Proposal for the Implementation of Key Performance Indicators for a Warehouse. Case: Tracto Partes Diamante de Puebla S.A. de C.V

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Abstract

In this article, the company Tracto Partes Diamante de Puebla S.A. de C.V is studied, in which a new spare parts warehouse management strategy is proposed based on performance indicators or KPIs (Key Performance Indicators). The implementation strategy is divided into five stages: 1.- Evaluating the current situation, 2.- Designing the program and assignment of goals 3.- Definition of KPIs, 4.-Standardized communication 5.-KPI's implementation proposal. With the new warehouse management proposal, the company seeks to improve work standards, strengthen the relationship with customers, increase the return margin, and achieve their loyalty with an improvement in the fulfillment of orders.

Keywords
KPIs, Warehouse, Process, and Improvements.

1. Introduction
Tracto Partes Diamante de Puebla S.A. de C.V. is a wholesaler, importer, and distributor of spare parts and accessories for air brakes and suspension parts. It is made up of a central warehouse in Puebla, Mexico, and two Distribution Centers (CEDIS) strategically located, one in the city of Mérida, Yucatán, Mexico, and the second in the city of Tuxtla Gutiérrez, Chiapas, Mexico. It was the direct distributor of the leading original equipment brands and exclusive distributors of premium brands.

In today's highly competitive environment, companies have as their primary objective to win a large share of the market, increase their sales and supply efficiencies. They must give adequate importance to productivity indicators, translated into improvement actions for companies, complying with the established objectives. Today, the processes within a warehouse drive companies to be highly competitive. The improvement of these processes can achieve a competitive advantage in the market. Companies require much more than a good sales strategy. They must take advantage of the improvement and measurement of the processes within the warehouse, making the operation work systematically to the market requirements (Salehzadeh et al., 2020).

This case study will focus on establishing the necessary performance indicators within the company to obtain an improvement according to its objectives.

Objectives
One of the company's main goals, Tracto Partes Diamante de Puebla S.A. de C.V., is to have highly efficient processes and improve the company's operation. With the implementation of the KPIs the company would seek to control the identification, location, regulation, mobility, time, and movement of the goods in the warehouse. Having these performance indicators will facilitate decision-making, keeping an organization in the warehouse.

2. Literature Review

The achievement of the organization's competitiveness must be referred to the corresponding plan, which sets the vision, mission, objectives, and corporate strategies based on the adequate situational diagnosis. The management indicators become the organization's vital signs, and their continuous monitoring makes it possible to establish the conditions and identify the various symptoms that derive from the normal development of activities. An organization must also have the minimum possible number of indicators that guarantee us to have constant, accurate, and precise information on aspects such as effectiveness, efficiency, effectiveness, productivity, quality, budget execution, management incidence, all of which make up the organization's set of vital signs. To measure the performance of an organization in terms of quality and productivity, it must have indicators that allow the interpretation of strengths, weaknesses, opportunities, and threats at any given time; therefore, it is essential to clarify and specify the necessary conditions to build those valid for the improvement of organizations. An indicator is a magnitude that expresses the behavior or performance, which, when compared with some reference level, allows detecting positive or negative deviations. Working with indicators requires having a whole system that ranges from taking data on the event's occurrence to the feedback of the decisions that improve the processes (García, 2008).

A study carried out in the construction industry in the Northwest of Mexico shows a lag in the implementation of technologies for administration in general. Many projects apply manual methods, not only for the monitoring of materials but also for total management. A system where the flows of materials and supplies are monitored and analyzed implies reducing waste and making the profitability of the projects feasible. To counteract this drawback, the researchers applied a methodology consisting of three stages based mainly on a management system and the use of rapid implementation technological tools; achieving; as a result, a saving of time, economic resources, and materials, showing that the warehouse and inventory area is an essential part of the processes in the construction industry L. (Romero et al., 2018).

