

PRIORITIZING TURNOVER DECISION FACTORS USING THE DEMATEL METHOD

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ABSTRACT

A number of trends (e.g., globalization, increase in knowledge work, accelerating rate of technological advancement) make it vital that firms acquire and retain human capital.

This paper identifies and analyzes factors of voluntary turnover decision. Hence, based on a comprehensive review of the literature, the influencing factors are identified. In order to analyze the identified factors, DEMATEL methodology is applied. Furthermore, based on the DEMATEL results the factors are also categorized into two groups of driver and dependent. The results of study show that job satisfaction, Met expectation and organizational commitment are the factors that play important role in voluntary turnover decisions.

Keywords: voluntary turnover decision , Decision making trial and evaluation laboratory ,DEMATEL , Employee retention, voluntary movers.

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INTRODUCTION

The importance of recruiting, retaining and managing resources that can help to increase competitiveness of organizations has become a crucial factor in the success of industry. Among these resources, human resources demand special attention. From a managerial perspective, the attraction and retention of high-quality employees is more important today than ever before. A number of trends (e.g., globalization, increase in knowledge work, accelerating rate of technological advancement) make it vital that firms acquire and retain human capital.

There are important differences across countries, analysis of the costs of turnover (Hinkin & Tracey, 2000) as well as labor shortages in critical industries across the globe have emphasized the importance of retaining key employees for organizational success. In response, managers have implemented human resources policies and practices to actively reduce avoidable and undesirable turnover (Fulmer, Gerhart, & Scott, 2003; Hom, Roberson, & Ellis, 2008; Kacmar, Andrews, Van Rooy, Steilberg, & Cerrone, 2006; Michaels, Handfield- Jones, & Axelrod, 2001).

From the perspective of the organization, employee turnover creates both tangible and intangible costs. The tangible costs include recruitment, selection, training, adjustment time, possible product and/or service quality problems, and the costs of agency workers/temporary staff (Morrell, Loan-Clarke and Wilkinson 2004a).

The intangible costs, which may be even more significant than the tangibles, involve the effect of turnover on organizational culture, employee morale, social capital and organizational memory (Morrell et al. 2004a).

For an individual, turnover (including both voluntary and involuntary) will mean making a break with existing social networks, the stress of a new environment and an adjustment process. For some employees there may be direct losses related to benefits that they were receiving as being part of the organization (Griffeth, Hom and Gaertner 2000). There may also be some advantages. For example, Davia (2005) reports that employees at the early stages of their career who voluntarily leave, experience positive increases in their wages compared to those that do not change jobs. Furthermore, Davia (2005) found that turnover may pay in the mid-term even for involuntary movers although at a decreasing rate.

According to the mentioned points, recognition of the factors that encourage employee to turnover, and implementation of these in policies of human resource, will have significant role in decrease of turnover rate.

In this paper we try to gather these factors from the literature and then we evaluate these using the DEMATEL method from the multi-criteria decision making (MCDM) approach.

LITERATURE REVIEW

Much of the research examining turnover has grown from March and Simon's (1958) notions. In their now-classic book "Organizations", March and Simon (1958) introduced a general theory of organizational equilibrium, which emphasized the importance of balancing employee and organization contributions and inducements. The two factors that determine an employee's balance are perceived desirability and perceived ease of leaving the organization; today these concepts are typically labeled as job satisfaction.

March & Simon introduce the Organization Size as key determinants of turnover.

Locus of control refers to an individual's perceived ability to control personal outcomes (Rotter, 1966). Individuals with an internal locus of control (internals) believe that success or failure is due to their own efforts. In contrast, individuals with an external locus of control (externals) believe that what happens to them is controlled by outside forces such as luck, fate, or chance (Spector, 1982). Internal locus of control is positively related to job satisfaction and organizational commitment and is negatively related to turnover intentions and turnover (e.g. Ng, Sorensen, & Eby, 2006).

Although internals tend to have lower turnover intentions and turnover less frequently than externals, once they form intentions to quit, internals tend to be more likely to quit than externals (Allen et al., 2005; Renn & Vandenberg, 1991)

Porter and Steers (1973) introduced a model in which employees' met expectations were the driving factor in influencing turnover decisions.

(Kahneman & Tversky, 1979). Turnover decisions, then, that are framed in the domain of gains, i.e. focusing on what one stands to gain by quitting compared to what one stands to gain by

staying, should be related to risk aversion, and thus lower turnover risk propensity. Turnover decisions that are framed in the domain of losses, i.e. focusing on what one stands to lose by quitting compared to what one stands to lose by staying, should be related to risk seeking, and thus greater turnover risk propensity.

