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Internal motivation factors affecting university researchers' participation in the Talent Mobility program

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Abstract

The purpose of this research was (1) to compare the level of need for competence, need for autonomy, need for relatedness, self-efficacy in working with private sector, and a growth mindset of university researchers between those researchers who had participated in the Talent Mobility program with those who had not, and (2) to create a model of internal motivation factors affecting university researchers' participation in the Talent Mobility program. The samples consisted of 323 university researchers and included researchers who had participated in the Talent Mobility program and those who had not. The data were analyzed using Logistic Regression analysis. The research findings were as follows: (1) The university researchers who had participated in the Talent Mobility program and those who had not were significantly different in the level of their need for autonomy, their need for relatedness, their self-efficacy in working with the private sector, and their growth mindset, but the level of need for competence was not significantly different between the two groups. And (2) The model of internal motivation factors affecting the participation of university researchers in the Talent Mobility program was suitable. The two factors that significantly affected university researcher participation in the Talent Mobility program were a growth mindset and self-efficacy in working with the private sector. Therefore, the relevant authorities should encourage the development of these two factors mentioned. When university researchers have increased in their level for these two factors, they will be more likely to participate in the Talent Mobility program.

Introduction

The Talent Mobility program was initiated by the National Science Technology and Innovation Policy Office (STI). The Talent Mobility program was proposed to facilitate the mobilization of research and the development of personnel from public research institutes or universities to work in private companies. Part of the motivation was to alleviate the shortage of personnel in research and development in the private sector.

The Talent Mobility program was launched in 2015. National Science Technology and Innovation Policy Office (STI) provides the environment and external factors which

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facilitate researchers' participation in the Talent Mobility program. The factors included having a clearing house for assisting and providing coordination between researchers and private companies. The program included encouraging the adaptation of regulations that enable researchers to work with the private sector, providing a budget and compensation for the university to hire replacement personnel researchers to work with the private sector, and setting the remuneration of researchers and research assistants, etc. However, in the past, researchers were participating less (Lomtaku & Sungsanit, 2017). From 2013 to 2017, only 549 Science Technology and Innovation researchers participated in the public sector out of 36,749 persons, which accounted for only 1.49 percent (National Science Technology and Innovation Policy Office [STI], 2017).

Thus, it is important to study the factors that encouraged or discouraged researchers from participating in the Talent Mobility program, to find ways to encourage researchers in universities to increasingly participate in the Talent Mobility program (Kitipongwatana, Kaweekijmanee, Wiarachai, Koseeyaporn, 2016). There have not been any studies done in the past that clearly identified the types of motivational factors and how these motivation factors have affected university researchers participating in the Talent Mobility program. Thus, it is necessary to study the concept and theories on motivation and the motivational factors that affect university researcher participation in the Talent Mobility program. In particular, internal motivational factors have not been facilitated much in recent years.

Literature Review

Motivation theorists usually divide motivation into two different types, internal motivation and external motivation, which can be differentiated by the motivating force leading to action for an individual (Calder & Staw, 1975; Deci, 1972; Porac & Meindl, 1982; Scott, Farh, & Podsakoff, 1988). Intrinsic motivation is the motivation to do something motivated by natural satisfaction. (Berlyne, 1966; Decharms, 1972; Deci, 1972; Ryan & Deci, 2000). Extrinsic motivation is doing something because it leads to valuable results such as an improved portfolio performance, increased compensation or career advancement (Deci, 1972; Lawler & Porter, 1967). In a recent literature review, it was found that extrinsic motivation is as important as intrinsic motivation in influencing behavior (Deci, Koestner, & Ryan, 1999).

The Self-Determination Theory (STD) was offered by Deci and Ryan (2000). They identified three basic psychological needs for human beings, a need for competence, a need for autonomy and a need for relatedness. When these three basic psychological needs are satisfied it enhances a person's ability to get the best out of their internal motivation.

