



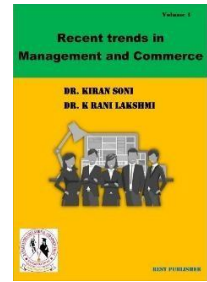
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A Risk Assessment of Emergency management using (WASPAS) MCDM Method

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Abstract

Emergency management is an administrative function of developing communities and disaster management frameworks that reduce risk. Emergency management, also known as emergency response or disaster management is the responsibilities for prevention, preparedness, response, mitigation and recovery system resources and coping and management of all humanitarian aspects of emergencies. It prevents and rob gates the harmful effects of all hazards, Indian calamities. WASPAS method weighted sum model (WSM) and weighted of product model (wpm) uses benefits. Integrating WSM and WPM, 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: High influence, Very high influence, Low influence, No influence. Evaluation Preference: The involvement and support of army, Application of modern logistics technology, Reconstruction and staff comforting, Government unity of leadership to plan, Education campaign on disaster prevention. The result it is seen that Government unity of leadership to plan is got the first rank where as is the Application of modern logistics technology is having the lowest rank. The Government unity of leadership to plan is got the first rank where as is the Application of modern logistics technology Lowest rank.

Introduction

The ultimate goal of an emergency management plan communities identify vulnerabilities communities identify vulnerabilities mitigate the aftermath of a disaster prepare and respond to disasters develop projects further is to provide a data-driven structure that helps. Disaster management in big data, emergency management performance of response teams and affected to improve performance of information collected from the community uses real-time analytics. Disaster management data collection and crisis mapping, social media mining and innovative emergency management event simulations emergency management software's like preparedness, defense and executive directors and emergency for their groups they help facilitate efforts. Strategies from previous disasters statistical disaster management data analysis improving preparedness through big data emergencies are instant big data can be analyzed generate intelligence. Emergency management is the activity of managing for communities to reduce risks, to deal with disasters and to create structures. Capable of coping with risks and disasters safer, less vulnerable communities' emergency management seeks to improve. Emergency management is a federal, at the state or local level as a central function of public administration must change or it's a may become an intergovernmental system. The area is complex and we're many approaches can be taken to pick out our problems and needs. Disaster stages, administrative functions, organizational relationships or technical components of each danger. List the basic elements of a risk management approach under the general headings of physical aspects. However, from a systems perspective, a more integrated and comprehensive approach is appropriate to define problems and requirements. The following figure illustrates the various interactions affecting the field of emergency management. In the WASPAS method, two for optimality a composite scale based on criteria searched for. The first criterion of optimality, via the weighted average success criterion is the WSM method like it is a famous and well the adopted MCDM approach is several based on decision criteria used to evaluate alternatives. Weighted aggregate product assessment (WASPAS) the methodology consists of eight manufacturing decision-making problems as a useful MCDM tool when solving are investigated, i.e. Cutting fluid, electroplating system, forging stage, arc welding process, industrial robot, grinding stage, materials mach inability. All exams considered difficulties and disabilities accurately this method has sorting capability. WASPAS effect of λ parameter on ranking performance the method is also investigated [1].

Emergency Management

The emergency manager must be the organizational leader to manage the various philosophies and territorial conflicts that inevitably arise, and facilitate the coordination and implementation of emergency management policies, plans and programs. Furthermore, traditional managers engage in intensive personal development activities to meet the challenges of

