int Trading Co	PKR 104,850,000
Kemsol	PKR 8,370,000
Nord cell & Co Sweden	PKR 243,000,000
SABIC	PKR 1,503,399,375
Shanxi Colorshine Chemical Industry	PKR 15,862,500
Shougang Noumeng Chemicals	PKR 9,281,250
TNN Development	PKR 3,262,500
Zrich Int	PKR 13,657,500

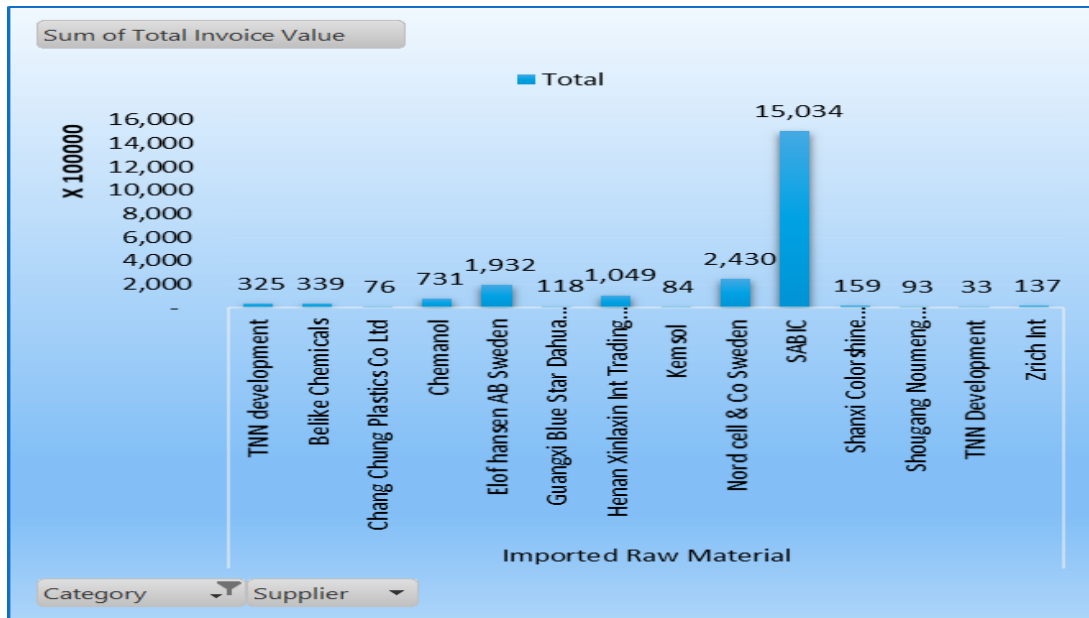


Figure 8.1 Imported raw materials spend analysis results

ii. Local Raw Material Category Spending Results

Urea is the main raw material in local category which is procured from Fauji Fertilizer Company (FFC) which has the highest share in spending category of local raw materials. Similarly, Sea Salt is also procured from Asia salt refinery and Hub Salt accounts for PKR 1 mil. Tufail Chemicals provides formic acid of about PKR 1.7 Mil. Sitara chemicals provides caustic soda and HCL.

Table 4.1 Spend Analysis of Local Materials

Local Raw Material	Total Invoice Value in PKR 267,179,816
Tufail Chemicals	PKR 1,725,750
Al Jebel Enterprise	PKR 24,507
FFC	PKR 264,160,400
Hamza Traders	PKR 228,214
Pak Asia Salt Refinery	PKR 924,413
Sitara	PKR 116,532

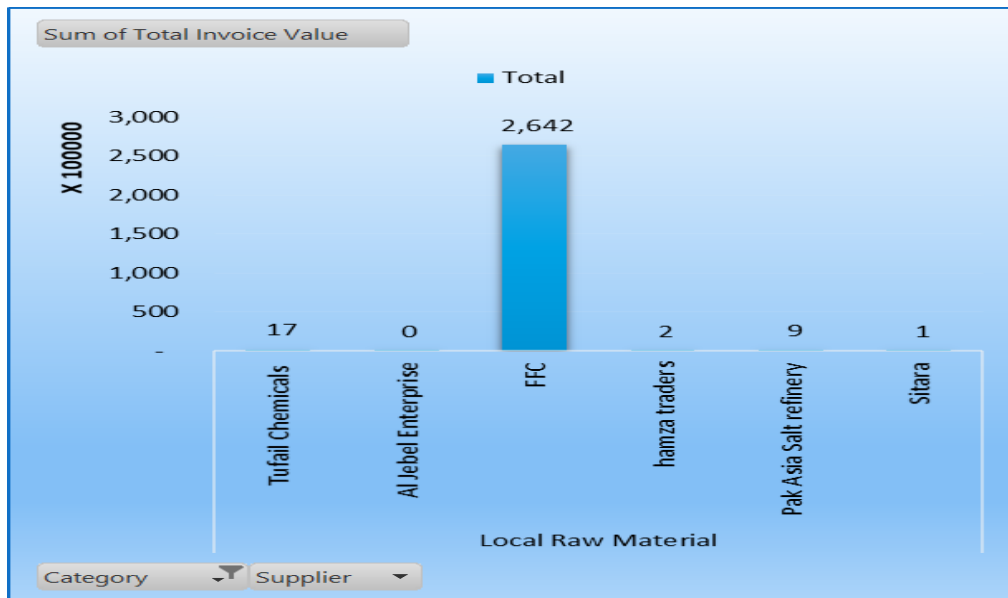


Figure 9.1 Local raw materials spend analysis results

iii. Printing & Packaging Material Category Spending Results

Wah Nobel Chemicals spend PKR 45 Million in packaging and printing of finished products. Master Multi products and Margalla packages provides Polypropylene bags of worth PKR 41 Million annually in which final product is packed. Cans/drums are procured from SunderPlast and Green Strip accounts for PKR 3.8 Mil. Packages converter provides printing services of bottles and drums.