Another concept related to internal motivation is growth mindset. A growth mindset (Dweck, 2006) includes the belief that intelligence grows with effort, that intelligence can be developed, in the necessity of gaining insights, in the acceptance of challenges and applying oneself, in the importance of perseverance in the face of failure, of following a path towards expertise while learning from criticism, and in learning lessons and gaining inspiration from the success of others.

Self-efficacy is an assessment of one's ability to create and manage the desired action in order to accomplish a set of tasks. Self-efficacy is the most important variable leading to behavior change. The behavior of people is heavily influenced by a belief in one's ability to be able to conduct self-efficacy (Bandura, Adams, Hardy, & Howells, 1980).

So, the problem of getting researchers to participate in the Talent Mobility program is relatively small. This project is based on an important policy established by the government to solve problems with research and development in the private sector in Thailand. To facilitate university researchers' participation in this program, in addition to external factors, it is important to understand the internal motivating factors and the driving force within the individual decisions of the researchers. The problem was to determine what the motivating factors affecting university researcher participation in the Talent Mobility program are and how these internal factors affect university researcher participation in the Talent Mobility program. According to the concepts and theories of psychology, there are human needs for competence, autonomy, relatedness, self-efficacy and a growth mindset. These factors seemed to be the internal motivating factors that affected university researcher participation in the Talent Mobility program. The purpose of this study was (1) to compare the levels of a need for competence, autonomy, relatedness, self-efficacy in working with the private sector, and having a growth mindset between university researchers who had participated in the Talent Mobility program with those who had not, and (2) to create a model for the internal motivation factors affecting university researchers participation in the Talent Mobility program.

Methodology

The population included researchers in science technology and innovation in the public sector (a total of 36,749 people), some of whom had participated in the Talent Mobility program and some who had not (STI, 2017). The group of researchers who had participated in the Talent Mobility program included 549 people. The

sample size was determined by using the criteria as established by (Peduzzi, Concato, Kember, Holford, Feinstein, 1996). The sample size was calculated from the formula N = 10 k/p with the sample having a minimum of 200 people.

The sampling included probability sampling and stratified sampling. The sample was classified into two groups, the university researchers who had participated in and those who had not participated in the Talent Mobility program both regionally and at universities respectively. Coordination and cooperation for the distribution of questionnaires was conducted by the national science technology and innovation policy office (STI), the Office of the Higher Education Commission (OHEC), the clearing house and Talent Mobility program offices at universities in regions across the country. After that, sampling was carried out at universities using simple random sampling and the distribution of online questionnaires to university researchers via e-mail and the Line application.

The research focused on the creation and efficiency of these tools and their significance for credible findings. The construction and performance of the tool was as follows:

1. Review the related concepts and theories that best fit the variable definitions, the development of the appropriate operational definitions for variables used in the framework, the study of working within the private sector context from semi-structured interviews with 30 university researchers, both those who had and those who had not participated in the Talent Mobility program in a similar proportion.

2. Experts were consulted in the development of the questionnaire to determine the appropriateness of the measurement content and the appropriateness of the language used. Based on expert feedback, the questionnaire was revised and became a powerful tool following the next step.

3. Content validity was assessed following the findings by the IOC from the 3 professors and experts. The questionnaire questions were selected from those that had a content validity of 0.60 or higher. Through this process 31 items were selected for the questionnaire.

4. The reliability test brought was conducted by having 30 questionnaires completed by researchers who had never participated in the Talent Mobility program and sample. The coefficient alpha Cronbach for the questionnaires was between 0.961-0.962, which shows that the questionnaires were reliable and suitable for data collection.

5. An exploratory factor analysis was done to create factors for a series of indicator questions. It was found that there are five internal motivation factors affecting participation in the Talent Mobility program by university researchers. The indicators were decreased from 31 to 30 indicators.

The data were analyzed using descriptive statistics and a logistic regression analysis to find the internal motivation factors affecting university researcher participation in the Talent Mobility program.

