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**Article**

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# IMPROVEMENT OF BODY SHOP MANAGING AS A PART OF VEHICLE IMPORTERS CENTER

Vasil Stamboliski<sup>1</sup>

## Abstract

The dynamic rhythm of living in today's contemporary surroundings can not be considered without the use of personal and commercial vehicles, for transport of passengers and cargo. This means that every manufacturer in this segment, in their departments for development, find a way to increase their participation in the market. Since the race with time, for promoting new models on the market, not always is in positive relation with the profit which the manufacturer plans to achieve, issues the manufacturer's focus in the after-sale activities.

The body shop with its service, as part of the after-sale activities, brings the client satisfaction to a higher level and of course contributes to realization of higher profit of the company.

The setting of the equipment and the staff management, the analysis of the number of entries and realized working hours in the body shop of an importer centre are the central topic/main subject for the author in this paper work.

Finding the key factors, as well as the possibility for implementation of the key factors, would reflect increased number of entries, increased number of realized working hours and possibility for improving of the existing system of managing.

**Keywords:** after-sales, service, body shop, management, realized working hours, body-shop organization.

*Jel Classification:* L84

## INTRODUCTION

Innovation gives contribution in different ways. For example, the research evidences suggest that there is a strong correlation between the performance on the market and new products. The new products help to enter and maintain the market share as well as to increase the profitability in it. In case of mature and already existing products, the competition does not simply come from the low price offer but from other different factors such as: design, quality and distribution.

For example, Japanese dominance in the late 20-ties in different sectors-automobiles, motorbikes, shipyards, electronics is due to a great number of superior capabilities in the production, which is a result of consistent model of innovation in process. Toyota

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production system and the equivalent system in Honda and Nissan is in priority with performances around 2 to 1 vehicle, on average, in automobiles production, following the quality indicators and productivity. Simply, becoming able to offer better product and/or service, cheaper and with better quality it would be a source of competitiveness for a long time (Markovska 2010).

The Body shop with its services, as a part of After-sales activities, contributes to the completion of the service activities. This department provides services in repairing damaged cars during car accidents, driver's negligence or accidents as a result of weather conditions.

The equipment, as well as the set up of the equipment, training and adequacy of human resources in the body shop should be in continuous stream of updates and innovations which are implemented by the manufactures themselves. This means that the set up of the body shop should provide quality service which will contribute to the customer's satisfaction and to achieve greater profit for the company.

From the above mentioned, it seems that most of the automobile manufacturers as well as their importers focus on quality after-sales customer service in order to maintain the constant customers and gain new ones, which themselves are the most important prerequisite for existence of the producer and its importer centers.

In this paper work, the author presents a complete analysis of the equipment set up, personnel, the number of entries and realized working hours in the body shop of the importers center in the last five years, in June 2008, 2009, 2010, 2011 and 2012.

The analyses made show some problems and if they are not properly treated with suggested principles of improvement, which would contribute to find out key factors that lead to the increased number of entries and realized working hours, which is the objective of the research of this paper work (Stamboliski 2010).

## **TEMPORARY SITUATION AND INVESTIGATION**

The body shop is a complex service which contributes to meet the needs of the customers, and of course the profit of the company. For realizing the entire service activity and to provide a complete service to customers for new damaged vehicles there is a need of proper managing of the body shop which will operate as apart of After-sales. This department offers services for damaged vehicles as a result of an accident, damages due to driver's negligence and damages due to the influence of the weather conditions.

The services which are offered by the body shop are as follows:

- Replacement and repair of damaged parts from the vehicles,
- Replacement of glasses of the vehicle,
- Chassis checking,
- Scratches correction,
- „Make up” of the vehicles,
- Control checks in the frame of a guarantee, repairs mentioned by the producer and others.

