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Applications of the WASPAS Methodology in Remanufacturing Decision Making

Golani Hema Pribhdas

SSt College of Arts and Commerce, Maharashtra, India.

Email: bhavikapurswani@sstcollege.edu.in

Abstract

At least the original from the original equipment manufacturer (OEM). Product used for performance specification Returns from the customer's point of view Reproducibility of the process and it's At least from scratch for the resulting product Equivalent to manufactured equivalent warranty Providing warranty, Remanufacturing costs your business Help reduce. How are your products? are designed and their life their environment at all stages of the cycle Considering impacts, raw materials, energy and water costs you minimize can keep of waste you need to dispose of You'll also save money by downsizing. WASPAS Method Weighted sum model (WSM) and weighted product Advantages of model (wpm) utilities. WSM and WPM Integration, ranking of WASPAS alternatives increases accuracy. That at the stage, WASPAS is an optimum calculates the additive parameter, it will be given in detail later. The WASPAS method of analysis is excellent the best solution. Short distance and negative-best is more than solution the long-range solution determines, but a comparison of these distances not considered significant Alternative: Width, Size, Thickness, and Weight. Evaluation Preference: Mounting Plate, Anti-rotation guide, Ball screw, Belt drive mount, Belt pulley assembly to calculate the final value, The result it is seen that Anti-rotation guide is got the first rank where as is the Ball screw is having the lowest rank, The value of the dataset for Range of Re Manufacturing in WASPAS (Weighted Aggregated Sum Product Assessment) method shows that it results in Anti-rotation guide and top ranking.

Keywords: Original equipment manufacturer (OEM), Remanufacturing, WASPAS method

Introduction

Throw away, than businesses that once relied on products better long-term relationships with your customers you can create. Rather than businesses that once relied on products, better long-term relationships with your customers you can create. - Consumers of re-manufactured goods may be considered 'second class' and may restrict sales growth of certain fashion-based, Condition such as goods or textiles Condition such as goods or textiles products. The environmental benefits are greater by designing for recycling or recycling. It also from natural sources, especially drugs, animal or plant tissue or fermentation broth Recovery and purification from indicates. Product refining and concentration, and finally product. Fermentation, reduce wastewater treatment costs and can reduce Product degradation. Some methods for on-site recovery are more effective than other products for the production of chemicals and drugs by fermentation. Show Company recovery strategies are strategies undertaken to protect A company and its winding up A company and its winding up Prevents. Recovery strategies of the company Main objective lead to its downfall Identify and resolve root causes of problems quickly is to see. Risk profile of business and reinsurance contracts impact on profitability CRITIC and WASPAS methods are connected to the choice problem. The MCDM makes the proposed decision with HFS, and the changes are finished in the normalized and weighted production mode. Next, the purpose of the examination is to illustrate the GSS harassment method and to introduce additional method based on the WASPAS method and genuine measures for trouble evaluation.

Re-Manufacturing

[3] In addition to reliability, the cost of reproduction is another criterion to consider for process planning. Starting a reproduction business requires a large reproduction. Reproducers only do this if the reproducers make a profit can go, therefore, another major The challenge of redesign process planning, Guaranteeing reproduction reliability By improving the process plan at a low cost. [9] This section deals with reproductive activities we focus on cases and models we pay. Many different contexts of use Practical cases have been reported. Above As mentioned, production or inventory for the through unique optimization models many jobs are dedicated to scheduling reclamation, pricing, order quantity, limited life cycle of a lot of products on one item. [13] Our modeling structure is developed by Ferrier and Swaminathan and we expand it in the following way. First we propose novel optimization models that integrate the CCD-mechanism into traditional production and reproduction and pricing Samples. Secondly, IT-Market and We study two models for the SD-market. Third, the effects and production of the CCD mechanism and carbon related parameters to investigate we extend the analysis. The income earned Products in the second period in the first period to breed. [19] The above review is a design of RL network Important