Price and Mueller (1981, 1986) developed a comprehensive structural model, which identified the antecedents of job satisfaction and intent to leave and added organizational commitment as a mediator between these two variables.

A turnover theory was introduced by Sheridan and Abelson's (1983) cusp catastrophe model. The model incorporates two withdrawal determinants, organizational commitment and job tension.

Graen, Liden, and Hoel (1982) found that the quality of the leader-member exchange relationship predicted employee turnover.

Emotional exhaustion and job insecurity were found to be positively related to turnover intentions.

self-efficacy refers to the belief in one's ability to successfully perform a particular behavior (Bandura, 1997). As individuals' beliefs in their abilities to successfully perform a particular act increase, they tend to focus more on opportunities worth pursuing and less on the risks to be avoided (Krueger & Dickson, 1994). Focusing more attention on the potential benefits versus the risks of a particular behavior ought to be positively associated with actually performing the behavior (Ajzen, 1991). Furthermore, Heath and Tversky (1991) found that perceived competence, a construct similar to self-efficacy, was positively related to risk taking under uncertainty. Therefore, it is hypothesized that the belief in one's ability to successfully leave a current job and perform well in a new position (i.e., high self-efficacy for turnover) will be positively related to turnover risk propensity.

Inertia is a tendency to continue as before. Bodies at rest tend to remain at rest, while bodies in motion tend to remain in motion. The idea of risk inertia suggests that individuals develop habits with regard to how they respond in similar risky situations. This implies that individuals who have made risky choices when faced with turnover decisions in the past should be more likely to do so again when faced with subsequent turnover decisions. Similarly, those who have typically avoided risk when faced with past turnover decisions should be more likely to do so in subsequent

similar situations. Thus, inertia is part of the personal frame of reference individuals bring to turnover decisions. (Ghiselli, 1974)

If quitting a job is typically a riskier choice than staying, then there may be a sound basis for organizational hiring standards suggesting that applicants with a history of frequent job changes are more likely to quit any job.

organizational culture was proposed to influence turnover through the development of a unique turnover culture in which employees engage in sense-making and social information processes that trigger withdrawal cognitions (Abelson, 1993).

Lee and Mitchell proposed that turnover decisions are not always the result of accumulated job dissatisfaction and may sometimes occur without much deliberation at all. Perceived success or failure of past turnover decisions is another aspect of the personal frame of reference individuals bring to turnover decisions. The outcome history of past turnover decisions should influence behavior in subsequent similar situations. An individual who chose to quit a previous job and was happy with the results of that decision is more likely to do so again when faced with a similar situation. However, the individual who regretted quitting that job would be less likely to do so again. Sitkin and Weingart (1995) proposed and found evidence for a straightforward relationship between outcome history and risk propensity such that success would lead to propensity to repeat the past decision and failure would lower that propensity. However, Sitkin and Pablo (1992) originally proposed a somewhat more complicated relationship. While success should lead to propensity to repeat the decision, failure leads to greater variability in future propensity, suggesting that past decision failure might not be clearly positively or negatively related to subsequent risk propensity.

Problem domain familiarity represents the amount of experience an individual has with making decisions similar to the one he or she faces, and is another aspect of personal frames of reference. Some individuals facing a turnover decision will have dealt with many such decisions, whereas others may have never faced one before. Individuals with little experience are more likely to make poor assessments of risk and to underestimate risk levels (Sitkin & Pablo, 1992). As individuals acquire experience, they are able to make more accurate assessments of risk levels. However, as they gain extensive experience, individuals tend to downplay current situational constraints and place increasing confidence in their own abilities and successes. When individuals

overweight their own abilities and underweight current constraints, they can become overconfident and underestimate actual risk. Thus, individuals with little experience making turnover decisions and those with extensive experience (e.g., job-hoppers) are both likely to underestimate risk.

The quantity, attractiveness, and attainability of alternative roles should be related to turnover decisions; however, the evidence for direct relationships of labor market conditions or perceived alternatives with individual turnover is mixed and inconsistent (Hom & Griffeth, 1995). It may be that one mechanism by which alternatives, whether work or non-work roles, influence turnover is by affecting the perceived risk of quit decisions. To the extent potential alternative roles are less favorable (e.g. not plentiful, not attainable, or not attractive) for the individual, quitting should be seen as involving greater risk. Further, Steel (2002) recently argued that resource substitutability (having resources available that decrease dependence on a particular job) may explain impulsive quitting and other examples of quit behaviors that seem to ignore perceptions of alternatives. Resource substitutability may operate in part by increasing the relative favorability of alternatives and decreasing perceptions of the risks associated with quitting. For an individual with a working spouse supplying an alternate source of income, the option not to work should be relatively more favorable, and the risks associated with quitting should be less.

