Research Managers and Administrators in Conflicting Organizational Cultures: How Does Their Human Capital Help Professional Survival in Knowledge-Intensive Organizations?

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Abstract

Research Managers and Administrators (RMAs) face various challenges caused by conflicting and contradictory organizational subcultures in knowledge-intensive organizations (KIOs), but their human capital, such as skills and personality traits, helps RMAs to maintain job and organizational engagement and professional growth. Focusing on self-leadership of RMAs, the effects of the RMAs' human capital on their performance and job satisfaction are statistically tested with the Research Administration as a Profession (RAAAP) wave-1 dataset that captures the current states of RMA around the world. RMAs more willing to mobilize their self-leadership are more successful in terms of their career development and are happier with the job, and thus, they are surviving even in conflicting and contradictory subcultures. Implications are also provided about human capital and agency of RMAs as well as human resources practices of KIOs.

Keywords:

Research Manager and Administrator (RMA), knowledge-intensive organization (KIO), organizational culture, human capital, self-leadership, RAAAP

Introduction

This paper is intended to explain professional development and survival of Research Managers and Administrators (RMAs) in knowledge-intensive organizations (KIOs), focusing on organizational culture and human capital management. RMAs are

professional workers in KIOs, e.g., universities, research institutes, and other organizations for which knowledge is critical for survival, and they tend to face conflicting and even contradictory subcultures in the KIOs. On the one hand, there is a culture of innovation and research that values challenges and free thinking, and on the other, there is a culture of bureaucracy that values control. The latter exists to a certain degree even in KIOs because bureaucracy is (a) necessary (evil) where people have to collaborate for common goals, including research projects (e.g., Bourgeault et al., 2011; Greenwood, 2009; Grey, 2012; Kaplan, 1959; Kleinman & Vallas, 2001; Leitner & O'Donnell, 2007; Scott et al., 2000). In addition, increasing reliance on public research grants more often demands that KIOs comply with standardized accounting and reporting on the granters' term, which results in some degrees of bureaucratic control in recipient KIOs (e.g., Greenwood, 2009; Grey, 2012; Kaplan, 1959; Leitner & O'Donnell, 2007). The subcultures also exist along occupational lines, such as researchers and administrators. RMAs are exposed to sometimes contradicting expectations from researchers, who value the innovative, free-thinking subculture, and non-research administrative workers, who value the subculture of bureaucratic control.

In this paper, how RMAs use their human capital to survive in the two organizational subcultures and grow as professional workers is discussed. Human capital is a concept that describes the intangible assets that employees can contribute at the workplace (e.g., Caddy, 2000; Lenihan et al., 2019; Petty & Guthrie, 2000). It originally emphasized skills, training, and expertise of workers, but today it encompasses different job-related attributes of an employee, such as personality traits, attitudes, values, beliefs, and other characteristics, including willingness to assist colleagues and contribute to an organization, resilience, creativity, self-efficacy as well as cognitive ability. This paper particularly focuses on an attribute called self-leadership of RMAs. Self-leadership is an employee's own initiative to commit to an assigned job and improve their performance by relying on internal, in addition to external1, standards about what should be done and why it should be done for the assignment (Carmeli et al., 2006; Pearce & Manz, 2005; Stewart et al., 2011). Employees may exert self-leadership whether or not an assignment is intrinsically rewarding, i.e., challenging, meaningful, and motivating, but the exertion is especially important when an assignment is not. In such a case, employees with self-leadership are believed to try to reduce the discrepancies between their internal standards of an intrinsically rewarding job and the external requirements by embedding naturally rewarding elements into the assignment.

For example, an RMA can set self-goals that contribute to the job AND are motivating to oneself and can imagine the intrinsic and extrinsic rewards that one can enjoy when

the goals are attained. In this regard, self-leadership includes the process of influencing one's own cognition, emotions, and thought patterns so that a job is psychologically and materialistically satisfactory but without changing the external goal of the job itself. Then, while working, the RMA self-monitors and uses the advancement of the job and others' reactions as feedback. Thus, it is also a learning process initiated by the RMAs themselves. In other words, when RMAs are more resourceful in terms of their human capital, they are more likely to use self-leadership.

When self-leadership works well, it increases job satisfaction, performance, engagement, and organizational citizenship behavior, which is a voluntary behavior to help others at the workplace beyond prescribed responsibilities (Sun et al., 2007). At the same time, other psychological benefits are attained, including self-control, confidence, and self-efficacy, and thus, the possibility of stress and anxiety are decreased, whereas the possibility of career success is increased. It is also said that workers with certain personality traits, especially conscientiousness of the BIG 5 personality traits (openness, conscientiousness, extraversion, agreeableness, and neuroticism), are more likely to exert self-leadership (Stewart, Carson, & Cardy, 1996 in Stewart et al., 2011), and as a result, to become high performers through their own initiative. The benefits of the RMAs' initiative, such as self-leadership, may not be limited to those just mentioned. For example, to survive the conflicting and contradictory work demands in a free-thinking knowledge-creating culture and control-oriented bureaucratic culture, it is necessary to be adaptable and resilient when facing the frictions and tensions due to the subcultures. While handling the stressful situations and finding solutions (or points of compromise) at work, RMAs have to be tough enough to undertake the challenges of strategizing for their own professional development as well as proving their talents at the same time. The initiative may help them to establish their foothold in a KIO and to advance their individual growth.

The concept of human capital above is more than what theories of motivation, such as Theory Y that emphasizes managerial control while focusing on intrinsic aspects of employee motivation, describe and what the classic definition of human capital such as the "willingness to work" (e.g., Petty & Guthrie, 2000) covers. However, it is actually the talents normatively expected of RMAs, including the capability of and a positive attitude toward lifelong self-learning (Landen & McCallister, 2006). In this regard, the inclination to engage in self-leadership is an essential attribute of RMAs. Thus, in this paper, it is assumed that self-leadership by RMAs helps them to survive difficult work environments in KIOs. In other words, RMAs with self-leadership are more likely to survive and be successful, making them more valuable assets in KIOs than those without self-leadership.

Research Questions and Method

By explaining the relationship between self-leadership of RMAs and their survival and development in KIOs, this paper is intended to specifically answer the following questions. First, what attributes and behavior patterns are helpful for RMAs to overcome the difficulties of the conflicting and contradictory subcultures in KIOs? Second, what implications do the attributes and behavior patterns have to human resources management practices in KIOs? The first question is especially important because the difficulties that RMAs encounter in the conflicting and contradictory organizational subcultures do not automatically indicate that, for example, they will psychologically break down, burn out, or quit2. Those difficulties may lead to job-related stresses that result in negative workplace behavior and turnover, but not everyone follows that path. Thus, the real question involves determining what makes a difference between the "exit, voice, and loyalty" (Withey & Cooper, 1989) on the side of RMAs. Withey and Cooper (1989), citing Hirschman (1970), argued that an organization will receive three possible responses when someone is dissatisfied with the current situation, which are: simply leaving and never returning (exit), taking action to amend problems (voice), and remaining silent but making the best efforts to improve the situation (loyalty). In other words, what causes RMAs to take the path of voice or loyalty and what attributes and behavior patterns help them to take the initiative to maintain or even improve their job commitment and engagement? In this regard, loyalty does not necessarily mean committing to an organization for the organization's benefit but remaining at the organization and crafting jobs to increase one's own satisfaction.