comprehensive emergency management, support organizational development programs, and, if desired, meet complex organizational demands, which tend to impose significant limitations on what traditional operational-oriented organizations do. To deal with the problems that arise [2]. This change is gradually classic it has moved beyond top-down bureaucracy multi agency, intergovernmental a dynamic and flexible model for network model, greatly facilitating interdisciplinary collaboration. After hurricane Katrina, command and control to return to approaches there are strong pressures that characterize the national emergency management system and shared responsibility for intervening in conflicts with the necessary cooperation and authority. Addressing by nature and man created hazards and managing disaster operations. Cooperation in emergency managements very important and command and control why approaches are so complicated [3]. All Govt local, state and federal positions are also in emergency management are involved. All three have some emergency responsibility ties and functions are common however, at every level of government its unique responsibilities and resources to the local agency a state of emergency in many ways have the role of managing agency. It is a useful system has and need programs, develop and maintain facilities and equipment [4]. Their about social feedback phase schneiderman and price (2007) of sns millions of users in emergency management of this approach to citizen engagement as justification for justifying practicality mention. As they imagine, the computer is a useful user, the user local information for a centralized community response phase and clarity about what to do next brings choices. Fire, flood, tornado, hurricane, public health concerns and terrorist attacks report information about emergency events such as it allows residents to get information to send and receive or request assistance, text messages, photos or videos provide, internet-enabled computers and mobile devices, cell phones etc. Residents can be used. These inputs are with social authorities not only that but also shared with other citizens [5]. A basis for teaching emergency management formal, initial condition or boundary conditions minimum required for participants in connection providing information and one or to multiple roles and one or to do or give more tasks includes goals. To reach solving problems and goals achieving and developing a strategy, scenario proceeding through the discussion. Simple in approach, the scene is relative indicates a restricted geographical place, maybe small or medium sized metropolis, brief distance perhaps the first few after the apocalypse relative clarity, emergency coordinator or disaster manager, and a uncomplicated goals, collapse trapped under the rubble of fallen buildings organizing rescue of people [6]. In running relief operations after disasters decision making emergency management (EM), catastrophic losses of human life and there are huge public and private properties is an issue of concern. Of mass emergencies for character, information overload and significant stress involves uncertainty EM teams have to make decisions in situations. Such situations are often routine, complex solves the problem. Potential for multiple failures in EM response affected by many factors. Predict disasters consist of an impossible sequence of events. The best decision makers are mayors, district/city managers, and school and university officials rarely with EM as their primary occupation are involved; and many large companies have multiple internals includes groups, different goals and with cultures, to reduce the effect of emergency must work together. Because of this, a solid lack of distributed team training expertise is hard to build. Of this as a result, better coordination and information for EM communication is required. Many in EM are complex coordination between groups; hence, group should be the main center for training [7]. FEMA's establishment is more sensitive to risks a wide range of conceptual and applied approaches consistent with acceptance. National governors following the guidelines of the association, most four visitors to emergency related to management divided into operational phases. They are recovery, preparedness, response and mitigation. This model is FEMA's comprehensive emergency management (CEM) and then their combined urgent as part of the management system (IEMS). Both cam and items are pre-emergent as distinguished from management efforts [8]. North American systems of new Zealand in the last decade impact on emergency management are coming therefore, eons in new Zealand a study of in addition to training, throughout north America in this study, various similar government organizations had been approached had been asked to participate. Answered the questionnaire everyone is the company's emergency manager or emergency management consultant. At the beginning of the questionnaire from the perspective of the organization they worked for they were instructed to answer the questions [9]. Emergency management is an altered reality by using new technology in terms of opportunities and threats facing of oil and gas production due to continuous changes in process, different actors in a distributed system constellations are built. It is planning and introduces opportunities for action. New while technology offers opportunities, technology-enabled distributed actors challenges for network emergency handling creates. The objective of the presented study is, one of continuous risk and risk management further emergency management by becoming part of it means looking for possibilities for resilience [10].

WASPAS

The WASPAS method is an technique, it changed into progressed by using which this method in many decision problems and contexts used and extended. Begonias et al (2013) based on the WASPAS method a multi-criteria incorporated selection-making procedure select the best version construction net page for deep water port. Advanced an MCDM technique on a reconstructed vernacular constructing the use of AHP address the issue of day lighting and traditional continuity. Hashemkhani solfani et al. (2013) SWARA hierarchical weight estimation ratio analysis and WASPAS methods using multiple to solve the shopping mall location problem criterion developed approach to decision making. Javadskas et al. (2013a) WASPAS and MOORA multi-objective based on ratio analysis validates the robustness of optimization methods. Javadskas et al. (2013b) some public and commercial to evaluate facades of buildings WASPAS method was used [2]. Weighted discussed in recent years total product assessment (WASPAS) and ambiguous extensions. The new MCDM will determine the utility approach is weighted total product evaluation (WASPAS) is called. In WASPAS 2012 recommended for the first time and it is strong in deterministic approaches to new MCDM application is one. This approach is a weighted one product version (WPM) and weighted sum model (WSM) is zavadskas, tusk's, proposed and the argued combination. The accuracy of this approach stronger than wpm and WSM [3]. WASPAS formal, ordered fuzzy using numbers (OFNS), which is proposed by zadeh an extension of ambiguity set approach. The concept of OFNS is introduced. Ambiguous as opposed to numbers, arithmetic in this model functions of real numbers as such, they a unique case of OFNS. WASPAS approach through zavadskas, turkis, and antucheviciene was created. WASPAS method accuracy is a weighted amount rather than used method or weighted ones