Zelak et al., (2019) proposed in a distribution center of the food sector with about 480 SKUs, nine alternatives on picking a policy, based on Wave Picking, due to a deficiency in the picking process, simulating the processes within the distribution center, an implementation gain of the Q.C. sample with 6-sigma or 99% reliability. Alumbugu et al. (2020) studied 32 construction manufacturing companies, in which they detected the efficiency in the cost of transportation and delivery time, proposing a descriptive analysis of storage, delivery, and unloading in the operational process, obtaining a detection of underutilization of vehicles in working hours and detection of inefficiency in the discharge system (administrative and technological systems). In Belgium, van Gils et al. (2016) studied an international auto parts warehouse located in Belgium, with shipments worldwide. They detected inefficiency in forecasting orders for the picking area concerning the staff, and they proposed the application of 12 different forecasting models based on time series. On average, the standard deviation of the error forecast could be reduced by around 20%, in addition to becoming less dependent on the experience of supervisors.

Kenova, (2017) studied a leading retail company located in Bulgaria with the influence of the warehouse on the reputation and profitability of a company. The implementation of a Warehouse Management System (WMS) was studied, with this, the company managed to convert your WMS to Fasty Warehouse Manager (FWM) in 5 years, obtaining information in real-time; traceability in time and form; increased productivity; reduction of expiration dates; reduction of administrative costs; short delivery time; more control. With all of the above, the company can now distribute nationwide. In German companies, Glock et al., (2017) mencioned in the automotive, manufacturing, retail, and chemical industry sectors, high costs and errors were detected in the Order Picking Process, a qualitative study of Maverick picking was proposed based on case studies, having as an improvement the detection of influence towards picker performance by different targets and behaviors.

There is even research where sustainability is applied as part of the results to be obtained within the management and distribution of warehouses, for example, a model based on WMS (Warehouse Management System), a management model, and a metaheuristic model, obtaining not only an 18.89% improvement in the routing problem but also a 37% reduction in CO2 emissions generated by order preparation (Gómez, 2017). On the other hand, Artificial Intelligence (A.I.) currently plays a significant role in managing and distributing warehouses. In China, a small outsourced logistics services company managed to obtain benefits through the Directed Pick-and-pack System (IPPS) to optimize your person-hour resources by meeting your production planning needs Y.K.Tse, 2012. Following this same line of A.I. for warehouse management, there are also Case-based reasoning (CBS) and Fuzzy logic (F.L.) tools which provide support, evaluation, and warehouse management with direct benefits as described by Chow et al., (2006), Tseng et al., (2005) and Vinodh et al., (2011).

By not having a comparative reference in which the company counteracts the result of the established indicator, García, (2008) mentions that there are several levels: the historical, the standard, the theoretical, the one required by the users, the competition, policy, consensus, and planned. And that the objectives and tasks that an organization proposes must be specified in measurable expressions, which serve to quantitatively express said goals and functions, and the "indicators" are responsible for that specification. In ordinary language, the term "indicator" refers to essentially quantitative data, which allows us to realize how things are about some aspect of reality that we are interested in knowing. The indicators can be measures, numbers, facts, opinions, or perceptions that indicate specific conditions or situations.

Main functions of management indicators:

- Supports and facilitates decision-making processes.
- Controls the evolution over time of the main processes and variables.
- Rationalizes the use of information.
- Serves as a basis for the adoption of practical and valuable norms and standards for the organization.
- Serves as the basis for planning and prospecting for the organization.
- Serves as the basis for the development of remuneration and incentive systems.
- Serves as a basis for understanding the evolution, current situation, and future of the organization.
- It encourages the participation of people in the management of the organization.

In the same way, this author argues that the information must present the situation or the state. The data can be: quantitative, qualitative, numerical or graphic, printed or visualized, summarized, and detailed. The form must be chosen according to the situation, needs, abilities of the person who receives and processes it. A measure of how often it is required, produced or analyzed. It is the scope in terms of coverage of the area of interest. It can originate within or outside the organization. The fundamental thing is that the source that generates it is the correct source. Information can tell us about the past, current events, or future activities or events. The data is relevant if it is necessary for a particular situation. It is vital to be clear about the right thing to do and how to do it correctly to establish management indicators at any level; by always keeping in mind to do the right thing correctly, we will be on the path of effectiveness and productivity.

In logistics, indicators should only be developed for those activities or processes relevant to the company's logistics objective. For the above, the following steps should be taken into account:

- Identify the logistics process to measure.
- Conceptualize each step of the process.
- Define the objective of the indicator and each variable to be measured.
- Collect information is inherent to the process.
- Quantify and measure the variables.
- Establish the indicator to control.
- Compare with the global indicator and that of the competition
- internal.
- Follow and feedback the measurements periodically.
- Continuously improve the indicator.
- External projection and benchmarking.

