Relationship between Person-Environment Fit and Job Engagement in Nurses of Ahvaz Hospitals

Abdolzahra Naami, PhD*
Department of Psychology
Shahid Chamran University of Ahvaz

The purpose of this article is to investigate the relationship between person-environment and job engagement. Participants consist of 270 nurses from hospitals in Ahvaz selected via the stratified sampling method. The results showed that there is a positive relationship between person-job, person-organizational, person-vocational, person-supervisor and person-group fit with job engagement. In addition, the results indicated that person-vacation fit and person-job fit had the most roles in prediction of job engagement.

Keywords: person-environment, job engagement

Job engagement is a burgeoning psychological concept important for both occupational health psychology and human resources management as it has the potential to simultaneously serve their purposes of employees welfare and organizational performance, respectively (Schaufeli & Salanova, 2007). To the individual employee, job engagement signifies good health, well-being, optimal functioning, and favorable performance which in turn mean success to the organization (Schaufeli & Salanova, 2007).

Job engagement is defined as “a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption (Schaufeli, Salanova, Gonzalez–Roma, and Bakker, 2002).

* Email: naamiabdul@yahoo.com
Vigor refers to a feeling of high energy and mental hardiness while working, and a willingness to persist in tough situations and make commendable efforts on one’s job. Dedication refers to a feeling that one experiences of having a strong connection with one’s work, along with feeling of being important, eager, and motivated. Absorption refers to a feeling of being completely concentrated on or immersed in one’s work to such an extent that time appears to pass quickly and yet one finds it difficult to detach oneself from one’s work.

The positive consequences of job engagement are many and range from positive job-related attitudes to extra-role behavior, and general performance (Bakker & Schaufeli, 2008).

Engaged persons experience more job satisfaction, higher commitment to their organizations, have lesser or no intentions to quit their job (Rich, 2006), and enjoy better mental and psychosomatic health (Hallberg & Schaufeli, 2006) when people who are more engage in their jobs are compared to those who are less engaged, the more engaged people have higher job satisfaction, are more committed to the job, and have lower turnover intentions (Christian & Slaughter, 2007).

Antecedents of Engagement

Both theoretically and empirically, job engagement has been linked to job resources and motivation (Schaufeli and Salanova2007), leaders high in task and support behavior ( Aguilar and Salanova, 2005), autonomy, feedback, social support (Christain and Slaughter, 2007), job characteristics, social support and organizational norms (Lloren,Bakker,Schaufeli and Salanova, 2006), job enrichment (e.g., job significance, supervisor feedback, job identity, and skill utilizations) and perceived control (Shraga, 2007). However, no research to date has attempted to examine the relationship of job engagement with person-environment fit. The broad goal of the current research was to bring together job engagement and person-environment fit to examine how or whether an individual is related to job engagement.
Person environment fit (P-E) is a multi-level construct comprised of five types of fit. The five types of P-E fit are person-vocation, person-job, person-group, person-supervisor, and person-organization.

Person-vocation (P-V) fit represents the broadest fit domain and focuses on the compatibility between an individual and his or her career choice (Kristof, 1996). Research on P-V fit stems from Holland’s (1959) theory of vocational choice, which explains that individuals are best suited to occupations that are congruent with their self-concept. Research has shown that facilitating the fulfillment of one’s needs results in satisfaction with work (Haptonstal, 1998). Holland (1959) suggested that vocational choices can be thought of as an “expression of personality.” Based on this premise, he proposed that individuals should be most attracted to careers that fit with their self-concept and will be more likely to persevere in such vocations. Empirical research on P-V fit generally supports this theory, indicating that the congruence between a person and his/her occupation is related to positive work outcomes such as increased work satisfaction, career stability and persistence, and career success (Donohue, 2006; Feij, van der Velde, Taris, & Taris, 1999).

