

## CORRELATION ANALYSIS OF INFLUENCE OF THE INTERNAL MARKETING IN THE PRODUCTIVE YIELDING IN INDUSTRIES OF BAJA CALIFORNIA, MEXICO

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### ABSTRACT

Was made an investigation to correlate the productive yielding in ten industries installed in the Baja California State in the northwest of the Mexican Republic, in three cities where are located the industrial companies (two in Ensenada, four in Mexicali and four in Tijuana). This scientific study represents the methodology to convince to operative workers of the ten industries evaluated, to make its operative activities with the most quality indices to avoid errors and defective products and with this can generated economic losses. This investigation was made in 2021 and was relevant because support to improve the behavior of the operative personnel of the manufacturing areas, and improve the industrial process to obtain an increase in the productivity and quality levels and with this the economic gains, originating a growth of 25% in the productive yielding in the ten industrial plants evaluated.

**Keywords.** Internal marketing, industries, productive yielding, productivity and quality indices.

### 1. INTRODUCTION

The elaboration of activities with high quality in the industrial processes in industries in any place of the world, is very relevant because industrial plants can have a growth debit to its economic gains (Tang et al, 2020). This is because the industrial processes in the manufacturing areas can be simple or complex and sometimes the attitude of workers of these areas of the industries and the experience, can generates improvements and the realization of his activities with good quality and avoid errors and with these defective products fabricated (Abzari et al, 2011; Cerqueira et al, 2018). When occurs errors and the manufacturing of defective products, the industrial companies generate economical losses and with this can close and the workers of any area of the industries workers in any area of the industries can be left without a job, each worker being a family breadwinner that does not generate productivity or economic gains (Prado et al, 2018). To have control about this is necessary apply an strategic method called the internal marketing, which consists in the generation of activities from of the bosses (directors and general and area managers) in the industries, to convince the workers of each area to perform their functions optimally and thus obtain high-quality operations, with which quality products can be manufactured and generate the greatest satisfaction with the client, to originate economic gains each year and thus obtain a profit bonus for all workers each year (Huang et al, 2014). With the internal marketing in the industrial companies can contribute to have four relevant aspects that are showed in figure 1 and explained below (Abbas et al, 2018; Bailey et al, 2016).

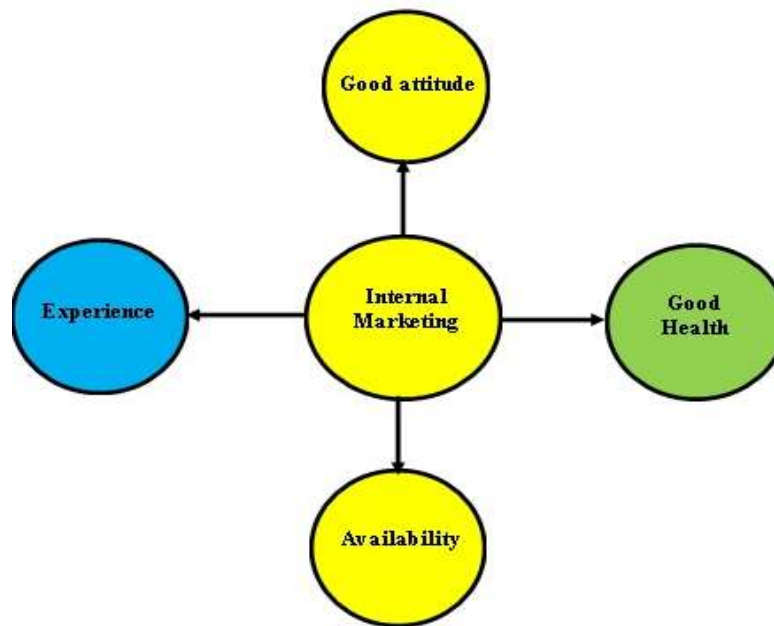


Figure 1 Relevant aspects generated by the internal marketing strategies

a) Good attitude. Is important factor to elaborate any type of activity of the manufacturing people, which elaborates the industrial activities that generates the manufactured products, and with this aspect, the industrial workers realize the industrial operations with high quality. This is promoted by the directive and managers (General Manager and Areas Managers).

b) Good health. The directive and managers (General Manager and Areas Managers, are the incharge persons to promote the good health in your workers of different areas to foment the maximum operative yielding and with this reach the goals every day.

c) Availability. This factor is very important because the workers of the manufacturing areas can realize extra activities when have good attitude and health and the directive and managers General Manager and Areas Managers, are promoted a good work environment and recognize the effort of the manufacturing people and reach goals to get these people, some economical compensations as economical bonus in some weeks. For this reason, people have the availability to work extra hours.

d) Experience. To reach the goals every day in the manufacturing areas is necessary generate a good capacitation and also, contract experimented persons in the industrial processes, which each industry make to increase the productivity levels and quality, and with this obtain economic gains and growth, to contract more people.