Table 5.1 Spend Analysis of Printing/Packaging materials

Printing & Packaging	Total Invoice Value in PKR 45,804,165
Margalla Packages	PKR 693,225
Packages Converter	PKR 202,266
Green Strip Pvt Ltd	PKR 1,438,844
Margalla Packages	PKR 7,632,964
Master Multi Products	PKR 33,502,950
Sunderplast Pvt Ltd	PKR 2,333,916

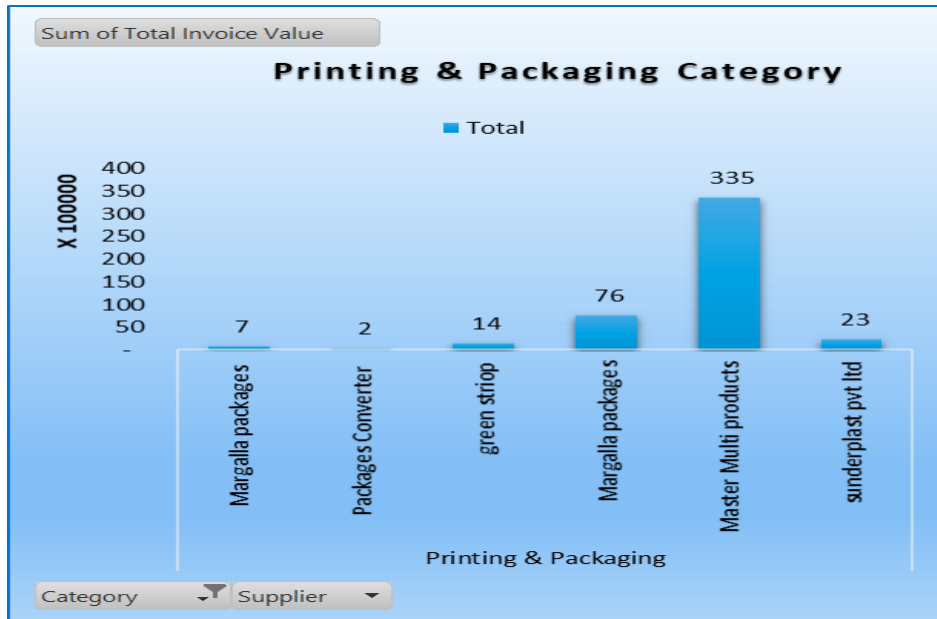


Figure 10.1 Printing and packaging spend analysis

iv. Spare Parts Category spending Results

Formaldehyde Plant spare parts i.e. mechanical, electrical, instrumentation etc. are procured from the OEM Wuxi Huihao Plastic and Rubber Company which accounts for PKR 7.9 Million.

Table 6.1 Spend Analysis of Spare parts

Spare parts	Total Invoice Value in PKR
Wuxi Huihao Plastic and Rubber Company	PKR 7,980,000

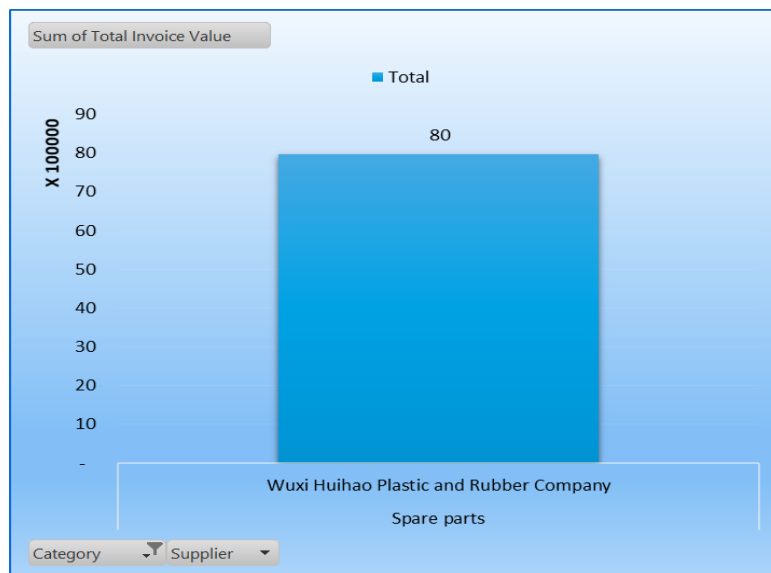


Figure 11.1 Spare parts spend analysis results

v. Fuel Category spending Result

Wah Nobel chemicals uses firewood as fuel for boilers which produce steam used in production process of formalin. Firewood is mainly cheaper than natural gas, coal and biomass. The total spend in this category is annually PKR 42 Million. Firewood is a regular raw material which is procured from multiple sales tax registered vendors. Among all Qazi associates provides Fire wood of Annually PKR 17 million. While Hamza traders provides PKR 14 Million.

