

Ranking The Strategies of Human Resource Management During Economic Crisis Period Using Analytic Hierarchy Process

Emrah Önder¹ and Altan Doğan²

Abstract

Choosing a right action in economic crisis period is a kind of multi-criteria decision making problem for human resource management. The aim of this paper is to determine the appropriate strategy that human resource management department applies during economic crisis time. In this study, data was taken from human resource management experts. We proposed a strategy selection analysis model considering Analytic Hierarchy Process method. Subjective opinions of human resource management experts turn into quantitative form with Analytic Hierarchy Process. AHP was used for calculating the strategies' ratings.

In this study human resource management strategy alternatives including “Reducing Resources”, “Increasing Resources” and “Increasing Organizational Identification” and sub alternatives which can be used during economic crisis period were evaluated and ranked. “Increasing Organizational Identification” strategy alternative had the highest priority weight and “Reducing Resources” strategy had the lowest priority weight. “Increasing Resources” strategy is seen as more important than “Reducing Resources” strategy and this is an interesting result emerging.

JEL classification numbers: M12, M51, M5, D81.

Keywords: Human Resource Management, Economic Crisis, Analytic Hierarchy Process, Multi Criteria Process, Multi Criteria Decision Making, Ranking Strategies.

¹Istanbul University, Faculty of Business Administration, Department of Quantitative Methods, Turkey.

²Istanbul University, Faculty of Business Administration, Department of Human Resource Management, Turkey.

1 Introduction

Government influences, the competition, changes in the workforce, and general economic conditions may have an impact on the organizations and their objectives. General economic conditions indicate the overall economy's state such as economic boom or recession. The level of unemployment, inflation rates, stock market fluctuations, and interest rate are factors related to general economic conditions [1]; [2]. Today's organizations are operating in global environment. For this reason, economic conditions have become more complex and create enormous uncertainty for managers. Different economies of different countries are more closely tied together now. For example, in the early 2000s, the economic recession in the United States affected whole economies and organization. The economic problems in Asia and Europe also affected United States' stock market and companies [3].

Technological, social, ecological, political, legal, ethical and, economic factors are the organization's external environment factors. Managers take into account these factors. While they may be able to do little or nothing to change these factors, they have no other alternative but to respond them. They must identify, evaluate, and react to the factors outside the organization that may affect its operation [4]; [5]. One of the key factors affecting organizations is the economic crisis. A crisis is an unexpected problem that can lead to disaster if not resolved quickly and appropriately [6]. A financial crisis is a disturbance to financial markets, associated typically with falling asset prices and insolvency among debtors and intermediaries, which ramifies through the financial system, disrupting the market's capacity to allocate capital within the economy. In an international financial crisis, disturbances spill over national borders, disrupting the market's capacity to allocate capital internationally [7]. Financial and economic crisis attacks the enterprises, the government and the employees, in short, all actors in the economy. All of these actors face the crisis and economic recession and aftermath equally unprepared [8].

Economic crisis period impacts greatly countries, governments, societies and organizations. Human resource management and human resource management functions are also affected by the economic crisis period. The crisis demands the creation of a human resource strategy that can be adjusted to a completely new, completely changed economic environment and to a corresponding business strategy by most companies [8].

In this article. we try to determine the appropriate strategy that human resource management department applies during economic crisis time This paper is arranged into five sections. The second section shows the structure of the strategy selection in HRM during economic crisis time. The third section provides an overview of AHP method and formulations and gives information about AHP. Application and results are shown in fourth section. Finally, conclusion, remarks and discussions of the study are presented in section five.

2 Strategy Selection in HRM during Economic Crisis Time

General economic conditions or the economy of the nation, also world, on the whole and its most segments, is a vital environmental factor affecting human resource management and its functions. As a generalization, when the economy is booming it is more difficult to recruit or find qualified workers. But when a downturn is experienced or when an

economic crisis is beginning, more qualified applicants are available and it's easier to reach and recruit these people [9]. Economic factors are linked to political, legal and cultural issues. Factors such as interest rates, inflation and economic growth affect the availability of workers. When the unemployment rate increases, the number of the job seeker increases, and this make it easy to fill the jobs [10].

Human resource management is affected by economic crisis in lots of different ways. At a strategic level, human resource management operates in external economic, political and societal environment which affected by the financial crisis completely. The dynamism and volatility of the crisis have created a high degree of uncertainty. This uncertainty has an effect on the design of the human resource architecture at company level, putting a premium on flexibility. As to the operational challenges of human resource management due to the crisis, first and foremost is the decline in product demand. This causes decline in labour demand [11].

Human resources management becomes essential in view of the decisions that must take into consideration both the organizations but also those of its employees. It also has to solve problems without damaging the long-term interests of the company, to restructure the staff list and reduce salary expenses without losing valuable employees, to act firmly without destroying the trust and loyalty of the employees. At the same time the crisis situations motivate employees to have more performance, to be more dedicated, to set for themselves ever higher standards in order to keep their job [12]. In economic crisis period, human resources managers can use three main strategies. These are reducing resources, increasing resources and increasing organizational identification.

Reducing Resources: In economic crisis period, employment downsizing or reducing workforce has become a fact of working life. Most of the organizations implement employment downsizing during economic downturns as a reactive, tactical action. Many organizations downsize their workforce in an effort to save the jobs of those remaining [13].

