Chapter 4.7

Key Perspectives for a Long-term Career – Statistical Analysis of International Data for a New Profession

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Abstract

Research managers and administrators (RMAs) face the invisibility arising from the diversified work and ambiguous boundaries. Some reports pointed out the stress of RMAs. Moreover a long-term career is a critical matter for RMAs to succeed. Thus, this chapter aims to identify the relationship between the long-term career of RMAs and relevant factors. The dataset from Research Administration as a Profession 2 (RAAAP-2) allowed regression analysis considering national and regional differences in the analysis. The analysis included 3,235 respondents. The results indicated that job attraction perceived by RMAs and additional acquisition of academic degrees after engagement were positively and significantly related to the total years of experience. Moreover, the linear mixed models showed that country/regional variation and the total years of experience had a significant link even after controlling the other variables. The findings would highlight the attraction of research management and administration as a profession.

Keywords: Long-term career; job attraction; regard for professional qualifications; academic degrees; RAAAP; regression analysis

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Introduction

The unique characteristics of university RMAs include the broader range of roles and tasks required (Shambrook & Roberts, 2011; Shelley, 2010; Tauginienė, 2009). However, RMAs lack deep awareness of their roles and tasks from their direct stakeholders, such as university executives and researchers (Poli, 2018a; Virágh et al., 2019). Moreover, definitions of their roles and functions in many countries are unclear (Virágh et al., 2019). In other words, RMAs are still developing their profession around the world.

Since professional authority depends on the quantity and quality of knowledge (Etzioni, 1969), professionals' work generally needs the knowledge and skills they have developed from long-term work experience and learning from mistakes. Therefore, factors affecting RMAs' years of work experience are remarkable for establishing the RMAs' expertise. However, little statistical and empirical research has focussed on the relationship between years of RMAs' work experience, perspective on the job, and skill development.

This chapter will identify the relationship between the number of years of work experience of RMAs and contributing factors such as individual recognition, skill development, and evaluation of professional qualifications. The international survey RAAAP-2 (Kerridge, Ajai-Ajagbe, et al., 2022) made it possible to incorporate national and regional differences in the analysis. The results of this chapter reduce the invisibility of RMAs arising from the diversity of their work and the blurring of boundaries (Poli, 2018a), provide valuable and practical implications for RMAs themselves and their employers, and highlight the attractiveness of research management and administration as a profession.

Theoretical Background

Factors of Career Longevity

Factors that affect the success of professionals' long-term careers have received extensive attention in a wide range of fields of human resource management. Knowledge and competence (supported by experience) are essential to professional work performance, and friction and stress are inherent in the work process. If young professionals leave the workforce within a short time, capacity building will not progress, negatively impacting organisational capacity and culture.

This difficulty in long-term professional employment may be more pronounced in expanding highly stressful fields such as interpersonal services. For example, empirical studies have been active in nursing, long-term care, teaching, and hospitality. In addition, research has identified job satisfaction (e.g. Marshall, 2019), internal relationships, core practical skills (Bobek, 2002), and job autonomy as long-term career factors.

However, there is little empirical analysis using statistical methods on the factors influencing the long-term engagement of RMAs. The reason likely arises from the invisibility of RMAs due to job diversity and blurred task boundaries (Poli, 2018a). In addition, research administration is an internationally new profession.

Empirical Studies on RMAs

Some reports about stress exist for RMAs (Katsapis, 2010; Shambrook, 2012). For example, Tabakakis et al. (2020) developed a survey of 2,416 RMAs from four countries (the United States, the United Kingdom, Australia, and Canada) which measured the extent of burnout and the workplace factors causing it. As a result, they identified several essential items significantly related to burnout, including work pace, role clarity, quality of leadership, work–family conflict, and justice and respect.

In Japan, the Research Management Skill Standards were created in the profession's early years to standardise skills (University of Tokyo, 2014). Empirical studies using the standards are underway. For example, Ito and Watanabe (2017, 2020) focussed on Japanese RMAs with diverse work experience and balanced professional skills (Lazear, 2003, 2004).

In 2015, they surveyed RMAs from Japanese universities and public research institutions. First, following the procedure of Bublitz and Noseleit (2011), factor analysis was used to generate four factors from 22 different skills. Then, a balanced skills score was calculated from the number of factors in which the skill level was intermediate or higher. Considering previous studies, they used the highest degree and diverse work experiences as explanatory variables. A negative binomial regression analysis of 252 respondents confirmed that master's and doctoral degrees were positively and significantly related to balanced skills. Diverse work experience was also positively correlated with balanced skills.

