Explaining the effects of factors affecting efficiency and effectiveness of human resources in Gachsaran Oil Company

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Abstract: This study explains the effects of factors affecting human resources efficiency and effectiveness in Gachsaran Oil Co. the research method is descriptive- survey (non-experimental) and research plan is Solidarity. The aim of study is applicable and research. The statistical population was 150 people according to information obtained from human resources president. The sample size was 108 people according to Morgan Table. 108 questionnaires were distributed among sample participants and then, questionnaires were completed and returned. Research tool included effectiveness questionnaire with Cronbach's alpha coefficient of 0.741 and efficiency with Cronbach's alpha coefficient of 0.714. Questionnaires were analyzed using SPSS and LISREL software and descriptive and inferential statistics. Research findings show that there is relationship between factors affecting efficiency and effectiveness improvement of human resources. Efficiency and effectiveness can be predicted with respect to Beta coefficients, through effects of factors affecting efficiency and effectiveness by multiple regression method and using SPSS software as stepwise method. Also, LISREL software was used in order to identify priority and factors affecting effectiveness and efficiency.

Key words: Efficiency; Effectiveness; Human Resources and Gachsaran Oil Co

1. Introduction

Rapid changes and technology effects on all organizations especially industry organizations, and neglecting it will stop activities and will collapse organization rapidly in long-term. Organizations constitute from important elements such as human resource capital, technology and management; many experts believe that human resource is the most important element and effective component of trade and economic activity since improving efficiency and achieving organizational aims depend on correct and rational functions of these resources of organization; management group is the main component of human resources classification, which plays an important role in continuation of company's activities. Attracting skilled people, with emphasis on managers is called development of human resources in human resource management process that is an inevitable necessity that organizations need it for survival, development in changing world and today evolution.

The role of human resource and especially human resource management are very important in order to stay and compete in business and commerce so that it is symbol of strength. Since as we know, and economic enterprises know, human resource is its owner and will be implemented by management guidance that is objective ability.

Human resource is the most important factor in improving productivity and controlling production costs. Employing experts in right place will improve production. Improving productivity must be considered at all levels including individuals, families, organizations and countries. Productivity is a technical, economic and cultural issue that its workability will be created through participation of person in community and management of organization with their environment. Today, what is appeared as progress factor in developed countries is productivity increase (Taheri, 1999).

According to mentioned cases, following items can be outlined on importance of study. Workforces are used in refineries with very specific requirements and their special conditions in work and life place effect on productivity (efficiency and effectiveness) of organization.

Finding cases that can increase the productivity of human resources working in such conditions is very important. Therefore, the researcher explains the effects of factors improving efficiency and effectiveness of human resources on productivity in Gachsaran oil Co. Therefore, essential problem of this study is to explain the effects of factors improving efficiency and effectiveness of human resources on productivity in Gachsaran oil Co. so that empirical and research wealth of this field is increased and effective achievements are obtained in improving the efficiency and effectiveness of human resources and productivity.

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2. Literature

2.1. Effectiveness

Piter Deraker, as experts of management science, believes that effectiveness means to do right works. According to Deraker, effectiveness is the key to organization success. Tools, patterns and best applications of knowledge management that are along with knowledge sharing culture, form the working environment and increase the effectiveness of organization (Heidari Tafreshi and Khadivi, 2012).

Improving effectiveness is one of the factors affecting organization improvement and several factors may play important role in this regard. Given the importance of human factor in organizations,

considering it is of high priority. Understanding factors that influence employees' effectiveness can help managers in order to increase effectiveness of employees and organization effectiveness through management of these factors (Taheri, 1999).

Beneficiaries' satisfaction model view organization as systems that are designed in order to satisfy each of beneficiaries through governing organization coalition as need for their survival. These were triple efforts that have been implemented by Scott C. Sure and Cameroon in order to integrate effectiveness literature that reflects consensus and disagreement. The relationships between these three models, organizational effectiveness and extent of organizational effectiveness have been provided in literature of Queen and Rurbaf (Robbins, 2009).