research shows that the problem, because the conditions that lead to model development Unique. The study emphasizes reducing RL costs by selecting locations and capabilities. Research shows that the reproduction concepts that need to be explored for different types of recalled products. Other positions to be Warehouses considered in the model (storage and consolidation), recycling for inspection and disposal, Factories for recycling, recycling, spare parts and markets recycled materials. The network treats residue. [23] In this study, a set-up of Wagner-Witt algorithm generalizing under the cost assumption) and above production and reproduction systems Test modifications of the mentioned heuristics we test. Dynamic lot through reproduction some papers written on sizing heuristics not considered. Also, they are very complex. [29] 14% re- 64 rate. Finally, the authors rank the aforementioned literature review, expert opinions and based on 66 surveys among students fifteen factors. Re of E-waste 68 in India List of factor 67 affecting production process. Also, these factors are external and internal factors are categorized. External factors are an Incentivizes the organization to reproduce, at the same time-motivation for reproduction activities. [33]Production and reproduction processes have different paths in the production facility. It is assumed that both production and reproduction are done in two steps; the first functions are separate for new parts and revenues, the second function is general. The first function can be considered as pre-processing and disassembly / testing for new parts; the second function can be considered as the main production activity; at this stage of assembly production, the same unit cost for new and used parts [49] Reproducing for end consumers about climate change becomes more important, eco-conscious production such as Riemann will also increase. Meanwhile, companies need the right tools and to focus on economic benefits with planning want.

WASPAS Method

In order now not to stand global aggression, it will now be critical for manufacturing groups to make about powerful choices and correctly pick the maximum powerful use of their worst assets. , Slicing Fluid, Electroplating System, Forging Level, Arc Welding Technique, Commercial Robot Various Multi Criteria Decision Making (MCDM) Techniques currently help teams discover a consistent course. In this paper, the compatibility of the Weight Total Product Assessment (WASPAS) method is a powerful MCDM the tool is explored, while the eight in the scrambler Corrects product selection issues. Degrees, material machining overall performance and electro-discharge micro machining system. The accredited MCD map is the maximum accurate blend of cockroaches, viz. linear normalization of the preliminary choice matrix to evaluate all options thinking about the best choice troubles. The effect of the α parameter on the evaluation overall performance of the WASPAS method is likewise explored. The software of the WASPAS technique ought to be both correct. Evaluating the vendors in the chain and locating hierarchical cakes with environmental necessities will permit. Is typically the number one goal of inexperienced supply chain control (GSCM), with some alternatives and requirements to minimize damaging environmental impacts on all capabilities and boundaries of the deliver chain? Due to the content material, Green Dealer Selection (GSS) can be taken into consideration as a multi-criterion selection making (MCDM) hassle. The difficult concept of understanding units is a powerful device to reveal the uncertainty of the statistics inside the MCDM problem. BreakType-2 Obscure Sets (IT2FSs), a new integrated method to the use of Type-1 ambiguity the usage of C-language term time period club residences, has been proposed to remedy a couple of scaling problems with IT2FS. Look at this, based at the Weighted Total Product Assessment (WASPAS) technique, this technique contemporary method to calculating common weight. In the usual weight calculation machine, we integrate the subjective weights expressed by way of the selectors with the target weights due to the entropy technique to acquiring the maximum practical weights. Since uncertainty is an inevitable feature of MCDM issues, the proposed method would be a top notch tool for selecting in uncertain situations. According to the literature, WASPAS did not don't forget the characteristics of the pains and tribulations that preceded the progress challenge in corporations until the projects were published. The single analysis technique isn't always usually used if there are versions (options) inside the limited category. Approved techniques within the literature are used to decide the uncertainty of experiments and might use multiple characteristic decision making techniques (MADM) as a branch of MCDM. The approach to the approach is given in the 'Waspas Method' segment. At the 'risk identity and fixed weights' level, the rankings (values) of necessities for each variant of the member of the family are presented in the form of a choice matrix. Waspas risks and standards weights are recognized. A verbal exchange for careful evaluation of the device via non-public surveys, more often than not 'threat assessment and numerical instance', feasibility assessment concludes within the case assessment of avenue production work in Iran. In the 'Discussion' section, the method starts with identifying the trouble and then selecting the option. Reported. Then, inside the 'Inventions and Conclusions' phase, its key conclusions and constraints are considered. Once the standards and options are decided, the requirements and the WASPAS approach to evaluate the options. CRITIC and WASPAS methods are connected to the choice problem. The MCDM makes the proposed decision with HFS, and the changes are finished in the normalized and weighted production mode. Next, the purpose of the examination is to illustrate the GSS harassment method and to introduce additional method based on the WASPAS method and genuine measures for trouble evaluation. Using HF-aggregation operators on prudent MCDM troubles to enhance the WASPAS machine with HFS