Materials and Methods

RAAAP Data

The RAAAP is a global survey of research administration professionals (Kerridge & Scott, 2018a). It is endorsed by the International Network of Research Management Societies (INORMS), and supported by member associations. The second edition in 2019, RAAAP-2 (Kerridge, Ajai-Ajagbe, et al., 2022) received 4,324 responses from over 70 countries. The starting dates of research administration systems and employment practices vary by each country, so the country where the respondent works should be considered in the analysis. The survey is conducted anonymously via the Internet, and the data are publicly available.

The dataset for this analysis arose from the RAAAP-2, which consists of 39 main questions. Many questions referred to the respondents' attributes, perceptions of their jobs, and the characteristics of their organisations. This analysis selected the question items that seem to contribute to the long-term career progression of professionals. The sample included 3,235 respondents with no missing values in the relevant items.

Response Variable

As for the career length of RMAs, the researchers used the item, 'Approximately how many years in total have you been employed in the field of Research Administration?'. Response options were set up in one-year increments for years of employment from 1 to 9 and five-year increments for years from 10 to 39, with options for less than 1 year and more than 40 years. Respondents with 'no experience' were exempt from this analysis. If the responses were in one-year increments, the value was left unchanged. For the five-year tiers, the median value replaced the initial value; 0.5 for less than one year; 40 for more than 40 years. These values were used as the 'Total Years as an RMA' for the objective variable. Although this variable is strictly an ordinal scale, it was treated as an interval scale because of the number of years captured in 17 steps.

Explanatory Variables

To explore the factors contributing to RMAs' long-term career success, the question 'Why have you stayed in research administration?' was analysed. This question consisted of 15 branch items, each rated on a five-point Likert-type scale. Exploratory

factor analysis (EFA) using the maximum likelihood method for the 14 items, excluding 'other', produced four factors with eigenvalues exceeding 1.0. For a sharper factor structure, 12 items remained after removing items until the factor loadings of all items surpassed 0.4. Table 4.7.1 shows the 12 items and their factor loadings after Promax rotation.

The last eigenvalue was 3.948 for Factor 1, which trailed Factor 2 (1.789) and below. Factor 1 received a strong factor loading from the items indicating that respondents were attracted to the RMAs' job characteristics.

The researchers then calculated Cronbach's alpha coefficients to confirm if the items related to the obtained factors measured the same concept. Among them, the coefficient of the five items with large loadings on the first factor was 0.788. After removing an item which decreased Cronbach's alpha, the alpha for the four items improved to 0.826, indicating high reliability (internal consistency). According to this result, a new explanatory variable, 'Job Attraction', was created by averaging the scores of the four items.

Prior studies have shown that education links to RMAs' skills. As for education, the RAAAP-2 survey includes a question, 'Level of Academic Qualification Gained DURING your time as an RMA'. The question classified education level by an acquired degree. In this analysis, a dummy explanatory variable, 'Academic Degrees', was created by assigning '0' to no degrees acquired after becoming an RMA and '1' if any degree was acquired.

Each country has introduced a system of professional accreditation for RMAs' skills. The RAAAP-2 asked, 'What is your level of agreement with these statements about professional accreditation in research management and administration?' This question consisted of six items on a five-point scale of agreement.

Table 4.7.1. Factor Loadings in the EFA I.

Questionnaire Item	Factor 1	Factor 2	Factor 3	Factor 4
I like the challenging work	0.866	0.007	0.008	−0.027
I enjoy the profession, it's fun	0.737	−0.083	−0.031	0.036
I like working with faculty/ academics	0.643	−0.024	0.076	−0.041
The work is never boring or monotonous	0.617	−0.042	−0.064	0.159
It's a new profession and I like to help shape it	0.548	0.135	−0.008	−0.127
I do not intend to stay	0.025	0.909	−0.101	0.017
I am looking to change but have not found a new career yet	0.003	0.826	0.076	0.044
No opportunity to change	0.028	0.100	0.671	−0.017
Too late to change careers now	−0.035	−0.166	0.576	0.097
Unsuccessful in trying to move into another field	0.043	0.221	0.568	−0.035
It pays well	−0.049	0.117	−0.090	0.701
Job security	−0.036	−0.072	0.256	0.470

EFA using the maximum likelihood method was conducted on these six items. One factor had an eigenvalue greater than 1.0 (eigenvalue of 3.411), indicating a one-factor structure. Table 4.7.2 shows the factor loadings after the deletion of one item with a low factor loading. Cronbach's alpha coefficient was 0.868, confirming high internal consistency. Finally, the average score of the five items became the explanatory variable 'Regard for Professional Qualifications'.