Support for a relational perspective on organizational withdrawal processes is rooted partly in the concept of social capital, which refers to the sum of actual and potential resources available through relationships that individuals have established with others (Leana & Van Buren, 1999). In reviewing the value of social relationships for competitive advantages, Uhl-Bien and her colleagues (2000) noted that low-quality relationships can have large costs for organizations, among them higher turnover. Others have suggested that, as constituted in relational networks, social capital may reduce turnover (Krackhardt & Hanson, 1993).

Sitkin and Pablo (1992) focused on organizational culture and leaders as social influences on organizational decisions. For individual turnover decisions, co-workers, supervisors, mentors, as well as family and friends might all influence perceptions about a turnover decision. For example, Krackhardt and Porter (1986) found that social networks influenced turnover in a kind of snowball effect wherein turnover among a central or similar employee in the communication network could lead to turnover among other employees. Additionally, Mossholder, Settoon, and

Henagan (2005) suggest that employees who have greater numbers of close relationships with co-workers are more invested in the organization, and thus less likely to turn over. Researchers have also suggested that organizations could develop a turnover culture that expects and reinforces turnover. To the extent salient others view a turnover decision as risky, this may influence individual perceptions of the risk involved.

Greater sacrifices associated with quitting a job should increase the perceived risk involved with a turnover decision. Over time, individuals become enmeshed in a web of material and psychological relationships involving their jobs, organizations, co-workers, and communities. Severing or rearranging these ties can result in sacrificing important investments and relationships. (Mitchell et al., 2001)

one particularly important individual difference in the context of turnover is risk preferences. Risk preferences refer to a stable disposition to be risk seeking or risk averse across situations, and there is evidence that individuals differ in this trait (Weber & Milliman, 1997). Individuals who are more risk seeking in general should have a higher risk propensity when considering turnover decisions, while those who are more risk averse in general should have a lower risk propensity when considering quitting.

Bloom and Michel (2002) found that a firm's pay distribution affects turnover as well. Outstanding employees may leave a company where there is low pay differentiation.

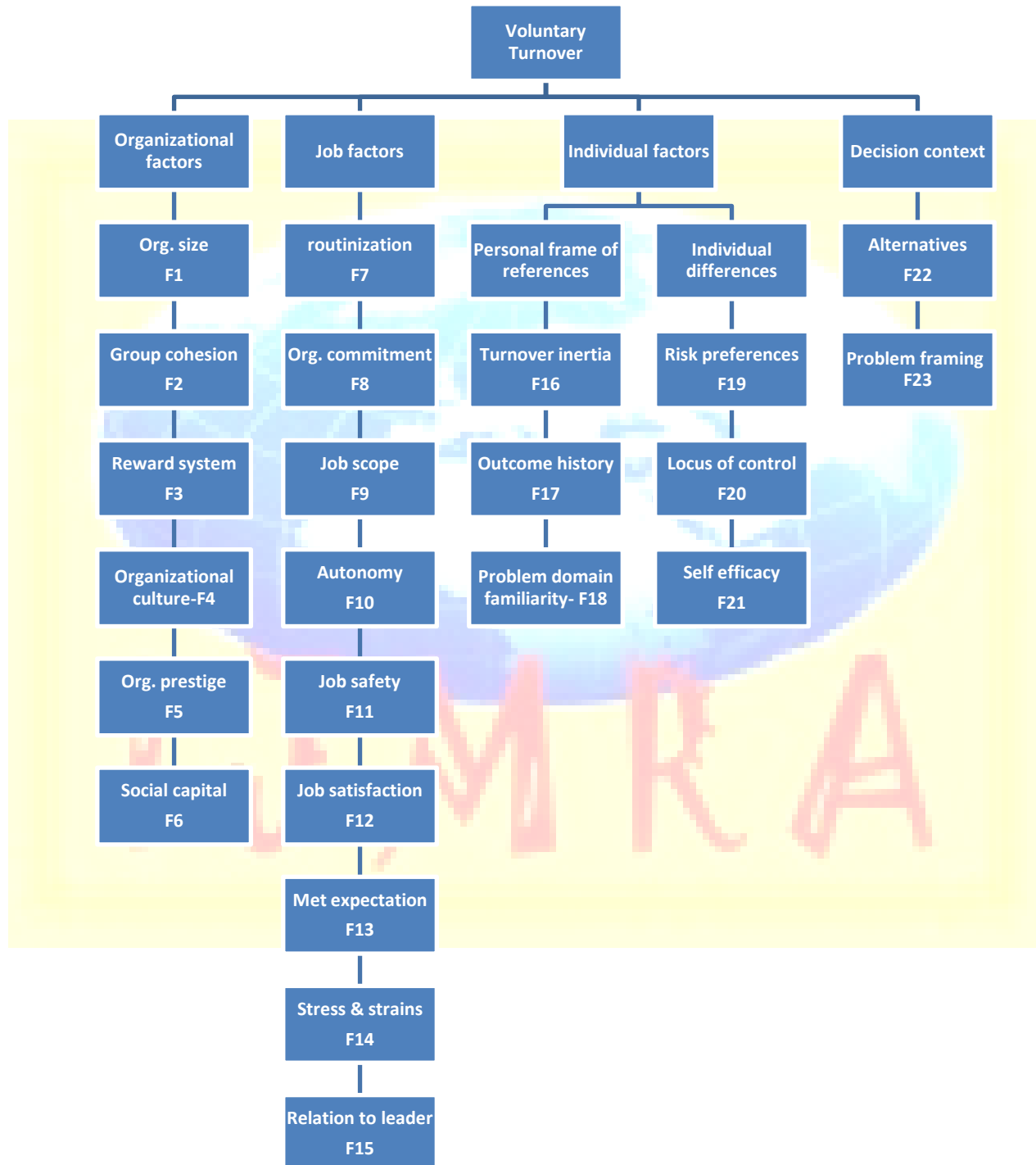
Barrick and Zimmerman (2005), for example, demonstrated that self-confidence and decisiveness combined with biodata (e.g., ties to the organization, time at prior employer) measured during the recruitment process were negatively associated with turnover.