From the report of Economist Intelligence Unit, 66% of human resource management respondents say they have identified opportunities to streamline processes and cut costs during the recession. Likewise, 47% of human resource management respondents say they have worked to remove low-performing workers more quickly [14].

Employment downsizing or reducing workforce asks for great responsibility decisions on behalf of the human resources managers. Because human resources managers have to equally meet the crisis situation and the organization's and the employees' long-term strategies. Human resources managers can use the dismissals, the technical unemployment, the part-time, the wage cut, the flexible working hours, in order to overcome the effects generated by the crisis [12].

The economic crisis changes the way human resource approaches compensation and benefits [15]. Based on daily experience, wage cut proves to be the most difficult measure that employees can handle, probably not only because this influences the life standard negatively, but also because they perceive this measure as a sign of their work's devaluation. As a consequence, it is possible to lose many valuable employees who would find an employer who would value their work. In this context, the reduction of personnel expenses often takes the form of reduction or even renouncing to elements from the wages packet, others than the basic pay (incentives, rises, etc.). If the wage cut is inevitable, it must be correlated with the reduction of the working time, or by rendering the schedule flexible. However, it is advisable that this be the last measure to be taken [12].

In this study, reduction of sources are examined under three sub strategy [16]; [17]. These three sub strategy and their sub strategies are:

Reducing workforce: Terminating contracts before they are due, Stop renewing labour contracts, Outsourcing business in order to reduce workforce, using temporary employees, increasing the use of flexible working hours, leaving without pay, reducing work hours, providing incentives to take early retirement

Reducing training budget: Reducing support for self-initiated study, reducing off-the-job training for middle managers, reducing off-the-job training for low managers, reducing off-the-job training for other employees, reducing on-the-job training, stopping the short-term training programs, stopping the long-term training programs

Reducing salary/wage/pay and benefits: Not paying employees' wage temporarily, Freezing pay increments, Reducing base pay rate, Reducing performance-based pay rate, Reducing fringe benefits

Increasing Resources: Managing crisis in a manner that causes positive consequences is seen a considerable advantage [18]. In economic crisis period, human resources managers can use the increasing resource strategy in order to increase the efficiency, attract the people who add value to organization, and retain high performer workers. In this way, human resources managers see the crisis as an opportunity and want to take advantage of the crisis. They want to use available opportunities to reduce the cost of crisis and decrease the profitability.

In this study, increasing resources strategy is examined under three sub strategy [16]; [17]. These three sub strategy and their sub strategies are:

Keeping workforce same or expanding workforce: Keeping workforce same, Expanding workforce

Increasing training budget: Increasing off-the-job training for middle managers, increasing off-the-job training for low managers, increasing off-the-job training for other employees, Increasing on-the-job training

Increasing salary/wage and fringe benefits: Increasing pay increments, increasing base pay rate, Increasing performance-based pay rate, Increasing fringe benefits

Increasing Organizational Identification: In economic crisis period, employee commitment reduces greatly. Reducing salary/wages/pays and other results of the economic crisis impact levels of trust and loyalty in employees. Most of the employees feel stressed and nervous in this period. Some of the organization's best and brightest workers are leaving to join competitors if their employers don't take immediate steps to motivate and retain them [15].

To avoid these negative outcomes human resources managers try to increase workers' organizational identification. Human resources managers work to prevent the unfavorable situation, workers' despondency and job dissatisfaction in crisis period. They also try to increase organizational identification in order to ensure that the human resources policies are acceptable during crisis. In this study, increasing organizational identification strategy is examined under three sub strategy [16]; [17]; [19]. The three sub strategies are:

- Working to increase employee's job satisfaction
- Working to increase employee's organizational identification
- Working to increase employee's motivation and commitment

3 Analytic Hierarchy Process

AHP was developed in the 1970s by Thomas Saaty is a multi-criteria decision making (MCDM) methodology [20]. It has been used extensively for analyzing complex decisions. The approach can be used to help decision-makers for prioritizing alternatives and determining the optimal alternative using pair-wise comparison judgments [21]; [22]. Weighting the criteria by multiple experts avoids the bias decision making and provides impartiality [23].

The AHP is a selection process that consists of following steps [24], [25]; [26]:

1. Define the problem and determine the criteria. Factors and related sub factors must be correlated [27].
2. Structure the decision hierarchy taking into account the goal of the decision.
3. Construct a set of all judgments in a square comparison matrix in which the set of elements is compared with itself (size nxn) by using the fundamental scale of pair-wise comparison shown in Table 1. Assign the reciprocal value in the corresponding position in the matrix. Total number of comparison is n.(n-1)/2 (Lee, 2012).

Table 1: The fundamental scale of pair-wise comparison for AHP

Intensity of Importance	Definition	Explanation
1	Equal importance	Two activities have equal contribute to the objective
3	Moderate importance	Experience and judgment slightly favor one activity over another.
5	Strong importance	Experience and judgment strongly favor one activity over another
7	Very strong on demonstrated importance	An activity is favored very strongly over another
9	Extreme importance	The evidence favoring one activity over another is of the highest possible order of affirmation
2,4,6,8	For compromise between the above values	Sometimes one needs to interpolate a compromise judgment numerically

4. Use overall or global priorities obtained from weighted values for weighting process. For synthesis of priorities obtain the principal right eigenvector and largest eigenvalue. Matrix $A=(a_{ij})$ is said to be consistent if $a_{ij} \cdot a_{jk} = a_{ik}$ and its principal eigenvalue (λ_{max}) is equal to n.