In addition to recruiting, hiring, career development, and talent management of RMAs in general, the second question is important in terms of the professional development of RMAs, especially for junior ones, from within themselves. The existing studies about RMAs mainly aim to help the managerial leadership in KIOs (e.g., Kerridge & Scott, 2018; Landen & McCallister, 2006), and this approach is important because the understanding and willingness of the management team is always critical for RMAs to grow as individuals and as a profession. However, there are at least two caveats in the approach. First, unfortunately, the support from the management cannot always be taken for granted. It is not because managers are exploitative of talents or budget constraints from time to time may prevent them from utilizing RMAs, but because their span of control and overall job responsibilities do not allow them to focus on developing RMAs. In addition, some of them may be uninterested in RMAs because the position is new to their KIOs and they are uncertain of how to use RMAs. In these situations, junior RMAs must take the initiative to develop their own career as many other professionals do. Second and related to the first point, RMAs as knowledge

workers, including even junior RMAs, have to be ready to take the responsibility for their professional development without being directed from the leadership. This type of initiative from the side of junior RMAs may also be helpful to the leadership of KIOs because it will increase effectiveness and efficiency of their organizations without direction and control from above. In this regard, it is important not only for junior RMAs but also for senior ones and the managerial leadership of KIOs to understand what attributes are helpful for the professional development of RMAs.

To answer the above questions, the rank-ordered and categorical data obtained in wave 1 of the Research Administration as a Profession (RAAAP) survey are analyzed with ordered logistic regression. The survey, conducted in 2016, aimed to help the leadership of KIOs to obtain prospects for the professional development of junior RMAs by capturing the state of the RMAs' soft skills worldwide (Kerridge & Scott, 2017, 2018). It was funded by the US National Council of University Research Administrators (NCURA) Research Program, and eleven global and local professional associations distributed its questionnaire to their members. As a result, 2,691 RMAs and others responded from the US, UK, Canada, Europe, Oceania, and other regions. The details of the data and survey are explained in the Research Method section.

Expected Contributions of This Paper

Then, why is it important to study RMAs from the perspective of human capital and organizational culture? The first clear reason is that the jobs of RMAs have become more complicated than before as the KIOs and funding sources for research diversify around the world. The RAAAP survey (Kerridge & Scott, 2018) indicates that the roles of and expectations for RMAs have grown as the profession spreads from the US, UK, and Europe to the rest of the world. In addition, the KIOs themselves are becoming more diversified as emerging economies build up their capability for policy research. For example, think tanks traditionally meant nonprofit, independent organizations that made public-policy proposals to the government, but today, there are many different forms of think tanks, such as research institutes inside universities, for-profit research institutes, nonprofit organizations, non-governmental organizations, and research institutes affiliated with the government (McGann, 2020). As the organizational forms of KIOs diversify, more research funding is provided from the public sector, including the government. This tendency has been clear in Anglo-American and other developed countries for more than several decades since government agencies started providing research funding to non-governmental institutions for R&D projects (e.g., B. L. R. Smith, 1990; Sapolsky, 1990; M. R. Smith, 1985), whereas in emerging economies, it seems to be a comparatively recent phenomena, as their

governments have started establishing research institutes of their own. Injection of public fund into KIOs has already increased the pressures for accountability not only at the individual level of each researcher but also at the organizational level (Chaminade & Catasus, 2007; Kleinman & Vallas, 2001; Silva, 2018; B. L. R. Smith, 1990; M. R. Smith, 1985), which encourages the centralized control of research projects in the form of rules and paperwork. In other words, the RMAs in more KIOs are likely to feel the job-related tensions caused by the different expectations stemming from the organizational subcultures of bureaucratic control and free-thinking knowledge creation that are common today. It is worthwhile to understand how RMAs handle these complicated situations.

Second, developing a work environment in which RMAs can perform to their fullest potential is important from a larger context, which includes the ever-changing relationship between KIOs and the public, the pressure for KIOs to stay lean, and the emergence of the digital economy. The changes in the relationship between KIOs and the public started in the 1960s when public voices about the social impact of scientific research, especially research financed by public funds, began to be heard (Chaminade & Catasus, 2007; Kleinman & Vallas, 2001; Silva, 2018; B. L. R. Smith, 1990; M. R. Smith, 1985). Since then, the public has demanded accountability from KIOs for the impact of research, and their voices are ever growing globally. In this environment, how effectively RMAs can perform their jobs, which means, what the work environment allows them to do, may influence the effectiveness not only of individual research projects but also an entire KIO3. This need for an appropriate work environment has also grown because of the trends towards lean organizations and the digital economy. Being effective and efficient as an organization, i.e., staying competitive, organizations today tend to keep as little slack as possible, including personnel, inventory, and facilities. Digital economy adds uncertainties to the trend. Even before the global crises by COVID-19 advanced digitization of work, knowledge work to be replaced by artificial intelligence was a hot issue and global network of organizations was expected to change how knowledge was created and innovation occurred. It is still unclear how KIOs survive in this drastically changing environment. Under these conditions, workers have to be "high performers" equipped with multiple skills and a willingness to learn throughout their careers, regardless of their job categories.

The studies on high-performance work systems (HPWSs) suggest that high performers tend to emerge at workplaces where job satisfaction and trust in management are common because of meaningful and challenging jobs, opportunities to participate in substantive decision-making at the team levels, and support for training (Appelbaum, 2002; Belanger, Giles, & Murray, 2002; Giles, Murray, & Belanger, 2002; Lenihan et al., 2019; McGuirk et al., 2015; Petty & Guthrie, 2000)4. Here, again, the type of

work environment in which RMAs are working is a problem that warrants attention. Although the existing studies of HPWSs concern how the management contributes to creating high performing workers by designing appropriate work environments, this paper is concerned about how RMAs take the initiatives themselves to make their job interesting, challenging, meaningful, and satisfying from the bottom. This is why the concept of self-leadership will be helpful to understand how they professionally survive and grow in the conflicting and contradictory subcultures of KIOs. Instead of the management, the actors with agency in this research are the RMAs themselves who take the initiative toward job crafting so that the job is intrinsically rewarding and satisfactory. In this regard, this paper is a response to the call by Huang and Hung (2018) and Kaplan (1959) to study the perspective of social activities and human agency in research management.