Table 7.1 Spend Analysis of Fuel (Firwood)

Fuel	Total Invoice Value in PKR 42,285,277
Ghulam Mehdi	PKR 691,875
Khalid Mehmood	PKR 1,068,918
Adeel Ahmed	PKR 3,100,000
FIAZ Khan	PKR 609,450
Ghulam Mehdi	PKR 2,207,319
Hamza Traders	PKR 14,770,268
Khalid Mehmood	PKR 544,202
Mat & Sons	PKR 303,188
Mat& Sons	PKR 330,750
Qazi Associates	PKR 17,235,386
Tahir Associates	PKR 1,423,920

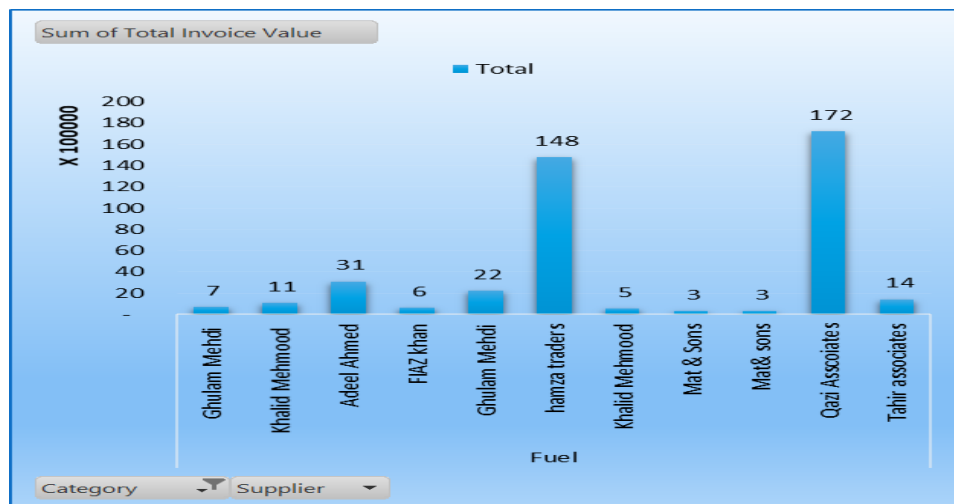


Figure 12 Fuel spend analysis results

vi. Admin Supplies Spending Result

Procurement spending in admin category is mostly related to stationary items, uniforms, masks, entry passes etc. required at plant. Total spending in this category is annually PKR 1.6 Million. Highest spending is in uniforms of production workers from Unitex Enterprises i.e. PKR 0.76 Million.

Table 8.1 Spend Analysis of Admin Supplies

Admin Supplies	Total Invoice Value in PKR 1,679,126
Ahsan Stationers	PKR 22,500
Al Awan Printing & Packages	PKR 37,206
Khushi Traders	PKR 18,532
Pictorial Printers	PKR 260,793
Saleh Enterprise	PKR 433,321
Shalimar Scientific Stores	PKR 98,280
Syed Mansoor Trading Company	PKR 42,344
Unitex Enterprises	PKR 766,150

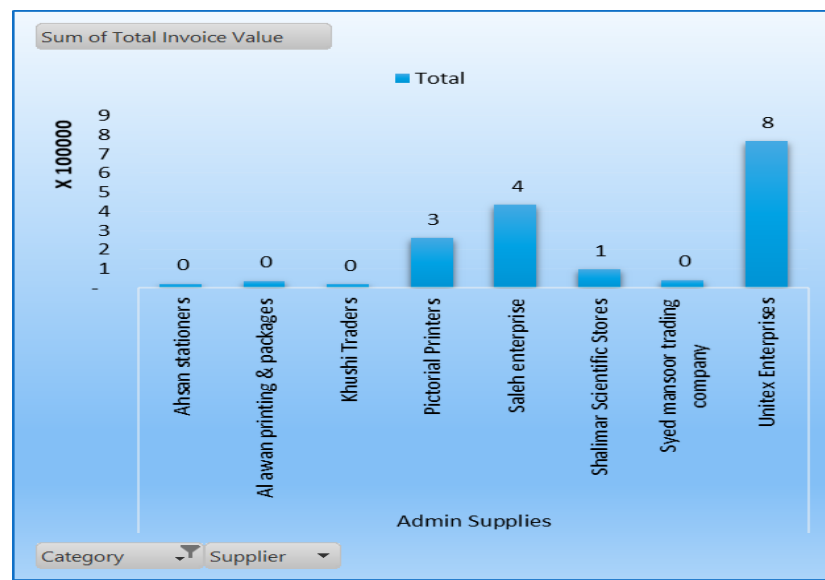


Figure 13.1 Admin supplies spend analysis results

vii. MRO spending Result

Procurement of Maintenance Repair & Operations (MRO) items is mostly done locally by market survey and finding the suitable supplier. Mostly items are related to mechanical, electrical and servicing of machine parts. Some of these items are emergency items of which servicing and repair is critical for plant operations. Total Spending in this category is PKR 5.93 Million Annually.

Table 9.1 Spend Analysis of MRO

MRO	PKR 5,933,041
Al Madina Bearing Centre	PKR 282,906
Aqua Tec	PKR 234,000
Hamti Enterprise	PKR 148,052
Jaffer Bros	PKR 236,705
KF Iron Store	PKR 105,113
Khushi Traders	PKR 42,471

Lahore Engg Svcs	PKR 140,400
M.I Traders	PKR 157,365
Material Matters	PKR 40,950
Mfe International	PKR 477,360
Nauman Trading	PKR 75,814
Naz Int	PKR 35,000
Nova Engg	PKR 235,170
Qurban Enterprises	PKR 438,261
Royal Class Traders	PKR 202,234
RS Traders	PKR 152,053
Sanabil Traders	PKR 32,853
Shalimar Metal & Mills Store	PKR 460,688
Shalimar Scientific Stores	PKR 36,211
Standard Ceramic Industries	PKR 105,066
Sunderplast Pvt Ltd	PKR 2,265,120
Universal Scales	PKR 29,250