The general eigenvalue formulation is:

$$Aw = \begin{bmatrix} 1 & w_1/w_2 & \dots & w_1/w_n \\ w_2/w_1 & 1 & \dots & w_2/w_n \\ \dots & \dots & \dots & \dots \\ w_n/w_1 & w_n/w_2 & \dots & 1 \end{bmatrix} \begin{bmatrix} w_1 \\ \dots \\ \dots \\ w_n \end{bmatrix} = nw \tag{1}$$

$$a_{ij} = w_i / w_j, \quad i, j = 1, 2, \dots, n \tag{2}$$

$$Aw = \lambda_{max} w \tag{3}$$

For measure consistency index (CI) adopt the value:

$$CI = (\lambda_{\max} - n) / (n - 1) \quad (4)$$

Accept the estimate of w if the consistency ratio (CR) of CI that random matrix is significant small. If CR value is too high, then it means that experts' answers are not consistent [27]; [20]. When CR value is less than 0.10 consistency of the comparisons is appropriate [27]. The CR is obtained by comparing the CI with an average random consistency index (RI).

$$CR = \frac{CI}{RI} \quad (5)$$

The following gives the average RI:

Table 2: Average RI values

n	1	2	3	4	5	6	7	8	9	10
Random Consistency Index (RI)	0	0	0.52	0.89	1.11	1.25	1.35	1.40	1.45	1.49

Briefly, maximized eigenvalue, CI and CR are found to obtain the weights of each criterion [27]. Experts are asked to compare the criteria on a pair-wise basis to determine their relative importance. AHP was used in order to determine which strategies are important and precedence order of all sub strategy alternatives, including “Reducing Resources”, “Increasing Resources” and “Increasing Organizational Identification”.

4 Application of Ranking HRM Strategies In Economic Crisis Time

To apply proposed method a real world human resource strategy selection problem was solved. In this strategy ranking problem there are 33 sub strategies. The hierarchical structure to select the best strategy is shown in Figure 1. The questionnaires conducted between the dates 1-20 April 2013 is answered by 10 experts. Data were collected from the experts via web based survey. They are asked to compare the criteria at a given level on a pair-wise basis to identify their relative precedence.

AHP is an effective decision making method especially when subjectivity exists and it is very suitable to solve problems where the decision criteria can be organized in a hierarchical way into sub-criteria. The findings of previous studies about HRM strategies during economic crisis time were first identified by literature review and decision team's decisions. Experts expressed or defined a ranking for the strategies in terms of importance/weights. Each experts is asked to fill “checked mark” in the 9-point scale evaluation table. The AHP allows group decision making. One of the main advantages of the AHP method is the simple structure. Alternatives to be considered in the selection of strategy are determined by literature review and HRM experts. Past experience and the back-ground of the experts are utilized in the determination of the strategies and 33 important alternatives to be used for strategy selection are established. The backgrounds of experts are shown in Table 3.

Table 3: The backgrounds of participant (human resource management experts)

<i>Expert ID</i>	<i>Sector</i>	<i>Department</i>	<i>Title</i>	<i>Experience</i>
1	Education	Human Resource Management	PhD	12
2	Iron and Steel	Human Resource Management	Manager	12
3	Health	Human Resource Management	Director	17
4	Banking	Human Resource Management	Manager	17
5	Textile	Human Resource Management	Regional Manager	17
6	Finance	Human Resource Management	Administrator	12
7	Production	Human Resource Management	Chief	10
8	Consultancy	Human Resource Management	Senior Consultant	10
9	Production	Human Resource Management	Personnel	2
10	Banking	Human Resource Management	Training Manager	16

33 strategy alternatives were used in evaluation and decision hierarchy is established accordingly. Decision hierarchy structure with the determined alternative strategies is provided in Figure 3.

There are four levels in the decision hierarchy structured for strategy selection problem. The overall goal of the decision process is “Determining human resource department strategy in economic crisis time” and it is the first level of the hierarchy. The strategy alternatives are on the second, third and fourth level of the hierarchy. After forming the decision hierarchy for the problem, the weights of the strategies to be used in evaluation process are calculated by using AHP method. In this phase, the experts in the expert team are given the task of forming individual pairwise comparison matrix by using the Saaty’s 1-9 scale. Geometric means of experts’ choice values are found to obtain the pairwise comparison matrix on which there is a consensus. The results obtained from the computations based on the pairwise comparison matrix provided in Table 4, are presented in Table 5.