In short, RMAs today face increasing challenges, such as complexity and uncertainty, in their work, work environment, and the digital economy, in addition to the already shifting relationship between academia and the public. Advancing the knowledge of how RMAs work under these conditions and what attributes are necessary for the job will be helpful not only for RMAs but also for the KIOs that need their human capital.

Structure of This Paper

Following the Introduction, RMAs are defined drawing on the existing research in the first section. There, a definition for this paper is provided, as well as that of non-research administrative workers in KIOs. In the second section, KIOs are defined and how the bureaucratic subculture may affect organizational behavior of KIOs is discussed. In the third section, the problems that individual RMAs may encounter in conflicting and contradictory subcultures of KIOs are described, which is based on this author's experience in a research institute in the public sector of Japan in addition to the existing literature of organizational sociology and behavior. Then, in the fourth and fifth sections, the hypotheses regarding the use of the RMAs' human capital to overcome the problems of the subcultures are introduced, and the research method is explained. In the next two sections, the results of the statistical hypotheses testing are explained, and the findings and their implications are discussed. Finally, in the concluding section, the research in this paper is summarized and its limitations and the further research needed are discussed.

Who are RMAs: Definition

The existing studies suggest that there are two main approaches to defining RMAs, although the two are not mutually exclusive. The first approach uses the functional roles expected for RMAs to define the profession (e.g., Chronister & Killoren, 2006; Kerridge & Scott, 2018). It goes through the research life cycle, starting with fundraising (which is called research development in many cases), followed by the pre-award and then the post-award responsibilities, including accountability for spending and the application of knowledge to produce tangible assets outside academia. This process also requires the RMAs to perform such roles as international coordination and contracting, compliance with the legal requirements of accounting and export control, intellectual property protection, and research ethics. In this approach, RMAs are professional workers who provide necessary services to researchers, the administration, and research funders throughout the phases of the research. This approach is also interested in the high-echelon positions that RMAs occupy in KIOs, such as chief research officer, associate vice president, director of sponsored programs, and so on (Chronister & Killoren, 2006). The ranks and positions describe another aspect of the functional roles that RMAs may take as their careers advance in KIOs. In general, in this approach, RMAs are defined as supporters, managers, and leaders to advance core competencies of KIOs.

The second approach follows the functional definition of RMAs and enriches it by reflecting on the philosophical values of the profession and on the necessary skills and attributes of individual RMAs to realize those values (Kaplan, 1959; Kerridge & Scott, 2018; Landen & McCallister, 2006; Lehman, 2017; Shambrook & Roberts, 2001). In this view, RMAs are considered to not simply move the research forward but to add their own value to the outputs of the research at the organizational and interorganizational levels by reconciling the interests of the researchers with those of the organization or vice versa. Their responsibilities include, for example, proactively connecting the existing and potential stakeholders and controlling the institutional resources allocated to the research project to appropriate degrees. To maximize the total value of the research for the KIOs and the outside stakeholders, RMAs have to play diverse roles ranging from data translators, communicators, problem solvers, holders of expert knowledge about one's own KIO to "brokers, translators, intermediaries, and helpers who value the long-term process", "compliance officers, cheerleaders, consoler, advocate, and … crisis counselors" (Landen & McCallister, 2006, p. 75, 77).

These are both functional descriptions of RMAs, but the second approach is more interested in their human capital to perform their responsibilities, such as knowledge

and skills. For example, Lehman (2017) discusses that the various types of knowledge necessary for the responsibilities requires RMAs to accumulate and share knowledge (i.e., knowledge management), and for that purpose, an organizational culture that supports knowledge management and the community of practice of RMAs is crucial. Concerning the need for broad knowledge, Landen and McCallister (2006) also argue that learning-by-doing is still an essential part of the profession due to the lack of formal education and training for RMAs and thus their traits, especially a propensity for initiative and lifelong learning, matter in addition to support from supervisors. In a similar vein, Kerridge & Scott (2018) are interested in the soft skills necessary to perform the RMAs' jobs and for their career development.

The above two approaches successfully capture aspects of RMAs, and drawing on these studies, this paper is intended to understand RMAs from the organizational sociology and behavior points of view. RMAs in this paper are defined as professionals working for the good of research who commit to establishing their foothold at the workplace, developing an occupational identity, and evolving professionally in two contradictory subcultures of free-thinking knowledge workers (to which they belong) and of bureaucracy-oriented non-research administrative workers in KIOs. In the process, they have to contend for appreciation and recognition from both types of workers, which adds complications to their efforts. Based on this definition, the interest of this paper is to explain how RMAs use their human capital while facing the challenges caused by the subcultures and trying to meet the various demands in the institutional contexts specific to each of their KIOs. Thus, as described in the Introduction, this paper is interested in the human agency of RMAs, as Huang and Hung (2018) and Kaplan (1959) were. It can also be said that the definition of RMAs in this paper is less normative but more descriptive than the above two approaches.

Since this paper concerns a bureaucratic subculture that may exist along occupational divisions in KIOs, it is also necessary to define non-research administrative workers. In this paper, they are defined as generalist workers without research background and experience who use their knowledge of governmental and organizational budget, legal affairs, auditing, accounting, personnel policy, contact with the government, public affairs, and so on mainly in the central offices of KIOs for the entire organization. Although some of their functions overlap with those of RMAs, the priority in their job is to maintain the operational continuity of the entire organization, for which routines and bureaucratic control are more useful than in the job of RMAs whose priority is advancing research. In other words, even though RMAs share the concerns of non-research administrative workers, the priority of their profession is not always the same as that beheld by non-research administrative workers.

Bureaucratic Culture in KIOs

Then, how exactly do the conflicting and contradictory subcultures of KIOs intervene when RMAs perform their responsibilities and try to grow as professionals individually and occupationally? Although RMAs may accept the job-related stress created by working with researchers in a free-thinking, knowledge-creation culture as an occupational hazard and handle it accordingly, the duality in the organizational culture clearly adds difficulties to their job. In this section, the influence of the bureaucratic subculture of KIOs is discussed.

KIOs are organizations whose inputs and outputs heavily rely on the knowledge of their employees, and the inputs and outputs are not only for producing goods and services but also for innovating the organization itself to adapt to the environment (Alvesson, 1993, 2000; Benjamins et al., 2002; Chaminade & Catasus, 2007; Greenwood, 2009; Lyon, 2005; Makani & Marche, 2010; Sheehan & Stabell, 2007). There is no simple agreement about the definition and examples of KIOs, but the bottom line is that not only does a KIO need the expert knowledge of employees for its growth and survival but expert knowledge is also the cornerstone of the organization. Thus, not all KIOs are the workplaces of RMAs, but RMAs, who are professionals working for the good of research, clearly work in KIOs regardless of the sector or institution. Then, how is it possible for KIOs to have the bureaucratic subculture? In the Introduction, this author mentioned two possibilities. First, bureaucracy is (a) necessary (evil) in an organization where people have to collaborate for common goals. Elements of bureaucracy, such as standardization, compliance with predefined procedures, documentation, and meritocracy, are inventions of modern organizations in which being goal-oriented is the mantra (March & Simon, 1958; Perrow, 1986; Selznick, 1947; Weber, 1978), and thus, any organization, including KIOs, naturally has a bureaucratic orientation to some extent (e.g., Alvesson, 2000; Bourgeault et al., 2011; Greenwood, 2009; Grey, 2012; Kaplan, 1959; Kleinman & Vallas, 2001; Leitner & O'Donnell, 2007; Scott et al., 2000). Second, the accountability for using public research grants necessitates a certain amount of bureaucracy because researchers, RMAs, and non-research administrative workers have to follow the directives, rules, due dates, etc. set by the granters. On these points, the existing literature on research management and administration also mentions that the organizational structure of universities and research institutes has been centralized for oversight, i.e., bureaucratic control, of pre- and post-award activities (Chronister & Killoren, 2006; Kaplan, 1959).

