COMPREHENSIVE PLANNINGMATERIALS AND PRODUCTS OF PARS KHAZAR INDUSTRIAL COMPANY

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Abstract:

In the last two decades wonderful changes is formed about technology information and computer systems that this matter causes the change of old view and the orient activity structure and gives its place to process point of view. According toviewand process management of all steps required to reach a conclusion considered as chain and therefore will be tried to create uniformity between existing capacities And all steps necessary to strengthen the efficiency and effectivenessof processes. Accomplishing thisonthecurrentindividualmembers of asupply chainplanning, control and coordination ofthe entire supply chainprocessperspective(supplied) should beimplemented. In this project was tried to first is attempted to identify supply chain ParsKhazar and finally a mathematical model that encompasses the important restrictions is the chain members to reduce the overall cost of materials, parts and productsto beoffered

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Keywords: supply chain, comprehensive planning, small appliances, Operations Research Models

Introduction:

During the last two decadesof manufacturingand servicefirmsintoeventhave reached tothisconclusion thatIn order toincreasemarket shareandprofitabilityoftheCompanyis required toidentifythefacilitiesto theirabilityintoidentify, plan and controlpowertoother componentin yourchain Andbycreating coordination in wholechain, compared tosharingofthe existence information in whole Sets order touse each of thesecomponentscan be taken. Almostin allIranian companiesstilldominatethetraditionalislandanditsultimate success ofany companydepends ontheoptimization oftheirsupply chainindependent oftheothernodesknow. This matter causesthereduction of overalleffectiveness and, accordinglywilldecrease the efficiency ofindustryinGDP. In order tointegratebothasupply chain(supply) inorder to increasethe above parametersrequiredthreecurrentfinancialinformationandplanningshould beintegratedin the chain. Integrated planningofmaterial flowintheseprofitshasmuch more effective.

Underthis approachsincethe lateeighties,the term"supply chain management" was introducedandwidelyusedin the nineties. Beforethese Yearsthe organizationareawas madewith respect totheharmonies, the terms andphrasessuch as"Operations Management" and"logistics"

wasafrequent usage. One of themost completedefinitionsare providedbyMichaelHughes's bookonsupply chain management"principles of supply chainfundamentals" are givenbelow:

"Supply chain management is coordinating production, inventory, and location in the transport chain components in order to achieve the best combination between responsive and efficiency of the market. In the following provide brief review Pars Khazar products and finally with trying will be presented a mathematical model for comprehensive planning chain. It should be noted is the product of a reverse distribution (sales returns for any reason) in a supply chain is important but is not included in this study.

A brief about the Pars Khazar supply chain:

Pars Khazar Company by over 40years experience about the production of small household appliances ,with the largest and most experienced production companies in the country. The companywas foundedin the Rasht city in 1347partnered with Japan's Toshiba called ToshibaPars Corporation andin1359thename was changed toPars Khazar Industrial Company. The experience ofsmall householdconsumptionin Iranis less than50 yearsand at the beginningofthisequipmentgenerallywassuppliedbyimports.

Productscontainingiron,fan, juicer,rice cooker, meat grindersandmainlyfrom Germany, USA, Japan, the UK and Francewas imported. Thiscompany has more than330dealersafter sales servicesin205citiesand30provinces andan averageproduction capacityof about42% of thetotal capacityof the countryin whichtheshare of64% of theproductionfan, 43% of theproducedrice cookerandabout thevacuumingandmeat grindersareabout 30%oftotal capacity.

Householdproductionmodelisthevariationduetothe differences, there aremany similaritiesinthe overall processcan bemadeas follows:

1-Manufacturingprocess: Theprocessofpredominantlysheetmetal partsandstageswireformingand theyarejoinedbywelding, are produced.

2-Completeprocess:manufacturemetal partsabovethestagethistypeofcleaning, operation, protection, coating, smooth, coating andplatingareready tousein the final product.

3-Providing of different partscontractors:orconsideringoutsourcingsomepartsdue tothe highinvestmentand aswell asbeingspecializedforcollaborativeassemblylineproducedbycontractorsareutilized. In thecaseofraw materials, parts, semi-structured format,and...Contractorsinthesafeand putthepartsinthe assemblyofthe finalproductthey receivefromthem.