Table 1: Eight focuses of organizational effectiveness criteria

Definitions	Features	Focuses
Adjusting and matching needs with external conditions affecting organization	Flexibility	OFM
Expansion of workforce and throughput of organization steadily	Gain and development of resources	OFM
Determining clear aims and developing operational plans of organization	Setting aim and Planning	OCM
Increased quantity and quality of outputs compared to inputs of organization (system)	Efficiency and Productivity	OCE
Establishing communication and information channels in order to obtain and use information faster and more desirable	Information Management	PCM
Establishing work discipline and continuing uniform process of organization operations	Control and retention of stability	PCE
Implementing assigned activities coordinately and establishing mutual trust between employees	Human resource spirit and solidarity	PEM
Human resource education in order to gain more knowledge, experience and skills	Development and improvement of human resources	PFE

2.2. Factors affecting effectiveness

According to results of "Goodman" and "Pening" study in 1977 and "Steamz" in 1975, it seems that effectiveness of organization is affected by following 4 basic variables which are controlled by Manager (Robbins, 2009):

Organizational features: features such as structure and technology

Environmental features, features such as economic and market conditions

Employee features: features such as job performance and job suspension

Policies: such as policies and regulations and provisions

2.3. Efficiency

Efficiency is related to accurate performance of tasks in organization. The decisions are made with the aim of reducing costs, increasing productivity and improving product quality. Efficiency is output to standard output ratio. The efficiency means achieving organization aims with minimum cost and undesirable consequences. Apparently, organization

efficiency can be examined through comparing efficiency of operation and used resources; thus, the organization efficiency is equal to operational efficiency ratio to consumed resources (Eqtedari, 1995).

Administrative policies in order to increase efficiency of employees:

1. Rational restriction of decision-making and policy-making resources of employees, so that participants in these affairs have much more knowledge and information on behavioral sciences and ability in order to recognize and analyze employees problems so that aims of this organization are accessible;

2. Flexibility of organizational formation for human resources and value them so that we give more value to organization's employees and not their position:

3. The participation of employees in organization affairs and using their ideas and opinions;

4. Emphasis on necessity of employee evaluation and it effects in management process (Shahbazi, 1997).

2.4. Factors affecting efficiency

Factors that effect on productivity usually affect efficiency and increase or decrease it.

Factors affecting productivity are divided into two main categories of intra- organization (authority and power of organization) and extra- organization or environment factors that are beyond the control of organization in short term are:

Intra- organization factors include:

Hardware factors: such as machinery and equipment, technology, raw materials, land and financial resources;

Software factors: such as information, directions, maps and formulas;

Human ware or brain ware factors:

A) Human resource: Ability, expertise, experience, education, motivation, workplace and management attitudes;

B) Management: style philosophy and management, access to information technologies

Extra- organizations factors include factors that are are highly effective on productivity but firms are not able to control them;

Such as: government policies, national and international laws and regulations, workplace, access to financial, electricity, water, transport, communication resources and raw materials (Taheri, 1999).
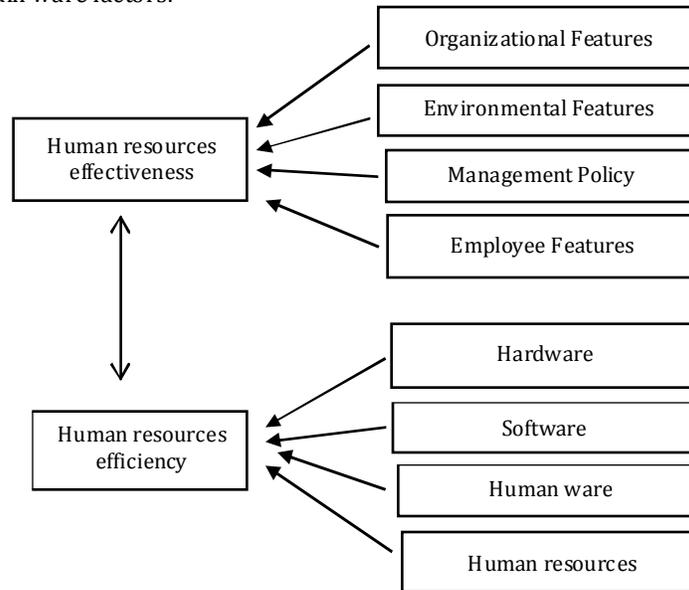

Fig. 1: Conceptual model of study

3. Hypotheses

1. There is relationship between organizational features and effectiveness of human resources.
2. There is relationship between environmental features and effectiveness of human resources.
3. There is relationship between management policy and effectiveness of human resources.
4. There is relationship between employee features and effectiveness of human resources.
5. There is relationship between hardware factors and efficiency of human resources.
6. There is relationship between software factors and efficiency of human resources.
7. There is relationship between human ware factors and efficiency of human resources.
8. There is relationship between human resource factors and efficiency of human resources.
9. There is relationship between effectiveness and efficiency of human resources in Gachsaran Oil Co.