There are several KPI's; the main ones are:

Financial and Operational Indicators
They measure the total cost of the logistics operation, that is, the monetary value of serving customers and planning, managing, acquiring, distributing, and storing inventory for customers.

Time Indicators
Through these indicators, the duration of the execution of the company's logistics processes is known and controlled, that is, the time it takes to carry out a specific activity or function.

Some of these indicators are:

• Total cycle of an order:
Time elapsed from the moment a customer places the order until the product is delivered and invoiced and, in some cases, charged.

• Purchase order cycle:
Indicator to control the response and delivery times of suppliers.

• Cycle of order in the warehouse or warehouse:
A time elapses during order management when the request is made in the warehouse until dispatched to the end customer.

•Transit time:
A period that elapses during the transport of goods.

• Inventory forecast horizon:
Period and frequency of demand estimates.

Quality Indicators
They show the efficiency with which the activities inherent to the logistics process are carried out, that is, the level of perfection of the process in what has to do with order management, merchandise maintenance, picking and packing operations., transportation, etc. These reflect the deficiencies in the execution procedures of the logistics process, which is why it is essential for the company since the efficiency in its operations determines the efficiency in costs and service level, two vital factors for competitiveness in highly changing and competitive markets in an international scope.

Within these indicators, two large groups stand out:

• Percentage of perfect orders:

% of orders entered correctly.
% of orders complete with exact quantities.
% of orders collected with actual amounts.
% of orders packed according to customer.
% of orders shipped without damage or breakdowns.
% of orders dispatched on time and to the indicated place.
% of orders perfectly documented.

• Percentage of breakdowns:

% of merchandise losses.
% of damages in the packaging.
% of breakdowns caused in transport.

Productivity Indicators
They reflect the ability of the logistics function to use assigned resources efficiently, that is, labor, the capital represented in inventory investments, vehicles, information and communication systems, storage spaces, etc. The general objective of logistics resources is to generate sales, that is, to reach markets efficiently, optimizing costs, and improving profit margins.

As an example of these indicators, the following are presented:

Classification of key performance indicators:

• Number of boxes moved per man.
• Number of orders dispatched.

• Number of orders received.
• Number of units stored per square meter.
• Storage capacity in pallets.

Indicators of Perfect Delivery (Logistics Excellence)
At the moment of the delivery is when the company can rate the efficiency of the deliveries of its products. It's because the company can verify all the logistic processes that make up the total quality in the delivery to the final Customer. The weighting of the effectiveness levels in each multiplied variable makes up the perfect delivery. It measures the effectiveness of logistics management in its deliveries, which are crucial to measuring the competitiveness of organizations and is one of the most critical indicators in logistics management.

3. Methods
A qualitative methodology is being proposed to develop the proposal for implementing performance indicators in the company's warehouse. The steps carried out were subjectively based on an audit carried out in the various areas belonging to the company. According to the results, the main problem is the absence of specific indicators regarding the processes executed within the warehouse, causing a certain ignorance of the possibilities of improvement that can be implemented in said processes.

4. Data Collection
Based on the specified problem, the information has been studied, and a warehouse management improvement strategy has been designed, consisting of five stages: 1. Evaluation of the current situation, 2. Design of the program and assignment of goals, 3. Definition of KPIs, 4. Standardized communication and 5. KPI's implementation proposal.

Monitoring Plan of the Improvement Strategy
With a Scrum theory approach, the proposed strategy seeks to make decisions based on what is known. Scrum employs an iterative and incremental approach to optimize risk control and predictability. Therefore, the three pillars that support the process implementation are a) Transparency, B) Inspection, C) Adaptation.

a) Transparency: The significant aspects of the process must be visible to those responsible for the result; all must occupy a common language. Therefore, a Gantt Project chart was used to visualize the fulfillment of these five improvement stages or sprints. Each action will be linked by their position in the schedule, which depends on the company's availability. The five sprints of the strategy have been identified, which correspond to the five stages of implementation of the KPI's proposal. The beginning of a task that depends on the conclusion of a previous action will be represented with a link of the end-start type. Also included are those actions that occur in parallel and can be assigned to each activity to control costs, resources, and required personnel.

b) Inspection. In the Scrum philosophy, participants must frequently inspect project progress indicators to detect unwanted variations. For monitoring the project, a board called backlog was used and monitored through the Trello tool. A project management software with a web interface, which works with cards that are assigned to managers. These activities were divided according to their fulfillment into actions to be done, those in process and those finished.