Allen, Moffit and Weeks (2005) found that low selfmonitors and employees with low risk aversion were more likely to translate their intentions to leave into actual turnover.

Although stress had previously been considered in turnover models (e.g., Sheridan & Abelson, 1983), recent research investigated the potential beneficial effects of certain types of stressors. Consistent with prior stress research, hindrance stressors (e.g., organizational politics, hassles, situational constraints, role conflict, role overload) were found to lead to lower job satisfaction, lower organizational commitment, more withdrawal behaviors, higher turnover intentions, and higher turnover (Cavanaugh, Boswell, Roehling, & Boudreau, 2000; Podsakoff, LePine, 2007).

The factors influence turnover decision, illustrated in figure 1.

Figure 1- The factors influence turnover decision



DEMATEL method

DEMATEL is a sophisticated method for establishing a structural model involving causal relationships among complex factors (Gabus & Fontela, 1972, 1973). DEMATEL was developed by the science and human affairs program of the Battelle Memorial Institute of Geneva between 1972 and 1976 and it was used to solve the complicated and intertwined problem group. The methodology, according to the properties of objective affairs, can confirm the interdependence among the variables/attributes and restrict the relation that reflects the properties with an essential system and development trend. The end product of the DEMATEL process is a visual representation— an individual map of the mind—by which the respondent organizes his or her own action in the world (Hori & Shimizu, 1999; Kamaike, 2001; Yamazaki et al., 1997; Yuzawa, 2002). The procedures of the DEMATEL method (Fontela & Gabus, 1976) are discussed below.

Step 1: *Generating the direct-relation matrix.* We use four scales for measuring the relationship among different criteria: 0 (no influence), 1 (low influence), 2 (high influence), and 3 (very high influence). Next, decision makers prepare sets of the pair-wise comparisons in terms of effects and direction between criteria. Then the initial data can be obtained as the direct-relation matrix which is a $n \times n$ matrix A where each element of a_{ij} is denoted as the degree in which the criterion i affects the criterion j .

Step 2: *Normalizing the direct-relation matrix.* Normalization is performed using the following,

$$X = k * A \quad (1)$$

$$k = \frac{1}{\max_{1 \leq i \leq n} \sum_{j=1}^n a_{ij}} \quad (2)$$

Step 3: *Attaining the total-relation matrix.* Once the normalized direct-relation matrix X is obtained, the total relation matrix T can be acquired by using Eq. (3), where I is denoted as the identity matrix

$$T = X * (I - X)^{-1} \tag{3}$$

Step 4: *Producing a causal diagram.* The sum of rows and the sum of columns are separately denoted as vector D and vector R through Eqs. (4-6). Then, the horizontal axis vector $(D + R)$ named ‘‘Prominence’’ is made by adding D to R , which reveals the relative importance of each criterion. Similarly, the vertical axis $(D - R)$ named ‘‘Relation’’ is made by subtracting D from R , which may divide criteria into a cause and effect groups. Generally, when $(D - R)$ is positive, the criterion belongs to the cause group and when the $(D - R)$ is negative, the criterion represents the effect group. Therefore, the causal diagram can be obtained by mapping the dataset of the $(D + R, D - R)$, providing some insight for making decisions.