TABLE 1. Re Manufacturing

DATA SET				
	Width	Size	Thickness	Weight
Mounting Plate	34.360	39.530	56.360	75.360
Anti-rotation guide	29.120	42.970	33.690	48.360
Ball screw	24.080	22.580	45.360	57.120
Belt drive mount	45.230	28.280	58.470	65.420
Belt pulley assembly	12.430	86.410	56.360	86.140

Table 1 shows the Re Manufacturing Alternative: Width, Size, Thickness, and Weight. Evaluation Preference: Mounting Plate, Anti-rotation guide, Ball screw, Belt drive mount, Belt pulley assembly to calculate the final value.

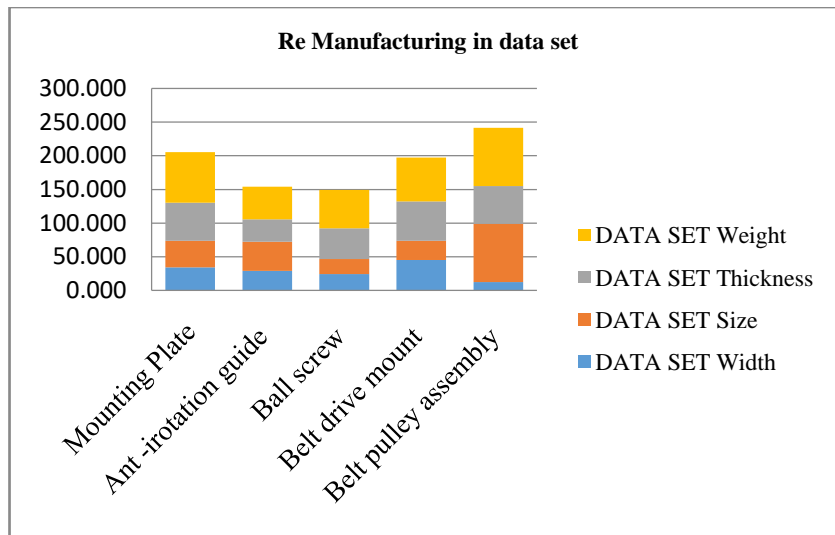


FIGURE 1. Re Manufacturing

Figure 1 Re Manufacturing the Width it is seen that Belt drive mount is showing the highest value for Belt pulley assembly is showing the lowest value. Size influence it is seen that Belt pulley assembly is showing the highest value for the Ball screw is showing the lowest value. Thickness it is seen that Belt drive mount is showing the highest value for Anti-rotation guide is showing the lowest value. Weight it is seen that Belt pulley assembly is showing the highest value for Anti-rotation guide is showing the lowest value.

TABLE 2. Re Manufacturing in Performance value

Performance value				
Mounting Plate	0.759672784	0.4574702	0.597764372	0.64172
Anti-rotation guide	0.643820473	0.497280407	1	1
Ball screw	0.532390007	0.261312348	0.742724868	0.846639
Belt drive mount	1	0.327276936	0.576192919	0.739223
Belt pulley assembly	0.274817599	1	0.597764372	0.561412

Table 2 shows the Performance value is divided by the maximum of the given value

TABLE 3. Re Manufacturing in Weight age

Weight			
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25

Table 3 shows the weight of the Re Manufacturing the weight is equal for all the value in the set of data in the table 1. The weight is multiplied with the previous table to get the next value.