recommended product model that it is favorable. Current literature, to consider OFNS in ambiguous WASPAS mode failed and one of the methods mentioned above the concept lacks unifying research [4]. Weighted aggregate product assessment (WASPAS) systematic, downside risks to the project used to assess outcomes. Change compared to independent methods of ranking this method is efficient and highly accurate. WASPAS methodology in new multi-index decision making techniques one, it is accepted in many areas is used. In this research, road in Iran we identify the risks of the construction project we evaluated, the results of which, access to baroque pits infeasible/irrelevant, during the project life cycle loss of key manpower, inexperienced support hiring contractors among the identified risks are the most important risks [5]. Weighted aggregate product assessment (WASPAS), time usage choice of attendance software including the problem is integrated. Critic approach is a goal for figuring out scale weights methodology, which include depth of version and choice-making a contradiction within the structure of the hassle is protected. It belongs to the elegance of conversation methods and alternatives information at the standards to be assessed primarily based totally on WASPAS the method is weighted sum version (WSM) and of weighted product model (WPM). Mixing and it's full of alternatives used to rank. Kritik and WASPAS a new based on combination of methods applicability decision making approach of this article to the literature the main contribution is proof [6]. Healthcare outsourcing for 15 different strategies have been developed. QSPM tool and several standards decision making device WASPAS method integrating an integrated approach to evaluate the strategic options used recommended. Top five best ranking strategic options are QSPM and WASPAS be mindful of using approaches want also, a strong, math-based as the WASPAS method was used, the result was accurate can also be considered reliable [7]. One based on the WASPAS approach the new method was developed with HFS. Experts and various information to calculate scale weights actions are proposed. A change to the WASPAS technique, HF-operators and scalar weight estimation procedure is carried out. For the inexperienced dealer selection problem the generated method is executed. With HFSS WASPAS method for estimating MCDM problems and an integrated based on information activities [8]. WASPAS the technique is very realistic and the rating is correct strongly attracts the idea of WASPAS approach weighted sum model (WSM) and weighted product model (WPM) uses advantages. WSM and wpm in addition, the rating accuracy of WASPAS options will increase. At that factor, WASPAS is a highest quality mixture calculates the parameter, that is distinctive later may be given. Many of the WASPAS systems were successful despite the applications, most published works rank ignore the concept of precision, and WSM and composition parameter of wpm on temporal basis is determined. Wafeipour et al. (2014) priority areas for implementation of solar energy projects [9]. Current research examines the effectiveness of TSPS intuitive fuzzy weighted aggregate for comparison uses product assessment (if-WASPAS) technique. The proposed method IFSS operators based on more scaled weights a new method of calculating scale weights to calculate, to arrive at more reasonable weights objectivity derived from similarity measure method results with weights expressed by experts we aggregate the subjective weights. Objective new unity for IFSS to calculate weights actions are developed and proposed a variety of harmony activities are elegant demonstrates characteristics [10].

Analysis and Discussion

Table 1. Emergency Management the High influence it is seen that Government unity of leadership to plan is showing the highest value for Education campaign on disaster prevention is showing the lowest value. Very high influence it is seen that Government unity of leadership to plan is showing the highest value for the involvement and support of army is showing the lowest value. Low influence it is seen that Reconstruction and staff comforting are showing the highest value for Government unity of leadership to plan is showing the lowest value. No influence it is seen that Application of modern logistics technology is showing the highest value for Government unity of leadership to plan is showing the lowest value.

TABLE 1. Emergency Management

	High influence	Very high influence	Low influence	No influence
The involvement and support of army	91.08000	69.53000	29.15000	22.05000
Application of modern logistics technology	79.12000	84.97000	33.69000	27.30000
Reconstruction and staff comforting	84.08000	72.58000	29.18000	23.10000
Government unity of leadership to plan	93.17000	98.28000	24.60000	17.59000
Education campaign on disaster prevention	63.33000	86.41000	27.96000	18.89000

Table 1 shows the Emergency Management Alternative: High influence, Very high influence, Low influence, No influence. Evaluation Preference: The involvement and support of army, Application of modern logistics technology, Reconstruction and staff comforting, Government unity of leadership to plan, Education campaign on disaster prevention to calculate the final value.