$$T = [t_{ij}]_{n \times n}, i, j = 1, 2, \dots, n \tag{4}$$

$$D = \left[\sum_{j=1}^n t_{ij} \right]_{n \times 1} = [d_i]_{n \times 1} \tag{5}$$

$$R = \left[\sum_{i=1}^n t_{ij} \right]_{1 \times n} = [r_j]_{1 \times n} \tag{6}$$

where vector D and vector R , respectively denote the sum of rows and the sum of columns from totalrelation matrix $T = [t_{ij}]n \times n$.

Step 5: *Obtaining the inner dependence matrix.* In this step, the sum of each column in total-relation matrix is equal to 1 by the normalization method, and then the inner dependence matrix can be acquired.

RESULTS

The factors are illustrated in figure 1. The relationship between these factors are gathered from ten experts .table 1 depicts the average of expert`s opinions (matrix A).After computing the matrix T, the numbers of D+R and D-R are calculated. (table 2)

Table 1-Average matrix (A)

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	F19	F20	F21	F22	F23
F1				0.9																			
F2						3.2																	
F3												2.2											
F4						0.8										1.9							
F5												1.1											
F6								2.1															
F7												1.2											
F8																							
F9							1																
F10												1.5											
F11												2.8											
F12								1.9															
F13												3.1										2.5	
F14											2.2												
F15												1.1	0.9	0.8									
F16																	1.3						
F17																		1.7					
F18																							1
F19																							
F20																				2.3			
F21																1.5			2.1	1.5			
F22																							
F23																							

Table 2-matrix T

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	F19	F20	F21	F22	F23	D	D+R	D-R	
F1	0	0	0	0.161	0	0.02	0	0.0086	0	0	0	0	0	0	0	0.1	0.0127	0.0038	0	0	0	0	0.0007	0.264	0.264	0.264	
F2	0	0	0	0	0	0.57	0	0.2143	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7857	0.7857	0.7857	
F3	0	0	0	0	0	0	0	0.0738	0	0	0	0.2175	0.4	0	0	0	0	0	0	0	0	0.175	0	0.8596	0.8596	0.8596	
F4	0	0	0	0	0	0.14	0	0.0536	0	0	0	0	0	0	0.3	0.0788	0.0239	0	0	0	0	0	0.0043	0.6428	0.8035	0.4821	
F5	0	0	0	0	0	0	0	0.0369	0	0	0	0.1087	0.2	0	0	0	0	0	0	0	0	0.088	0	0.4297	0.4297	0.4297	
F6	0	0	0	0	0	0	0	0.375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.375	1.1123	-0.3623	
F7	0	0	0	0	0	0	0	0.0727	0	0	0	0.2143	0	0	0	0	0	0	0	0	0	0	0	0.287	0.4656	0.1084	
F8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8088	-1.8088	
F9	0	0	0	0	0	0	0.2	0.013	0	0	0	0.0383	0	0	0	0	0	0	0	0	0	0	0	0.2299	0.2299	0.2299	
F10	0	0	0	0	0	0	0	0.0909	0	0	0	0.2679	0	0	0	0	0	0	0	0	0	0	0	0.3588	0.3588	0.3588	
F11	0	0	0	0	0	0	0	0.1696	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0.6696	1.1186	0.2206	
F12	0	0	0	0	0	0	0	0.3396	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3396	2.7498	-2.0706	
F13	0	0	0	0	0	0	0	0.1878	0	0	0	0.5536	0	0	0	0	0	0	0	0	0	0.446	0	1.1878	1.9378	0.4378	
F14	0	0	0	0	0	0	0	0.0666	0	0	0.393	0.1964	0	0	0	0	0	0	0	0	0	0	0	0.6559	0.7988	0.513	
F15	0	0	0	0	0	0	0	0.1064	0	0	0.056	0.3135	0.2	0.1	0	0	0	0	0	0	0	0.072	0	0.8513	0.8513	0.8513	
F16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2321	0.0705	0	0	0	0	0.0126	0.3152	0.9769	-0.3465	
F17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3036	0	0	0	0	0.0542	0.3578	0.7436	-0.028	
F18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1786	0.1786	0.5993	-0.2421	
F19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.8957	-0.8957	
F20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.41	0	0	0	0	0.4107	0.6786	0.1428	
F21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0.0622	0.0189	0.49	0.49	0.3	0	0	0.0034	1.1053	1.1053	1.1053	
F22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7812	-0.7812
F23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2538	-0.2538
R	0	0	0	0.161	0	0.74	0.2	1.8088	0	0	0.449	2.4102	0.8	0.1	0	0.7	0.3858	0.4207	0.9	0.3	0	0.781	0.2538				