4- Supply and procurement of parts:large numberofpartsorproductsdue totheirlowconsumptiondue tothe complexityofits production,investment andexpertiserequiredto producetheplantwas notcost-effective and arepurchasedfromotherdomestic and foreigncontractors. Includingfittingsandgaskets, electronic components, boardandcardboard....

5-sub-assembly:numberofpartssupplyandproduction, the assemblylinebefore theapplicationneedsintoisprepared forthe operationof thesub-assembly ispre-assembled. For example:pastingdecorpieces, preparing the headwires.

6-Assembleproduct: This is thefinalreceiptofallcompletedparts, sub-assembly orassemblylineinterconnectingthe different stages ofpurchaseand finallyafter ensuringthequality andperformance ofproducts in acartonandSharingandis forwardedto the warehousefordistribution.

7-Thestorage,distributionandsales: productsproducedontheabove threecompaniesandsome oftherequestsAccording topreviousales figuresare sentintomain2 storages. One ofThesewarehouses is inRashtIndustrial Parkandother storageis in 11km Special Road. Accordingto ordersreceivedafterthe orderconfirmedduringrequiredQuitcommandwas issuedfrom thewarehousesandthetransferofthewarehouse, thewarehousemanagercompared toproviderequiredvehicles(Van, single trucksandpair lorries) attempted and Towards to sending goods are attempted. Determinetheorderin whichthegoods areto be sent tothe warehouseorstoragechargeswhatis relatedinto, Based onpastrecords, and currentlydoesnothave acomprehensiveandscientific.

Thenew systemisset upunderthedistancesales. ThesystemAccording toSMS,e-mail orphonetowardsgettheinformationrequiredprocesstheorderandattemptedinventory controlunitsareavailable. Afterissuingtowards to necessary coordinationofinventory controlsheetattempted buyerinformation(address, phone, etc.) andputit intheinventory. Inventoryrequired tobe installedon theproductionandtransportofaspecificspace. PreparedPackagesonthedailytracking codeis placedinthemail. Orderedby thecustomercan be trackedby thetracking code.

A sale of this sector sharesmuchofthecompany's currentsalesandalmostnoonewayis tolimitedand specific. Byadvancementofscienceandknowledgemanagement,supply chainplanningand limitedpreviousfunctionalperspectivehas been converted tothe planningprocessand therefore, instead ofa specificrangeof activities, planningofprocurementprocesses-production and distribution, and theaccuracyisevaluated. Therefore, in thisstudy,we will pay to towards toinvestigate the possibilityofoptimizationWholesale and preparation a comprehensive model in order to optimization and reducing the cost of materials and component supplier and producing the product and its distribution. In next page there is a recycling materials, components and products graph in Pars Khazar Company supply chain.

Description ofComprehensive PlanningModel(Advanced) Supply ChainPars Khazar(about the cycleof materials andproducts):

Inthis section weevaluate theobjective functionandconstraints ofsupply chain planningmodelhas been discussed.

Whateveraccuracy ofthe abovein expressingconditions and modessystemis better, the designed modelismore effective andefficientplanningand reducing costsinthe supply chainwill work. The aimofsolving themathematical modeldevelopedinthis section, reducedtotalcostof thesupplychainsmovingmaterialsisParsKhazar.Thereduced costincludes:

1-Reducethe costofpurchasingthesetrequirementsandorders.

2-Reduced maintenance costsitems(materials, parts) stockavailability

3-reducedcostsdue toshortagesof materials andcomponents

4-Reducethe cost ofproduction(manufacturing, filling, pre-assembly andfinal assembly)

5-Reducethe cost ofproductiondue toparts shortagescaused bythefraction of relevant

6-Reducethe cost ofproductionandreduceproductiontimeandreduceproductcost,shortagecostof productshortages

7-reducingmaintenancestorageproducts.

8-Reducingcostof productionand distributioncompanyrepresentatives.

Totalcosts, the costof materials andcomponents andcirculatingitthroughout thesupply chainwill determinePars Khazar. It is obvious in each ofthesecases;a large numberofother componentscan beidentifiedaschaincosts because of little effect it has not been modeled or complication. If the number ofmodelcomponentsistoohigh, is impossibleto solvethe model andobtaingoodresultsorit will be difficult. Therefore,therestrictionshavenosignificant effectonthe decisionsakeof simplicityof the modelhas not beenconsidered. [3]

Later will be discussed the investigatedlimitations of the model. Mostmajor reason forthis limitationisdue tothelimitationsofavailable resources, there is providedthefollowing:

1 - Limited capacity of suppliers: Due to resource constraints It is obvious that each supplier is required to supply the parts that have been ordered from the company, to take action. Suppliercapacityconstraintsandnegotiationsmust bemade throughmutualagreementinvestigatethesupplier andMSAccessthat specifiesthe maximumcapacityofits allocation tocompanies, should be determined.