### Internal Marketing

Is a strategic method to foment the four relevant aspects mentioned in the last section, involving to workers of manufacturing areas and all areas of each industrial company to make his operational functions with higher quality (Vieira et al, 2018). This promoted by the matrix of figure 2, which shows the four different events and is expressed by diverse colors which is mentioned next (Ruizalba et al, 2014):

Level 1 (red color). Indicates an ineffective and unpleasant situation, such as the worst level, by representing, for example, that both the facilities of a place of service are dirty and inadequate, and the customer service is not efficient.

Level 2 (orange color). Indicates an effective and unpleasant situation, improving the level a bit, by representing, for example, that the facilities of a place of service are clean, being efficient, but the customer service is inefficient, the facilities being effective and the customer treatment unpleasant. client.

Level 3 (yellow color). It indicates an ineffective and pleasant situation, improving the level, by representing, for example, that the facilities of a place of service are dirty and inadequate and customer service is efficient.

Level 4 (green color). Indicates an effective and pleasant situation, such as the best level, by representing, for example, that the facilities of a place of service are clean and customer service is efficient.

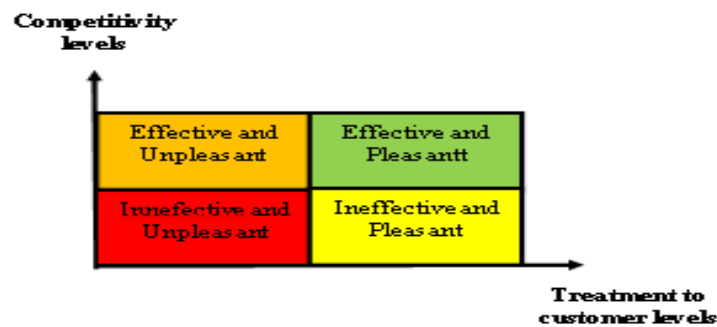


Figure 2 Matrix of diverse events that can occur in any type of activity

### Relation of internal marketing and industrial processes

In all industrial processes are simple and complex operations and this aspect in sometimes the complex activities can discourages to the operative personnel of the manufacturing areas, and for this reason is necessary apply the specialized strategic of the internal marketing to convince to the workers of the industrial processes to make his industrial operations with good attitude, effort, working in team, have good availability to obtain the manufactured products with high quality. This represents a relevant aspect to determine the personnel that directive and managers can get to make the industrial operations with high quality. As is showed in figure 3 is represented the five relevant aspects of the internal marketing that are expressed now (Lopez et al, 2016):

- Adequate communication of the new strategies. Is interesting factor to determine the optimal way to communicate from directive, managers, supervisors, engineers and technicians to operative personnel of the manufacturing areas.
- Adaptation to new production strategies. Is relevant aspect to convince to workers of the industrial processes to accept the new strategies and generates his activities with high quality.
- Elimination of barriers by manufacturing workers. Is part of the last factor, being important generates the conviction in personnel of the manufacturing areas to make his activities with high quality, avoiding a negative mentality on the part of workers in industrial processes.
- Support from executives and general manager and area managers. Is interesting to convince to personnel of make his activities with high quality, using the adequate communication and strategic methods.
- Reevaluate the new strategies to apply continuous improvement constantly. When was applied the last four steps is necessary reevaluate a new strategic to improve any type of industrial process.

With the five aspects mentioned above can obtain an efficient operative yielding of the workers of the manufacturing processes (Vera et al, 2018; Oliveira et al, 2017)).