Fig - 1 Bilateral relationships among all affecting criteria

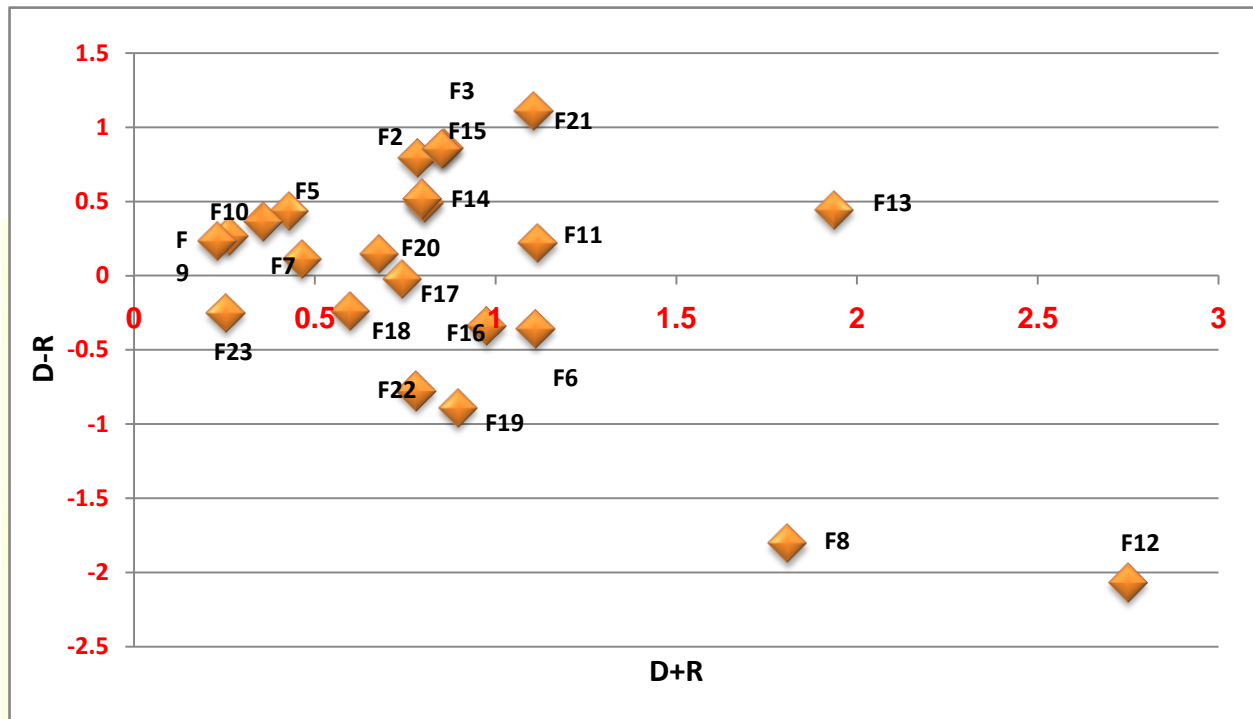


Table 3- Degree of (Di+Ri) and (Di-Ri)

Rank(R)	R	Rank(D)	D	Rank(D+R)	D+R	Rank(D-R)	D-R
F12	2.4102	F13	1.1878	F12	2.7498	F21	1.1053
F8	1.8088	F21	1.1053	F13	1.9378	F3	0.8596
F19	0.8957	F3	0.8596	F8	1.8088	F15	0.8513
F22	0.7812	F15	0.8513	F11	1.1186	F2	0.7857
F13	0.75	F2	0.7857	F6	1.1123	F14	0.513
F6	0.7373	F11	0.6696	F21	1.1053	F4	0.4821
F16	0.6617	F14	0.6559	F16	0.9769	F13	0.4378