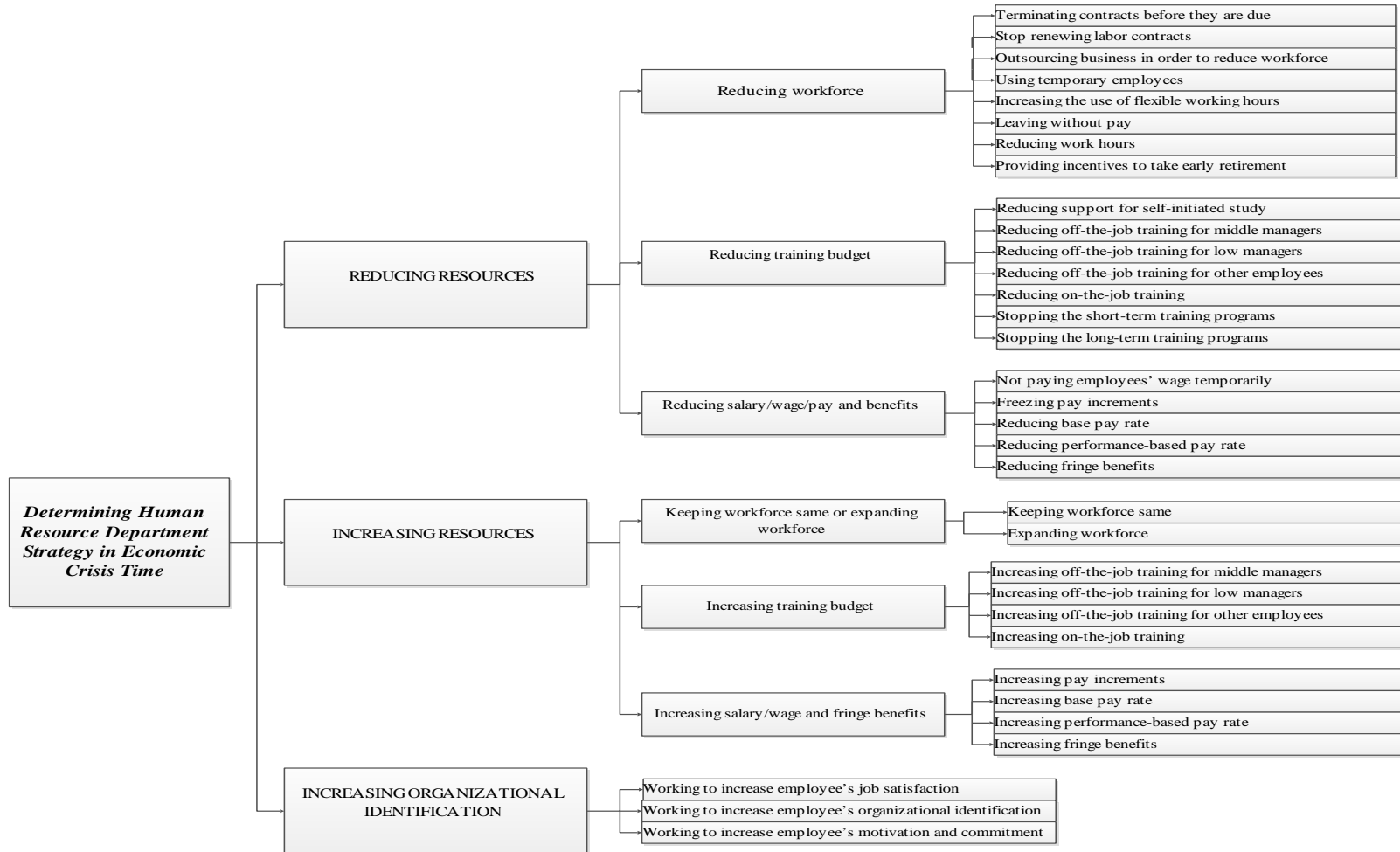


Figure 1: Hierarchical structure for strategy selection

Table 4: Local and global weights of criteria

CRITERIA	LOCAL WEIGHTS	SUB CRITERIA	LOCAL WEIGHTS	SUB CRITERIA	LOCAL WEIGHTS	GLOBAL WEIGHTS		
Reducing Resources	0.202	Reducing workforce	0.174	Terminating contracts before they are due	0.05499	0.00193		
				Stop renewing labor contracts	0.09241	0.00324		
				Outsourcing business in order to reduce workforce	0.12447	0.00437		
				Using temporary employees	0.11690	0.00410		
				Increasing the use of flexible working hours	0.18122	0.00636		
				Leaving without pay	0.14702	0.00516		
				Reducing work hours	0.12129	0.00426		
		Reducing training budget	0.427	Reducing support for self-initiated study	0.20347	Providing incentives to take early retirement	0.16170	0.00567
						Reducing off-the-job training for middle managers	0.13754	0.01184
						Reducing off-the-job training for low managers	0.16579	0.01427
						Reducing off-the-job training for other employees	0.18798	0.01618
						Reducing on-the-job training	0.05496	0.00473
						Stopping the short-term training programs	0.11124	0.00957
		Reducing salary/wage/pay and benefits	0.399	Stopping the long-term training programs	0.13901	Not paying employees' wage temporarily	0.05883	0.00474
						Freezing pay increments	0.33738	0.02716
						Reducing base pay rate	0.10415	0.00838
						Reducing performance-based pay rate	0.16643	0.01340
						Reducing fringe benefits	0.33321	0.02682
Increasing Resources	0.226	Keeping workforce same or expanding workforce	0.566	Keeping workforce same	0.72200	0.09244		
				Expanding workforce	0.27800	0.03559		
		Increasing training budget	0.230	Increasing off-the-job training for middle managers	0.29727	Increasing off-the-job training for low managers	0.17979	0.00934
						Increasing off-the-job training for other employees	0.13753	0.00714
						Increasing on-the-job training	0.38541	0.02002
		Increasing salary/wage and fringe benefits	0.204	Increasing pay increments	0.18752	Increasing base pay rate	0.23497	0.01083
						Increasing performance-based pay rate	0.40700	0.01876
						Increasing fringe benefits	0.17050	0.00786
						Increasing organizational identification	0.16588	0.09493
		Increasing Organizational Identification	0.572	Working to increase employee's job satisfaction	0.39030	Working to increase employee's organizational identification	0.44382	0.25400
Working to increase employee's motivation and commitment	0.39030					0.22337		