1. Activities to do, mark all pending tasks. They are identified with the red label because they are the most critical or need the most attention due to their expiration date.
2. Activities in progress are identified with the yellow label and encompass those in progress.
3. Activities are identified with the green label and completed, including all the sub-activities connected to the sprint.

c) Adaptation: It will be discussed with the General Directorate of the company to verify that the project is feasible, identify aspects of the process that deviate from acceptable limits, make adjustments before implementation, and mitigate the risks.

5. Results and Discussion

5.1 Numerical Results

Assessment of Current Situation

An audit was applied to know the company's current situation as an instrument for collecting qualitative information on the processes of receipt, assortment, review, packaging, and occupational safety-health, the results of which are quantified and compared with the maximum possible effect. To be achieved, allowing in this way to know levels of compliance for each one. These results reflect that the compliance percentage of the area is more significant than 50% in each of the processes. However, compared to total compliance, it is located on average at 13.2%, making it possible to conclude that individually each of these processes carries out their daily activities according to the company's specific needs. However, overall, their work is not following the expectations that the organization would like.

Additionally, the level of absenteeism of the study company was analyzed. Taking the 2005-2020 database of the National Survey of Occupation and Employment (INEGI, 2021), the events of abandonment of employment were taken concerning the subordinate and paid worker, thus obtaining a quarterly average national absenteeism rate of 2.78%, which compares it with the zero rates of absenteeism of the study company, a labor advantage is noticeably observed.

5.2 Graphical Results

In the table 1-5 we can find the weaknesses and strengths of the process in the company, it was detected by process surveys made in each of them.

Table 1. Receipt

Processes to highlight.	Poor processes.
➔ Closeness to the reception area or platform. ➔ Optimal space for the receipt of materials. ➔ Manual of the reception process.	➔ There is no cleaning process for the material. ➔ Lack of marking the goods with the date of receipt. ➔ No contingency process. ➔ Lack of established schedules for receiving the material.

Table 2. Assortment

Processes to highlight.	Poor processes.
➔ Manual of the assortment process. ➔ Equipment such as handling carts that support the weight of orders. ➔ Inclusion of assortment personnel in the improvement process within the warehouse.	➔ There is no automated stocking process. ➔ There is no contingency process. ➔ The warehouse manager carries out no inspection. ➔ There is no knowledge of the desirable assortment time.

Table 3. Review

Processes to highlight.	Poor processes.
➔ Review personnel is qualified to handle the goods. ➔ There is a specific space to review the merchandise. ➔ A review confirmation is issued.	➔ There is no checklist where the status of the goods is qualified. ➔ No registration document of the physical state of the merchandise is presented after the review. ➔ There is no knowledge of the desirable review time. There is no automated review process.

Table 4. Packaging

Processes to highlight.	Poor processes.
➔ The packaging material is resistant to temperatures, environmental corrosion, generation of everyday dust, shockproof solid, stackable, and resistant to slippery surfaces. ➔ The pallet load limits are respected. ➔ The packing staff template is correct and sufficient.	➔ The maximum physical load within the packing personnel is not established. ➔ The staff is not responsible for the care and cleaning of the material. ➔ There are no preventive measures for the oxidation and corrosion of the merchandise.

Table 5. Occupational health and safety

Processes to highlight.	Poor processes.
➔ The warehouse's occupational health and safety policies have been approved and disseminated. ➔ There is an assessment of risks and the exposed workers in conjunction with their prioritization. ➔ There is a planning of the necessary preventive measures according to the risk assessment. ➔ The necessary prevention signs are in place.	➔ There are no company regulations or policies for waste disposal. ➔ No cleaning process is carried out.

5.3 Proposed Improvements

How are We Going to Get There?
It is intended to implement an improvement plan analyzing the items already considered by the company in each process, evaluating the areas of improvement that adapt to the company, generating KPIs with their respective measurement and control.