In other words, it is not automatically assumed that any KIO is free from bureaucracy in itself. At the same time, because the organization is a KIO wherein knowledge workers provide resources crucial for its survival, it is highly probable that the KIO

has two contradictory and conflicting subcultures of bureaucratic control and free-thinking knowledge creation. The contradiction and conflicts are a reality in the work environment for RMAs. Then, how do the KIOs with the bureaucratic subculture behave towards RMAs?

To begin with, bureaucratic organizations tend to avoid developing clear job descriptions for individual employees. This is because bureaucracy, in principle, assumes that the power to make a decision resides with the office instead of a specific individual and anyone is replaceable in terms of taking on a responsibility (Weber, 1978). As a result, job rotation becomes common as a means to train employees, generalists are considered more useful at the organizational level, and thus, the need for job descriptions for specific employees disappears. Under this condition, even if a KIO hires advanced degree holders for specific functions, such as RMAs, the organization applies the bureaucratic control methods originally developed for generalist administrative staff sometimes mass-recruited without considering the purpose of hiring RMAs. At the same time, even without clearly defined job descriptions, expectations in nonverbal form may exist, and this results in the dilemma that RMAs face because anyone can expect anything from them when their job is not clearly defined. In some cases, the above problem occurs because a KIO lacks experience in hiring and using RMAs. However, there is also a more fundamental issue at the KIOs with stronger bureaucratic subcultures behind the problem, which is, the power of non-research administrative workers.

In KIOs with bureaucratic subcultures, many employees are non-research administrative workers, and in some cases, they have an even larger influence than do researchers because the former controls various organizational functions at the entire organizational level. Although researchers generally enjoy higher status in KIOs, in regard to the functions under the control of non-research administrative workers, their "nay" stops the paper processing and halts the progress of the project. This is their power due to the bureaucratic control in KIOs. Since RMAs frequently work with both researchers and non-research administrative workers, the influence of the latter, which may be implicit and invisible to researchers, makes the jobs of RMAs complicated. Researchers may not understand why their desires are not fulfilled when working with the RMAs, RMAs have to follow the researchers' demands AND comply with bureaucratic requirements, and non-research administrative workers do not tend to understand that the bureaucratic mode of operation is not as natural to researchers and RMAs as it is to themselves.

The bureaucratic subculture also leads to knowledge management problems in KIOs. Organizations develop their own knowledge management cultures that define

what knowledge is valuable for organizational survival (Benjamins et al., 2002; Kimble et al., 2016; Lehman, 2017; Lyon, 2005). Thus, the important knowledge to be distributed, shared, and retained under the bureaucratic culture is different from that in an innovative, free-thinking culture. For the former, the knowledge directly serving the implementation of organizational policy is valued, whereas for the latter, it is mainly abstract ideas that are appreciated in the academic community or findings for application that may change the world. This difference in what is valued clearly appears in, for example, the key performance indicators for each of the activities. The conflict in the knowledge management culture adds complexity not only to the day-to-day jobs of RMAs but also to the career development of individual RMAs because the organizational values may affect how their KIOs want to train and utilize them.

On this point, the studies on HPWSs and human resources management argue that an intrinsic reward, such as meaningful and challenging work, increases the job satisfaction of employees (Appelbaum, 2002; Appelbaum et al., 2000; Belanger et al., 2002; Giles et al., 2002). However, the above understanding of a knowledge management culture implies that what is meaningful depends on the organizational values, i.e., the definitions are different for the bureaucratic and knowledge-creating cultures. Then, what if the management of the KIO that believes in bureaucratic control tries to provide intrinsically rewarding jobs to RMAs from their perspective when RMAs expect to promote a culture of innovation and knowledge creation? In addition, it is necessary in HPWSs to encourage employee participation in substantive decision-making in an autonomous team as a source of motivation, but what types of decision-making opportunities are more important for RMAs, i.e., the opportunities for bureaucratic processes or the benefit of research? RMAs internalize these conflicts caused by the cultural schism while they are working with researchers and non-research administrative workers.

Another problem originating from the bureaucratic subculture in KIOs is that bureaucracy tends to resist learning and change, and thus, a KIO with the subculture is less likely to adopt a work environment in which RMAs can be fully utilized. Bureaucracy is notorious in terms of having strong inertia and being immune to change (Perrow, 1986; Scott, 2001; Scott et al., 2000), although change is said to be the only constant today. On the other hand, practices that encourage high performers are something "to be learned" by organizations (Appelbaum et al., 2000). The combination of these findings results in a grim picture. Even if KIOs hire RMAs and try to utilize their talents, those with the strong bureaucratic subculture cannot provide appropriate opportunities for the professionals to contribute because those organizations are not accustomed to learning from the new employees and changing themselves.

Problems that Individual RMAs Encounter in KIOs

In the previous section, it has been argued that the bureaucratic subculture of KIOs results in a conflict-ridden work environment for RMAs, which includes ambiguous and diversified expectations from researchers and non-research administrative workers, conflicting values about knowledge management, and resistance to organizational learning and change. In this section, the problems of the duality in the organizational culture will be elaborated at the level of individual RMAs.

The studies on organizational behavior and human resources management suggest that "reality shock" from discrepancies between expectations and reality of a job may lead to person-organization misfit5 and increase the risk of many problems, such as demotivation, disengagement, job-related stress, decreased job satisfaction, loss of trust, absenteeism, and eventually turnover (e.g., Arigbe, 2018; Follmer et al., 2018; Louis, 1980). RMAs may experience this "reality shock" when they encounter the contradictory and conflicting values and expectations due to the subcultures of bureaucratic control and free-thinking knowledge creation. For example, it could happen that newly hired RMAs are assigned to administrative positions or to positions where much effort is expended on administrative paperwork in KIOs. As a result, most of their work hours tend to be used for administrative tasks, meetings with non-research administrative workers, and for other bureaucratic procedures rather than helping researchers, in contrast to the job description and expectation common to the profession. This assignment is beneficial as a type of on-the-job training and job enrichment. However, for RMAs who are hired to work for research and researchers, it could be a breach of the psychological contract and an implication that bureaucratic formalism is more valued in their KIOs. In terms of the HPWS, challenges and meaningfulness are not felt from the assigned tasks, which decreases the intrinsic reward and, thus, job satisfaction. In addition, the role ambiguity and conflict due to the contradictory and conflicting job demands may lead to a conflicting role identity, which increases the job-related stress.