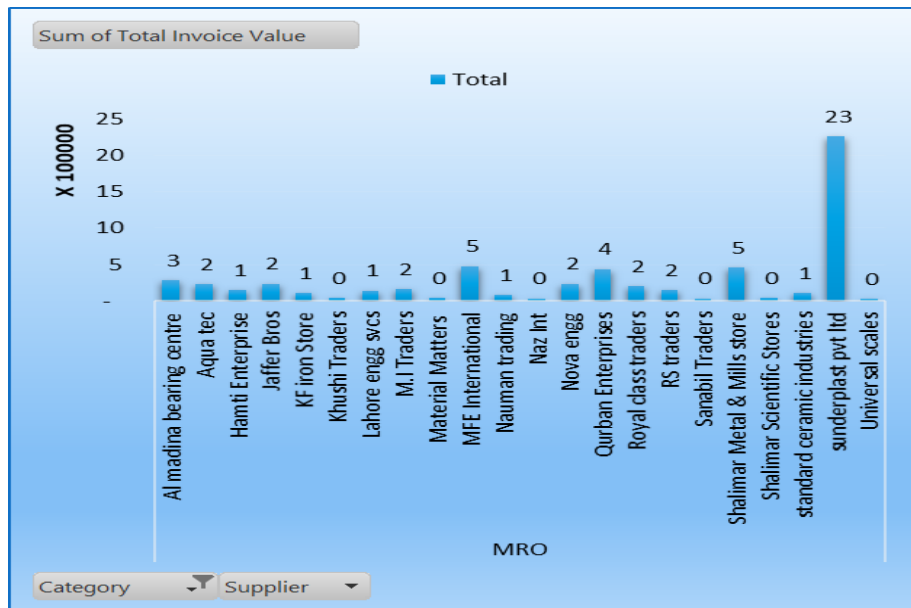


Figure 14.1 MRO spend analysis results

3.5 Kraljic Matrix Analysis/Plotting

After analyzing the results of Spend Analysis, next part is plotting these results in Kraljic matrix to interpret the Supply risk & supply impact on financial results.

Strategic procurements: Company's core operations depend on procurement of these procurements. These are high stake procurements of the company which have limited suppliers.

Bottleneck procurements: These items have low business risk but limited supplier market. The strategic recommendation is managing stock levels, supplies, relationship with supplier and setting backups.

Non-critical Items: These items have low impact on company operational activities and are mostly simple. Appropriate strategy is to manage volume control, business process automation and rationalization.

Leveraged Items: With leveraged procurements, the company has a comfortable margin of maneuver and exercising bargain power of buyer. Appropriate strategies here are the exploitation of the full purchasing power with the competition of suppliers, negotiation, or the search for substitute products.

i. Imported Items

Results of spending category of imported suppliers is now plotted on Kraljic matrix accordingly on the basis of spending volume, business level importance, supply risk, criticalness, profit impact and supply disruptions e.g. SABIC is placed on strategic category as it is core component in business activity due to volume/spending.

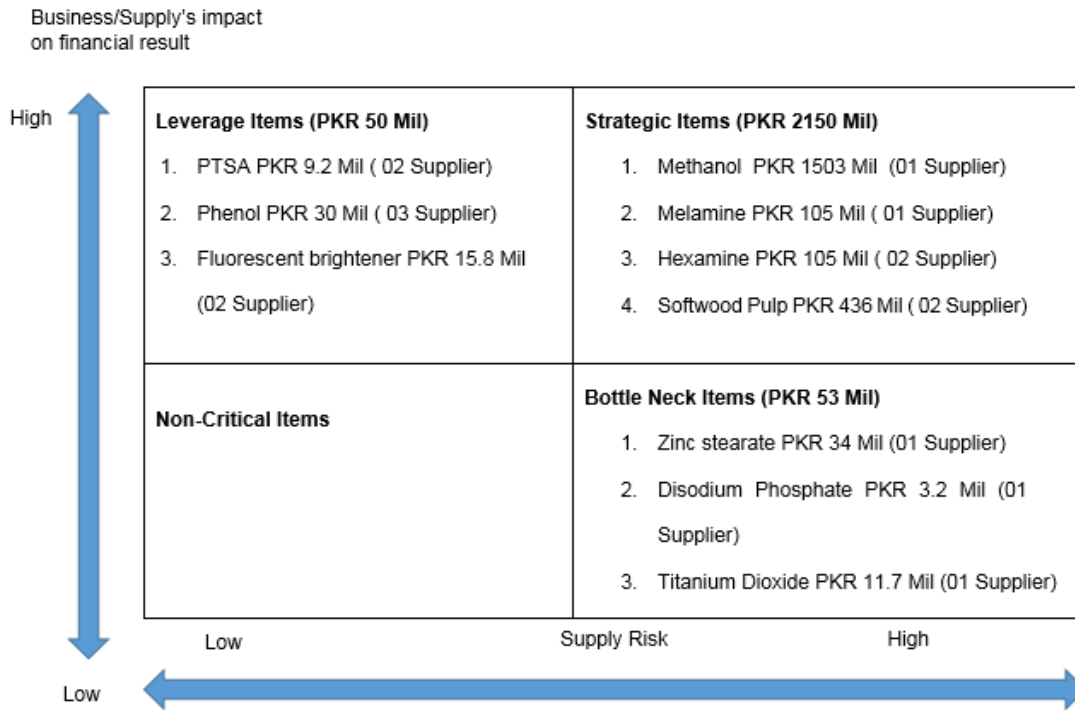


Figure 15.1 Imports Kraljic matrix plot

ii. Local Raw Materials

Local raw material is plotted on kraljic matrix on the basis of their importance in business activity, spend volume, supply risk involved and supply disruption. Therefore, Urea from FFC is placed in strategic category as it is core component and amount of spending is also high.