For the purpose of this kind of workshop it is necessary to make a design with the aim to meet the market needs and meeting necessary space for proper functioning of the equipment and the technicians. The analyses which are made for designing a body shop are as follows:

1. Calculation for entries in the body shop,
2. Analyses of the working process,
3. Staff/employees/personnel and hierarchical status,
4. Needed technicians,
5. Space efficient worker,
6. Total working surface,
7. Equipment,
8. Illumination and height of the work shop,
9. The choice of suppliers for the purpose of the work shop

The estimation for the new organization structure has been made upon thorough researches and visits of similar companies in the course of several months, and by using the experience of the principal of the importers center. , noted that to achieve the objective of this paper to improve the management of the body shop workshop; we need to have the following human resources: It has been noted that in order to achieve proper management/functioning of body shop workshop the following human resources are necessary:

- Body shop manager,
- Accounting officer for preparation of invoices in the body shop,
- Body shop team leader,
- Appraiser damage,
- Responsible for spare parts in the body shop,
- Removal/Refitting for in the body shop,
- Painters and drafter of colors
- Prepares the vehicle for painting.

Further this paper will present and calculate the required number and profile of staff in the body shop workshop (Euroimpex 2008).

### **Designing of entries in the body shop**

For the calculation of the entries of the body shop workshop we need data, that would have calculated that the capacity of vehicles to meet over a day. Data from the authorized center of statistics and data from the department of sale of the importer of vehicles are: (CESVIMAP 2007)

1. Number of vehicles sold in last 5 (five) years,
2. Second Customer loyalty,
3. Accidents during 1 (one) year.

From the above mentioned, it can be concluded that in the last 5 (five) years the importer had sold 5.000 vehicles, the clients loyalty is 65%, and during 1 (one) year from the total number of registered vehicles, the number of the accidents is around 30%. Therefore:

$$5.000 \times 0,65 \times 0,3 = 975 \text{ serviced vehicles during one year.}$$

In order to calculate the number of the vehicles which could be serviced in a body shop per day, we use the data for working days in a calendar year:

- 365 days in a year,
- 104 days Saturdays and Sundays,
- 12 national holidays,
- 22 days vacation,

- 4 days training
- 3 days sick leave

220 working days in a year (1.760 working hours)

From the above mentioned, it can be concluded that the body shop should service:

$$975 / 220 = 4,43 \text{ vehicles per day.}$$

### Working process analyze

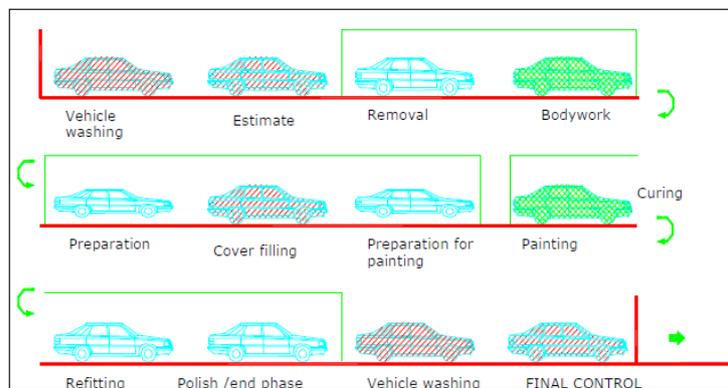


Figure 1. Working process analyze in the body shop

### Staff/employees/personnel and hierarchical structure, and the required number of direct perpetrators profile

The previously presented analysis of the workflow, processes is executed with more employees who are required to perform services of the body shop workshop. With further analysis, we determine the required number of direct employees in the workshop or removal / refitting, panel beater, preparer and painter.

The following review shows the required number and profile of technicians, time required to repair of the vehicle (Table 1), the average retention time of vehicle in to the body shop workshop for the average damaged part:

Table 1. Average time to repair an average damaged vehicle	
Operations in the vehicle repair	Actual working hour
1. Removal of the vehicle components	0,5
2. Panel beater job	4,5
3. Preparation for the painting	2,0
4. Time for curing of the surface	2,0*
5. Painting on the repaired parts	1,5
6. Curing of the paint	1,0*
7. Refitting of the vehicle components	1,0
<i>Total actual work on a vehicle</i>	<i>9,5</i>

Note: \* time that can be used to work on another vehicle.