The dissociation between the normative expectations of the RMA profession and the reality of their work also puts RMAs in a quandary about how to handle the demands and requests from researchers. Researchers tend to have their own expectations of RMAs regardless of the jobs assigned to the RMAs and try to appropriate the talents and efforts of RMAs for their own benefit. Some of them simply consider RMAs as another job category to perform administrative work for their KIO. On the other end of the spectrum, however, there are researchers who demand RMAs to fulfill their requests even when the RMA's work hours are already occupied with formal assignments or the requests appear irrelevant to or low in priority in terms of the

assignments. In between the two, there are researchers who try to use RMAs to save their own efforts and budget, for example, using RMAs as surrogates to supervise research assistants, to do paperwork for their research projects, such as writing draft proposals, and to organize events in and out of their KIO by relying on the financial and human resources that the RMA's division has.

These researchers naturally tend to prioritize their research needs over the hierarchy and formalized procedures, whereas non-research administrative workers who have learned the bureaucratic subculture throughout their career tend to demand that RMAs learn and share those values. To the eyes of the former, RMAs may be human resources provided to them by their KIO to help the researchers whenever they need aid. On the other hand, to the latter, nothing may be wrong with assigning RMAs to administrative positions for bureaucratic routines because those are THE work to them. RMAs themselves are stuck in the middle of the two occupational and cultural camps and are forced to make a choice to satisfy the demands from both camps at once, i.e., by not choosing either and working harder than formally required, or by making either demand a priority tacitly and performing a balancing act. This type of predicament at the workplace is unhealthy, but there are more problems in it. First, the pressure to make the choice is implicit because neither the researcher nor the non-research administrative worker tends to believe that anything is wrong with their own behavior. As a result, it is likely that the RMAs' overwork and/or commitment is misunderstood by others in the KIO as simply a voluntary choice, not the result of situational forces. Second, in the case that RMAs are supposed to be tenured after a few years of more than satisfactory performance, it is naturally assumed that the nontenured ones are more likely to be risk-averse and bend to the pressure without raising their voices. The silence, however, is no guarantee that they are happy with the job.

The paradox is that even with the above problems that RMAs encounter at the organizational and individual levels, including job-related stress due to role ambiguity, identity conflict, and contradictory expectations as part of the job routine, not every RMA leaves their KIO or disengages from the job. Since conflicting and contradictory subcultures are common in KIOs to larger or smaller degrees, it is worthwhile to ask what makes the difference in the responses of the RMAs to the problems. Thus, two questions are asked in this paper. First, what attributes and behavior patterns are helpful for RMAs to overcome difficulties of the conflicting and contradictory subcultures in KIOs? Second, what implications do the attributes and behavior patterns have to the human resources management practices in KIOs? In the next section, two hypotheses that focus on an attribute of RMAs, self-leadership, are explained. As described in the Introduction, self-leadership is the initiative of

the RMAs themselves toward job crafting so that the job is intrinsically rewarding and meaningful, which results in increased job satisfaction and performance. This attribute constitutes part of the human capital of RMAs with which they tend to be high performers and contribute to the missions of their KIOs.

Hypotheses about the Human Capital of RMAs

According to the existing literature on organizations, human resources management, and research management and administration, human capital of RMAs, such as self-leadership, is helpful for them to survive when facing the tensions caused by the conflicting and contradictory subcultures in KIOs. RMAs with self-leadership are supposed to mobilize their knowledge, skills, and psychological and cognitive abilities for job crafting, which results in various positive outcomes, including longer tenure, career success, rational decision-making, better performance, learning, and voluntary helping behavior extended to colleagues (Carmeli et al., 2006; Pearce & Manz, 2005; Prussia et al., 1998; Stewart et al., 2011; Sun et al., 2007). In short, they show better person-organization and person-job fit.

Thus, the following hypothesis is proposed:

H1: RMAs who mobilize self-leadership are more likely to show higher degrees of fit to their organization and job than RMAs who do not mobilize self-leadership.

The existing literature also emphasizes that self-leadership leads to psychological benefits in, for example, job satisfaction and engagement, higher motivation, self-efficacy, emotional control, and better mental states (Carmeli et al., 2006; Pearce & Manz, 2005; Prussia et al., 1998; Stewart et al., 2011). It deserves attention that these effects are obtained through the intrinsic motivation of RMAs to make their jobs challenging and meaningful to them. RMAs proactively redesign their assignments to make the tasks intrinsically rewarding, although the redesigning does not harm their KIOs by changing the objectives of the assignments. This type of proactiveness and balancing on the side of the employees due to self-leadership contrasts with classic arguments about human capital and high-performance workers that focus on how to encourage employees to be proactive and challenging through an extrinsic reward and motivating system designed by the employer (e.g., Appelbaum, 2002; McGuirk et al., 2015; Pyoria, 2007; Sun et al., 2007). With self-leadership, RMAs intrinsically make their job challenging and meaningful, which increases their happiness with working as RMAs.

Therefore, the following hypothesis is proposed:

H2: RMAs who mobilize self-leadership are more likely to show higher degrees of satisfaction with their job and the accompanying challenges than RMAs who do not mobilize self-leadership.

As mentioned in the Introduction, the above hypotheses are statistically tested using the results of the Research Administration as a Profession (RAAAP) survey (Kerridge & Scott, 2017, 2018; RAAAP, 2016). The next section provides descriptions of the survey and dataset developed from its results.

Research Method

The dataset for this paper was taken from wave 1 of the RAAAP survey. The survey was aimed at grasping the current state of RMAs all over the world and at helping the leadership of KIOs to support junior RMAs, who will be the leaders of the next generation, to develop the necessary skills. The questionnaire had 83 optional, multiple-choice questions in total and several descriptive questions and consisted of three parts about the experience of working as an RMA, the skills in the current RMA role, and the background, including the educational level, training and certificates, and affiliations with professional associations. To reach RMAs worldwide, the survey was distributed online through 11 global and regional RMA associations, and 2,691 responses were collected from the US (36.9%), the UK (17.8%), Continental Europe (15.3%), Oceania, i.e., Australia and New Zealand (13.3%), Canada (9.5%), and rest of the world (7.2%)6. As a result, a dataset with over 200 variables was developed, the majority of which were rank-ordered variables.