Definition of KPI's
To measure the performance of the employees and the achievement of the company's commercial objectives, use of the KPI Key Performance Indicator (KPI) was implemented. These KPIs were brought to bear on the business of the company and should be focused on improving the processes of the areas within the operation the company; To achieve this, the research team, in conjunction with the company's staff, selected efficiency, effectiveness, effectiveness, productivity and competitiveness as the primary measurement parameters.With the graphic visualization of the tasks and the monitoring of the actions with their follow-up to each of the project stages, the results will be quantifiable,

avoiding possible errors. Therefore, to evaluate the fulfillment of orders, KPIs will be implemented, monitored in the four areas of operation belonging to the warehouse: receipt, arrangement, storage, order preparation (assortment), and packaging (dispatch).

a. Receipt Area: The receptions per person-hour will be evaluated to determine the percentage of receptions processed accurately. Defining the rate of compliance with deadlines describes the level of effectiveness in the reception of the merchandise requested by the company. The degree of perfectly received deliveries will allow employees to know the number and percentage of orders that do not meet the defined quality and service specifications, with a breakdown by the supplier.

b. Arrangement: In this area, the percentage of perfect arrangements will be evaluated. This indicator will allow knowing the rate of merchandise received correctly accommodated and enable employees to identify incorrect accounts to study errors to prevent them in future references. Knowing the cost per adjusted unit will allow us to see the percentage of the cost for accommodating a unit, package, or pallet in the warehouse. The value obtained from the use of space will vary depending on the product to be stored.

c. Storage: The value obtained by this indicator will vary depending on the product to be stored; this data compares the cost per unit held to decide if it is more profitable to outsource the storage service or have your warehouse. Warehouse inventory accuracy generates the ratio between ending inventory and average sales for the last period and indicates how many times the stock you have lasts.

d. Order Preparation (assortment): The stock brake indicator will be taken in order preparation; the result will allow knowing the difference between the previous one and the latter will be an error indicator. Reliability in order preparation will help measure the performance of order preparation so that the order is dispatched on time and in the right conditions and product.

e. Dispatch: In this part, the level of dispatch compliance will be evaluated to know the percentage of effectiveness of correct shipments. Knowing the dispatch time index will allow it to compare the average dispatch time concerning the standard time calculated.

These KPIs were developed according to the weak points of each area to improve and streamline the daily operational activities as it is described in the Table 6.

Table 6. Evaluation in the study areas.

	Receptions per person-hour	**Compliance with Deadlines**	**Deliveries perfectly received**
Receipt	The number of receptions accurately received / number of total receptions.	The total number of orders received successfully / total orders scheduled.	They were multiplying the number of rejected orders x100 / total purchase orders received.
	Percentage of perfect accommodations	**Cost per accommodated unit**	**Use of space.**
Arrangement	Merchandise properly accommodated / total merchandise received.	Total operating cost of labor / accommodated units	The number of pallets to store/required square meters.
	Value	**Inventory**	
Storage	Storage cost/number of units stored.	Difference value / total inventory value	
	Stock break in order preparation	**Order picking indicator**	**Reliability in order preparation.**
Order picking (assortment)	Percentage of lines with lack of material / total orders to prepare	Orders correctly prepared/total orders	The number of successful order fulfillments / total orders.
	Level of compliance	**Time index**	**Value of maintaining a square meter of the warehouse or the cost per unit dispatched.**

Dispatch	The number of dispatches completed x100 / total number of dispatches required.	Average dispatch time / standard time.	Total warehouse operating cost x100 / units dispatched.

Standardized Communication

Communication is essential in each area of the study company to achieve effective empowerment based on their previously detected areas of opportunity. For this, a descriptive analysis was carried out applying the STATA 15.0 software for the mean, and standard deviation of the results of the surveys used to the company, obtaining the following histograms for each area (Figure 1-5):

