

A simulation approach for assembly line improvement of Iran Heavy Diesel Company

Hassanali Aghajani¹, Hamzeh Samadi², Hossein Samadi³, Hossein Lotfi⁴

Abstract:

The current research aims to investigate improvement possibility of Iran Heavy Diesel (DESA) Company Assembly Line by Simulation. Therefore, in addition to reviewing the existing thematic literature in relation to the system, model, simulation, assembly lines and the improvement solutions, as well as studying similar research background and history, the primary model of company assembly line was created by using data collection instruments like documents reviewing and observation. After presentation of created model and a summary of descriptive data, the model was validated by averages test. Data were analyzed by ARENA and SPSS using software. In the next stage, the improvable point of assembly line, namely Test room was identified by interviewing with 48 people related with assembly line. Then, after describing the reason of attention to this point, the use of new technology was proposed for achieving improvement in this section. The results of testing this proposition by simulation model showed that if such system is implemented in assembly line, the cycle time will improve by 33% and the queue time in test station will reduce by 62%. Finally, based on these results, the discussion and conclusion were represented, and some suggestions were given for managers and directions for further researches were provided in conclusion.

Keywords: assembly line, Iran Heavy Diesel, simulation.

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1. Assistant Prof., Industrial Management, University of Mazandaran, Babolsar, Iran
 2. PhD Candidate, Department of Public Administration, Islamic Azad University, Science and Reserch Branch, Tehran, Iran
 3. MSc. Public Administration, Young Researcher Club, Qaemshahr, Iran
 4. MSc. of Industrial Management, University of Mazandaran, Babolsar, Iran

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Corresponding Author: Hassanali Aghajani

Email: aghajani@umz.ac.ir

An analysis of housing market in Tehran Province using system dynamics

***Ali Mohamad Ahmadvand¹, Hadise Khodadadi Abyazani²,
Zeinab Mohammadiani³***

Abstract:

Housing is the third top factor in human life, after food and clothing in all communities. Many variables are involved in determining housing prices and it is impossible to ignore housing feedback. One of the powerful tools to determine the impact of policies in this field is using system dynamics approach. According to this approach, the cause-and-effect diagram of factors affecting housing prices in Tehran is presented for dynamic model. To simulate the intended model Vensim software was used. Finally, scenario making was conducted to consider various policies in housing market. The results show that enhancing other provinces' facilities, increasing the supply of affordable housing by the government as well as loaning for construction decrease the housing price thereby the price would be balanced.

Keywords: housing market, housing supply and demand, system dynamics.

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- 1. Prof., Industrial Engineering Department, Faculty of Engineering, Eyvanekey Institute of Higher Education, Semnan, Iran*
 - 2. MSc. in Industrial Engineering, Faculty of Engineering, Eyvanekey Institute of Higher Education, Semnan, Iran*
 - 3. MSc. in Industrial Engineering, Faculty of Engineering, Eyvanekey Institute of Higher Education, Semnan, Iran*
-

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Corresponding Author: Hadise Khodadadi Abyazani

Email: hadisekhodadadi@gmail.com

Drawing the cause-and-effect relations during the time in a dynamic strategy map

***Mojtaba Akbarian¹, Esmail Najafi²,
Farhad Hosseinzadeh Lotfi³, Reza Tavakkoli-Moghaddam***

Abstract:

One of the biggest organizational challenges in deployment of strategies is the time lag between the cause-and-effect relations according to a lag between indicators of strategic objectives. With adding the time factor, the strategic objectives at different times have a causal relationship with each other. The causal relationships between strategic objectives are essential. In this paper, after dividing strategic objectives into four aspects of balanced scorecard in the National Iranian Oil Refining & Distribution Company, the fuzzy DEMATEL method is used to draw the cause-and-effect relation between strategic objectives in the strategic map considering the time delay from the lag key performance indices. By drawing the dynamic strategy map, the network relation between strategic objectives during the time identified and by defining strategic initiatives for the strategic objectives of the lag key performance indices, improvement for the strategic objectives of the lead key performance indices will appear.

Keywords: balanced scorecard, dynamic strategy map, Fuzzy DEMATEL, lead & lag key performance indicators.

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- 1. PhD Candidate, Industrial Engineering, Islamic Azad University, Science and Research branch, Tehran, Iran*
 - 2. Assistant Prof., Department of Industrial Engineering, Islamic Azad University, Science and Research branch, Tehran, Iran*
 - 3. Prof., Department of Mathematics, Islamic Azad University, Science and Research branch, Tehran, Iran*
 - 4. Prof., Department of Industrial Engineering, University of Tehran, Tehran, Iran*
-

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Corresponding Author: Mojtaba Akbarian
Email: mojtabaakbaryan@gmail.com

A method for solving possibilistic multi-objective linear programming problems with fuzzy decision variables

Mahnaz Hosseinzadeh¹, Mohammad-Bagher Menhaj², Aliyeh Kazemi³

Abstract:

In this paper, a new method is proposed to find the fuzzy optimal solution of fuzzy multi-objective linear programming problems (FMOLPP) with fuzzy right hand side and fuzzy decision variables. Due to the imprecise nature of available resources, determination of a definitive solution to the model seems impossible. Therefore, the proposed model is designed in order to make fuzzy decisions. The model resolves the deficiencies of the previous models presented in this field and its main advantage is simplicity. To illustrate the efficiency of the proposed method, it is applied to the problem of allocating orders to suppliers. Due to the nature of the fuzzy solutions obtained from solving the model, the decision maker will be faced with more flexibility in decision making.