4. Methods

The current research method is descriptive-survey (non- experimental) and research plan is Solidarity. The aim of study is applicable and survey.

This study is sectional in terms of time horizon since it is done in a time distance.

The statistical population consisted of Gachsaran Oil Co. that was 150 people according to information obtained from human resources president. Sampling is stratified sampling method. The sample size was 108 people according to Morgan Table.

Shahsavari effectiveness questionnaire (2012) was used in order to evaluate the organizational effectiveness. Cronbach's alpha is equal to 0.741 for effectiveness questionnaire (researcher made). Efficiency standard questionnaire containing 11 questions was used in order to evaluate organizational efficiency. Cronbach's alpha coefficient is equal to 0.714 for efficiency questionnaire. Total alpha is equal to 0.712, so reliability of questionnaire is confirmed.

Data analysis was done using multiple regression statistical testing (multivariate), Pearson correlation coefficient using (SPSS) software and path analysis using LISREL software.

5. Data analysis

The first hypothesis: There is relationship between organizational features and effectiveness of human resources.

Table 2: Results of Pearson test

Relationship and reliability	Sig	Significance level	Pearson correlation coefficient	Variable
Positive and significant	0.000	0.05	0.562	Effectiveness
				Organizational features

As can be seen in table, the correlation is 0.562, therefore the hypothesis of relationship between organizational features and effectiveness of human resources is confirmed due to the fact that Sig is smaller than significance level of (0.000 < 0.05).

The second hypothesis: There is relationship between environmental features and effectiveness of human resources.

Table 3: Results of Pearson test

Relationship and reliability	Sig	Significance level	Pearson correlation coefficient	Variable
Positive and significant	0.000	0.05	0.692	Effectiveness
				Environmental features

As can be seen in table, the correlation is 0.692, therefore the hypothesis of relationship between environmental features and effectiveness of human resources is confirmed due to the fact that Sig is smaller than significance level of (0.000 < 0.05).

The third hypothesis: There is relationship between management policy and effectiveness of human resources.

Table 4: Results of Pearson test

Relationship and reliability	Sig	Significance level	Pearson correlation coefficient	Variable
Positive and significant	0.000	0.05	0.830	Effectiveness
				Management Policy

As can be seen in table, the correlation is 0.830, therefore the hypothesis of relationship between management policy and effectiveness of human resources is confirmed due to the fact that Sig is smaller than significance level of (0.000 < 0.05).

The forth hypothesis: There is relationship between employee features and effectiveness of human resources.

Table 5: Results of Pearson test

Relationship and reliability	Sig	Significance level	Pearson correlation coefficient	Variable
Positive and significant	0.000	0.05	0.791	Effectiveness
				Employee Features

As can be seen in table, the correlation is 0.791, therefore the hypothesis of relationship between employee features and effectiveness of human resources is confirmed due to the fact that Sig is smaller than significance level of (0.000 < 0.05).

The fifth hypothesis: There is relationship between hardware factors and efficiency of human resources.

Table 6: Results of Pearson test

Relationship and reliability	Sig	Significance level	Pearson correlation coefficient	Variable
Positive and significant	0.000	0.05	0.664	Efficiency
				Hardware factors

As can be seen in table, the correlation is 0.664, therefore the hypothesis of relationship between hardware factors and efficiency of human resources is confirmed due to the fact that Sig is smaller than significance level of (0.000 < 0.05).

The sixth hypothesis: There is relationship between software factors and efficiency of human resources.

Table 7: Results of Pearson test

Relationship and reliability	Sig	Significance level	Pearson correlation coefficient	Variable
Positive and significant	0.000	0.05	0.673	Efficiency
				Software factors

As can be seen in table, the correlation is 0.673, therefore the hypothesis of relationship between software factors and efficiency of human resources is confirmed due to the fact that Sig is smaller than significance level of (0.000 < 0.05).