Results

There were 323 sample respondents used in the analysis. The majority of the samples were researchers who had not participated in the Talent Mobility program (60.1%). The highest percentage of the researchers lived in the Northeast and in Bangkok (29.1%, 28.8% respectively). The majority were male (57.9%). The highest percentage were aged between 40 and 49 years (46.7%). Most of the researchers were married (59.8%). The majority had a Ph.D. degree (78.3%). The highest percentage had academic positions at the faculty (46.7%). Most had 5 to 10 years (28.5%) work experience and the majority did not work in university administration (68.4%).

The university's researchers who had participated in Talent Mobility program and those who had not were found to have significant differences in the level of their overall internal motivation factors in almost every factor, as shown in Table 1 (*t*-test of a need for relatedness (NFRT), growth mindset (GMT), need for autonomy (NFAT), and self-efficacy (SET) = 0.01**, 0.00**, 0.01**, and 0.00** accordingly), except the factor of the need for competence (NFCT) (*t*-test = 0.18), which were not found to be significantly different on average. The researchers who participated in the Talent Mobility program had higher levels for the five internal motivation factors than the researchers who did not participate in the Talent Mobility program. It was found that the need for relatedness (NFRT) was the most important factor.

The model for the internal motivation factors affecting university researchers' participation in the Talent Mobility program was found to be suitable because it had accurately predicted the percentage of university researchers that participated in the Talent Mobility program at 64.1 percent, (shown in Figure 1). Two factors that significantly affected university researchers' participation in the Talent Mobility program were a growth mindset and self-efficacy in working with the private sector. If the university researchers have a growth mindset that goes up by 1unit, it will increase the likelihood for participation in the Talent Mobility program by a factor of 2.509. On the other hand, if university researchers have self-efficacy in working with the private sector, it will increase the likelihood for participation in the Talent Mobility program by a factor 1.760 times.

Table 1 Results with a level of overall internal motivation factors comparing the university's researchers who had participated in Talent Mobility program and those who had not

Factors	Total (323 persons)			Participate (129 persons)			Not Participate (194 persons)			*t*-test
	Mean	*SD*	Results	Mean	*SD*	Results	Mean	*SD*	Results	*p*
NFRT	5.35	0.59	very high	5.48	0.50	very high	5.27	0.63	very high	.01**
NFCT	5.30	0.62	very high	5.42	0.55	very high	5.21	0.65	very high	.18
GMT	5.16	0.65	high	5.39	0.50	very high	5.01	0.70	high	.00**
NFAT	4.92	0.64	high	5.02	0.59	high	4.88	0.70	high	.01**
SET	4.80	0.75	high	5.06	0.61	high	4.63	0.79	high	.00 **

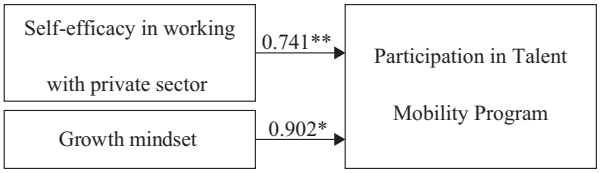

Figure 1 A model from the results for the internal motivation factors affecting university researcher participation in the Talent Mobility program

Conclusion

Growth mindset significantly affected university researcher participation in the Talent Mobility program. An increase of 1 unit in growth mindset results in a 2.509 increase in participation in the Talent Mobility program. Therefore, the relevant authorities should encourage researchers to have Growth mindset increasingly. People with a growth mindset tend to have the following beliefs (Dweck, 2006):

1. If they have the tenacity to try, intelligence can grow over time.
2. Intelligence can be developed.
3. Having a deep desire to learn.
4. Having the ability to accept challenges and apply themselves.
5. Showing persistence in the face of failure.
6. Trying to follow a path that leads to expertise.
7. Having the ability to learn from criticism and find lessons and inspiration from the success of others.