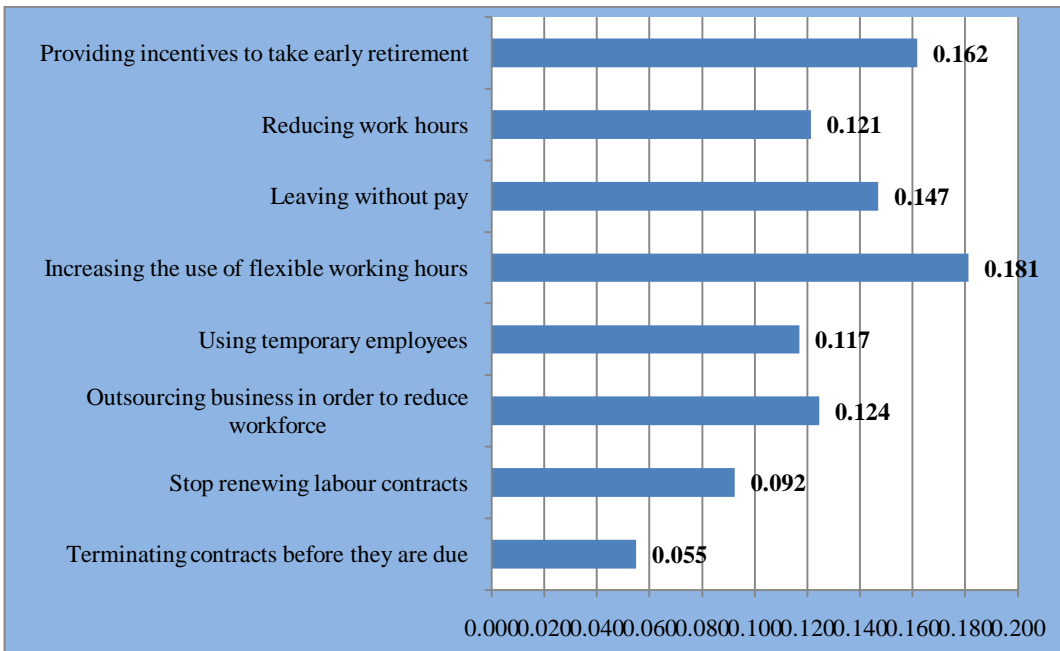
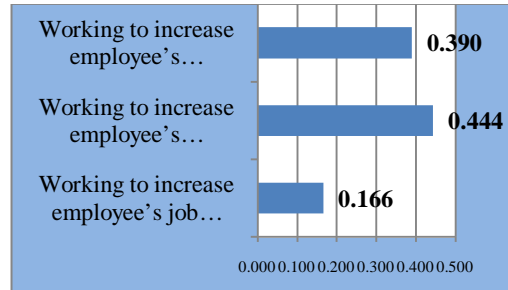
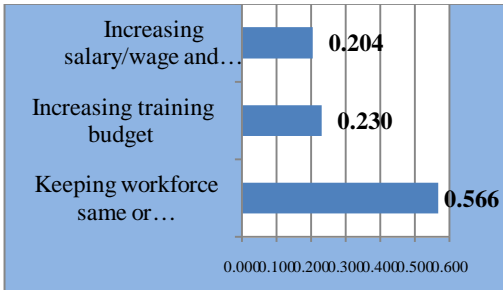
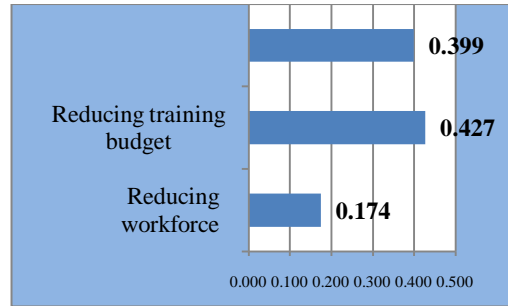
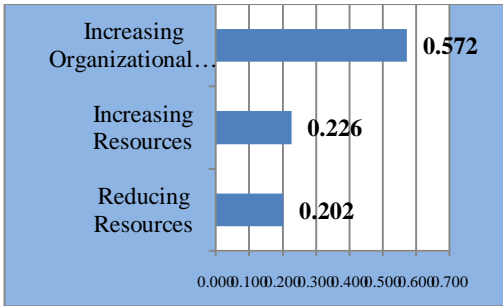