TABLE 4. Re Manufacturing in Weighted normalized decision matrix (WSM)

Weighted normalized decision matrix			
0.189918	0.114368	0.149441	0.16043
0.160955	0.12432	0.25	0.25
0.133098	0.065328	0.185681	0.21166
0.25	0.081819	0.144048	0.184806
0.068704	0.25	0.149441	0.140353

Table 4 shows the Weighted normalized decision matrix it is calculated by multiplying the weight and performance value in table 2 and table 3

TABLE 5. Re Manufacturing in Weighted normalized decision matrix (WPM)

Weighted normalized decision matrix			
0.933591	0.822414	0.879291	0.895027
0.895759	0.839751	1	1
0.854196	0.714974	0.92834	0.959234
1	0.756361	0.871248	0.927244
0.724038	1	0.879291	0.865606

Table 5 shows the weighted normalization decision matrix it is calculated by multiplying the weight and performance value in table 2 and table 3

TABLE 6. Preference Score (WSM) (WPM)

WSM Weighted Sum Model	Preference Score	WPM Weighted Product Model	Preference Score
	0.614157		0.604249
	0.785275		0.752214
	0.595766		0.54385
	0.660673		0.611033
	0.608498		0.551079

Table 6 shows the preference score of WSM Weighted Sum Model it is calculated by the sum of the value on the row of weighted normalized decision matrix. the preference score of WPM Weighted Product Model it is calculated by the product of the value on the row on weighted normalized decision matrix.

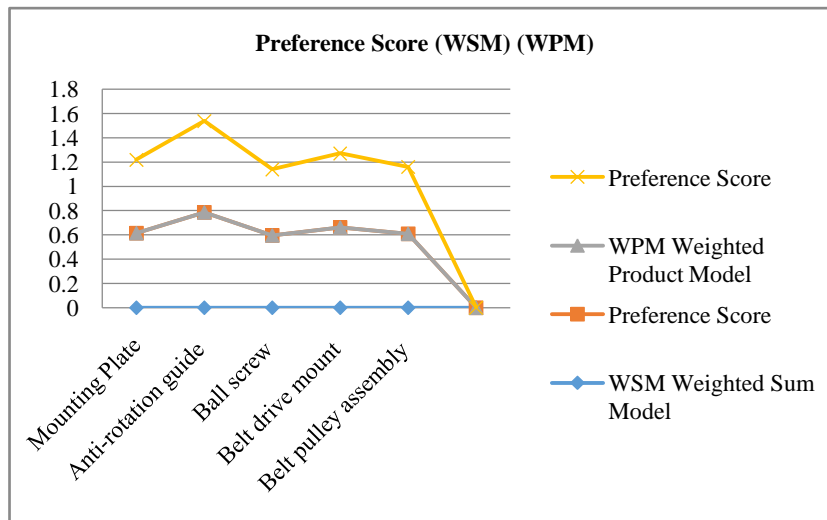


FIGURE 2. Preference Score (WSM) (WPM)

FIGURE 2 shows the preference score of WSM Weighted Sum Model it is calculated by the sum of the value on the row on weighted normalized decision matrix. Government unity of leadership to plan (WSM) (WPM) is the highest and the value the calculation of the WPM Weighted Product Model and WSM Weighted sum Model.

TABLE 7. WASPAS Coefficient

lambda	WASPAS Coefficient
0.5	
	0.609203
	0.768745
	0.569808
	0.635853
	0.579789

Table 7 shows the WASPAS Coefficient value lambda 0.5 and seeing figure 3.