F11	0.449	F4	0.6428	F19	0.8957	F5	0.4297
F18	0.4207	F5	0.4297	F3	0.8596	F10	0.3588
F17	0.3858	F20	0.4107	F15	0.8513	F1	0.264
F20	0.2679	F6	0.375	F4	0.8035	F9	0.2299
F23	0.2538	F10	0.3588	F14	0.7988	F11	0.2206
F7	0.1786	F17	0.3578	F2	0.7857	F20	0.1428
F4	0.1607	F12	0.3396	F22	0.7812	F7	0.1084
F14	0.1429	F16	0.3152	F17	0.7436	F17	-0.028
F1	0	F7	0.287	F20	0.6786	F18	-0.2421
F2	0	F1	0.264	F18	0.5993	F23	-0.2538
F3	0	F9	0.2299	F7	0.4656	F16	-0.3465
F5	0	F18	0.1786	F5	0.4297	F6	-0.3623
F9	0	F8	0	F10	0.3588	F22	-0.7812
F10	0	F19	0	F1	0.264	F19	-0.8957
F15	0	F22	0	F23	0.2538	F8	-1.8088
F21	0	F23	0	F9	0.2299	F12	-2.0706

As illustrated in table 3 and figure 1, Met Expectation factor dispatch most influence to the other factors. (D_i shows the sum of influence dispatching from factor i to the other factors both directly and indirectly.)

Job satisfaction factor receiving most influence from the other factors. (R_i shows the sum of influence that factor i is receiving from the other factors.)

CONCLUSION

Based on the comprehensive review of the literature, we gather 23 factors that influencing the voluntary turnover decisions. Then we ask the experts to determine the relations among the influential factors. With using the DEMATEL method, the results of study show that job satisfaction, Met expectation and organizational commitment are the factors that play important role in turnover decisions.

References

- Abelson, M.A. (1993). Turnover cultures. *Research in Personnel and Human Resource Management*, 11, 339–376.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211.
- Allen, D.G., Moffit, K.R., & Weeks. K.P. (2005). Turnover intentions and voluntary turnover: The moderating roles of self-monitoring, locus of control, proactive personality, and risk aversion. *Journal of Applied Psychology*, 90, 980–990.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman Co.
- Bloom, M., & Michel, J.G. (2002). The relationship among organizational context, pay dispersion and managerial turnover. *Academy of Management Journal*, 45,33–42.
- Barrick, M.R., & Zimmerman, R.D. (2005). Reducing voluntary turnover, avoidable turnover through selection. *Journal of Applied Psychology*, 90, 159–166.
- Cavanaugh, M.A., Boswell, W.R., Roehling, M.V., & Boudreau, J.W. (2000). An empirical examination of self-reported work stress among US managers. *Journal of Applied Psychology*, 85, 65–74.
- Davia, M.A. (2005), ‘Job Mobility and Wage Mobility at the Beginning of the Working Career, a Comparative View across Europe,’ Working Papers of the Institute for Social and Economic Research, no. 2005–03, Colchester, University of Essex.
- Fulmer, I.S., Gerhart, B., & Scott, K.S. (2003). Are the 100 best better? An empirical investigation of the relationship between being a “Great place to work” and firm performance. *Personnel Psychology*, 56, 965–993.

- Fontela, E., & Gabus, A. (1976). The DEMATEL observer, DEMATEL 1976 Report. Switzerland
- Geneva: Battelle Geneva Research Center.
- Graen, G.B., Liden, R., & Hoel, W. (1982). Role of leadership in the employee withdrawal process. *Journal of Applied Psychology*, 67, 868–872.
- Griffeth, R. W., Hom, P. W., & Gaertner, S. 2000. A meta-analysis of antecedents and correlates of employee turnover: Update, moderator tests, and research implications for the next millennium. *Journal of Management*, 26: 463–488.
- Ghiselli, E. E. (1974). Some perspectives for industrial psychology. *American Psychologist*, 80, 80–87.
- Gabus, A., & Fontela, E. (1972). World problems, an invitation to further thought within the framework of DEMATEL. Switzerland, Geneva: Battelle Geneva Research Centre.
- Gabus, A., & Fontela, E. (1973). Perceptions of the world problematique: Communication procedure, communicating with those bearing collective responsibility (DEMATEL report no. 1). Switzerland Geneva: Battelle Geneva Research Centre.
- Heath, C., & Dialdin, A. (1991). Probability and belief: Ambiguity and competence in choice under uncertainty. *Journal of Risk and Uncertainty*, 4, 5–28.
- Hinkin, T.R., Tracey, J.B., 2000. The cost of turnover. *Cornell Hotel and Restaurant Administrative Quarterly* June, 1.
- Hom, P.W., Roberson, L., & Ellis, A.D. (2008). Challenging conventional wisdom about who quits: Revelations from corporate America. *Journal of Applied Psychology*, 93, 1–34.
- Hom, P. W., & Griffeth, R. (1995). Employee turnover. Ohio: South-Western College Publishing.
- Hori, S., & Shimizu, Y. (1999). Designing methods of human interface for supervisory control systems. *Control Engineering Practice*, 7(11), 1413–1419.
- In G. R. Ferris (Ed.), *Research in personnel and human resources management*, vol. 18: 137–185. Greenwich, CT: JAI Press.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 2, 263–291.