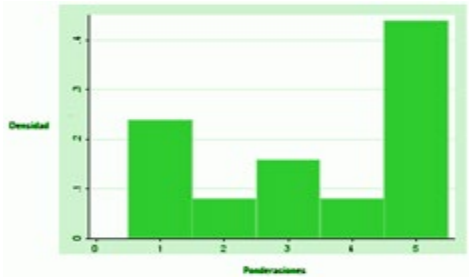

Figure 1. Average receipt area: 3.4; Standard deviation: 1.683251

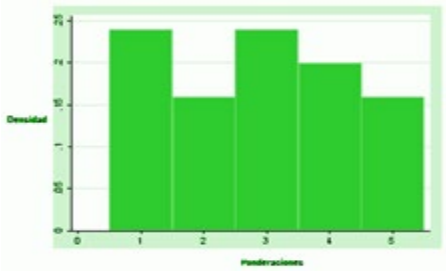

Figure 2. Average assortment area: 2.88; Standard deviation: 1.42361

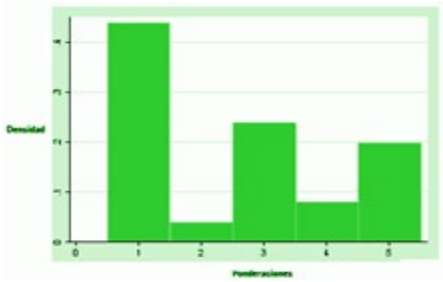

Figure 3. Average review area: 2.56; Standard deviation: 1.609348

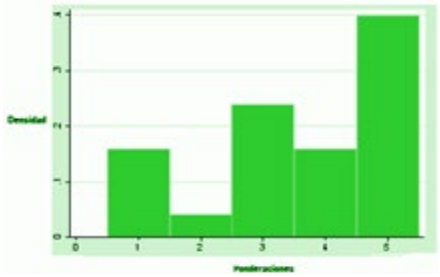

Figure 4. Average packing area: 3.6; Standard deviation: 1.47196

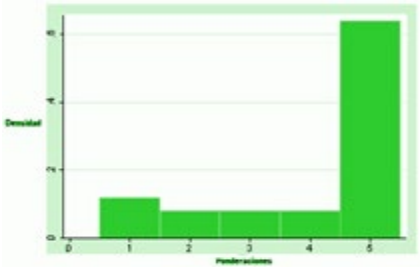

Figure 5. Occupational Health and Safety Area Average: 4.04; Standard deviation: 1.485485

Based on the previous results, the following risk control activities were determined to mitigate the detected areas of opportunity in the Table 7.

Table 7. Detected risks and mitigation issues

Detected risks	Control Activity / Action Plan	Training topics (Mexican Standard)
The poorest overall performance is in the REVIEW area.	Daily Review staff meetings to verify the daily improvement of deficient activities	NOM-006-STPS-2014 NOM-024-SCFI-2013 PROY-NOM-150-SCFI-2002 PROY-NOM-006-STPS-2017
The most variable yield is in the RECEIPT area.	Leadership and commitment in the reception staff to maintain the improvements made	
The most significant number of opportunity areas is in the ASSORTMENT area	Increase in alliances with suppliers and purchasing logistics techniques to obtain efficient assortments	
The highest number of activities with a rating of "4" is found in PACKAGING	Training of the area manager to improve these activities in the short and long term.	
The area with the most stability of efficiency is OCCUPATIONAL HEALTH AND SAFETY	Application of Mexican regulations to update current procedures.	NOM-034-STPS-2016 NOM-016-SCFI-1993 NOM-009-STPS-2011 NOM-019-STPS-2011 NOM-001-STPS-2008 NOM-157-SCFI-2005

Notes:
PROY-NOM-006-STPS-2017: Storage and handling of materials through the use of machinery-safety conditions at work.

NOM-006-STPS-2014: Handling and storage of materials-safety and health conditions at work.
NOM-024-SCFI-2013: Commercial information for packaging, instructions, and guarantees of electronic, electrical, and household appliances.

NOM-034-STPS-2016: Safety conditions for the access and development of activities of workers with disabilities in the work centers.

NOM-016-SCFI-1993: Electronic devices for office use and powered by different sources of electrical energy.
PROY-NOM-150-SCFI-2002: Motor transport-Wheels for car and light truck tires-Safety specifications and test methods.

NOM-009-STPS-2011: Safety conditions for working at height.
NOM-033-STPS-2015: Safety conditions to carry out work in spaces.
NOM-019-STPS-2011: Constitution, integration, organization, and operation of the safety and hygiene commissions.
NOM-001-STPS-2008: Buildings, premises, facilities, and areas in work centers-safety conditions.
NOM-157-SCFI-2005: Fire protection equipment-extinguishers as a safety device used in private, public, and general cargo motor vehicles-specifications and test methods.