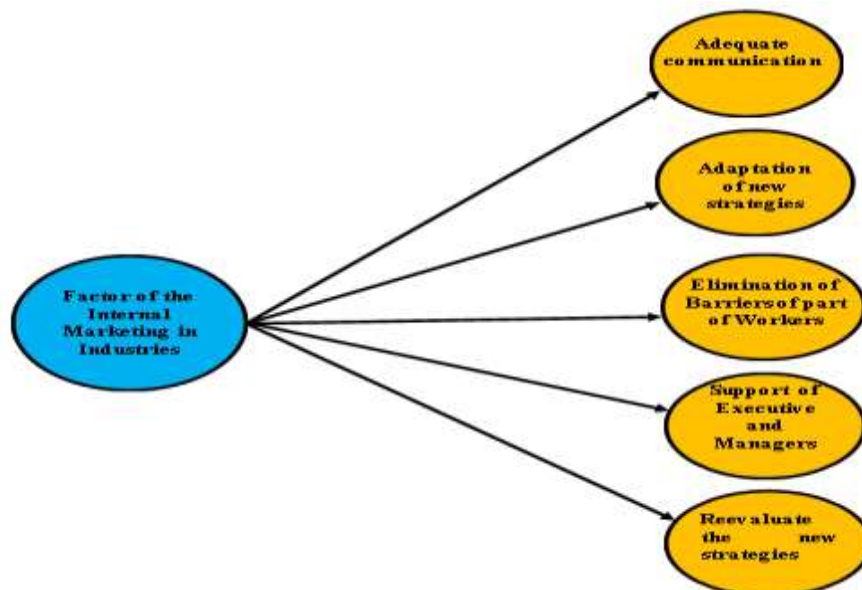


Figure 3 Relevant factor of the internal marketing in industries

### Productivity and quality levels in industries

These parameters are very relevant in any type of operation, focused in this investigation, where were important to evaluate the operative yielding of the workers of the manufacturing areas (AlBorie, 2012) and the analysis as daily, weekly, monthly, seasonally and yearly periods in the 2021, where was made this scientific study (Figueroa, 2020).

## 2. METHODOLOGY

In this investigation, was made three special activities, where were evaluated as is mentioned next:

- A comparative analysis of the operative yielding at the beginning of this scientific study and at the end of this investigation, including the behavior of directive, managers, supervisors, engineers and technicians with the operative personnel of the industrial processes.
- A comparative evaluation of the operative yielding at the beginning of this scientific study and at the end of this investigation of the productivity and quality to make the improvements of each area of the industrial processes.
- An analysis of behavior of the operative workers of the manufacturing areas in the ten industries evaluated in this investigation, relationship with the continuous improvements elaborated.

## 3. RESULTS

In this investigation was obtained relevant information about the behavior of the workers of the industrial processes and directive, managers, supervisors, engineers and technicians that have constantly communication with the operative personnel of the manufacturing areas. In the next sections are expressed this relevant information.

### Correlation analysis of operative yielding and internal marketing

A correlation analysis of the relationship of the operative yielding of workers of the manufacturing areas and the application of the strategic method of internal marketing as made to determine the principal reasons of the decrease of the productivity and quality indices before begin this scientific study. This correlation analysis is represented in table 1. In this table was showed the parameters of operative yielding in 50 workers of industrial processes in the ten industries evaluated, and the factors provided from the internal marketing.

Table 1 Correlation analysis of operative yielding and internal marketing factors in the ten industries

Parameters	Operative Yielding Before the investigation, %					Operative Yielding After the investigation, %				
Factors	I1	I2	I3	I4	I5	I1	I2	I3	I4	I5
Attitude Level	67	63	66	69	68	75	78	87	85	80
Availability Level	64	67	61	66	63	79	85	84	88	85
Experience	69	70	68	63	64	84	83	89	83	88
Health	60	65	63	67	62	80	81	84	89	84
Parameters	Operative Yielding Before the investigation, %					Operative Yielding After the investigation, %				
Factors	I6	I7	I8	I9	I10	I6	I7	I8	I9	I10
Attitude Level	68	67	64	65	65	79	80	83	86	83
Availability Level	66	68	69	63	63	84	78	84	84	80
Experience	69	63	66	68	68	85	88	88	88	85
Health	65	68	68	66	69	82	85	85	80	83

Industries (Ten industries of Baja California was evaluated)

In the last table was illustrated the difference between the begin and the end of this investigation, using the internal marketing and the operative yielding, using to improve efficiently the factors of the internal marketing, observing the operative yielding in the ten industries evaluated, increase around in 20% as average level.

### Comparative evaluation of the productivity and quality

These relevant parameters are evaluated constantly by directive and manager, together with the supervision and manufacturing engineers, which were in the industrial processes of the ten industries evaluated, during this scientific

study. In table 2 is illustrated this section of the investigation, where is expressed the productivity and quality levels in each industrial company evaluated with the strategic method of the internal marketing.