Person-Job (P-J) fit has been conceptualized as the fit between the characteristics of a person and the tasks or responsibilities that the individual is expected to accomplish in exchange for employment (Kristof, 1996). Two basic conceptualizations of P-J fit have been proposed by Edwards (1991). The first form emphasizes a demands-ability (D-A) fit, in which the demands of a job (e.g., requirements concerning knowledge, skill level, etc.) are met by an employee’s knowledge, skills, abilities, and other characteristics (KSAOs). The second conceptualization addresses P-J fit as the match between an employee’s needs, desires, and preferences, and how these needs are met by the job performed; this type of fit is referred to as needs-supplies (N-S) fit, or occasionally, supplies-values (S-V) fit. Individuals who possess high levels of P-J fit have been found to have higher levels of job satisfaction, organizational commitment, organizational identification, perceived organizational support, and
reduced turnover intentions and actual turnover (Brkich, Jeffs, & Carless, 2002).

Person-group (P-G) fit refers to the compatibility between an individual and his/her team or workgroup (Kristof, 1996). This type of fit is based on the principle that many job roles require interpersonal interaction with group members in order to be successfully performed (Werbel & Johnson, 2001). Given that organizations increasingly rely on teams and workgroup as the unit of production, understanding group dynamics and how group members “fit” has become increasingly relevant. P-G fit is generally thought of as a key driving force behind effective team composition (Klimoski & Jones, 1995). Within the literature on team composition, some researchers have found that, when group members share similar values, goals, abilities, and/or personality traits, they display more positive work attitudes and achieve higher productivity as a work unit.

Person-organization (P-O) fit or the congruence/fit between a person and his or her work environment has captured the attention of many researchers and practitioners as being an important workplace variable. Schneider (2001), one of the leaders in the field of fit research has identified the concept as one of the most pervasive concepts in psychology. This widespread interest in P-O fit research is due-at least in part- to mounting empirical evidence suggesting that it predicts many positive work outcomes. For job applicants, P-O fit has been linked to increased organizational attraction, job pursuit intentions, job acceptance intentions, and job choice decisions (Dineen, Ash, & Noe, 2002). Recent meta-analytic findings suggest that P-O fit is actually one of the most important predictors of applicant attraction outcomes (Chapman, Uggerslev, Carroll, Piasentin, & Jones, 2005). For job incumbents, researchers have also found that P-O fit predicts important work outcomes, including job satisfaction, organizational commitment, work performance, job involvement, perceived organizational support, stress and well-being, and work motivation (Sarris, 2006; Winfred, Bell, Doverspike, & Villado, 2006).
Person-supervisor fit (P-S fit) pertains to the dyadic relationship between a supervisor and his/her subordinate; it focuses on the extent to which employees values (Krishnan, 2002), goals (Witt, 1998), personality traits (Smith, 2002), and demographic characteristics (McLeod, Lobel, & Cox, 1996) are congruent or compatible with those of their supervisor. Only recently has this construct garnered attention as a distinct component of fit.

**Hypotheses**

1- There are positive correlations between person-vocation fit and vigor, absorption, and dedication.

2- There are positive correlations between person-job fit and vigor, absorption, and dedication.

3- There are positive correlations between person-supervisor fit and vigor, absorption, and dedication.

4- There are positive correlations between person-group fit and vigor, absorption, and dedication.

5- There are positive correlations between person-organization fit and vigor, absorption, and dedication.

**Method**

**Participants**

Questionnaires were distributed to 286 nurses working in Ahvaz hospitals that were selected according to a stratified random sampling method. Questionnaires were sent to nurses and they were informed about the research objectives and that responses were remain anonymous. Two hundred and seventy completed questionnaires were received. The sample consisted of 70% females and 30% males with an average age of 41 years.
Measures

**Person-organization Fit (P-O fit).** P-O fit was assessed using a 3-item measure developed by Cable and DeRue (2002). Respondents were asked to indicate agreement on a five-point Likert scale ranging from strongly agree to strongly disagree. Because past research has defined P-O fit as values congruence (see Kristof, 1996), this measure assesses the perceived compatibility between organizational values and that of employees’ own values. In using confirmatory factor analysis to test a three-factor model, Cable and DeRue (2002) have found convergent and discriminate validity for this measure with organizational identification, perceived organizational support, and OCBs, turnover, job satisfaction, career satisfaction, and occupational commitment. Internal reliability was found to be 0.91 and 0.92 across the two separate samples (Cable and DeRue, 2002). In this research the person-organization fit measure had a good reliability with alpha equal to 0.90.