5.4 Validation

For the monitoring of the performance of the warehouse area of the areas: receipt, arrangement, storage, assortment, and dispatch, an excel format has been prepared that will help the managers and employees of the company to identify the areas that are below the expected result. This option is the first approach to monitoring activities and is part of a continuous improvement plan. The dashboard implementation and its follow-up depend on the approval of the logistics manager and the availability of the company's areas.

Proposed Indicators – Receipt
Metrics:

- Percentage of receptions processed accurately: Number of receptions accurately received / Number of total receptions.
- Level of effectiveness in receiving the requested merchandise: Total number of orders received correctly / Total scheduled orders.
- Number and percentage of orders that do not meet the defined quality and service specifications, with a breakdown by the supplier. Orders rejected x100 / Total purchase orders received.

Proposed Indicators – Accommodation
Metrics:

- Percentage of merchandise received correctly accommodated: Merchandise accommodated / Total merchandise received.
- The percentage of the cost to accommodate a unit, package or pallet in the warehouse: Total operating cost of labor / Units accommodated.
- Use of space: Number of pallets to store / square meters required.

Proposed Indicators – Storage
Metrics:

- Compare the cost per stored unit to decide if it is more profitable to outsource the storage service or have your warehouse: Storage cost/number of stored units.
- Warehouse inventory accuracy, the ratio between ending inventory and average sales for the last period. Indicates how many times the inventory lasts: Difference value / Total inventory value.
- Number and percentage of orders that do not meet the defined quality and service specifications, with a breakdown by the supplier. Orders rejected x100 / Total purchase orders received.

Proposed Indicators - Assortment
Metrics:

- Out of stock indicator in order preparation, the difference between the previous and the latter will be an error indicator: Percentage of orders with missing / Total orders to prepare.
- Percentage of correctly prepared orders that can be based on units, lines or customers: Orders correctly prepared / Total orders.
- Reliability in the preparation of orders is measured by the performance of the practice of orders so that the order is dispatched on time and in the correct conditions and product: Number of correct order fulfillments / Total orders.

Proposed Indicators -Delivery
Metrics:

- Compliance level, is the percentage of correct dispatches (It consists of knowing the level of effectiveness of dispatches): Number of dispatches completed / Total number of dispatches required
- Dispatch time index compares the average dispatch time concerning the calculated standard time: Average dispatch time / Standard time
- Dispatch time index compares the average dispatch time with respect to the calculated standard time: Average dispatch time / Standard time

6. Conclusion

The logistics processes within a warehouse are fundamental aspects to guarantee customer service levels in compliance with product requirements, expectations in the quantities to be delivered, and the expected time of order fulfillment. With the proposal of the KPI's, the company should:

1. Guarantee the efficiency levels of the activities carried out by the company, improving the delivery service and productivity resources involved profitability. of the organization

2. Understand the activities of the warehouse management processes.

3. Generate a baseline and identify the functions and design specific indicators for this area, allowing to determine the current state and making it possible to compare with future results to obtain precise conclusions of the increase or decrease in the efficiency of the company in the storage area, based on actual results achieved by the establishment of indicators.

4. Measure the quality, service, costs, and delivery time of the company's customers, through the following factors: Receive their complete orders, not have a supply with the wrong materials, have a short delivery time, quality in the products, by not presenting no failure at the time of use, receive the material in good condition, obtain a low or no cost in shipping by parcel and have correct advice from the company's sellers to acquire the right products. About this point, for the moment, the company. It does not have a standard measurement to define customer satisfaction; the factors above are extracted from feedback from customers who experience any of the factors above. It would be essential to work on a survey plan applied to customers to know the aspects that can help the company strengthen customer loyalty and return.

In this work, we proposed some indicators in each area of operation that will be very useful for the company and have greater effectiveness at the time of the arrival of the supplies to the warehouse.

We conclude that the perfect use of these new tools can help the company Tracto Partes Diamante de Puebla SA de CV have greater efficiency in its warehouse and the distribution of its products, improving logistics on a large scale inside outside of the company.

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