- Krackhardt, D., & Hanson, J. R. 1993. Informal networks: The company behind the chart. *Harvard Business Review*, 71(4):104–111.
- Krackhardt, D., & Porter, L. W. 1986. The snowball effect: Turnover embedded in communication networks. *Journal of Applied Psychology*, 71: 50–55.
- Kamaike, M. (2001). Design elements in the passenger car development: The classification and the influence analysis in case of recreational vehicle. *Japanese Society for the Science of Design*, 48(1), 29–38.
- Krueger, N., & Dickson, P. R. (1994). How believing in ourselves increases risk taking: Perceived self-efficacy and opportunity recognition. *Decision Sciences*, 25, 385–400.
- Leana, C. R., & Van Buren, H. J. 1999. Organizational social capital and employment practices. *Academy of Management Review*, 24: 538–555.
- Morrell, K. Loan-Clarke J., & Wilkinson, A. (2004). The role of shocks in employee turnover, *British Journal of Management*, 15, 335–349.
- March, J.G., & Simon, H.A. (1958). *Organizations*. New York: John Wiley.
- Mitchell, T. R., Holtom, B., Lee, T. W., Sablinski, C., & Erez, M. 2001. Why people stay: Using job embeddedness to predict voluntary turnover. *Academy of Management Journal* 44: 1102–1121.
- Mossholder, K. W, Settoon, R. P., & Henagan, S. C. (2005). A relational perspective on turnover: Examining structural, attitudinal, and behavioral predictors. *Academy of Management Journal*, 48, 607–618.
- Porter, L.W., & Steers, R.M. (1973). Organizational, work, and personal factors in employee turnover and absenteeism. *Psychological Bulletin*, 80, 151–176.
- Price, J.L., & Mueller, C.W. (1981). A causal model of turnover for nurses. *Academy of Management Journal*, 24, 543–565.
- Price, J.L., & Mueller, C.W. (1986). *Absenteeism and turnover of hospital employees*. Greenwich, CT: JAI Press.
- Podsakoff, N.P., LePine, J.A., & LePine, M.A. (2007). Differential challenge stressor hindrance stressor relationships with job attitudes, turnover intentions, turnover, and withdrawal behavior: A meta-analysis. *Journal of Applied Psychology*, 92, 438–454.

- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*, 80, 1–28.
- Spector, P. E. (1982). Behavior in organizations as a function of employee's locus of control. *Psychological Bulletin*, 91, 482–497.
- Sheridan, J.E., & Abelson, M.A. (1983). Cusp catastrophe model of employee turnover. *Academy of Management Journal*, 26, 418–436.
- Sitkin, S. B., & Weingart, L. R. (1995). Determinants of risky decision-making behavior: A test of the mediating role of risk perceptions and propensity. *Academy of Management Journal*, 38, 1573–1592.
- Sitkin, S. B., & Pablo, A. L. (1992). Reconceptualizing the determinants of risk behavior. *Academy of Management Review*, 17, 9–38.
- Steel, R. P. (2002). Turnover theory at the empirical interface: Problems of fit and function. *Academy of Management Review*, 27, 346–360.
- Uhl-Bien, M., Graen, G. B., & Scandura, T. A. 2000. Implications of leader-member exchange (LMX) for strategic human resource management systems: Relationships as social capital for competitive advantage.
- Weber, E. U., & Milliman, R. A. (1997). Perceived risk attitudes: Relating risk perception to risky choice. *Management Science*, 43, 123–144.
- Yamazaki, M., Ishibe, K., Yamashita, S., Miyamoto, I., Kurihara, M., & Shindo, H. (1997). An analysis of obstructive factors to welfare service using DEMATEL method. *Reports of the Faculty of Engineering, Yamanashi University*, 48(1), 25–30.
- Yuzawa, A. (2002). A state and subjects of TMO conception for city core vitalization countermeasure: A case study of Maebashi TMO Conception. *Bulletin of Maebashi Institute of Technology*, 5(1), 61– 67.