**Person-job fit (P-J fit).** Nine survey items were used to assess workplace perceptions of person-job fit. Participants were asked to indicate how much they agreed or disagreed with statements based upon a 7-point Likert-type scale. All items were initially generated and validated by Brkiceh, Jeffs and Carless (2002). "I am able to use my talents, skills, and competencies in my current job" is an example of an item from the person-job fit scale. The reliability for this scale was reported at $\alpha=0.92$, demonstrating strong internal scale consistency. In this research the reliability of scale with alpha was 0.87.

**Person-supervisor fit (P-S fit).** In order to assess P-S fit, I used an adapted scale developed by Cable and DeRue (2002) with three items that was initially developed to measure P-O fit. The reliability for this scale was reported at $\alpha=0.87$. In the present study, person-supervisor fit scale yielded a cronbach's alpha of 0.78.

**Person-vocation fit.** In order to assess P-V fit I used an 11-items measure developed by Cable and DeRue (2002) (e.g., “My profession represents my interests” and “My profession requires me to be someone I
am not”). These items represented value congruence, needs-supplies fit, personality congruence, and interest congruence conceptualizations. Based on the pilot data, the coefficient alpha estimate is 0.88. In current research the coefficient alpha estimate is 0.86.

**Person-group Fit.** There were nine survey items related to person-group fit perceptions presented by Kristof-Brown, Jensen and Colbert (2002) which depicted high, medium, and low levels of person-group fit. For instance, “I do not have much in common with my coworkers.” “Generally, my coworkers and I work well together to accomplish tasks.” In the present study, person-group fit measure yielded a cronbach's alpha of 0.85.

In all measures of E-P Fit Items were scored on a 5-point Likert type scale ranging from 1 "strongly disagree" to 5 "strongly agree".

**Job Engagement.** This variable was measured with the work engagement scale, consisting of three sub-scales: Vigor, dedication, and absorption (Schaufeli et al., 2002). Vigor was measured using six items (e.g., when I get up in the morning, I feel like going to work), dedication was measured using five items (e.g., my job inspires me), and absorption was measured using six items (e.g., time flies when I am working). Items were scored on a 5-point Likert type scale ranging from 1 "never" to "always". In the present study, vigor yielded a cronbach's alpha of 0.89, dedication had a cronbach's alpha of 0.95 and absorption yielded a cronbach's alpha of 0.92.

**Results**

The simple correlation analysis (Pearson's r) was used to examine the strength and direction of the relationship between person-vocation, person-job, person-supervisor, person-group, and person-organization fit and job engagement dimensions. These correlation coefficients are presented in Table 1. In addition, the predictive ability of the independent variables was assessed by using multiple regression analysis, with engagement dimensions as the dependent variables.
Table 1
Means, Standard Deviations and the Correlation Matrix for the Person-Environment Facets and Job Engagement Facets

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Vigor</th>
<th>Absorption</th>
<th>Dedication</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Person-Vocation Fit</td>
<td>29.67</td>
<td>7.59</td>
<td>.32*</td>
<td>.45*</td>
<td>.42*</td>
</tr>
<tr>
<td>2 Person-Job Fit</td>
<td>26.33</td>
<td>9.34</td>
<td>.27*</td>
<td>.32*</td>
<td>.30*</td>
</tr>
<tr>
<td>3 Person-Supervisor Fit</td>
<td>9.43</td>
<td>3.21</td>
<td>.17*</td>
<td>.21*</td>
<td>.19*</td>
</tr>
<tr>
<td>4 Person-Group Fit</td>
<td>40.98</td>
<td>12.43</td>
<td>.22*</td>
<td>.26*</td>
<td>.24*</td>
</tr>
<tr>
<td>5 Person-Organization Fit</td>
<td>9.89</td>
<td>3.65</td>
<td>.32*</td>
<td>.29*</td>
<td>.30*</td>
</tr>
<tr>
<td>6 Vigor</td>
<td>21.65</td>
<td>6.43</td>
<td></td>
<td>*P&lt;.05</td>
<td></td>
</tr>
<tr>
<td>7 Absorption</td>
<td>19.54</td>
<td>5.98</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Dedication</td>
<td>21.12</td>
<td>8.76</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The statistically significant correlation coefficients in Table 1 indicate that all of the five posited hypotheses are confirmed.

