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A MILITARY APPLICATION OF HUMAN CAPITAL MANAGEMENT: MILITARY PILOT TURNOVER

Zeki GULTEKIN, Engin ABDAN, Y. Selim KILIC

**Turkish Air Force Command and Staff College, Istanbul, TURKEY*

Abstract: *The issue of employee turnover has been the subject of various theoretical and empirical studies. Employee turnover is intimately related to human capital management. Specific and general training in human capital mostly increases marginal productivity of a worker in any organization. Most of the firms are having difficulties to retain and attract productive and qualified workers.*

From a military aspect, pilot turnover, as a result pilot shortage, emerges as one of the most challenging problems for decision makers. Military pilots are obviously crucial to any mission employing of air power. A poor retention rate for senior pilots, however, is one of the biggest concerns of military organizations. Military invests a considerable amount of money both in human capital and in the training of a pilot. The training of a pilot also takes a substantial amount of time. It is always difficult for the militaries to keep experienced pilots in the service. Experienced pilots frequently separate to fly in the civilian airline sector after their initial commitment period. High attrition rates waste training investments and reduce effectiveness.

It is critical for policy makers to know the reasons for high attrition rates and how they are related to human capital management. Policy decisions may be based on variables that significantly affect retention. In this study, the basic factors affecting the decision of pilots through separation are analyzed. As a theoretical approach, results of other related cases are surveyed and reflected to current study. According to findings both from literature survey and this study, several policy recommendations are presented considering human capital management.

Keywords: *employee turnover, pilot separation, human capital management.*

1. INTRODUCTION

Organizations have begun to recognize human resources as one of the most important issues for competitive advantage. Today, human capital that represents an organization's stock of knowledge, technical skills, creativity, and experience is becoming more and more important. It is considered that the collective attitudes, skills and abilities of employees contribute to development and growth in a similar way to physical assets such as

machines and money [1]. So, it is acceptable that organizations invest their resources to acquire, develop, and enhance their stock human capital in order to increase their productivity and so that the income of the organization. Considering human capital as a productive asset, human capital management emerges as one of the most challenging issues for any organization. The success of the organizations, now, depends on their ability to understand how human capital related with their performance and their wealth. The most

competitive organizations applying human capital management well will have the best strategies and methods for attracting, hiring, managing, developing and retaining their human capital. Every environment is unique, that's why, and policy makers need to know how to apply human capital management principles and methods regarding the needs of the organizations. At this point, Human Capital Theory helps decision makers to understand employee behaviors within the organizations.

2. HUMAN CAPITAL THEORY AND PROBLEM STATEMENT

Human capital theory assumes that the individual is logical and methodical, and tries to maximize his lifetime earnings by making individual decisions to invest his resources in education. The theory also assumes a link between education, productivity and increases in earnings. Essentially, human capital theory assumes that the stock of human capital is directly correlated to productivity, and the individual worker is compensated for increases in productivity. Since investments in education and training are direct ways to increasing the stock of human capital, the individual will make investment decisions by comparing the costs of those investments to the present value of the increase in income stream they produce. Investments will be undertaken if the present value exceeds the associated costs and the rate of return is greater than that from other available alternatives.

Military organizations invest human capital by giving both general training and specific training. General training refers to basic training that builds skills, which are portable from one organization to another. This form of training is clearly desirable for the employee because it enhances his stock as well as his mobility. Employers need workers who have either received the desired general training from another organization, or will receive it from themselves. For the former, organizations are willing to offer better employment terms to attract them. For the later, the general training is financed by reduced earnings during the training and

contractually obligated periods. Consequently, the employer will need to offer improved terms to match other potential employers to retain the services of their trained employee. Specific training, on the other hand, refers to specialized skills training that provide employees the skills, which the employer requires for the organization's unique operations. Organizations provide this form of training to the extent that productivity is enhanced [1]. Military organizations, as well as civilian organizations, also offer specific training. Military offers training in a variety of skills that are very useful in the civilian sector such as piloting. Mostly, return on investment is questionable since military personnel with these skills leave military more readily because they can earn more in the civilian sector. Military pilots are maybe the best examples that receive specific training, which costs a lot.

Military pilots are obviously crucial to any mission employing of air power. A poor retention rate for senior pilots, however, is one of the biggest concerns of military organizations. Pilots usually have five- to ten-year service obligations depending on countries and services. After this service obligation period, they are eligible to separate from service. After the initial obligations expire, the military accepts that it is difficult to retain pilots, who are usually attracted by the job offers of civilian airlines. It is important, for policy makers, to know the factors that explain the separation behavior of the pilots.