Table 1 shows that the performance of average repair of the damaged vehicle; it takes 12,5 hours in total, with 9,5 hours of effective work. To get the required number of direct employees and account executives these processes need to express in percentage (%) (Table 2) to indicate which types of direct employees how long have an impact on the repair:

**Table 2.** Participation of each direct executor in percentage in repairing process

Direct participation of employees in the repair of vehicle	Actual working hour	Participation in percentage %
1. Removal/Refitting mechanic	1,5	16
2. Panel beater	4,5	48
3. Repairer and Painter	3,5	36
<i>Total actual work on a vehicle</i>	<i>9,5</i>	<i>100%</i>

In order to calculate the number of direct executors the following equation is applied:

$$\text{Needed number of direct executor} = \frac{\text{Number of vehicles per day} \times \text{Effective work on a vehicle}}{1 \text{ day (8 working hours)}}$$

The above calculations, inserted into the equation for calculating the number of direct employees, results:

$$(4,43 \text{ vehicles per day} \times 9,5 \text{ effective hours}) / 8 \text{ working hours} = 5,26 \text{ effective executors}$$

With the data from Table - 2 and the result of the equation, the number and profile of the required direct employees can be determined:

$$5,26 \times 16\% = 0,84; \text{ that is 1 Removal/Refitting}$$

$$5,26 \times 48\% = 2,52; \text{ that is 3 Panel beater}$$

$$5,26 \times 36\% = 1,89; \text{ that is 2 Painters}$$

### Set-up of the equipment, space for effective worker

For functioning and carrying out the obligations of a worker in line with needs to perform body shop services, each technician is specifically required 2,5 working places. The above means that 6 workers need 15 working places. Namely, for previously determined number and profile of technicians we would need 2,5 working places for removal/refitting, 7,5 working places for 3 panel beaters and 5 working places for painters.

After determining the required workspace to perform its obligations, we will be continue with the calculation of sufficient surface of the body shop workshop:

**Table 3.** The space needed for the body shop

Operations in body shop	Dimensions of working space	Surface m <sup>2</sup>
1. Removal/Refitting	6M X 3.5M	21
2. Bench rack	7M X 5M	35
3. Panel beater	6M X 3.5M	21
4. Painter	6M X 3.5M	21
5. Painting chamber	7M X 6M	42

**Table 3. (continued)**

Operations in body shop	Dimensions of working space	Surface m <sup>2</sup>
6 estimating area	6M X 3.5M	21
7 delivery area	7M X 5M	35
8 mechanic	6M X 3.5M	21
9 painting (mixing) room	4M X 4M	16
	<i>Total:</i>	<i>443 m<sup>2</sup></i>
50% for vehicles movement		<i>222 m<sup>2</sup></i>
	<i>TOTAL:</i>	<i>665 m<sup>2</sup></i>

Also required parking space of 12,5 m<sup>2</sup> (5m x 2,5m) for each vehicle that can enter in the body shop workshop, or space for vehicles waiting to be entered into the workshop, space for the customers and space for the vehicles who are ready for delivery.

It should be taken into consideration that the space is needed for:

- Spare parts warehouse and parts from dismantled vehicles,
- Reception area,
- Changing room, kitchen and toilet,
- Office. (This space should be approximately 20% of the total body shop).

### Placement of equipment

Depending on the available space, the positioning of the equipment and the lay-out in the workshop can be determined. It should be noted that the installation of equipment needs to satisfy one's desires and requirements, such as: (Jovanovski 2003)

- Legislation,
- Protection and safety at work
- Protection of the environment,
- Quality,
- Efficiency and
- Productivity.

Lay-out or flow of vehicles in the workshop can be linear, crossed or circular flow of vehicles. In the case where the Lay-out is linear, movement of vehicles is in a line, or the movement of the vehicle repair workshop in a straight line (Figure 2). In the crossed Lay-out (Figure 3), the repair of the vehicle in service is in a zigzag motion. In the circle or workshop Lay-out the equipment is in the cycle order (Figure 4). Any combination of the above Lay-outs is possible, in order to meet the needs and space of the body shop workshop. Again, it should be noted that the positioning of the equipment depends on the space available for body shop workshop.