Figure 2: Resulting weights of criteria obtained with AHP

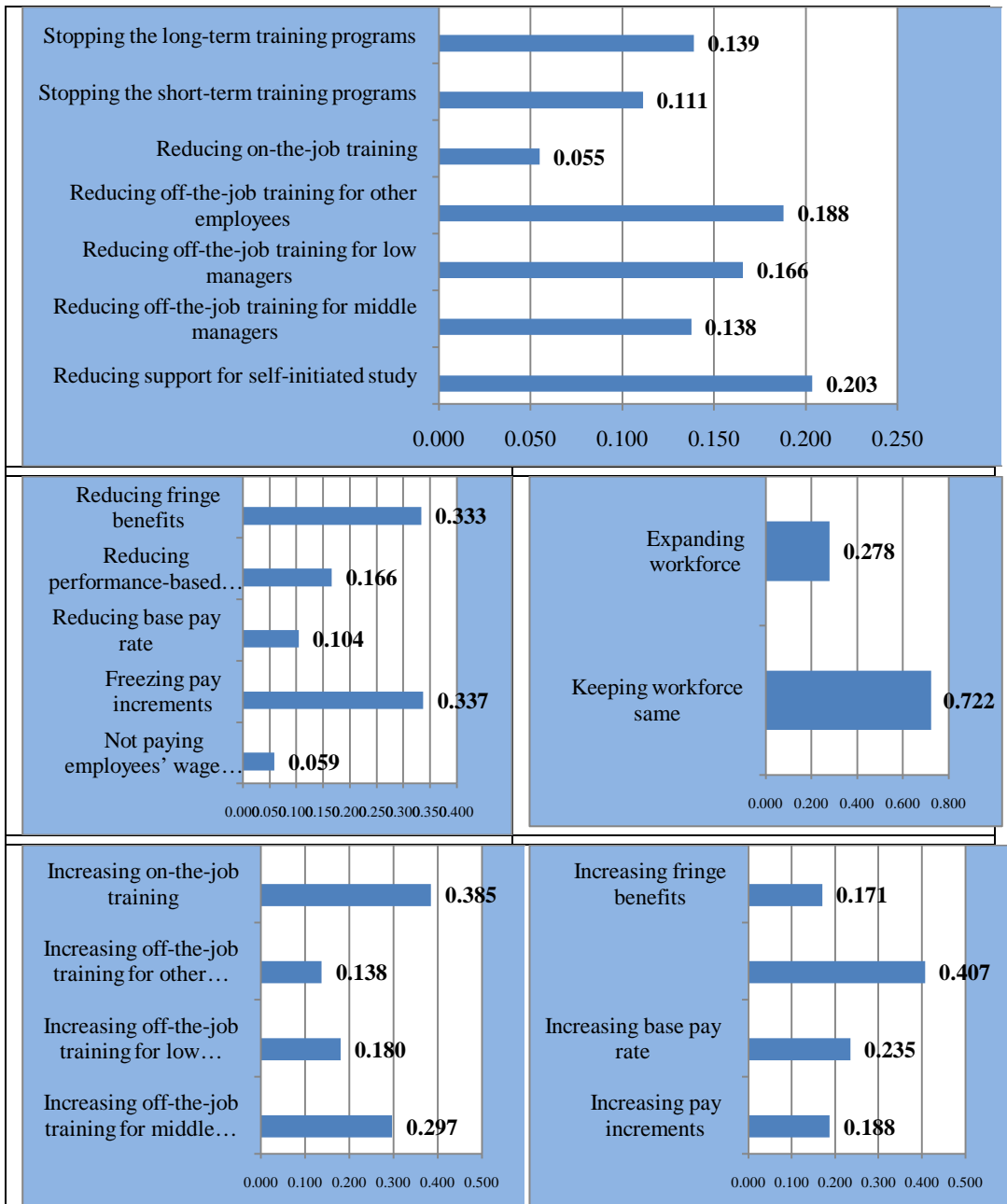


Figure 3: Resulting weights of criteria obtained with AHP

Table 5: Resulting weights, λ_{\max} , CI, RI and CR values of criteria and sub-criteria obtained with AHP

Criteria	Geometric Mean Weights (w)	λ_{\max} CI and RI	CR
Terminating contracts before they are due	0.00193		
Stop renewing labour contracts	0.00324		
Outsourcing business in order to reduce workforce	0.00437	$\lambda_{\max}=8.34$ 1	0.035
Using temporary employees	0.00410	CI=0.049	
Increasing the use of flexible working hours	0.00636	RI=1.41	
Leaving without pay	0.00516		
Reducing work hours	0.00426		
Providing incentives to take early retirement	0.00567		
Reducing support for self-initiated study	0.01751		
Reducing off-the-job training for middle managers	0.01184		
Reducing off-the-job training for low managers	0.01427	$\lambda_{\max}=7.29$ 9	0.038
Reducing off-the-job training for other employees	0.01618	CI=0.050	
Reducing on-the-job training	0.00473	RI=1.32	
Stopping the short-term training programs	0.00957		
Stopping the long-term training programs	0.01196		
Not paying employees' wage temporarily	0.00474		
Freezing pay increments	0.02716	$\lambda_{\max}=5.19$ 6	0.044
Reducing base pay rate	0.00838	CI=0.049	
Reducing performance-based pay rate	0.01340	RI=1.12	
Reducing fringe benefits	0.02682		
Keeping workforce same	0.09244	-	-
Expanding workforce	0.03559	-	-
Increasing off-the-job training for middle managers	0.01544		
Increasing off-the-job training for low managers	0.00934	$\lambda_{\max}=4.09$ 3	0.035
Increasing off-the-job training for other employees	0.00714	CI=0.031	
Increasing on-the-job training	0.02002	RI=0.9	
Increasing pay increments	0.00864		
Increasing base pay rate	0.01083	$\lambda_{\max}=4.02$ 7	0.010
Increasing performance-based pay rate	0.01876	CI=0.009	
Increasing fringe benefits	0.00786	RI=0.9	
Working to increase employee's job satisfaction	0.09493	$\lambda_{\max}=3.00$ 0	0.000
Working to increase employee's organizational identification	0.25400	CI=0.000	
Working to increase employee's motivation and commitment	0.22337	RI=0.58	