3. METHODOLOGY

The study utilized logistic regressions models to measure the determinants of separation by using the sample data [8]. As explanatory variables, the logistic regression model included age at commissioning, gender, race, education level, marital status, number of dependents, commissioning source, and months in grade. Since the dependent variable used in the separation model in this study is binary, which is



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retention, logistic regression models are appropriate as a tool for analysis. In this study's model, the dependent variable "Separate" is a binary variable. To overcome the limitations of the Linear Probability Model (LPM), the logistic regression (LOGIT) model was used. The LPM is easy to use, but it has some disadvantages. For example, in LPM, the estimated predicted probabilities can be less than zero or greater than one. Also, in LPM, the partial effects of independent variables are constant. In a LOGIT model, the dependent variable is binary and the general equation may be written as follows:

$$P(y=1|x) = P(y=1|x_1, x_2, \dots, x_k),$$

In this model, x represents explanatory variables and y represents the dependent variable. It was assumed that the response probability was linear. To avoid the limitations of LPM, a class of binary response models of the form was considered:

$$P(y=1|x) = G(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k = G(\beta_0 + x\beta),$$

where G is a function taking on values strictly between zero and one. $0 < G(z) < 1$ for all real numbers z . This ensures that the estimated response probabilities are strictly between zero and one. In the LOGIT model, G is the logistic function, which is the normal cumulative distribution function for a standard logistic random variable:

$$G(z) = \exp(z) / [1 + \exp(z)] \\ = \Lambda(z)$$

which is between zero and one for all real numbers [17].

This case is referred to as a LOGIT model or, sometimes, as a logistic regression. The function has an increasing

curve in z . Since it is nonlinear, the LOGIT model requires maximum likelihood estimation (MLE). In Maximum likelihood estimation computes parameters that maximized the probability of observing what was actually observed.

The estimated coefficients of the explanatory variables give the magnitude and the sign of the partial effects of each explanatory variable on the dependent variable. A positive sign of a coefficient indicates that an increase in x is associated with an increase in the probability of separation. Conversely, a negative sign of an estimated coefficient indicates a decrease in the probability of separation as x increases. The partial effects were found by using the results of the logistic regression. The STATA data analysis program was used to run the regressions and estimate the partial effects.

4. FINDINGS AND PILOT RETENTION

The regression model helped to understand how the chosen independent variables affect pilots' separation decisions. According to the model, the effects of chosen variables are as follows; an increase in age increased the probability of separation decision after the initial service commitment. Considering gender, being female increases the probability of leaving. The study indicates that pilots who are not married are less likely to stay in the service. This study reveals that advanced education has a negative effect on separation of pilots. In particular, pilots possessing an advanced degree, either a Master's Degree or a professional degree, tend to stay in military compared to their peers who had only Bachelors' Degrees. And also, pilots with

more dependants (spouse or children) are more likely to stay in the military. The effect of commissioning source was specifically examined in the model and it is analyzed that pilots having a deeper military background are less likely to leave the service.

There are several other reasons that a pilot chooses to separate from the service. Dissatisfaction about career in military is one of the most crucial factors as well as pay differential in separation decision. Separation from family, overall career dissatisfaction, inadequate career counseling, unattractiveness of some duties, not enough chances for further specialization, inflexible assignment, promotion policies, decreased chances for advanced education and benefit and retirement uncertainties are found to be the reasons of dissatisfaction [6].

The factors mentioned above are obviously trigger pilots to leave the military service. After the initial obligations expire, the military accepts that it is difficult to retain pilots, who are usually attracted by the job offers of civilian airlines. To induce pilots to remain in the service, the militaries had previously developed various pay incentive programs. These programs pay an annual bonus to pilots who commit to certain terms of service. Thus, if pilots choose to stay in the military under an agreement, then they are giving up the opportunity to fly for civilian airlines for that time period. However, for most military organizations, pay incentive programs seemed not enough to keep experienced pilots.

Individuals' behavior is the key to their retention decisions. It is obvious that compensation policies affect a pilot's decision to stay or leave. On the other hand, the effects of those policies differ from person to person. For instance, one pilot who really enjoys military service may choose to stay in the service for less compensation than another one who doesn't enjoy military service as much. Besides individuals' characteristics and behaviors, external influences are important in retention decisions, too. For example, if the civilian job market for pilots were strong, then the

motivation to leave would be relatively greater than if the market is poor or the pilots are not needed by civilian airlines.