Selected Variables for This Paper

Whereas the RAAAP survey was concerned with the relevant skillsets of RMAs, this paper is intended to explain how their human capital, such as self-leadership, contributes to surviving in the conflicting and contradictory subcultures in KIOs. The different purpose demands the development of a dataset specifically for this paper from the one obtained from the survey, which means a set of appropriate variables to operationalize the RMAs' human capital and measure its usefulness for occupational survival. Winnowing down the RAAAP dataset is also necessary because over 200 variables are too many for a statistical model. Thus, this author went through the questions in the RAAAP questionnaire and selected the four dependent and four independent variables listed in Table 1. In the process, the answers in strings such as

Table 1
List of Variables

Variables	Values	Interpretation	Questions in RAAAP-1 Survey	Choices in RAAAP-1 Survey
Dependent				
Tenure	1	Less than 10 Years	Approximately how many years in total have you been employed in the field of Research Administration? [Does not have to be consecutive years and can be full or part time]	< 5 5-9
	2	10 to 19 Years		10-14 15-19
	3	20 to 29 Years		20-24 25-29
	4	30 Years or More		30-34 35-39 >= 40
	(Deleted)	(Deleted)		Never
Position	4	Leader	How would you define your current role?	Leader - head of office, or responsible for leading strategic function(s)
	3	Manager		Manager - subordinate to a leader but responsible for a team or functional area
	2	Operational		Operational - responsible for undertaking specific duties, with no line management
	1	None of These		Not Sure - None of these options seem to fit my role
Challenging	1	Not Very Relevant	Why have you stayed in research administration? I like the challenging work.	1 (Not important/relevant)
	2	Relevant		2 3 4
	3	Really/Highly Relevant		5 (Really important/relevant)
Inability to Move	1	Not Very Relevant	Why have you stayed in research administration? Unsuccessful in trying to move into another field.	1 (Not important/relevant)
	2	Relevant		2 3 4
	3	Really/Highly Relevant		5 (Really important/relevant)
Independent				
Adaptability	1	Not Very Important	Adaptability/Change Management - includes identifying external changes early on, and developing strategies for managing change How important is Adaptability to the performance of your current job?	Not Important Somewhat Important
	2	Important		Important
	3	Very Important		Very Important Extremely Important
	missing	missing		No Response
Problem Solving	1	Not Very Important	Problem Solving - ability to identify problems and recommend solutions How important are Problem-solving skills to the performance of your current job?	Not Important Somewhat Important
	2	Important		Important
	3	Very Important		Very Important Extremely Important
	missing	missing		No Response
Initiative	1	Not Very Important	Initiative Taking - being a "self-starter", proactive rather than reactive, persistent in overcoming difficulties that arise in pursuit of a goal How important is Initiative Taking to the performance of your current job?	Not Important Somewhat Important
	2	Important		Important
	3	Very Important		Very Important Extremely Important
	missing	missing		No Response
Decision Making	1	Not Very Important	Decision Making - the ability to make good decisions with missing or incomplete information How important is Decision Making to the performance of your current job?	Not Important Somewhat Important
	2	Important		Important
	3	Very Important		Very Important Extremely Important
	missing	missing		No Response

"no response" were converted into missing values, whereas "Leader" and "Manager" were converted into a Likert scale. In addition, some samples were deleted when their answers seemed to be unreliable, such as they were “Never” working as an RMA, they were “Not Sure” in what sector or types of institutes they were working, and although their institution was “Other Government Department”, its sector was “Private non-profit” (a respondent chose one of these answers). Other rank-ordered variables were also rescaled because their distributions were skewed, and as a result, an assumption about the statistical models for ordinal variables could be violated, which is, no cell should have less than five or zero observations in the ordered logistic regression and tabulation.

Dependent Variables

Among the variables in Table 1, the four are chosen as dependent variables because the existing research suggests that the length of cumulative years working as an RMA (Tenure) and the current role (Position) are positively related to self-leadership (Carmeli et al., 2006; Pearce & Manz, 2005; Prussia et al., 1998; Stewart et al., 2011; Sun et al., 2007), the latter of which is an operationalization of career success. The other two variables, i.e., Challenging and Inability to Move, are taken from ten questions in the RAAAP survey about reasons to continue working as an RMA because it is assumed that self-leadership may result in positive reasons to do so. For this paper, the questions are categorized into three groups as in Table 2, i.e., continue working for excitement, lack of mobility, and other reasons. Then, to strip down those variables as much as possible, the Cronbach’s Alpha and intervariable covariance for each group are checked. Those statistics suggest that the variables in the first group, i.e., RMAs for excitement, are correlated and are likely to measure the same effect about RMAs around the world ($\alpha = 0.81$), and thus, it is sufficient to include one of them in the statistical model. The variable “Challenging” is selected because a form of self-leadership is redefining one’s work to be motivating by oneself when the work is not

Table 2
Correlation between Alternative Dependent Variables

	Obs.*	Average Intervariable Covariance	Cronbach's Alpha
Tenure			
Position			
Test Scale		0.40	0.42
RMAs for Excitement			
Fun	2,592	0.66	0.73
Challenging	2,595	0.73	0.74
Not Boring	2,586	0.66	0.77
Test Scale		0.68	0.81
RMAs for Lack of Mobility			
No Want to Move for Now	2,524	0.53	0.63
No Opportunity to Move	2,488	0.06	0.08
Inability to Move	2,495	-0.04	.
Test Scale		0.19	0.29
RMAs for Other Reason			
Pay	2,521	0.27	0.42
Possible Advancement	2,553	0.32	0.46
Job Security	2,530	0.31	0.45
Love of Working with Faculty	2,579	0.47	0.55
Test Scale		0.35	0.56

* Observations prior to the dataset cleanup

and the challenging work may be a result of their initiative over a long period of time.

Indeed, the wording in the RAAAP survey is "I like challenging work" (Table 1), whereas for the other two variables, it is "The work is never boring or monotonous" and "I enjoy the profession, it's fun". Since the variables measure the same effect, the latter two can also be appropriate for use as dependent variables for this paper. However, the first one is still better because it is less clear whether the other two suggest that RMAs use their self-leadership, or they simply feel their work is exciting. The phrase "The work is never boring or monotonous" even contradicts the assumptions about

self-leadership because a worker mobilizes the psychological asset when the work is boring or monotonous.

For the groups that continue working as RMAs due to lack of mobility and other reasons, the statistics in Table 2 suggest that the variables of each group have little correlations, and thus, they measure different effects about the population of RMAs (α = 0.29 and 0.56). Among these, the variable "Inability to Move" is selected because its wording is "Unsuccessful in trying to move into another field", and it is clearly opposite to job satisfaction resulting from self-leadership. The other two are "I don't want to change fields at this time" and "No opportunity to change". The former may be because of any reason, such as family, and thus, it is less valid to examine effects of self-leadership than the "Inability to Move". The latter may come from dissatisfaction with the job, but "Unsuccessful in trying to move into another field" indicates more negative sentiments about the jobs of RMAs. Therefore, "Inability to Move" is again more appropriate. No variables are selected from the "RMAs for Other Reason"

Table 3
Correlation between Selected Dependent Variables

	Obs.	Average Intervariable Covariance	Cronbach's Alpha
Tenure	2,454	0.06	0.33
Position	2,552	0.05	0.28
Challenging	2,484	0.08	0.37
Inability to Move	2,389	0.11	0.44

group in Table 2 because reasons such as good pay, opportunity for promotion, job security, and love of working with colleagues may make workers stay regardless of self-leadership.