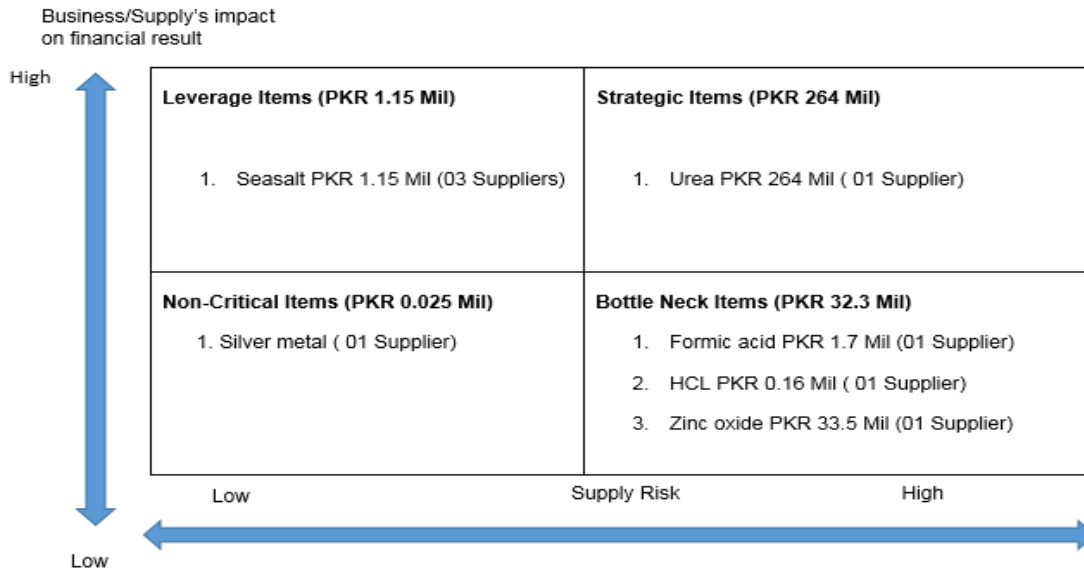


Figure 16.1 Local kraljic matrix plot

iii. Printing packaging, Fuel & Spare parts

Printing packaging is plotted on kraljic matrix on the basis of spend volume and core importance in business operations. Therefore, PP bags from Margalla packages and firewood from Hamza traders is placed in strategy item as it is core component in production process and amount of spending is also high. While Spare parts is placed in critical items as there is limited number of suppliers which can provide OEM Spare parts.

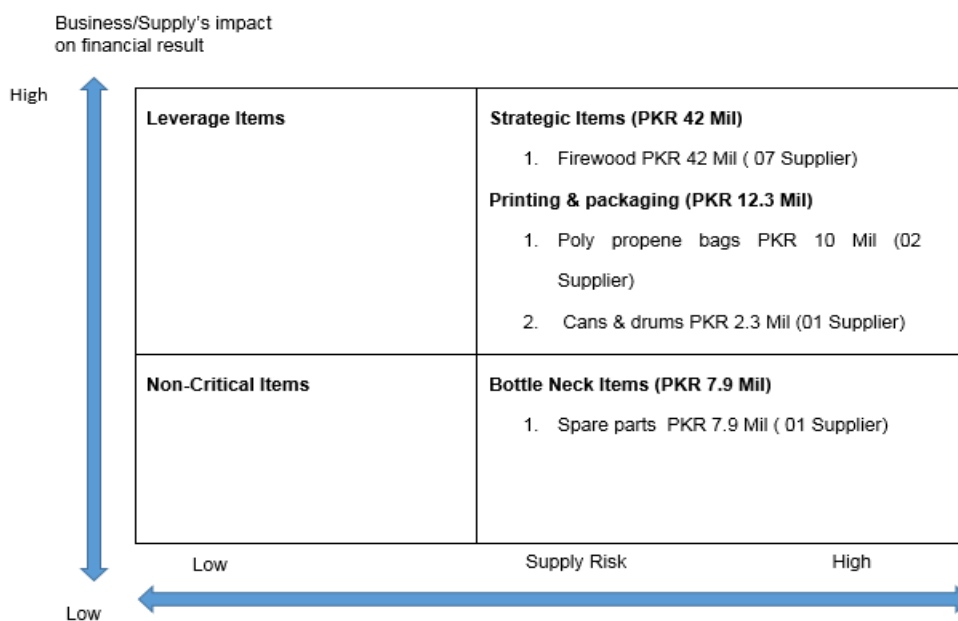


Figure 17.1 packaging, fuel, and spare parts Kraljic matrix plot

3.6 Strategy Development for Individual Product

Imported Raw Material: Using the spend analysis results procurement strategy for Imported raw material should be long term partnerships, contract agreements, Service Level Agreements (SLA), developing long term supplier relationship, alternating sourcing, exploring new vendors, indigenous manufacturing through Research & Development to mitigate supply risk.