We partially modified the RAAAP-2 regional classification to create a 'Country/Region' variable for the impact of the respondent's country or region of affiliation. Table 4.7.3 lists the 'Country/Region' categories and frequencies.

Control Variables

Respondents' age and gender were analysed from the RAAAP-2 questionnaire as control variables. The age options consisted of six levels: under 24, 25–34, 35–44, 45–54, 55–64, and over 65. This variable is strictly an ordinal scale, but since the class range is clear at 10 years, we assigned values from one to six in ascending order and treated it as an interval scale.

Table 4.7.2. Factor Loadings in the EFA II.

Questionnaire Item	**Factor 1**
It gives me more confidence in my abilities	0.922
It helps me do my current job better	0.909
It increases my credibility with faculty/academics/researchers	0.773
It helped me gain promotion/a new job	0.654
It has made no difference at all	0.499

Table 4.7.3. Respondents' Region and Total Years as an RMA.

Country or Region of Employment	**Degree**	**Average**	**S.D.**
United States	1,115	12.426	8.763
United Kingdom	432	8.400	6.361
Oceania	409	8.186	6.544
Scandinavia	330	8.508	6.519
Europe (rest of)	279	8.923	5.809
Canada	256	9.666	6.702
Germany	116	8.177	5.664
Japan	106	5.642	4.654
Asia (rest of)	87	5.184	3.862
Africa	73	9.521	5.913
Americas (rest of)	32	8.969	7.541
Total	3,235	9.763	7.485

S.D., standard deviation.

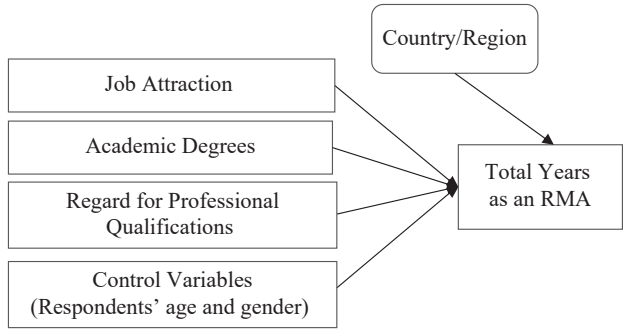

Fig. 4.7.1. Conceptual Model.

The gender question had four options: 'female', 'male', 'non-binary', and 'prefer not to say'. 'Non-binary', which has a low frequency, was merged into 'prefer not to say', and two dummy variables were created for 'female' and 'prefer not to say', with 'male' as the reference category.

Conceptual Model

By reviewing the previous studies above and operating the variables from the RAAAP-2 dataset, the researchers propose a conceptual model shown in Fig. 4.7.1. They intend to validate the relationships in the model.

Results

Regression Analysis

The statistical analysis programme IBM SPSS statistics version 26 was used. No ceiling or floor effects were found for 'Job Attraction' or 'Regard for Professional Qualifications' as measured by the Likert-type scale.

First, an ordinary least squares (OLS) regression analysis was conducted with 'Total Years as an RMA' as the objective variable. The results are shown in Table 4.7.4. Model 1 includes three explanatory variables, 'Job Attraction', 'Academic Degrees', and 'Regard for Professional Qualifications', in addition to the control variables. The variance inflation factor for each variable in Model 1 was less than 1.1, indicating no severe effects of multicollinearity.

In Model 1, 'Job Attraction' had a positive and significant relationship with 'Total Years as an RMA'. 'Academic Degrees' also showed a positive and significant relationship with 'Total Years as an RMA'. On the other hand, contrary to expectations, 'Regard for Professional Qualifications' did not show a significant relationship with 'Total Years as an RMA'.

Linear Mixed Model

Then, 'Country/Region' was put into the regression analysis. As for using a categorical variable like 'Country/Region', converting dummy variables is one of the options. However, since the number of categories in this variable is as much as 11, 10 dummy variables were required. In that case, it would be difficult to interpret the results of regression analysis.

Table 4.7.4. Results of Regression Analysis.

	Model 1				Model 2			
Variables	*B*	**SE**	**95% CI**		*B*	**SE**	**95% CI**	
Job attraction	0.888***	0.128	0.638	1.138	0.857***	0.126	0.611	1.104
Academic degrees	3.289***	0.248	2.803	3.774	3.107***	0.244	2.628	3.586
Regard for qualifications	−0.216	0.151	−0.512	0.080	−0.326*	0.150	−0.621	−0.031
Age range	3.703***	0.111	3.485	3.920	3.535***	0.111	3.318	3.752
Female	0.482	0.266	−0.040	1.004	−0.146	0.267	−0.669	0.378
Prefer not to say	0.698	0.963	−1.190	2.586	0.028	0.943	−1.821	1.876
Constant	−7.362***	0.735	−8.803	−5.921	−6.726***	0.852	−8.412	−5.039
Region (random effect)					1.959*	0.977	0.737	5.206
Adjusted R^2	0.317							
−2 restricted log-likelihood					20,836			

The response variable, Total Years as an RMA. Model 1, OLS. Model 2, maximum likelihood estimation.
B, non-standardised coefficient; SE, standard error; CI, confidence interval.
*P <0.05, **P <0.01, and *** P <0.001.