Keywords: *allocation, fuzzy decision variable, fuzzy ranking, multi-objective linear programming, possibilistic linear programming, triangular fuzzy numbers.*

1. PhD of Operations Research Management, University of Tehran, Tehran, Iran

2. Prof. in Electrical Engineering, Amirkabir University of Technology, Tehran, Iran

3. Assistant Prof., Industrial Management, University of Tehran, Tehran, Iran

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Corresponding Author: Aliyeh Kazemi

Email: aliyehkazemi@ut.ac.ir

Explanation of factors affecting supply risk management in automotive industry supply chain: A Grounded Theory

Masoud Simkhah¹, Kamran Feizi², Laya Olfat³, Maghsod Amiri⁴

Abstract:

This article aims to identify what and how factors influence management of supply risk in automotive industry supply chain. Based on grounded theory and 13 qualitative in-depth interviews with 10 managers in Iran's automotive industry supply chain, a theoretical framework is developed to examine antecedents and effective factors of this process. This framework suggests a broad range of factors causing an automobile manufacturer to manage the supply risk. These factors are called perceptual-attributive factors. In addition varied contextual and intervening factors are affecting automobile manufacturer decisions thereby guiding their actions/reactions in this process. Such factors are categorized as bedder factors and contingency factors.

Keywords: automotive supply chain, grounded theory, supply risk.

1. Ph.D. Student, Allame Tabatabaei University, Tehran, Iran

2. Prof., Allame Tabatabaei University, Tehran, Iran

3. Associate Prof., Allame Tabatabaei University, Tehran, Iran

4. Prof., Allame Tabatabaei University, Tehran, Iran

Submitted: 11 / November / 2013

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Corresponding Author: Masoud Simkhah

Email: m_simkhah@yahoo.com

An analysis of a new combined structural model of the Balanced Scorecard and European Foundation for Quality Management models

Mohammad Sharifi-Tehrani¹, Javad Yousefi²

Abstract:

The present study aims to address the problem of inadequate coverage of various aspects of organizational performance by balanced scorecard (BSC) model through its developing based on the European foundation for quality management (EFQM) model. To this end, a developed BSC model, encompassing variables of stakeholders, resource effectiveness, processes effectiveness, human resource management effectiveness, leadership method, strategy and performance was proposed and, then, validated in a new structural model. The findings firstly revealed an appropriate fitness of the proposed model. Regarding the relationship among variables, staff management effectiveness, resource effectiveness, leadership method and processes effectiveness, respectively, imposed the most “direct impacts” on the organizational performance. On the other hand, “summed impacts” (direct and indirect) on the organizational performance were imposed by leadership method, staff management effectiveness, resource effectiveness and stakeholders variables, respectively. Managers can apply the model suggested in this study to measure performance in the respective organizations as well as a weighting criteria guide on how to accurately measure different dimensions of performance.

Keywords: *Balanced Scorecard (BSC), combination of total quality management models, European Foundation for Quality Management (EFQM), organizational performance measurement, structural equation modeling.*

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1. Ph.D. Candidate, Marketing Management, Faculty of Administrative Sciences and Economics, University of Isfahan, Iran
 2. Instructor, Department of Tourism Management, Payame Noor University (PNU), Tehran, Iran
-

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Accepted: 01 / September / 2014

Corresponding Author: Mohammad Sharifi-Tehrani

Email: msharifit@chmail.ir

Developing several pricing models in green supply chain under risk by Game Theory Approach

Ghazaleh Allameh¹, Maryam Esmaeili², Taraneh Tajvidi³

Abstract:

Green supply chain management is an environmental approach in supply chain management that aims to decrease ecological risks in products' life cycle. Closed-loop supply chain by collecting and recycling the harmful production in nature attempts to achieve this goal. In this paper, due to different strategies in collecting products, several pricing models in two-echelon closed supply chain are presented. The interactions between the manufacturer and the retailer in pricing are investigated based on Stackelberg game and the optimal decisions of manufacturer and retailer are obtained in each model. Moreover, because of the dynamic nature of the supply chain in the real world, risk factor based on the mean-variance model is considered in the closed-loop. Finally, the presented models are analyzed using a numerical example and the best model is selected by comparing the profits. Moreover, sensitivity analyses are performed on collecting rate, recycling rate and the risk aversion. Results show that the coordinating model between the manufacturer and the retailer can be an appropriate substitution in high collecting rates and low risk aversion values.