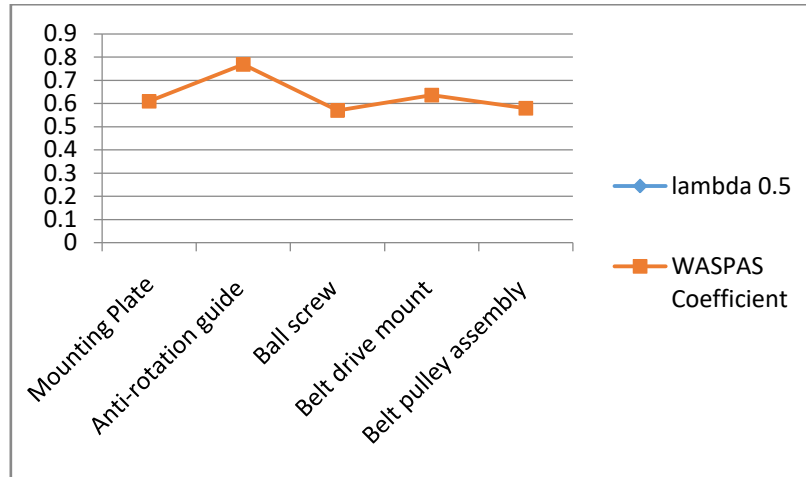


FIGURE 3. WASPAS Coefficient

TABLE 8. Re Manufacturing in Rank

	RANK
Mounting Plate	3
Anti-rotation guide	1
Ball screw	5
Belt drive mount	2
Belt pulley assembly	4

Table 8 shows the Re Manufacturing the final result of this paper the Anti-rotation guide 1st rank. Belt drives mount 2nd rank. Mounting Plate 3rd rank, Belt pulley assembly 4rd rank, Ball screw 5th rank. The final result is done by using the WASPAS method.

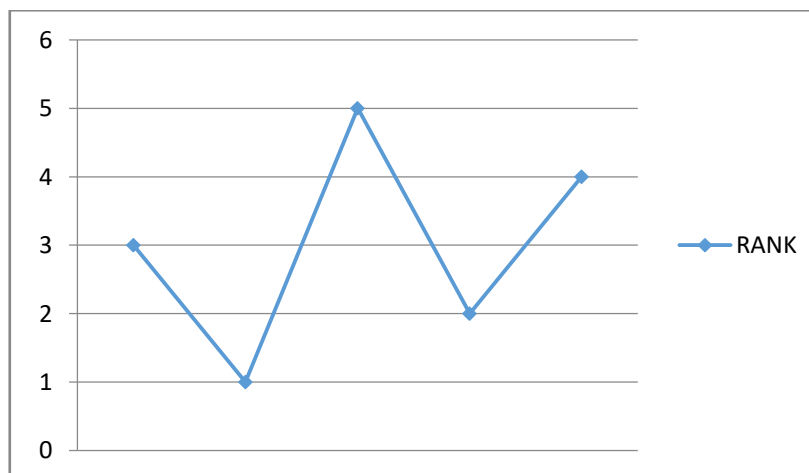


FIGURE 4. Rank

Table 8 shows the Re Manufacturing the final result of this paper the Anti-rotation guide 1st rank. Belt drive mounts 2nd rank. Mounting Plate 3rd rank, Belt pulley assembly 4rd rank, Ball screw 5th rank. The final result is done by using the WASPAS method.

Conclusion

The above review is a design of RL network because important research shows that problem the conditions leading to model development are unique. The study emphasizes reducing RL costs by selecting locations and capabilities. Research shows that the reproduction concepts that need to be explored for different types of recalled products. In this study, we generalize the Wagner-Witt algorithm under a set-up cost assumption) and test the experimental modifications of the heuristics mentioned above for production and reproduction systems. Some papers written in dynamic lot sizing with reproduction do not consider heuristics. Moreover, they provide a more complex algorithm or make more control system assumptions. In the usual weight calculation machine, we integrate the subjective weights expressed by way of the selectors with the target weights due to the entropy technique to acquiring the maximum practical weights. Since uncertainty is an inevitable feature of MCDM issues, the proposed method would be a top notch tool for selecting in uncertain situations. According to the literature, WASPAS did not don't forget the characteristics of the pains and tribulations that preceded the progress challenge in corporations until the projects were published. The single analysis technique isn't always usually used if there are versions (options) inside the limited category. Assessment (WASPAS) technique, this technique contemporary method to calculating common weight. In the usual weight calculation machine, we integrate the subjective weights expressed by way of the selectors with the target weights due to the entropy technique

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