Table 2
Facets of Person-Environment Fit Regressed on Vigor

<table>
<thead>
<tr>
<th>Variables</th>
<th>R</th>
<th>RS</th>
<th>B</th>
<th>β</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person-Vocation Fit</td>
<td>.32</td>
<td>.10</td>
<td>.30</td>
<td>.25</td>
<td>3</td>
<td>.003</td>
</tr>
<tr>
<td>Person-Job Fit</td>
<td>.37</td>
<td>.13</td>
<td>.83</td>
<td>.14</td>
<td>1.76</td>
<td>.05</td>
</tr>
<tr>
<td>Person-Supervisor Fit</td>
<td>.37</td>
<td>.14</td>
<td>.40</td>
<td>.24</td>
<td>2.30</td>
<td>.02</td>
</tr>
<tr>
<td>Person-Group Fit</td>
<td>.38</td>
<td>.15</td>
<td>.13</td>
<td>.09</td>
<td>.60</td>
<td>.29</td>
</tr>
<tr>
<td>Person-Organization Fit</td>
<td>.44</td>
<td>.20</td>
<td>.46</td>
<td>.29</td>
<td>3.61</td>
<td>.002</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables</th>
<th>R</th>
<th>RS</th>
<th>B</th>
<th>β</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stepwise</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person-Organization Fit</td>
<td>.32</td>
<td>.10</td>
<td>.38</td>
<td>.24</td>
<td>2.24</td>
<td>.001</td>
</tr>
<tr>
<td>Person-Vocation Fit</td>
<td>.39</td>
<td>.15</td>
<td>.28</td>
<td>.23</td>
<td>3.08</td>
<td>.001</td>
</tr>
</tbody>
</table>

126
Through hierarchical multiple regression analysis findings (Table 2) indicated that the combination of person-vocational, person-job, person-supervisor, person-group, and person-organizational fit were able to significantly predict vigor ($F=7.83$, $P<.001$).

The RS indicated that 20% of the variance of the vigor was explained by this regression model.

Next, attention was focused on determining which of the predictive variables is most closely related to vigor. For this purpose the researcher employed the stepwise multiple regression technique.

The statistics on the two variables that entered the stepwise multiple regression equation are given in the bottom section of Table 2. Person-organization fit was the first and the most salient of the variables that entered the regression equation, and accounted for 10% of the variation in vigor. At step 2, person-vocation fit entered the regression equation and accounted for an additional 5% of the variation in vigor. Together, these two variables explained 15% of the variation in vigor.

### Table 3

**Facets of Person-Environment Fit Regressed on absorption**

<table>
<thead>
<tr>
<th>Variables</th>
<th>R</th>
<th>RS</th>
<th>B</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person-Vocation Fit</td>
<td>.45</td>
<td>.20</td>
<td>.42</td>
<td>.40</td>
<td>5</td>
<td>.001</td>
</tr>
<tr>
<td>Person-Job Fit</td>
<td>.49</td>
<td>.24</td>
<td>.93</td>
<td>.18</td>
<td>2.39</td>
<td>.01</td>
</tr>
<tr>
<td>Person-Supervisor Fit</td>
<td>.50</td>
<td>.25</td>
<td>.29</td>
<td>.20</td>
<td>2.06</td>
<td>.04</td>
</tr>
<tr>
<td>Person-Group Fit</td>
<td>.50</td>
<td>.25</td>
<td>.07</td>
<td>.06</td>
<td>7.3</td>
<td>.46</td>
</tr>
<tr>
<td>Person-Organization Fit</td>
<td>.52</td>
<td>.27</td>
<td>.25</td>
<td>.18</td>
<td>2.10</td>
<td>.03</td>
</tr>
</tbody>
</table>