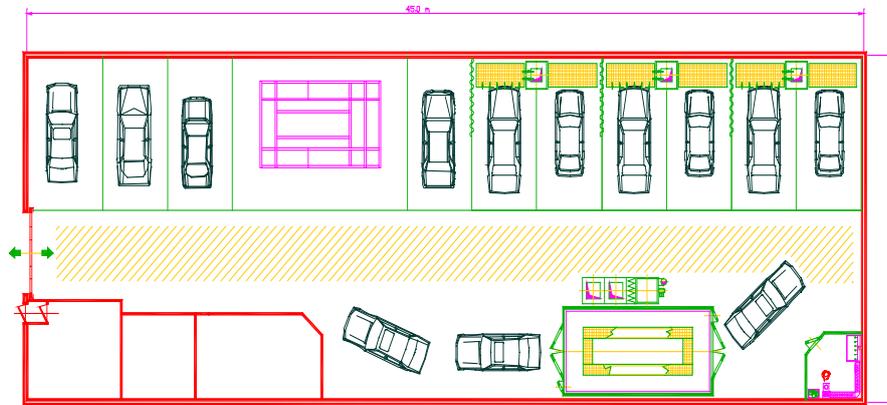


Figure 2. Line Lay-out

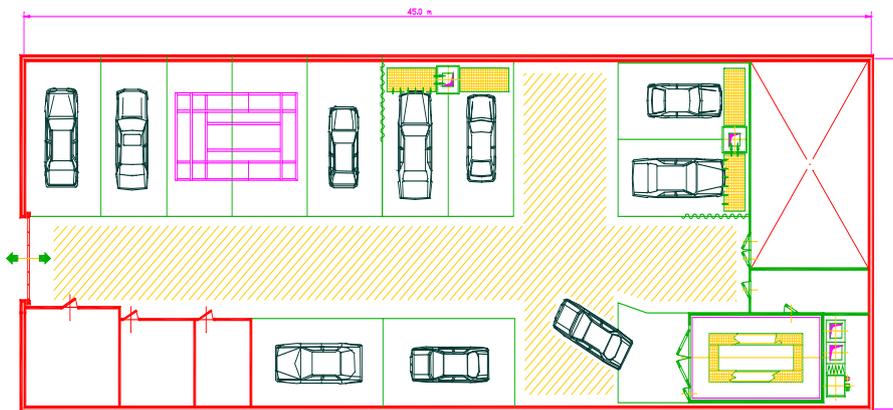


Figure 3. Crossed Lay-out

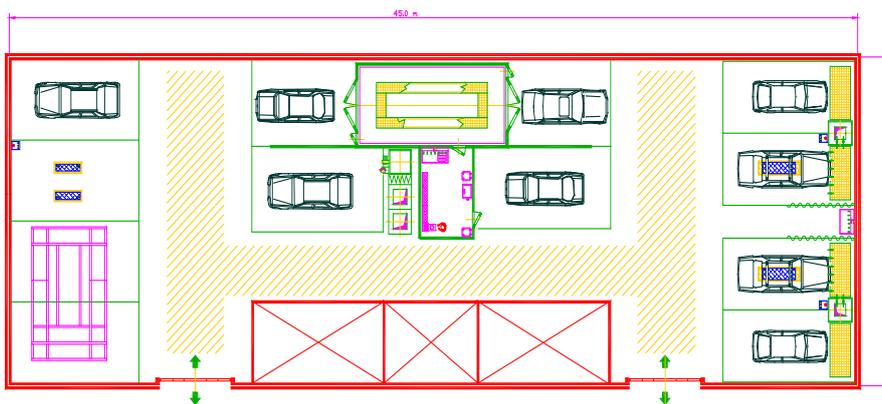


Figure 4. Circular Lay-out

## Research and results

After implementation of the above made exposed managing of the body shop workshop, results are prominent both in terms of customer satisfaction (Stamboliski, Donev, and Polenakovik, 2012) and increased profitability of the company compared with the number of entries and generated/ collected working hours and given the graphs of the following three images image (Figure: 5, 6 and 7). The images that we have, we can see that the research is not done in vain, and that it provides initial results. Further operation and maintenance of the level of management, requires continuous control and improvement without which there is continuous risk that everything achieved could fail.