The seventh hypothesis: There is relationship between human ware factors and efficiency of human resources.

Table 8: Results of Pearson test

Relationship and reliability	Sig	Significance level	Pearson correlation coefficient	Variable
Positive and significant	0.000	0.05	0.575	Efficiency
				Human ware factors

As can be seen in table, the correlation is 0.575, therefore the hypothesis of relationship between human ware factors and efficiency of human resources is confirmed due to the fact that Sig is smaller than significance level of (0.000 < 0.05).

The eighth hypothesis: There is relationship between human resource factors and efficiency of human resources.

Table 9: Results of Pearson test

Relationship and reliability	Sig	Significance level	Pearson correlation coefficient	Variable
Positive and significant	0.000	0.05	0.548	Efficiency
				Human resource factors

As can be seen in table, the correlation is 0.548, therefore the hypothesis of relationship between human resource factors and efficiency of human resources is confirmed due to the fact that Sig is smaller than significance level of (0.000 < 0.05).

The ninth hypothesis: The effectiveness of human resources and efficiency of human resources can be predicted in Gachsaran Co. using their effective factors.

As can be seen in tables 10 and 11, correlation efficiency of all data is determined.

Table 10: Results of Pearson test

Variable	R^2	R	sig	Standard deviation	Beta coefficient	t- statistics
Organizational Features	0.616	0.785	0.000	0.04	0.280	2.80
Environmental Features	0.814	0.902	0.000	0.28	0.292	3.83
Management Policy	0.898	0.948	0.001	1.1	0.324	2.57
Employee Features	1	1	0.000	0.45	0.469	2.66

The factors are added one by one to table in regression model, that is, firstly we entered independent variable of organizational features where correlation coefficient was 0.785 between them and effectiveness; since R is positive and near to one, therefore there is strong and direct relationship between them. In the next step, we entered the independent variable of environmental features where R was 0.902. In the third step, we entered the independent variable of Management Policy where R was 0.948. In the final step, we entered the independent variable of employee features where R was 1.

Studying above cases, firstly we concluded that correlation between all factors affecting effectiveness and independent variable of effectiveness is positive and direct and secondly, factors affecting effectiveness wren selected accurately because R is increased after entering any factor and finally will reach to 1.

As Sig of all factors is small than significance level (0.000<0.05), there is significant relationship between all factors and effectiveness; and considering the beta coefficients, the below factors: employee features, management policy, environmental features and organizational features have the most contribution in explaining changing variance of effectiveness variable.

Table 11: Evaluation of factors affecting organizational efficiency

Variable	R^2	R	sig	Standard deviation	Beta coefficient	t- statistics
Hardware factors	0.729	0.854	0.000	0.001	0.350	4.40
Software factors	0.799	0.894	0.000	0.401	0.491	2.13
Human ware factors	0.848	0.921	0.000	1.13	0.385	5.70
Human resource factors	1	1	0.000	0.65	0.364	7.66

According to Table 11, firstly we entered independent variable of hardware factors where correlation coefficient was 0.854 between them and effectiveness; since R is positive and near to one, therefore there is strong and direct relationship between them. In the next step, we entered the independent variable of software factors where R was 0.894. In the third step, we entered the independent variable of human ware factors where R was 0.921. In the final step, we entered the independent variable of human resources where R was 1.

Studying above cases, firstly we concluded that correlation between all factors affecting efficiency and independent variable of efficiency is positive and direct and secondly, factors affecting efficiency wren

selected accurately because R is increased after entering any factor and finally will reach to 1.

As Sig of all factors is small than significance level (0.000<0.05), there is significant relationship between all factors and efficiency; and considering the beta coefficients, the below factors: software factors, human ware factors, human resource factors and hardware factors have the most contribution in explaining changing variance of efficiency variable.

Calculating Coefficients of R and R^2 or determinant of factors that effect on effectiveness of human resources.