4. RECOMMENDATIONS

There is no specific way to predict the personal decision of a pilot, but the results of the studies may have some beneficial effects on policy decisions in terms of managing the human capital of military organizations. Civilian and military sector pay differential seems like one of the most challenging problems, revising the current incentive programs may help to reduce attrition and increase motivation. For example, pilots at their early career earn enough parallel to their experience; furthermore, military pays their education and training costs. However the income level doesn't increase much with the experience level increases by time in contrast to civilian sector. While civilian sector offers are important on separation decision, policy decisions on incentives must be revised considering civilian sector.

Being away from family frequently and being stationed in different cities are other problem areas. Policy makers need to evaluate the hardship associated with being away from family while working off base and either increase incentives or improve the quality of life where pilots are stationed.

As this study and human capital theory dictates graduate education is beneficial to both the pilots and the military organizations. Militaries should search for new ways to expand advanced education for pilots. Since advanced education has a significant negative effect on separation of pilots, Militaries should support all its pilots to obtain higher education, such as Master's Degree or an advanced professional degree. This is important since it may be considered that providing education could be difficult during active duty. Advanced education choices for both in-residence and off-duty programs may be diversified for pilots who are deployed in different workplaces. Thus, a pilot may have an opportunity to select an advanced education program that fits his/her



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work schedule. It seems that properly arranging and encouraging graduate education for pilots might decrease separation rates through the additional service commitments. Most of the military organizations have advanced graduate education schools, the usage of education programs can be expanded by increasing the number of pilots in those schools. To do so, military organizations can expand its capabilities by investing in the educational capabilities of their pilots.

As mentioned earlier, pilots having a deeper military background are less likely to separate. Policy makers should take the positive affect of military academies as commissioning source into consideration while selecting pilot candidates from different sources. The given motivation, encouraging and teaching the aviation lifestyle to cadets while they are studying at academy, could explain why military academy graduates are more likely to stay in the organization after their initial service commitments.

Another problem area seems like the dissatisfaction about career paths of pilots. The militaries might consider alternative career paths for pilots. Military pilots mostly considered as the future managers for the organizations that they are in. Militaries treat all pilots as potential leaders and assign them throughout their careers to both flying and non-flying jobs. At the other end of the range would be a career track that allowed pilots to spend all of their service time in flying assignments. Between those two extremes might be several other career paths that would combine, in varying degrees, flying and non-flying assignments. By offering different career tracks, the militaries could capitalize on the differences among pilots in how much actual flying they want to do

during their careers. However, the creation of separate career paths that allowed some pilots to spend the greater portion of their career flying might limit the pilots' possibilities for promotion. Despite that disadvantage, pilots for whom flying was paramount might be more likely to commit to a long term career if they were assured of a fly-only track [6, 7].

It is important for the military organizations to know the reasons for qualified personnel turnover. In order to achieve that keeping the records of all personnel and having a data center that allows statistical analyses may help decision makers.

Civilian airline impact on pilot separation seems like one of the most challenging issues. Further studies may focus on how critical the demand of civilian airlines and possible precautions.

5. CONCLUSION

Military invests a considerable amount of money both in human capital and in the training of a pilot. The training of a pilot also takes a substantial amount of time. It is always difficult for the militaries to keep experienced pilots in the service. Experienced pilots frequently separate to fly in the civilian airline sector after their initial commitment period. High attrition rates waste training investments and reduce effectiveness. Military organizations have to take some actions against these problems. Managing their human capital seems crucially important. Retention of military pilots is obviously affected by a number factors discussed earlier in this study. These factors trigger pilots to separate from the military for civilian airlines. Military decision makers are concerned with the

effect of civilian airline industry on pilots' separation decisions from military. It is expected that the demand of civilian airlines will be more than the current demand in the future since the industry is getting bigger. On the other hand, it is also a problem if all pilots prefer to stay in the military. For all military organizations, there is force structure and personnel planning. Experience level of personnel, in this case experience level of pilots, is important but there must be a balance between more experienced and less experienced personnel. Decision makers have to consider all the aspects of the problem such as the amount of pilots to be commissioned each year, force requirements, expected civilian airline demand, average experience level needed, the length of initial service commitment and the policies regarding incentives.

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