2-LimitsCapacitycontractors: similar tothe abovedescriptionand presentationmustbeclearlimits topotentialcontractors.

3- Limitation offactory production: Aspreviously described,each productaccording totheconstituentpartsandmaterialsnecessary tothe operationofmachinery,manpowerand meterand...During certain times oftheobese childrenof differentuses. Duetothelimitedcapacity andresourcesneededforthemtotake action.

4-Materials,partsstoragespacelimitations: Due to limitedstoragespace,eachproducedindifferent partsofthespaceallocated foreach pieceandthere arecertainlimitations which shouldbethemodel. This restrictionincludesalloftheplaces thatcanbe allocatedtothesegmentormaterialsincluded.

5-Limitedstorage capacity: Product specificstoragehas shelf products(accordingtotheproceduresinthestorageand transportationof products) certainlimitationsand capabilities ofthe modelmustbedesigned.

6-Distributionlimitedproduction:number ofthe caris usedtotransportproducts, atdifferenttimes anddays ofhighand lowlimitsthatmustbe consideredin planning. It should be notedthatthis limitationismanifestedinmanycities. Thereforeit isimportant forstorageismoreRasht.

7-The amount ofdemand: thecurrentsystemofsales(Sales Order) Salesof productsrequiregood estimates ofthevariousagenciesand recordsmust bebuyinyearspastperiods. It is obvious thatwhateveraccuratetheestimatebecomescloserandcloserto therealityofthe estimatedcostwill becalculatedandminimization.

8-EquilibriumMaterials anddevicestoragelimitations: Itislimitedtothe balanceinthemodel parameters anddeterminesthe amount of input, output,storageperiodofavailabilityisscarce.

9-Balanceproductsin storagelimits: these limitsareexactly the samerestrictionsmentionedontheproduct.

Decisionvariables:

According tothis modelhavebeen describedto determine theamount of eachofthe followingvariables: [4]

1.Whatmaterials and componentswhichcan bepurchased fromasupplier inthecourse?

2. What extentand at whatperiodpiecestobeproducedby theproduction units,factoriesand contractors?

3. Thenumbersofwhatkind ofproductfromwhatisproducedandstored?

4. Varietyofproductsin terms ofhow manyvariousstorestobe transferred?

5.Needsanddemandsofconsumers,whichis coveredwarehouses?

Mentioned inanyof thedecisionvariableswhichdeterminethefinalamount ofthesettlementwill be achieved.

The mathematical model: in following is paid to describing the related mathematical model.

Indices:

i.is used in order to define the components and the sold materials.

t.is used in order to define the period of investigation (month).

j. is used in order to define the production component.

s. is used in order to define suppliers.

K. is used in order to define the products variety.

e. is used in order to define the product storage.

p. is used in order to define the materials and components storage.

m. is the determinant of the different work station.

Variables and Parameters:

OR_{its}: the amount of the purchased components **i** in period of **t** from the source **s**.

SC_{its}: the cost of the purchased components **i** in period of **t** from the source **s.**

HC_{itp}: the cost of keeping the components in the period of **t** in storage **p.**

IN_{itp}: the amount of existence component **i** in period of **t** in storage **p**.

DC_{it}: the leakage cost of component **i** in period of **t** in storage **p**.

DQ_{it}: the leakage amount of component **i** in period of **t.**

CL_{is}: the carriage cost of each component unit **i**from the supplier **s**.

PC_{it}: the cost of component product **j** in period **t**.

IP_{it}: the existence component **j** in period **t**.

XP_{it}: the amount of component product **j** in period **t**.

HP_{it}: the cost of keeping component **j** in period **t.**

IP_{it}:the component existence **j** in period **t.**

DGC_{it}: the leakage cost of component **j** in period **t.**

DGQ_{it}: the leakage amount of component **j** in period **t.**

XPP_{kt}: the produced amount of product **K** in period **t**.