Table 12: Evaluation of factors affecting human resources

Variable	R^2	R	sig	Standard deviation	Bet coefficient	t- statistics
Organizational Features	0.616	0.785	0.000	0.04	0.280	2.80
Environmental Features	0.814	0.902	0.000	0.28	0.292	3.83
Management Policy	0.898	0.948	0.001	1.1	0.324	2.57
Employee Features	1	1	0.000	0.45	0.469	2.66

According to information in Table (12):

1. In the case of determination coefficient of (R2) or determinant with independent variable of organizational features, it can be said that: 61.6% of human resource effectiveness variance is explained by regression model with independent variable of organizational features.

2. In the case of determination coefficient of (R2) or determinant with independent variable of organizational and environmental features, it can be said that: 81.4 % of human resource effectiveness variance is explained by regression model with independent variables of organizational and environmental features.

3. In the case of determination coefficient of (R2) or determinant with independent variable of organizational features, environmental features and management policy, it can be said that: 89.8 % of human resource effectiveness variance is explained by regression model with independent variables of organizational features, environmental features and management policy.

3. In the case of determination coefficient of (R2) or determinant with independent variable of organizational features, environmental features, management policy and employee features it can be said that: 100 % of human resource effectiveness variance is explained by regression model with independent variables of organizational features, environmental features, management policy and employee features.

Calculating Coefficients of R and R^2 or determinant of factors that effect on efficiency of human resources.

Table 13: Evaluation of factors affecting organizational efficiency

Variable	R^2	R	sig	Standard deviation	Bet coefficient	t- statistics
Hardware factors	0.729	0.854	0.000	0.001	0.350	4.40
Software factors	0.799	0.894	0.000	0.401	0.491	2.13
Human ware factors	0.848	0.921	0.000	1.13	0.385	5.70
Human resource factors	1	1	0.000	0.65	0.364	7.66

According to information in Table (13):

1. In the case of determination coefficient of (R2) or determinant with independent variable of hardware factors, it can be said that: 72.9% of human resource efficiency variance is explained by regression model with independent variable of hardware factors.

2. In the case of determination coefficient of (R2) or determinant with independent variables of hardware factors and software factors, it can be said that: 79.9 % of human resource efficiency variance is explained by regression model with independent variables of hardware factors and software factors.

3. In the case of determination coefficient of (R2) or determinant with independent variables of hardware factors, software factors and human ware factors, it can be said that: 84.8 % of human resource efficiency variance is explained by regression model with independent variables of hardware factors, software factors and human ware factors.

3. In the case of determination coefficient of (R2) or determinant with independent variables of hardware factors, software factors, human ware factors and human resources it can be said that: 100 % of human resource efficiency variance is explained by regression model with independent variables of hardware factors, software factors, human ware factors and human resource.

A - According to weighted values obtained from effectiveness path analysis. The following factors: employee features (0.46), management policy (0.32), environmental features (0.29) and organizational features (0.28) have the most contribution in explaining changing variance of effectiveness variable.

B- According to weighted values obtained from efficiency path analysis. The following factors: software factors (0.49), human ware factors (0.38), human resource factors (0.36) and hardware factors (0.35) have the most contribution in explaining changing variance of efficiency variable.
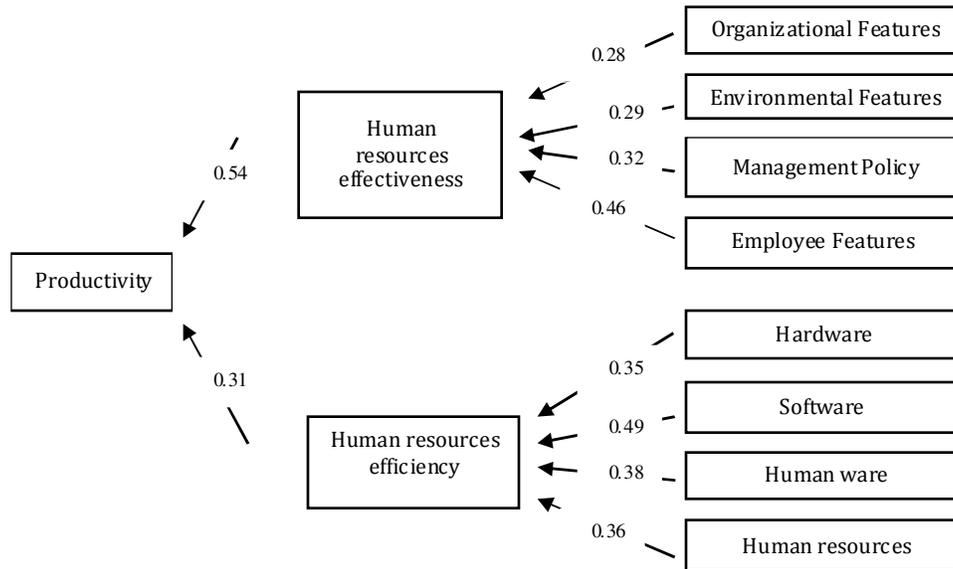
Fig. 2: Factors affecting efficiency