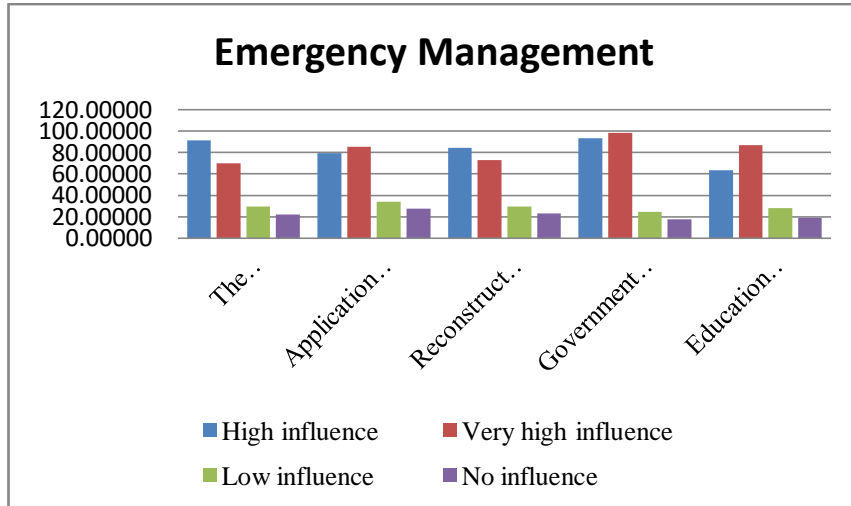


FIGURE 1. Emergency Management

Figure 1. Emergency Management the High influence it is seen that Government unity of leadership to plan is showing the highest value for Education campaign on disaster prevention is showing the lowest value. Very high influence it is seen that Government unity of leadership to plan is showing the highest value for the involvement and support of army is showing the lowest value. Low influence it is seen that Reconstruction and staff comforting is showing the highest value for Government unity of leadership to plan is showing the lowest value. No influence it is seen that Application of modern logistics technology is showing the highest value for Government unity of leadership to plan is showing the lowest value.

TABLE 2. Performance value

Performance value			
0.977568	0.707468	0.843911	0.797732
0.8492	0.864571	0.730187	0.644322
0.902436	0.738502	0.843043	0.761472
1	1	1	1
0.679725	0.879223	0.879828	0.931181

Table 1 shows the Performance value is divided by the maximum of the given value

TABLE 3. Weight

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 Emergency Management 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. Weighted normalized decision matrix (WSM)

Weighted normalized decision matrix			
0.244392	0.176867	0.210978	0.199433
0.2123	0.216143	0.182547	0.161081
0.225609	0.184626	0.210761	0.190368
0.25	0.25	0.25	0.25
0.169931	0.219806	0.219957	0.232795

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

TABLE 5. Weighted normalized decision matrix (WPM)

Weighted normalized decision matrix			
0.994344	0.917121	0.95846	0.945071
0.959959	0.964273	0.924397	0.895934
0.974662	0.927018	0.958214	0.934143
1	1	1	1
0.907995	0.968333	0.9685	0.982332

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)

Preference Score	WSM Weighted Sum Model	Preference Score	WPM Weighted Product Model
0.83167		0.826042	
0.77207		0.766632	
0.81136		0.808757	
1.00000		1	
0.84249		0.8365	

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.

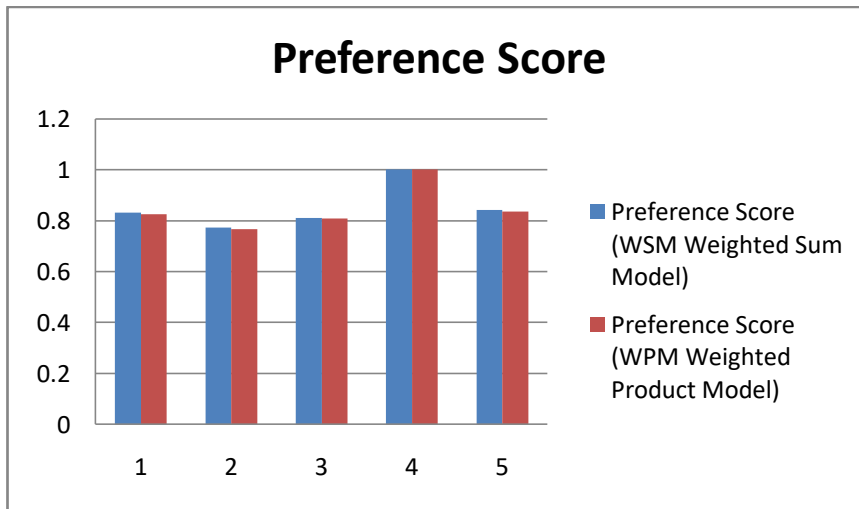


FIGURE 2. Preference Score (WSM) (WPM)

FIGURE 5 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	0.82886
	0.76935
	0.81006
	1.00000
	0.83949