CPP_{kt}: the produced cost of product **K** in period **t.**

HPC_{kte}: the keeping cost of product **K** in period **t** in storage **e.**

IPP_{kte}: the existence amount of product **K** in period **t** in storage **e.**

DPC_{kt}: the leakage cost of product **K** in period **t.**

DPQ_{kt}: the leakage amount of product **K** in period **t.**

DPX_{kelt}: the amount of sells product **k** from the storage **e** to buyer **l** in period **t**.

CPX_{kel}: the cost of transmission product **k** from the storage **e** to buyer **l.**

LP_{kte}: the amount of commodity **k** in period **t** transferred to storage **e**.

CLP_{kte}: the transmission cost of commodity **k** in period **t** to storage **e.**

CC_{its}: the production capacity of component **i**in period **t** by supplier **s**.

B_{ik}: the amount of utilization sold component **i** in product **k**.

B_{jk}: the amount of utilization produced component **j** in product **k**.

T_{jm}: the required time in order to produced component **j** in step **m**.

CC_{jm}: the production capacity of component **j** in step **m.**

S_{ip}: the occupied space by component **i**in storage **p**.

CS_p: the storage capacity of **p** in order to store materials.

CS_e: the storage capacity **e** in order to store product.

S_{jp}: the occupied space by the produced component **j** in storage **p**.

SP_{ke}: the occupied product space **k** in storage **e**.

D_{klt}: the request of product **k** by the costumer **l** in period **t.**

The purpose accessory:

The product cost + the components product cost + the purchase of components cost= Min

The shortage cost of components and products + the product distribution cost + the cost of the purchase components keeping +the purchase component cost (sum) = min

The cost of components portage + the cost of the purchased component leakage+ the cost of keeping the product existence+ the cost of component production (sum) + the cost of the component production lack + the cost of production keeping + the cost of product production (sum) + the lack of product + the cost of portage to distribution storage + the cost of distributing product (sum)

Min = sum((OP_{its} * SC_{its}) + (HC_{itp} * IN_{itp}) + (DC_{it} * DQ_{it}) + (CLS_{js} * OR_{its}))

+ sum ((PC_{jt} * XP_{jt}) + (HP_{jt} * IP_{jt}) + (DGC_{jt} * DGQ_{jt}))

+ sum ((XPP_{kt}* CPP_{kt}) + (HPC_{kte} * IPP_{kte}) + (DPC_{kt} * DPQ_{kt}))

+ sum ((DPX_{kelt}* CPX_{kel}) + (Lp_{kte} * CLP_{kte}))

The limitation:

1- the power and the capacity of suppliers => the order amount of materials and components: $OR_{its} <= CC_{its}$

2- The amount of required component in order to produced productions in period t =< the component order in period t _ the existence amount of component in period t:**Sum(IN_{itp}) + sum(OR_{its}) >= sum(B_{ik} * XPP_{kt})**

3- The capacity of step **m** production => the required time in step **m** * the amount of required component: **Sum (XPP_{kt} * B_{jk}) * $T_{jm}CC_{jm}$**

4- The available space in storage => (the occupied space * the amount of material) sum: **Sum (IN_{itp} * S_{ip}) <= CS_p**

5- The available space in storage => (the occupied space * the amount of components production) sum: **Sum (IP_{jt} * S_{jp})<= CS_p**

6- The available space in storage => the required space in order to store the receiving product in storage **e** + the occupied space the existence amount of the storage product **e**

Sum (LP_{kte} * Sp_{ke}) + (IPP_{kte} * SP_{ke})) <= CS_e

7- The request of costumers => the sending commodity to costumers: **Sum (DPX_{kelt}) <= D_{klt}**

8- The existence product in storage **e** + receiving commodity during **t** in storage **e** => the sending commodity from storage **e**:**DPX_{kelt}<= IPP_{kte} + LP_{kte}**

9- Sending during **t**- the receiving during **t** + the existence during **t =** the existence production during **t+1**: **IPP_{kt+1e} = IPP_{kte} + LP_{kte} – sum (DP_{Xkelt})**

10- Consuming during **t** – producing during **t** + the existence during **t**= the existence production component during **t+1**: **IP_{jt+1} =IP_{jt} + XP_{jt} + sum (XPP_{kt}*B_{jk})**

11- Consuming during **t** + buying during **t** + the existence during **t=** the existence of purchased component during **t+1: IN_{jt+1e} = IN_{jtp} + sum**

Recourses:

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