Therefore, this analysis employed a linear mixed model, which suits data grouped by organisational affiliation. In general, linear regression models estimate the effect (slope) of the explanatory variables on the objective variable and intercept as fixed parameters. In a linear mixed model, the effect of group differences is considered a stochastic variation (random effect) and is estimated as variance in the model equation. The estimation was the restricted maximum likelihood method.

The results of the analysis are shown in Model 2 of Table 4.7.4. Model 2 identified that 'Job Attraction' had a positive and significant relationship with 'Total Years as an RMA'. In addition, 'Academic Degrees' also had a positive and significant relationship with 'Total Years as an RMA'. On the other hand, 'Regard for Professional Qualifications' was not found to have a significant relationship with 'Total Years as an RMA'. The estimate for the random effect of country/region differences was significant.

Discussion and Conclusion

Discussion

First, the results revealed that job attraction was positively significant with the total years as an RMA. RMAs are stressed (Katsapis, 2010; Shambrook, 2012), and burnout is a widespread problem in international research (Tabakakis et al., 2020). Therefore, it is possible that to engage in such a profession for an extended period, one would need to feel a strong attraction to the job characteristics themselves.

Second, 'Academic Degrees' after engaging as an RMA were also positively and significantly related to 'Total Years as an RMA'. This is in harmony with the previous analysis by Ito and Watanabe (2020). In other words, post-employment education could lead to voluntary skill development and long-term engagement as a professional. Furthermore, RMAs have become more highly educated in recent years, and there are even graduate master's programmes dedicated to RMAs in the United States. Therefore, acquiring academic degrees after work engagement may result from the increasing advancement and complexity of RMAs' work.

On the other hand, 'Regard for Professional Qualifications' was not significantly related to 'Total Years as an RMA'. This result does not negate the validity of the RMA-related qualification introduced in various countries. A high evaluation for a vocational qualification does not necessarily mean that an individual has actually obtained a vocational qualification.

In the linear mixed models that considered the differences of country/region, the estimate for the random effect of country/region was significant. Moreover, the relationships between the explanatory and objective variables were similar. The results mean that country/regional variation and total years as an RMA have a significant link even after controlling for age, gender, and the three explanatory variables. Furthermore, the variables 'Job Attraction' and 'Academic Degrees' have a strong relationship with 'Total Years as an RMA', regardless of country or region.

Although researchers have pointed out that one of the challenges for RMAs is that their roles and duties are not fully recognised (Poli, 2018a; Virágh et al., 2019), the present results could imply that RMAs are evolving as a profession.

Conclusion and Limitations

Using the international survey RAAAP-2, this study sought to unveil the relationships between the total years as an RMA of RMAs and the relevant factors. The results emphasise the role of the perceived attractiveness of the occupational characteristics

and the acquisition of new degrees after employment for the career continuity of RMAs. Moreover, this tendency is international.

The results of this study will also provide some insights regarding research management practices in universities. Currently, many universities, regardless of nationality, suffer from inadequate resources. Furthermore, as new professionals, RMAs are often disadvantaged in allocating human and financial resources. However, considering the results of this study, stakeholders could promote improvements in the systems, operations, and workplace culture that affect the behaviour and perceptions of RMAs. More specifically, it would be beneficial to provide opportunities to make occupational characteristics more attractive and to support educational credential acquisition. This insight is meaningful for the career development of RMAs and the policy-making process, where the importance of RMAs is under discussion in the context of strengthening research capabilities.

The dataset arose from the RAAAP-2 public database (Kerridge, Ajai-Ajagbe, et al., 2022). Participation in the RAAAP-2 survey was voluntary, and selection bias is inherent. Furthermore, participants from the United States and the United Kingdom were mass, suggesting that interest in the RAAAP-2 survey was widely different across countries and regions.

The number of years of cumulative experience varied considerably across countries and regions. What makes the difference remains to be clarified. For example, there are remarkable differences between countries with a long history of RMAs, such as the United States and countries where research management systems began relatively recently. The policies of each country and the activities of RMA-related organisations are also possible factors. Future country-by-country analysis based on this analysis may lead to new research questions.

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