- i. SABIC: Methanol is the main raw material for core operations of Wah Nobel Chemical plant to produce formalin and annual PKR 1,503 Mil is spent on procuring methanol from SABIC. Hence there is dire need to develop long term contract with supplier to reduce supply risk as there are only few capable suppliers in region.
- ii. Henan Xinliaxin Int: Melamine is the main raw material in production of Glazing powder and PKR 104 Mil is spent on this raw material and only few capable suppliers are available in market which can provide high pressure melamine which makes it a strategic item and long-term contract agreement should be developed with this supplier to mitigate supply risk and get cost benefit.
- iii. Chemanol: Hexamine is one of core raw material which is procured from Saudi Arabia and Chemanol is of the few suppliers which provides high quality unstabilized hexamine. Annual PKR 73 Mil is being spent to procure this raw material which also makes it one of the key strategic items where long-term contract and agreement should be developed with supplier to reduce supply risk and cost impact.
- iv. Elof Hansen & Nordcell: Softwood Kraft Pulp is one of the major raw material in manufacturing of Urea Formaldehyde Molding Compound (UFMC) and annual PKR 436 mil is spent on buying of wood pulp which is essentially procured from Europe. Since Wah Nobel has annual consumption of 2860MT and price varies due to demand and supply throughout the year hence it is important to do long term contract with these suppliers to mitigate cost impact and supply risk after Ukraine Russia War. In Pakistan packaging and paper companies have long term annual contracts with these mills.
- v. Belike Chemicals: Zinc stearate is one of key items in production of UFMC. Production plant cannot afford poor material quality of this particular brand, which can cause defects in finished product. Moreover, zinc stearate is supplied by very few suppliers and keeping good relationships with supplier for material availability at any cost is necessary to reduce supply risk. Annual procurement of this material is PKR 33 Mil and is highly recommended by production due to high quality.
- vi. TNN Development: Disodium Phosphate is essential raw material in UFMC and anhydrous grade is supplied by one or two key vendors. Therefore, it is a bottle neck item and can create potential supply disruption. Hence all efforts be made to maintain good relation with supplier.
- vii. Shanxi Color shine Chemical Industry: Fluorescent brightener are used in small quantity for production of UFMC. It is supplied by multiple vendors globally. Annual spend on this item is PKR 15 Mil which allows the procurement manager to find alternates and negotiate maximum with suppliers to get cost benefit.
- viii. Guangxi Blue Star Dahua Chemicals: Titanium Dioxide Anatase Grade DHA100 is essential raw material for production of UFMC. It is approved by our Quality control as proprietary item. Therefore, it is mandatory for procurement to reduce supply disruption of this material and develop good relations with vendor.
- ix. Zrich Int: Phenol is essential raw material in production of phenolic resins and glues. However, it is supplied by multiple vendors from UAE, Taiwan, Korea. Annual spend on this item is PKR 13 Mil. Therefore it is also placed in leveraged category where multiple suppliers are available to negotiate and get benefit on cost.

- x. Shougang Nuomeng Chemicals: Para toluene sulfonamide (PTSA) is essential raw material for glazing powder and it is supplied by multiple vendors from China. Price varies from vendor to vendor due to product quality. Therefore, there is less supply risk and buyer can negotiate on price with vendors. Annual spend on this item is PKR 9 Mil.

Local Raw Material:

- i. Fauji Fertilizer Company (FFC): Urea is the main ingredient in production of UFMC, Resins, Glues and glazing powder. Annual spend on urea is PKR 264 Mil which makes it one of the strategic items to develop long term partnership and annual contract with supplier to deliver material on monthly basis to mitigate supply risk and get profit impact.
- ii. Tufail Chemicals: Formic acid is supplied by few vendors in Pakistan since it is NOC based raw material Therefore it is of high importance to reduce supply risk due to bottleneck item which has limited suppliers. Annual spend on this item is PKR 1.7 Mil. Therefore, strategy toward substitute be developed through local R&D or seek new suppliers.
- iii. Sitara Chemicals: Hydrochloric Acid is also one of the NOC based local material supplied by very few manufacturers in Pakistan. Despite its low consumption it is one of the bottleneck items which has to be made available to production plant. Therefore, good relationship be developed with supplier to mitigate high supply risk. Therefore, strategy toward substitute be developed through local R&D or seek new suppliers.
- iv. Pak Asia Salt Refinery: Sea salt is also a raw material which is supplied by multiple vendors in Pakistan. It is commonly available item but due to high consumption, negotiation can be done to reduce cost impact and alternate sourcing can be developed.
- v. Master Multi products: Zinc oxide is also a raw material which is highly critical item supplied by only limited reliable vendor. Annual spend on this item is PKR 33 Mil. Therefore, its timely availability be made in accordance to production requirement to mitigate supply risk. Therefore, strategy toward substitute be developed through local R&D and vertical integration be developed or seek new suppliers.

Printing & Packaging:

- i. Margalla Packages: Polypropylene bags of different sizes are one of the basic procurement items for packaging of finished product. Annual Spend on this item is PKR 9.7 Mil. Therefore, it is necessary to develop long term relationships with supplier and make contract/agreement with supplier to reduce supply risk and cost impact.
- ii. Sunderplast: Cans and drums of different sizes are one of the basic requirements for packaging of finished products. Annual spend on this item is PKR 2.3 Mil. Therefore, it is necessary to develop long term relationships with reliable supplier and make contract/agreement with supplier to get cost benefit.

Fuel:

Firewood Annual spend is PKR 42 Mil. It is the basic raw fuel for boiler to produce steam. It is essential item which is to make available at plant on monthly basis hence its supply risk is high. Therefore, it is necessary to develop long term relationships with supplier and make contract/agreement with supplier to reduce supply risk and cost impact. Three to four reliable vendors are available but there is necessity to make annual agreements with them.

4. Cost Benefit Analysis

This analysis demonstrates the rewards/benefits achieved if these strategic items which are core components in operations should be done on long term agreements rather than spot or open market prices.