**Stepwise**

<table>
<thead>
<tr>
<th>Variables</th>
<th>R</th>
<th>R</th>
<th>B</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person-Vocation Fit</td>
<td>.45</td>
<td>.20</td>
<td>.40</td>
<td>.28</td>
<td>.39</td>
<td>.001</td>
</tr>
<tr>
<td>Person-Job Fit</td>
<td>.49</td>
<td>.24</td>
<td>1.05</td>
<td>.19</td>
<td>.20</td>
<td>.005</td>
</tr>
</tbody>
</table>

Through hierarchical multiple regression analysis, in Table 3, findings indicate that the combination of the five components of person-
environment fit was able to significantly predict absorption (F=11.97, p<.001). The RS indicates that 27% of the variance of the absorption variable was explained by this regression model.

The results of the stepwise multiple regression technique (Table 3) showed that person-vocation fit was the first and the most salient of the five variables that entered the regression equation, and accounted for 20% of the variation in absorption. At step 2, person-job fit entered the regression equation and accounted for an additional 4% of the variation in absorption. Together, these two variables explained 24% of the absorption variance.

Table 4
Facets of Person-Environment Fit Regressed on dedication

<table>
<thead>
<tr>
<th>Variables</th>
<th>R</th>
<th>RS</th>
<th>B</th>
<th>β</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person-Vocation Fit</td>
<td>.43</td>
<td>.18</td>
<td>.42</td>
<td>.38</td>
<td>4.68</td>
<td>.001</td>
</tr>
<tr>
<td>Person-Job Fit</td>
<td>.46</td>
<td>.21</td>
<td>.90</td>
<td>.17</td>
<td>2.77</td>
<td>.03</td>
</tr>
<tr>
<td>Person-Supervisor Fit</td>
<td>.47</td>
<td>.22</td>
<td>.33</td>
<td>.21</td>
<td>2.08</td>
<td>.03</td>
</tr>
<tr>
<td>Person-Group Fit</td>
<td>.47</td>
<td>.22</td>
<td>.06</td>
<td>.05</td>
<td>.62</td>
<td>.52</td>
</tr>
<tr>
<td>Person-Organization Fit</td>
<td>.50</td>
<td>.25</td>
<td>.30</td>
<td>.21</td>
<td>2.35</td>
<td>.02</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables</th>
<th>R</th>
<th>R</th>
<th>B</th>
<th>β</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person-Vocation Fit</td>
<td>.42</td>
<td>.18</td>
<td>.40</td>
<td>.37</td>
<td>5.08</td>
<td>.001</td>
</tr>
<tr>
<td>Person-Job Fit</td>
<td>.47</td>
<td>.22</td>
<td>1.04</td>
<td>.19</td>
<td>2.63</td>
<td>.009</td>
</tr>
</tbody>
</table>

The regression analysis in Table 4 reveals that the significant F value (F=10.66, P<.001) indicates that person-vocational, person-job, person-supervisor, person-group, and person-organization fit explain a significant amount of variation in dedication.

The result of the stepwise multiple-regression revealed that person-vocational fit and person-job fit exerted the most profound influence on dedication. These variables explain 22% of the variation in dedication.
Discussion

The results show that there are positive correlations between person-job, person-organization, person-vocation, person-supervisor and person-group fit and job engagement.

Lewins (1951) interaction theory states that an individual's behavior is determined by the interaction between the individual and the environment. For example, theories of P-F fit contain a central tenet stating that the individuals positive experience is due to the individual working in an environment well-suited to his or her personal characteristics (Kristof-Brown, Jansen, & Colbert, 2002). Planned behavior (Fishbein & Ajzen, 1975) outlines the manner in which one's intentions translate into behavior. Work attitudes are effective in nature; they are feelings that an employee has about a given job, organization, and work situation. Workplace fit perceptions are also affective in nature and are related to work attitudes in the sense that they are situation-specific. In this manner, workplace fit perceptions become the cognitive evaluation of how well employee attitudes are reflected in the work environment. The evaluation made or perception held by employees directly affects their behaviors in the workplace.