6. The results

6.1. The first hypothesis

According to results of data analysis and correlation of 0.562, there is significant relationship between organizational features and effectiveness of human resources due to smaller Sig of (0.000) compared to significance level of (0.000 <0.05). The results are compatible with results of Delgoshaei et al (2008). They studied the effects of quality improvement groups' performance on efficiency and effectiveness of Tehran's Lolagar Hospital. The results showed that given the relative failure of quality improvement group plan in hospital, it seems that if required infrastructure and planning were done before implementing this project (management knowledge, team-work of senior managers, discussion in organization between employees and managers on TQM, training tools and techniques to improve the quality of management, training philosophy and importance of work and processes to employees, etc.). The project could increase the success in terms of increasing efficiency and effectiveness.

6.2. The second hypothesis

According to results of data analysis and correlation of 0.692, there is significant relationship between environmental features and effectiveness of human resources due to smaller Sig of (0.000) compared to significance level of (0.000 <0.05). The result is compatible with Hatrap and Kazlavsky research results (1993). They concluded in a study entitled organizational analysis of advanced technologies implementation that there is significant relationship between evaluation of educational activities and increased productivity and effectiveness.

6.3. The third hypothesis

According to results of data analysis and correlation of 0.830, there is significant and positive relationship between management policy and effectiveness of human resources; due to smaller Sig of (0.000) compared to significance level of (0.000 <0.05). The result is compatible with study results of Crohn et al (2012). They stated in their study that attitude of manager to decision-making process and employee participation in decision-making of financial constraints can help to small organizations in order to improve the performance of individuals and organization.

6.4. The forth hypothesis

According to results of data analysis and correlation of 0.791, there is significant and positive relationship between employee features and effectiveness of human resources due to smaller Sig compared to significance level of (0.000 <0.05). The result is compatible with study results of Hamid Kordbache et al. (1993). They stated in their study that attitude of manager to decision-making process and employee participation in decision-making of financial constraints can help to small organizations in order to improve the performance of individuals and organization. He examined the factors influencing total productivity of country manufacturing industry factors and used simultaneous equations system consisting of two multiple regression equations and concluded that production of workshops, human capital factor (percentage of secondary and higher education), capital intensity or ratio of capital to workforce number, the contribution of men workforces in employment of workshops, the contribution of individual, incomes and added value of imported raw

materials don't effect on productivity of total production factors.

6.5. The fifth hypothesis

According to results of data analysis and correlation of 0.664, there is significant and positive relationship between hardware factors and efficiency of human resources due to smaller Sig compared to significance level of (0.000 <0.05). The result is compatible with study results of Mortazavi et al (2005). They examined the role of new banking services in order to attract customers and improve the efficiency of banking system. The study results suggest that modern methods of banking services result in increased customers of Mashhad Sepah Bank, but these services have not resulted in t increased efficiency of bank branches (reducing costs and time of employees).

6.6. The sixth hypothesis

According to results of data analysis and correlation of 0.673, there is significant and positive relationship between software factors and efficiency of human resources due to smaller Sig compared to significance level of (0.000 <0.05). The result is compatible with study results of Zareiyan et al (2009). They examined the role of new banking services in order to attract customers and improve the efficiency of banking system. The study results suggest that modern methods of banking services result in increased customers of Mashhad Sepah Bank, but these services have not resulted in t increased efficiency of bank branches (reducing costs and time of employees). They studied the function of fuzzy TOPSIS technique in improving the efficiency analysis of bank branches using DEA technique. The results showed that using data importance (inputs and outputs), has made more accurate measuring efficiency of banks branches by DEA and has increased the reliability of this technique.

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