Through the above process, the four dependent variables of "Tenure", "Position", "Challenging", and "Inability to Move" are selected. Finally, the intervariable covariance and Cronbach's Alpha are taken again to examine whether the four dependent variables measure different effects. As Table 3 shows, the low correlations among them (α = 0.28 to 0.44) suggest that it is worthwhile to include those variables in a statistical model to explain the different outcomes of self-leadership. In this paper, the relationships between one of these variables and each of the independent variables below are studied pairwise.

Independent Variables

Next, the explanatory variables are selected from the dataset of the RAAAP survey, particularly from the questions in the "Generic Skills" section. In this section, the RMAs are asked about their soft skills, such as verbal and written communication skill, collaboration, and conflict resolution. While selecting the variables, this author focuses not on the labels but on the descriptions of the skills in the survey. For example, one of the skills is named "Critical Observation" in the survey. Critical observation is a necessary skill for self-leadership because a worker has to monitor others' reactions to his/her customizing of the assigned tasks and use the reactions as a feedback to one's own way of using self-leadership (Carmeli et al., 2006; Pearce & Manz, 2005; Prussia et al., 1998; Stewart et al., 2011). However, the description of "Critical Observation" in the survey says that it is an "ability to analyze and summarize aggregated data to various audiences", and thus, the skill is different from the one discussed in the research about self-leadership. In addition, self-leadership concerns the internal drive of individual workers, such as self-discipline, self-monitoring, self-efficacy, constructive thinking, emotional control, and self-standards about assigned tasks. Thus, skills that concern other workers are less appropriate as independent variables for this paper.

For example, "Taking Responsibility" is described as "Accepting and demonstrating personal responsibility for compliance areas, and for your staff". Similarly, "Project Management" is described as "assigning tasks and managing deadlines for an overall project goal (e.g.[,] implementation of a new system, policy or procedure)". Both are less appropriate than "Adaptability", which means "including identifying external changes early on, and developing strategies for managing change" or "Initiative Taking", which means "being a 'self-starter', proactive rather than reactive, persistent in overcoming difficulties that arise in pursuit of a goal". In this way, the four independent variables in Table 1 are selected, which are "Adaptability", "Problem Solving", "Initiative", and "Decision Making".

In the RAAAP survey, there are two types of questions for each soft skill. One is about its importance to perform the current job, and the other is about the level of the skill. In this paper, responses on the importance of the four skills are used because the same scale from "Not important" to "Extremely important" is used for all variables. On the other hand, the scale of the skill level, although it ranges from "Very low" to "Very high", has different definitions about tasks for RMAs depending on the skill, and thus, it is difficult to simply compare what each choice means across the variables. For example, a higher level of "Adaptability" means that RMAs change their approaches at departmental or organizational levels to respond to

changes "outside of the organization" or "in the wider environment", in other words, the skill level is associated with the span of influence of individual RMAs across organizational boundaries. In contrast, as the skill level of "Problem Solving" becomes higher, the definition in the survey says what RMAs do is refined from just handling "inconsistencies", "e.g.[,] identifying and addressing issues", to "e.g.[,] developing new processes/approaches to maximize effectiveness". The difference may or may not be individual or organizational.

Table 4
Distribution of the Ordinal Variables

Statistics	Obs.	Min.	Max.	Percentile				
				25%	50%	75%	90%	95%
Dependent Variables								
Tenure	2,454	1	4	1	1	2	3	3
Position	2,552	1	4	2	3	3	4	4
Challenging Job	2,484	1	3	3	3	3	3	3
Inability to Move	2,389	1	3	1	1	1	2	3
Independent Variables								
Adaptability	2,530	1	3	2	3	3	3	3
Problem Solving	2,532	1	3	3	3	3	3	3
Initiative	2,519	1	3	3	3	3	3	3
Decision Making	2,524	1	3	2	3	3	3	3

Table 4 summarizes the descriptive statistics of the dependent and independent variables. Through the variable selection, 2,691 observations in the RAAAP dataset are reduced to approximately 2,500. The Likert scales for the variables range from 1 to 4 for Tenure and Position, whereas for the other variables, the scales range from 1 to 3. Table 1 shows what each value of the Likert scale means, and the percentile distribution of each variable in Table 4 suggests that it is greatly skewed. First, a majority of the respondents seem to work for less than 10 years as RMAs in total (1 = Less than 10 Years) and then come those who work for 10 to 19 years (2 = 10 to 19 Years), whereas only approximately 10% seems to work for 20 years or longer (3 = 20 to 29 Years, 4 = 30 Years or More). The skewness may occur because research management and administration is a comparatively new profession outside the US and is still evolving, as Kerridge and Scott (2017, 2018) discussed. On the other hand, a majority of the respondents seem to occupy the positions of manager or higher (3 = Manager, 4 = Leader), and again, approximately 10% of them seem to work as heads of the office responsible for strategic functions. Second, almost all of the respondents seem to continue working as RMAs because they love a challenging job (3 = Really/ Highly Relevant). Kerridge and Scott (2017, 2018) also pointed to this characteristic of

the respondents of the RAAAP survey. When this author examined its distribution in detail, only approximately 6.7% of the respondents answered that the challenge is not very relevant as the reason and approximately 14% answered that it is relevant. Third, only approximately 10% of the respondents seem to keep working as RMAs because they have been unsuccessful in changing their occupation (2 = Relevant, 3 = Really/Highly Relevant), whereas for approximately 90% of them, the reason is irrelevant (1 = Not Very Relevant).

Fourth, all of the independent variables also have skewed distributions. Almost all of the respondents answered that those skills were important or very important in performing their current jobs (1 = Not Very Important, 2 = Important, 3 = Very Important). In detail, approximately 12% of the respondents answered that adaptability is not very important, approximately 22% answered that the skill is important, and approximately 66% answered that it is very important. For problem solving, the distribution is approximately 3%, 13%, and 84% respectively. For initiative, it is approximately 6%, 17.8%, and 76.2%. Finally, for decision making, it is approximately 10%, 22.8%, and 67.2%. The skewed distributions of the variables even after rescaling may cause a concern in analyzing the relationship between ordinal and categorical variables because in the tabulation, there may be cells with less than five observations. This issue is elaborated in the next part about the statistical model.