Person-group fit is quickly becoming a more relevant construct due to the increased number of teams operating in the work environment. Vancouver (1991) used group cohesiveness theories and member constituency goal congruence person-environment fit to explain the relation between person–group fit and job engagement. Member-constituency goal congruence is related to the concept of group cohesion. Group cohesiveness is a multidimensional construct comprised of agreement with norms, similarity of goals, member attraction, and intention to remain a member.

The broadest level of P-E fit is an individual and his or her vocation. Individuals seek vocational environment which are similar to their interests, outlooks, and competencies, because, presumably, these types knowledge, skills, and abilities, express their values, and undertake
agreeable roles. According to Holland’s (1959) theory of vocational choice, it can be explained that job engagement of individuals would increase when they are best suited to occupations and there are congruent with an organization (Bodenman, 1996).

We can use leader-member exchange to explain the relationship between person-supervisor and job engagement. Haptonstanl, (1998) discussed two types of relationship that develop between supervisors and subordinates. The in-group consists of subordinate who are trusted and influential members of the working group. The supervisor treats them with consideration. The out-group, by contrast, are subordinates who are supervised with directive style and are given little input into decisions. These relationships evolve over time, with characteristics of subordinate affecting the category in which they find themselves. In their meta-analysis of 79 studies Chatman (1989) showed that individuals who had good relationships with their supervisors tended to have higher job satisfaction, were more committed to their employees, and perceived the job as less stressful than individuals with poor prelateship with supervisor. According to these results, person-supervisor had a significant impact on job engagement.

Judge and cable (1997) examined fit in terms of the big five model of personality and organizational preferences. They found that different personality types were attracted to different organizational cultures.

Corresponding to the demand-abilities notion of fit, in the present study P-J fit is conceptualized as the match between individual capabilities and job requirements (Edwards, 1991). It focuses on the fit between employees’ knowledge, skills, and abilities and work demands (Lauver & Kristof-Brown, 2001). When a person possesses characteristics similar to those of an organization (e.g., culture, climate, personality, values, goals, and norms), supplementary fit is attained. When the characteristics of employees or the organization compensate or add missing elements to one another, complementary fit is achieved. Caldwell and Oreilly (1990) demonstrated that matching people’s abilities to the kSAOs requirements...
can be a useful strategy for enhancing job performance. They also found that employees whose abilities matched their jobs were more satisfied. Employees who have the characteristics necessary for good performance will be more successful on the job and will be more job-engaged.

P-O refers to the similarity in attributes of the person and the organization. In P-O fit research, value congruence has garnered most attention. Value congruence is the match between a person’s values and the organizational value system (Chatman, 1989). The social-psychological theories about similarity of attitude also confirm that individuals tend to interact more with “similar others” to reinforce their own values, beliefs, and affects. This would result in a shared understanding and perception about events and reduced uncertainty (Kristof, 1996).

References
*Academy of Management Review*, 14, 333-349.

Presented at the Sixty-Seventh annual meeting of the Academy of 

Coble, D. M., & DeRue, D. S. (2002). The convergent and discriminate 
validity of subjective fit perception. *Journal of Applied Psychology*, 
87, 875-884.


change and career persistence. *Journal of Vocational Behavior*, 68, 
504-515.

and organizational psychology*, 6, 233-357.

development of person vocation fit. *International Journal of Selection 
and Assessment*, 7, 12-25.

Fishbein, M., & Ajzen, I. (1975). *Beliefs, attitudes, intentions, and 
behavior*. Reading, MA: Addison-Wesley.

Hallberg, U., & Schaufeli, W. B. (2006). Can work engagement be 
discriminated from job involvement and organization commitment, 

process. *Dissertation Abstracts International*, 59, 901. (UMINO. 
9824483).

Counseling psychology*, 6, 34-45.

culture, and organizational attraction. *Personnel psychology*, 50, 359- 
393.

132


Received: 17 / 5 / 2011  
Revised : 20 / 12 / 2011  
Accepted: 22 / 12 / 2011