The “Working to increase employee’s organizational identification” (0.254), “Working to increase employee’s motivation and commitment” (0.223), “Working to increase employee’s job satisfaction” (0.095) and “Keeping workforce same” (0.092) are determined as the four most important alternatives in the strategy selection process by AHP. Consistency ratios of the all pairwise comparison matrix are calculated less than 0.1. So the weights are shown to be consistent and they are used in the strategy selection process. The least suitable strategy alternatives are “Terminating contracts before they are due” (0.002), “Stop renewing labour contracts” (0.003), “Using temporary employees” (0.0041) and “Reducing work hours” (0.0042).



Figure 4: Global weights of all sub-criteria obtained with AHP

5 Conclusion

Strategy selection in human resource department becomes more important decision during crisis time. Choosing the suitable strategy brings advantages in competitive business environments. In this study human resource management strategy alternatives including “Reducing Resources”, “Increasing Resources” and “Increasing Organizational Identification” and sub alternatives were evaluated and ranked. “Working to increase employee’s organizational identification” strategy alternative had the highest priority weight (0.254). Using multi criteria decision technique such as AHP method provides a useful approach for Human Resource Departments of the companies for selecting the best strategy with establishing a consensus. Main purpose of this paper is to use AHP method to select suitable strategy for the human resource departments during economic crisis time. The proposed methodology can also be applied to any other strategy selection problem involving multiple and conflicting criteria.

In this study human resource management strategy alternatives including “Reducing Resources”, “Increasing Resources” and “Increasing Organizational Identification” and sub alternatives which can be used during economic crisis period were evaluated and ranked. “Increasing Organizational Identification” strategy alternative had the highest priority weight and “reducing resources” strategy had the lowest priority weight. “Increasing Resources” strategy is seen as more important than “Reducing resources” strategy and this is an interesting result emerging.

Having evaluated the Increasing Organizational Identification strategy as highest priority and reducing resources strategy as lowest priority can be because of the thought that workers should not lose their main living source. Companies and human resources managers respect to the operations to increase the potential of available sources instead of reducing sources. In this context, activities which are increasing the workers commitment, satisfaction and motivation are prioritized as most important strategies. It can be seen that reducing the workforce, salary/wage/pay, training budget are respected as less prioritized strategies when sub strategies are checked. Increasing the use of flexible working hours is evaluated as highest priority in reducing the workforce strategy while terminating contracts is seen as the last thing to do.

As a sub strategy, reducing training budget has been evaluated as highest priority strategy in reducing the resources strategy. Reducing support for self-initiated study is ranked as highest priority whereas reducing on-the-job training is ranked as lowest. We can say that human resources managers consider continuing general trainings but stopping individuals ones.

Freezing pay increments and reducing fringe benefits are evaluated as highest priority strategy in reducing salary/wage/pay. During crisis, freezing pay increments and reducing fringe benefits are mostly common situations; also this has been seen in this study. Not paying employees’ wage temporarily and reducing base pay rate are evaluated as lowest priority strategies. Workers need their salary/wage/pay to live which is their only income. Based on these idea human resources managers are considered not paying employees’ wage temporarily and reducing base pay rate as lowest priority strategies.

Keeping workforce same or expanding workforce strategies are evaluated as highest priority strategies in increasing resources strategies. Keeping workforce same is the highest priority strategy. In this situation by keeping the workforce same, negative conditions, despondency, dissatisfaction which may be occurred because of the termination of workers contracts, can be prevented.

The most important strategies in increasing training budget sub strategy are found as increasing the on-the-job training and increasing off-the-job training for middle manager. Based on this we can say that training should continue in companies and this need can be ensured by on-the-job training which is considerably cheaper. Again by prioritizing middle managers trainings companies can aim middle managers to enrich the company so that they can get over crisis with less damage.

Increasing the performance-based pay rate has been evaluated as highest priority strategy in Increasing salary/wage and fringe benefits sub strategy. This can be understood as during crisis workers performances should be emphasized.