Table 7 shows the WASPAS Coefficient value lambda 0.5

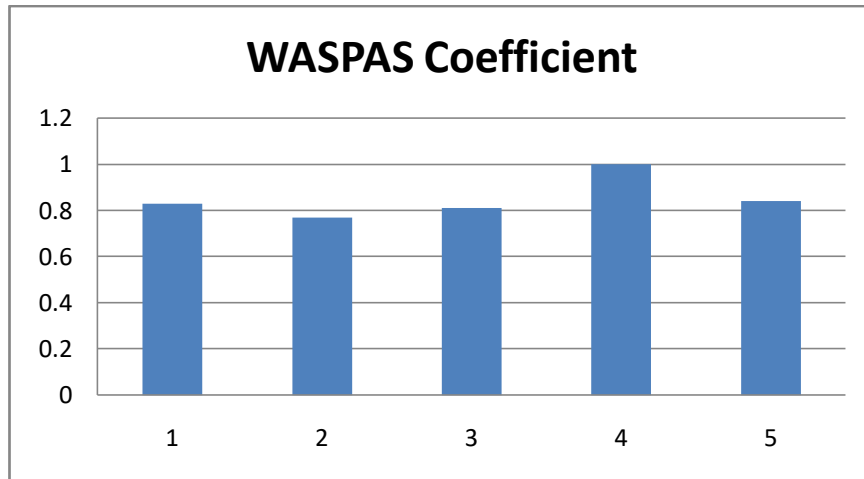


FIGURE 3. WASPAS Coefficient

TABLE 8. Rank

	Rank
The involvement and support of army	3
Application of modern logistics technology	5
Reconstruction and staff comforting	4
Government unity of leadership to plan	1
Education campaign on disaster prevention	2

Table 8 shows the Emergency Management the final result of this paper the involvement and support of army is in 3rd rank, the Application of modern logistics technology is in 5th rank, the Reconstruction and staff comforting is in 4th rank, the Government unity of leadership to plan is in 1st rank, the Education campaign on disaster prevention is in 2nd rank. The final result is done by using the WASPAS method.

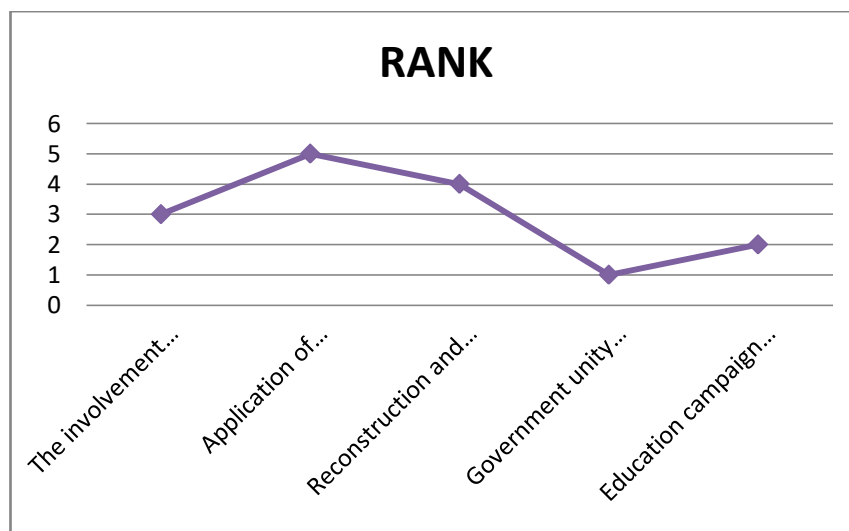


FIGURE 4. Rank

Figure 4 shows the graphical representation the final result of this paper the involvement and support of army is in third rank, the Application of modern logistics technology is in fifth rank, the Reconstruction and staff comforting is in fourth rank, the Government unity of leadership to plan is in first rank, the Education campaign on disaster prevention is in second rank. The final result is done by using the WASPAS method.

Conclusion

Emergency management is for communities of hazards Reduce vulnerability and deal with disasters it is the administrative function of creating structure. Vision Ability to deal with risks and disasters Safer, less vulnerable Emergency management to improve communities trying to WASPAS Method Weighted Sum Model (WSM) and the blessings of Weighted Product Modeling (WPM). Combining WSM and WPM, WASPAS Ranking of options increases accuracy. That segment, WASPAS is

best mixture parameter clans so as to accept in detail later. This The final conclusion of the thesis is the involvement of the military and Support is third-class, modern logistics Use of technology is in fifth grade, Restructuring and comforting employees The fourth level is that of the government for planning Leadership unity is first rate, disaster prevention The educational campaign is in second place.

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