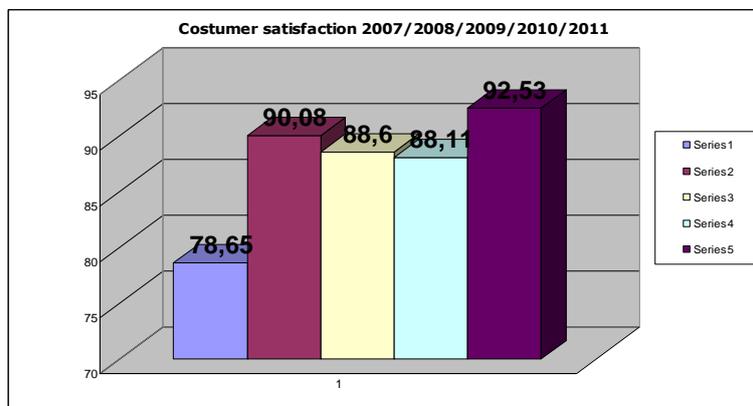


Figure 5. Customer satisfaction level

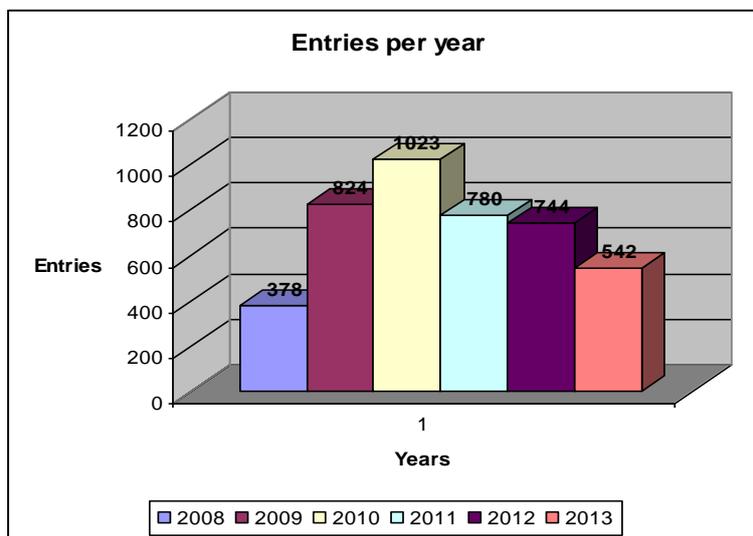


Figure 6. Workshop entries per year

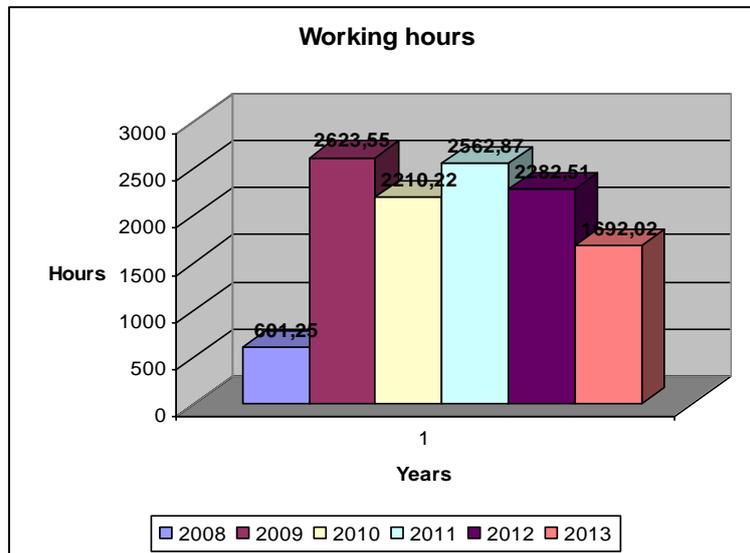


Figure 7. Working hours per year

## CONCLUSION

This research showed that the proper management of the body shop, having in mind: Designing of entries in the body shop, Working process analyze, Staff/employees/ personnel and hierarchical structure, and the required number of direct perpetrators profile, Set-up of the equipment, space for effective worker and Placement of equipment, generates a significant improvements of the body workshop performance.

From all the above mentioned, it can be concluded that the analyses of permanent operation of the body workshop of an importer center have been made. During preparation of the analyses, all aspects of the company business operation have been taken into account in order to make objective analyses, that will be a base for providing suggestions for improvement of customer needs of After-sales department in body workshop.

The analyses made, revealed the key factors which implementation will increase the entries and realized working hours in the body workshop, as well as increasing the customer satisfaction. All that leads towards increasing the company reputation and the same becomes more attractive to potential customers.

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