Table 2 Evaluation of productivity and quality indices applying the internal marketing factors in the ten industries

Parameters	Productivity, % Before the investigation					Productivity, % After the investigation				
Seasons	I1	I2	I3	I4	I5	I1	I2	I3	I4	I5
Spring	58	55	59	63	60	76	79	82	78	80
Summer	56	57	60	60	61	74	78	77	80	80
Autumn	55	57	55	59	57	70	73	72	77	79
Winter	58	62	60	62	61	77	75	79	80	81
Parameters	Productivity, % Before the investigation					Productivity, % Before the investigation				
Seasons	I6	I7	I8	I9	I10	I6	I7	I8	I9	I10
Spring	60	64	62	60	62	77	79	84	80	85
Summer	61	58	55	59	60	79	81	80	84	80
Autumn	61	63	55	59	60	80	83	79	77	79
Winter	58	61	68	62	58	81	80	77	79	80
Parameters	Quality, % Before the investigation					Quality, % Before the investigation				
Seasons	I1	I2	I3	I4	I5	I1	I2	I3	I4	I5
Spring	55	58	57	59	60	79	80	83	80	82
Summer	57	60	58	55	59	80	82	77	79	80
Autumn	58	60	62	63	60	80	79	77	79	81
Winter	55	58	59	62	60	79	82	83	81	80
Parameters	Quality, % Before the investigation					Quality, % Before the investigation				
Seasons	I6	I7	I8	I9	I10	I6	I7	I8	I9	I10
Spring	58	60	55	58	59	74	78	77	80	82
Summer	57	60	62	59	57	78	79	76	79	75
Autumn	55	59	64	63	60	78	83	85	80	77
Winter	60	58	55	53	58	79	82	80	76	79

Industries (Ten industries of Baja California was evaluated)

Last table shows the productivity and quality levels, which is represents the difference between the begin and the end of this scientific study, when was applied the strategic method of the internal marketing, and illustrating an increase of in the productivity and quality indices, by around 20%.

#### Correlation analysis of continuous improvements

This part of the scientific study was made to analyze the difference of the application the correct and inadequate continuous improvement in the industrial processes or take decisions correctly and incorrectly, where is showed in table 3.

Table 3 Evaluation of differences of the application of continuous improvement and take decisions in the ten industries

Parameters	Continuous Improvement Before the investigation					Continuous Improvement, % After the investigation				
Seasons	I1	I2	I3	I4	I5	I1	I2	I3	I4	I5
Spring	64	67	65	63	67	87	89	86	85	90
Summer	68	65	66	63	67	86	84	88	85	87



Autumn	65	63	66	65	66	86	85	86	88	87
Winter	64	67	65	66	68	89	87	88	86	85
Parameters	Continuous Improvement Before the investigation					Continuous Improvement, % After the investigation				
Seasons	I6	I7	I8	I9	I10	I6	I7	I8	I9	I10
Spring	64	65	63	62	67	88	89	87	90	88
86Summer	65	64	63	67	69	84	83	84	86	89
87Autumn	64	66	67	68	64	86	87	84	86	88
Winter	63	66	62	65	68	86	88	86	85	88
Parameters	Take Decisions, % Before the investigation					Take Decisions, % After the investigation				
Seasons	I1	I2	I3	I4	I5	I1	I2	I3	I4	I5
Spring	67	64	65	66	67	87	88	85	86	88
Summer	63	65	66	67	68	89	90	85	88	84
Autumn	60	64	66	67	65	88	86	84	88	89
Winter	63	66	68	64	65	86	88	84	88	85
Parameters	Take Decisions, % Before the investigation					Take Decisions, % After the investigation				
Seasons	I6	I7	I8	I9	I10	I6	I7	I8	I9	I10
Spring	66	63	64	65	66	89	88	85	88	84
Summer	67	65	66	63	68	82	83	84	89	86
Autumn	62	65	64	67	65	85	88	90	85	86
Winter	67	65	68	64	62	86	85	88	89	86

Industries (Ten industries of Baja California was evaluated)

Table 3 illustrates the percentages of the relationship of the application of the continuous improvement and take decisions, before and after occurred the application of the strategic method of the internal marketing in people of the manufacturing areas of the ten industries evaluated., observing the increment of the percentages levels in both cases, at almost 20%.

#### 4. CONCLUSIONS

This scientific study showed the necessity of apply the internal marketing as a strategic method to convince to workers of the manufacturing areas in the ten industries where was made this investigation. This was, to make his operative functions with the major attitude, take care of his health, have good availability and approach his experience to obtain the maximum quality in the fabricated products of this industrial companies. The application of the internal marketing increases the productivity and quality levels and with this the economic gains.

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