SN	Product	Qty(MT)	Avg Contract price \$ per MT	Annual Contract price (USD)	Spot market price \$ per MT	Annual Spot market price(USD)	Annual Benefit in USD	Cost to benefit ratio
	Imports							
1	Methanol	22000	355	7,810,000	500	11,000,000	3,190,000	0.29
2	Pulp	860	860	2,580,000	950	2,850,000	270,000	0.09
3	Hexamine	360	1150	414,000	1250	450,000	36,000	0.08
4	Melamine	900	1100	990,000	1200	1,080,000	90,000	0.08
						Total saving in USD	3,586,000	
SN	Product	Qty (MT)	Avg Contract price pkr per bag	Annual Contract price (PKR)	Spot market price pkr per bag	Annual Spot market price(PKR)	Annual Benefit in PKR	Cost to benefit ratio
	Local							
1	Urea	9600	2340	898,560,000	2800	1,075,200,000	176,640,000	0.16
SN	Product	Qty (Nos)	Avg Contract price pkr per bag	Annual Contract price (PKR)	Spot market price pkr per bag	Annual Spot market price(PKR)	Annual Benefit in PKR	Cost to benefit ratio
	Printing & Packaging							
1	Margalla packages	28000	96	2,688,000	110	3,080,000	392,000	0.13
SN	Product	Qty(MT)	Avg Contract price pkr per 40kg	Annual Contract price (PKR)	Spot market price pkr per 40kg	Annual Spot market price(PKR)	Annual Benefit in PKR	Cost to benefit ratio
	Fuel							
1	Hamza traders	1200	620	18,600,000	800	24,000,000	5,400,000	0.23
						Total savings in PKR (Local + Fuel + Packaging)	182,432,000	

Figure 18.1 Cost benefit Ratio

5. Conclusion, Managerial Implications

This project will help management to analyze short comings in its procurement process. Using the spend analysis results Wah Nobel Chemicals can do cost saving of 3.5 Mil USD in imports & PKR 182 Mil in local, packaging & fuel category if contract agreements strategy is applied. Greater visibility of spend category in terms of supply risk and supplier relationship as imports and local accounts for 96% of total spend and only 30% of suppliers so there is need to rationalize imports due to foreign reserve shortages and letter of credits curb by central bank. Seek new suppliers to mitigate supply risk in bottle neck items of PKR 93 Mil in all categories, develop alternate sourcing and shift towards local indigenous development through R&D. Exercise bargaining power in leverage items of PKR 61 Mil in all categories for cost saving due to abundant suppliers.

6 References

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7 Appendix

Wah Nobel Chemicals Procurement Data FY 2021-22

Order No	Material	Supplier	Total Invoice Value PKR	Category
Note Approval	UFMC Plant accessories	Wuxi Huihao Plastic and Rubber Company	7,980,000	Spare parts
2053	Softwood Pulp	Elof hansen AB Sweden	193,218,750	Imported Raw Material
2051	Flouroscent Brightener	Shanxi Colorshine Chemical Industry	15,862,500	Imported Raw Material
1860	Hexamine	Chemanol	9,506,250	Imported Raw Material
1879	Methanol	SABIC	212,062,500	Imported Raw Material
1871	Hexamine	Chemanol	37,327,500	Imported Raw Material
2052	Zinc stearate	Belike Chemicals	8,471,250	Imported Raw Material
1884	Methanol	SABIC	187,734,375	Imported Raw Material
574	Melamine	Henan Xinlaxin Int Trading Co	6,271,875	Imported Raw Material
1889	Methanol	SABIC	134,472,656	Imported Raw Material
1877	Phenol	Kemsol	8,370,000	Imported Raw Material
1	Melamine	Henan Xinlaxin Int Trading Co	20,671,875	Imported Raw Material
1892	Methanol	SABIC	87,677,438	Imported Raw Material
2064	Titanium Dixoxide	Guangxi Blue Star Dahua Chemicals	11,756,250	Imported Raw Material
1892	Methanol	SABIC	56,089,125	Imported Raw Material
2062	Zinc stearate	Belike Chemicals	7,425,000	Imported Raw Material
1886	Hexamine	TNN development	32,453,438	Imported Raw Material
1890	Phenol	Chang Chung Plastics Co Ltd	7,605,000	Imported Raw Material
2067	Softwood Pulp	Nord cell & Co Sweden	243,000,000	Imported Raw Material
1896	Methanol	SABIC	185,062,500	Imported Raw Material
2068	Zinc stearate	Belike Chemicals	43,875,000	Imported Raw Material
18	Melamine	Henan Xinlaxin Int Trading Co	91,125,000	Imported Raw Material

1900	Methanol	SABIC	231,328,125	Imported Raw Material
Note Approval	Hexamine	Chemanol	7,665,469	Imported Raw Material
17	Melamine	Henan Xinlaxin Int Trading Co	445,500,000	Imported Raw Material
2505	Phenol	Zrich Int	7,020,000	Imported Raw Material
2057	Methanol	SABIC	228,339,844	Imported Raw Material
2058	Zinc stearate	Belike Chemicals	81,506,250	Imported Raw Material
2078	Di sodium Phosphate	TNN Development	3,262,500	Imported Raw Material
1898	Hexamine	Chemanol	18,562,500	Imported Raw Material
2506	Phenol	Zrich Int	6,637,500	Imported Raw Material
41	PTSA	Shougang Noumeng Chemicals	64,800,000	Imported Raw Material
2520	Methanol	SABIC	51,609,375	Imported Raw Material
2520	Methanol	SABIC	129023437.5	Imported Raw Material
1359	PP bags	Margalla packages	1,455,773	Printing & Packaging
1361	PP bags	Margalla packages	554,580	Printing & Packaging
1360	PP bags	Margalla packages	866,531	Printing & Packaging
604	Firewood	Ghulam Mehdi	415,191	Fuel
107	Firewood	Qazi Asscoiates	543,813	Fuel
182	Firewood	Khalid Mehmood	203,713	Fuel
90251906	HCL	Sitara	116,532	Local Raw Material
12	PP bags	Master Multi products	30,460,950	Printing & Packaging
58	Firewood	Qazi Asscoiates	336,993	Fuel
196	Firewood	Khalid Mehmood	340,489	Fuel
1448	PP bags	Margalla packages	346,613	Printing & Packaging
540	PP bags	Margalla packages	589,241	Printing & Packaging
123	PP bags	Margalla packages	485,258	Printing & Packaging
987	PP bags	Margalla packages	693,225	Printing & Packaging
988	Firewood	Khalid Mehmood	394,634	Fuel
989	Firewood	Ghulam Mehdi	282,750	Fuel
990	Formic acid	Tufail Chemicals	1,725,750	Local Raw Material
1021	Firewood	Ghulam Mehdi	409,125	Fuel
1023	Firewood	Khalid Mehmood	674,284	Fuel
1024	Printing of bottles	Packages Converter	97,821	Printing & Packaging
1025	Printing of bottles	Packages Converter	74,131	Printing & Packaging
1026	Printing of bottles	Packages Converter	30,314	Printing & Packaging
1027	Firewood	Qazi Asscoiates	1,152,860	Fuel
1028	Cans	sunderplast pvt ltd	414,180	Printing & Packaging