References

- [1]. L. L. Byars and L. W. Rue, *Human Resource Management*, Ninth Edition, McGraw-Hill International Edition, The McGraw-Hill Companies, Inc., New York, 2008.
- [2]. S. P. Robbins and M. Coulter, *Management*, Tenth Edition, Pearson International Edition, Pearson Education, Inc., Upper Saddle River, New Jersey, 2009.
- [3]. R. L. Daft, *New Era of Management*, Ninth Edition, International Edition, South-Western, Cengage Learning, Canada, 2010.
- [4]. H. Wehrich, M. V. Cannice, and H. Koontz, *Management: A Global and Entrepreneurial Perspective*, 12th Edition, Tata McGraw Hill Education Private Limited, New Delhi, 2009.
- [5]. R. W. Griffin, *Management*, 9th edition, Houghton Mifflin Company, Boston, 2008.
- [6]. J. R. Schermerhorn, Jr., *Introduction to Management*, 10th Edition, International Student Version, John Wiley & Sons (Asia) Pte Ltd., Asia, 2010.
- [7]. B. Eichengreen, and R. Portes, The Anatomy of Financial Crises, *Threats to International Financial Stability*, Richard Portes, Alexander K. Swoboda (ed.), Cambridge University Press, Great Britain, 1987.
- [8]. B. Horváth, The Role of HR in the Crisis–HR Strategy of Today is the Success of Tomorrow No 1005, *Working Paper Series from Óbuda University*, Keleti Faculty of Business and Management, 2010.
- [9]. R. W. Mondy, *Human Resource Management*, Eleventh Edition, International Edition, Pearson Education, Inc., Upper Saddle River, New Jersey, 2010.
- [10]. R. L. Mathis and J. H. Jackson, *Human Resource Management*, Twelfth edition, South-Western, OH, USA, 2008.
- [11]. S. Zagelmeyer and P. J. Gollan, Exploring Terra Incognita: Preliminary Reflections on the Impact of the Global Financial Crisis upon Human Resource Management, *The International Journal of Human Resource Management*, **23 (16)**, (2012), 3287-3294.
- [12]. F. Ștefănescu and D. Dărăbăneanu, The Human Resources Management in the Context of the Economic Crisis, *Romanian Economic and Business Review*, **6 (1)**, (2011), 104-117.
- [13]. W. F. Cascio, *Employment Downsizing and Its Alternatives: Strategies for Long-Term Success*, SHRM Foundation, Investing in the Future of HR, 2009. Retrieved April 17, 2013, from:
<http://www.shrm.org/about/foundation/products/documents/downsizing%20epg-%20final.pdf>

- [14]. E. Bennett, The role of HR in Uncertain Times, *Economist Intelligence Unit Report*, 2009.
- [15]. A. Verma, Future HR Challenges in the Era of Economic Crises, *International Journal of Research and Development - A Management Review (IJRDMR)*, **1 (1)**, (2012), 53-57.
- [16]. J. Shen and B. D'Netto, Impact of the 2007–09 Global Economic Crisis on Human Resource Management among Chinese Export-Oriented Enterprises, *Asia Pacific Business Review*, **18 (1)**, (2012), 45–64.
- [17]. F. Ksk, Kriz Dneminin İnsan Kaynakları Ynetimi Uygulamalarına Etkileri: Ampirik Bir İnceleme, *Amme İdaresi Dergisi*, **34 (1)**, (2001), 15-32.
- [18]. T. Asunakutlu, B. Safran and E. Tosun, Kriz Ynetimi zerine Bir Arařtırma, *Dokuz Eyll niversitesi Sosyal Bilimler Enstits Dergisi*, **5 (1)**, (2003), 141-163.
- [19]. O. Ananvoranich and E. W. K. Tsang, The Asian Financial Crisis and Human Resource Management in Thailand, *Int. Studies of Mgt. & Org.*, **34 (1)**, (2004), 83–103.
- [20]. T. L. Saaty, *The Analytic Hierarchy Process*, McGraw-Hill, New York, 1980.
- [21]. M. J. Liberatore and R. L. Nydick, Group Decision Making In Higher Education Using The Analytic Hierarchy Process, *Research In Higher Education*, **38 (5)**, (1997), 593-614.
- [22]. K. E. Yoo and Y. C. Choi, Analytic Hierarchy Process Approach For Identifying Relative Importance Of Factors To Improve Passenger Security Checks At Airports, *Journal of Air Transport Management*, **12**, (2006), 135–142.
- [23]. M. Dagdeviren, S. Yavuz and N. Kilinc, 2009. Weapon Selection Using the AHP and TOPSIS Methods Under Fuzzy Environment, *Expert Systems with Applications*, **36**, (2009), 8143-8151.
- [24]. T. L. Saaty, How To Make Decision: The Analytic Hierarchy Process, *European Journal of Operational Research*, **48**, (1990), 9-26.
- [25]. T. L. Saaty, Decision Making With The Analytic Hierarchy Process, *Int. J. Services Sciences*, **1 (1)**, (2008), 83-98.
- [26]. T. L. Saaty and L. G. Vargas, *Models, Methods, Concepts & Applications of the Analytic Hierarchy Process*, International Series in Operations Research & Management Science, Kluwer Academic Publishers, 2001.
- [27]. S. Lee, W. Kim, Y. M. Kim and K. J. Oh, Using AHP to Determine Intangible Priority Factors for Technology Transfer Adoption, *Expert Systems with Applications*, **39**, (2012), 6388-6395.