Keywords: *closed-loop, green supply chain, pricing, risk, stackelberg game.*

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1. MSc. Student in Industrial Engineering, Faculty of Engineering, Alzahra University, Tehran, Iran
 2. Assistant Prof. in Industrial Engineering, Faculty of Engineering, Alzahra University, Tehran, Iran
 3. Assistant Prof. in Mathematics, Faculty of Science, Alzahra University, Tehran, Iran
-

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Corresponding Author: Maryam Esmaeili

Email: Esmaeili_m@alzahra.ac.ir

Performance assessment and ranking of Iranian insurance companies using an integrated model with experts preferences

Hashem Omrani¹, Ramin Gharizadeh Beiragh², Saeed shafie kaleibari³

Abstract:

This paper presents an integrated Data envelopment analysis (DEA) – Principal component analysis (PCA) – Analytical hierarchy process (AHP) to achieve the efficiency scores and ranks of the insurance companies. Fourteen insurance companies with thirteen input and output variables have been considered for the purpose of this study. Since the DEA model is sensitive to the number of variables in comparison to number of DMUs, to reduce data dimension, the PCA method is used. Obviously, the final ranks from PCA-DEA model is very subjective and only based on the pattern and distribution of data sets. Therefore, for incorporating the expert preferences, the AHP model is combined with two previous models and the final ranking is done by the integrated DEA-PCA-AHP and PCA-DEA model. The results of the model show that DANA, RAZI and DEY have become the best rank among insurance companies.

Keywords: Analytical Hierarchy Process (AHP), Data Envelopment Analysis (DEA), Iranian Insurance companies, Principal Component Analysis (PCA).

1. Assistant Prof., Industrial Engineering, Urmia University of Technology, Urmia, Iran

2. MSc. Student of Industrial Engineering, Urmia University of Technology, Urmia, Iran

3. BS in Industrial Engineering, Payam e Noor University of Tabriz, Tabriz, Iran

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Corresponding Author: Hashem Omrani

Email: h.omrani@ut.ac.ir

Modeling the effect of external sanctions on contractor's claims in DB project in Iran

***Mahmoud Golabchi¹, Hadi Talkhabi², Majid Parchami Jalal³,
Mohammad Mirkazemi Mood⁴***

Abstract:

Claims have become one of the inherent attributes of the construction industry. In order to determine the most appropriate strategy for prevention and resolution of these claims, some studies have been conducted to identify the causes of claims but they are common in the construction industry. It seems that the reason for making these claims is a better understanding of complexity and the causal variables. In this regard, one can refer to sanctions and their possible effects on the construction industry over recent years, resulting in the creation of remarkable claims. A "cause and effect model" of the impact of sanctions on creating claims in DB projects has been developed by the information collected through interviews as well as the study of documents related to the recent claims. Then, the studied system is simulated under three different sanction scenarios. The results show that the incidence of sanctions influences other aspects of the project and will cause new claims and affect time and cost as the main causes of claims and this effect increases with the severity of sanctions thereby causing vigorous growth and exponential claims.

Keywords: causes of claims, cause and effect model, sanctions, DB project.

1. Prof., University of Tehran, Tehran, Iran

2. MSc. Student in Project Management and Construction, University of Tehran, Tehran, Iran

3. Assistant Prof., University of Tehran, Tehran, Iran

4. PhD Candidate, Management, University of Tehran, Tehran, Iran

Submitted: 15 / September / 2013

Accepted: 26 / January / 2014

Corresponding Author: Hadi Talkhabi

Email: Hadi.Talkhabi@yahoo.com

Designing a model for selecting construction projects in public sector

Ali Mohaghar¹, MohamadReza Mehregan², Adel Azar³, Nasser Motahari⁴

Abstract:

Much research hasn't been done in the area of project selection in the public sector. In this paper, we tried to choose projects in the public sector, and a linear programming model is presented. In an effort to build the model, the decision criteria were identified using the Delphi method and then the criteria were reviewed at conceptual combining. The model was constructed in a linear, goal and mixed integer programming approach. After building the model, it was tested with data on budget bill, then, the results were analyzed and the model was revised several times. The results of the model execution confirmed its validity. This type of model as a decision support system can be used for project selection in the public sector.

Keywords: goal programming, linear programming, project selection, public sector.

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- 1. Associate Prof., Industrial Management, Faculty of Management, University of Tehran, Tehran, Iran*
 - 2. Prof., Industrial Management, Faculty of Management, University of Tehran, Tehran, Iran*
 - 3. Prof., Industrial Management, Faculty of Economic and Administrative Sciences, Tarbiat Modares University, Tehran, Iran*
 - 4. Assistant Prof., Management, Faculty of Economic and Administrative Sciences, Ferdowsi University of Mashhad, Mashhad, Iran*

Submitted: 18 / August / 2013

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Corresponding Author: Nasser Motahari

Email: n.motahari@um.ac.ir