1029	Urea	FFC	53,500,000	Local Raw Material
1030	Firewood	Mat & Sons	303,188	Fuel
1031	Firewood	FIAZ khan	474,000	Fuel
1032	Firewood	Ghulam Mehdi	474,000	Fuel
1033	Sea salt	Pak Asia Salt refinery	687,283	Local Raw Material
1034	Firewood	Mat& sons	330,750	Fuel
1035	Repair of Brightner	Naz Int	35,000	MRO
1036	Firewood	Ghulam Mehdi	745,278	Fuel
1037	PP bags	Margalla packages	1,704,924	Printing & Packaging
1038	PP bags	Margalla packages	815,022	Printing & Packaging
1039	PP bags	Margalla packages	815,022	Printing & Packaging
1040	PP bags	Master Multi products	3,042,000	Printing & Packaging
1041	Firewood	Ghulam Mehdi	424,200	Fuel
1042	Urea	FFC	53,500,000	Local Raw Material
1043	Firewood	Tahir associates	218,761	Fuel
1044	Firewood	Qazi Asscoiates	158,301	Fuel
1045	Cans	sunderplast pvt ltd	1,091,376	Printing & Packaging
1046	Firewood	FIAZ khan	135,450	Fuel
1047	Firewood	Tahir associates	471,393	Fuel
1048	Firewood	Tahir associates	733,766	Fuel
1049	Sea salt	Pak Asia Salt refinery	237,130	Local Raw Material
1050	Firewood	Qazi Asscoiates	2,889,268	Fuel
1051	Urea	FFC	15,458,400	Local Raw Material
1052	Firewood	hamza traders	3,037,250	Fuel
1053	Silver metal	Al Jebel Enterprise	24506.82	Local Raw Material
1054	Firewood	hamza traders	1,549,998.45	Fuel
1055	Urea	FFC	34,352,000.00	Local Raw Material
1056	Firewood	Qazi Asscoiates	3,481,013.25	Fuel
1057	Firewood	Qazi Asscoiates	1,345,383.00	Fuel
1058	Firewood	hamza traders	2,971,917	Fuel
1059	Cans	sunderplast pvt ltd	414,180	Printing & Packaging
1060	Urea	FFC	36,499,000	Local Raw Material
1061	Sea salt	hamza traders	228,214	Local Raw Material
1062	Firewood	Ghulam Mehdi	148,650	Fuel
1063	Firewood	Qazi Asscoiates	1,923,525	Fuel
1064	Phenyl bottles	Lahore engg svcs	140,400	MRO
1065	Cans	sunderplast pvt ltd	414,180	Printing & Packaging
1066	Urea	FFC	38,646,000	Local Raw Material
1067	Firewood	hamza traders	1,773,603	Fuel
1068	PP bags	green strip	1,438,844	Printing & Packaging
1069	Urea	FFC	32,205,000	Local Raw Material
1070	Firewood	Qazi Asscoiates	5,404,230	Fuel

1071	Firewood	hamza traders	5,437,500	Fuel
1072	V- belt	Qurban Enterprises	225,014	MRO
1073	Rubber Hose Pipe	Qurban Enterprises	96,525	MRO
1074	Marker blue	Ahsan stationers	22,500	Admin Supplies
1075	Suit white	Syed mansoor trading company	42,344	Admin Supplies
1076	LED bulbs	RS traders	62,677	MRO
1077	Electric conduits	RS traders	12,975	MRO
1078	V- belt	Sanabil Traders	32,853	MRO
1079	cutting disc	Royal class traders	44,167	MRO
1080	bag sewing machine	Qurban Enterprises	31,500	MRO
1081	Rubber gloves	Khushi Traders	18,532	Admin Supplies
1082	Steel Rope	Khushi Traders	42,471	MRO
1083	Weighing Balance	Shalimar Scientific Stores	11,700	MRO
1084	MB-100	Material Matters	40,950	MRO
1085	cable tie	MFE International	477,360	MRO
1086	cotton thread	Hamti Enterprise	122,148	MRO
1087	oil seal high temp	Nauman trading	5,054	MRO
1088	black shoes	Saleh enterprise	433,321	Admin Supplies
1089	AS - 260 Flocon	Aqua tec	234,000	MRO
1090	leave registers	Al awan printing & packages	12,870	Admin Supplies
1091	load cell	Universal scales	29,250	MRO
1092	fire bricks	standard ceramic industries	105,066	MRO
1093	Uniform	Unitex Enterprises	766,150	Admin Supplies
1094	Plastic Seal	Nauman trading	21,060	MRO
1095	Forwarding notes	Pictorial Printers	17,316	Admin Supplies
1096	Nuts & Bolts	Shalimar Metal & Mills store	27,349	MRO
1097	Roller bearing	Al madina bearing centre	141,453	MRO
1098	Juble clamp	Qurban Enterprises	42,611	MRO