Creating and promoting a growth mindset in working with the private sector can be done by:

1. Promoting researchers with outstanding contributions from working with the private sector in the Talent Mobility program to be role models for other researchers;

2. Encouraging researchers who have participated in the Talent Mobility program, especially those who excel in working with the private sector, to form a team and do projects with researchers who have not participated in the Talent Mobility program and advise these researchers on how to develop their ability and skills in working with the private sector and

3. Encouraging researchers to understand the growth mindset and encourage them to believe that everyone has the potential to learn and develop their skills in working with the private sector, that effort in learning is very important, and that they should not be discouraged with obstacles but rather to challenge themselves to develop over time.

Self-efficacy in working with the private sector significantly affected university researcher participation in the Talent Mobility program. If university researchers have an increase in self-efficacy by one unit, it will increase the likelihood of participation in the Talent Mobility program 1.760 times. Therefore, the relevant authorities should encourage researchers to increase their level of self-efficacy in working with the private sector. This may encourage the following beliefs:

1. Belief that they have sufficient knowledge and expertise to solve the problem and/or do research and transfer technology to entrepreneurs in the private sector.
2. Belief that they can bring their fundamental research contributions to the development of new commercial enterprises.
3. Belief that they can improve their ability to communicate academic knowledge with entrepreneurs and the community.
4. Belief that they can find and create a network with the private sector and community.

There is a significant difference between the researchers who have not participated in the Talent Mobility program and the researchers who have participated in the Talent Mobility program in the factors of need for autonomy (*t*-test = 0.01**), especially in need to manage work and time when working with the private sector in the Talent

Mobility program (*t*-test = 0.00**). This may be because the researchers who have not participated in the Talent Mobility program lack the awareness of the value and do not understand the importance of working with the private sector. As a result, researchers who had not participated in the Talent Mobility program had not struggled to manage their work and time while working with the private sector in the Talent Mobility program.

Therefore, the relevant authorities should encourage university researchers, especially researchers who have not participated in the Talent Mobility program, to have awareness of value and to understand the importance of working with the private sector and participating in the Talent Mobility program. Importantly, in the dimensions of enjoyment and challenge in researching and solving problems in real cases with the private sector, researchers may gain the perception that the results of their own research in commercialization and seeing their own research is beneficial to the public. When the researchers have value awareness and understand the importance of working with the private sector through the Talent Mobility program, they will have an increasing need to manage their work and time for working with the private sector through the Talent Mobility program.

Individual factors affect the participation of university researchers in the Talent Mobility program. This effect can be seen by putting personal factors into the model. It increased the prediction accuracy for the number of university researchers who participate in the Talent Mobility program. Therefore, the relevant authorities may promote policies to suit individual researchers, might focus on researchers that are younger in age, have academic positions such as researcher, and that have academic positions with a Ph.D. and are assistant professors.

External factors continue to be a major factor for the relevant agencies to continue to promote (these factors were found in the feedback on the open-ended questionnaire with the sample additional answers.): the university focus of the Talent Mobility program, by issuing new regulations and policies that are conducive to participation in the Talent Mobility program; having reasonable budget and compensation; and having a channel for the researcher to include research results from the Talent Mobility program to advance their career path.

Recommendation

The finding was that there are two factors significantly affecting the participation of university researchers in the Talent Mobility program, namely, a growth mindset and self-efficacy in working with private sector. Therefore, there may be other intrinsic motivation factors, and when these are put in the model, they may significantly affect the participation of university researchers in the Talent Mobility program. These additional factors may include enjoyment, anxiety, attitudes toward the project, willingness to join the project and a value awareness of the project.

It was found that the three basic psychological needs had an insignificant affect or a negative effect on the participation of university researcher participation in the Talent Mobility program. On the other hand, if studying the satisfaction of three basic psychological needs, there may be different findings.

Additional studies may compare university researchers with people from different academic positions who participated in the Talent Mobility program. Their reasons for participating in the Talent Mobility program may be revealed using in-depth interviews. The hope would be to get data to attract more researchers with different academic positions to join the Talent Mobility program. Also worthy of study would be the internal motivation factors affecting the participation of entrepreneurs in the Talent Mobility program to find similarities or differences in the findings.

Conflict of Interest

There is no conflict of interest.

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