Statistical Model

To study the relationship between ordinal and categorical variables pairwise, ordered logistic regression and simple tabulation are the most common models, and if the independent variables are highly correlated, the multicollinearity demands tabulating each pair of dependent and independent variables instead of using ordered logistic regression. Table 5 shows the values of the Kendall's tau-b correlation coefficients of the independent variables, which range from 0.39 to 0.48. These values mean that they have weak to moderate correlations with statistical significance at the level of $\alpha = 0.95$ ($p = 0.05$), and thus, it is possible to use ordered logistic regression. However, the skewness in the variable distributions leads to the concern about cells with small observations mentioned before. Considering these possibilities, this author checked the ratio of such cells in each pair of variables and confirmed the statistical significance of the pairs with small-sample cells using Fisher's exact test. Table 6 shows the results of the test. Based on the statistical conventions about when a chi-square test should be abandoned and switched to the exact test, the test is performed for pairs that have more than 20% of cells with observations of less than five or at least one cell with no observation.

Table 5
Correlation between the Independent Variables

	Adaptability	Problem Solving	Initiative	Decision Making
Adaptability				
Kendall's Tau-b	1.00			
Levels of Significance				
Problem Solving				
Kendall's Tau-b	0.48	1.00		
Levels of Significance	0.00 **			
Initiative				
Kendall's Tau-b	0.39	0.44	1.00	
Levels of Significance	0.00 **	0.00 **		
Decision Making				
Kendall's Tau-b	0.43	0.46	0.44	1.00
Levels of Significance	0.00 **	0.00 **	0.00 **	

** p = 0.05 level

Table 6
Cells with < 5 Observations and Results of Fisher's Exact Test

	Adaptability	Problem Solving	Initiative	Decision Making
Dependent Variables				
Tenure	1/12	0.00 **	0.00 **	1/12
Position	0/12	2/12	2/12	0/12
Challenging Job	0/9	0/9	0/9	0/9
Inability to Move	0/9	0/9	0/9	0/9

m/n = cell counts with < 5 Obs. ** p = 0.05 level
Tests are performed when more than 20% of cells have < 5 Obs. or at least 1 cell has no observation.

In the table, the underlined cells indicate the pairs of variables for which Fisher's exact test is performed. Among them, the pairs with two stars suggest that the results of the statistical tests about the relationship between those variables are significant. Thus, it is worthwhile to use ordered logistic regression for them to study the effects of self-leadership over the dependent variables. Many of the cells in Table 6 are filled with fractions that are not underlined. These pairs have less than 20% of small-frequency cells when they are tabulated, and thus, ordered logistic regression is also used for them.

Finally, for the hypotheses about self-leadership and the survival and evolution of

RMAs to be supported, the odds ratios for positive outcomes, such as longer tenure, higher positions, and satisfaction with challenging job, have to become larger as the unit of independent variables increases. At the same time, the odds ratio for the negative outcome, i.e., continue working as an RMA because they fail in changing the job category, has to decrease as the unit increases.

Results of the Test

Table 7 shows the results of ordered logistic regression about the four dependent and independent variables. The chi-square test suggests that the dependent variables have effects on the independent variables in the statistical model at the level of α = 0.90 and 0.95 (p = 0.10 and 0.05). In the next column, the values of pseudo R2 are very low. Although a pseudo R2 does not have much meaning to compare across different pairs of a dependent variable and independent variables, those low values raise a concern about the explanatory power of the independent variables regarding the variability of the dependent variable. However, the independent variables are selected from the survey results of the RAAAP based on theories of self-leadership, and the multicollinearity between the independent variables is checked (Table 5). Thus, the low pseudo-R2 values may come from the highly skewed distributions of the variables (Table 4), which may occur with rank-ordered and categorical variables7. In addition, due to the large observations in the dataset, even the small variability may make a difference in the actual population. With these possibilities in mind, the results of the regression analysis are explained in this section.

Table 7
Results of the Ordered Logistic Regression

	Odds Ratio	Std. Err.	P > |z|	CI (95%)		P > Chi²	Pseudo R²
Tenure (2,377 Obs.)						0.00	0.02
Adaptability	1.19	0.09	0.02 **	1.03	1.37		
Problem Solving	1.05	0.13	0.71	0.83	1.32		
Initiative	1.38	0.12	0.00 **	1.12	1.60		
Decision Making	1.39	0.11	0.00 **	1.19	1.63		
Position (2,470 Obs.)						0.00	0.07
Adaptability	1.69	0.12	0.00 **	1.48	1.93		
Problem Solving	1.06	0.11	0.60	0.86	1.31		
Initiative	1.26	0.10	0.01 **	1.07	1.48		
Decision Making	1.99	0.15	0.00 **	1.72	2.30		
Challenging Job (2,409 Obs.)						0.00	0.05
Adaptability	1.31	0.11	0.00 **	1.11	1.55		
Problem Solving	1.52	0.18	0.00 **	1.20	1.92		
Initiative	1.52	0.15	0.00 **	1.26	1.84		
Decision Making	1.19	0.11	0.05 **	1.00	1.43		
Inability to Move (2,316 Obs.)						0.04	0.00
Adaptability	1.02	0.11	0.84	0.83	1.27		
Problem Solving	0.91	0.15	0.57	0.67	1.25		
Initiative	0.79	0.10	0.06 *	0.62	1.01		
Decision Making	0.93	0.11	0.54	0.75	1.17		

** p = 0.05 level * p = 0.1 level

At the beginning, the adaptability, initiative, and decision making each make statistically significant differences in tenure, i.e., cumulative years of working as an RMA. As the years become longer by ten years, the ratio of RMAs who feel that adaptability is more important for performing their job to those who do not feel so increases 19% with all other factors held constant. Similarly, the ratio of RMAs who feel that initiative is more important for their job to those who do not feel so increases 38%, and that of RMAs who feel that decision making is more important for their job to those who do not feel so increases 39%. These results suggest that positive associations exist between how long the RMAs are working and their self-leadership, and the association is stronger with decision making, i.e., being able to make a good decision even from incomplete information, and then initiative, i.e., being a self-starter. Regarding the positions that RMAs hold in their KIOs, adaptability, initiative, and decision making are each also statistically significant, but the strength of associations are different from those for tenure. The stronger association exists with decision making, in which the ratio of RMAs who feel that the ability is more important to their job to those who do not increases almost twice (99%) as their positions increase from no specific position, operational ones, managers, to leadership. Next comes adaptability, with the odds ratio of 1.69, which is also very high. Then, initiative has the ratio of 1.26 but the lowest positive association. The results suggest that there are positive associations between the career success of an RMA and their self-leadership.

Two points are interesting about the results. First, a good decision-making ability is clearly important for a longer tenure and higher echelons, but as RMAs go up their career ladder in KIOs, the ability of being a self-starter seems to lose its gravity to that of being adaptable. This result is opposite in the case of tenure, for which initiative makes a larger difference as RMAs continue working for more years. Second, problem solving, which is an ability to identify problems and recommend solutions, is not statistically significant for tenure and positions. It is possible that problem solving is not important for self-leadership of RMAs, but in Table 7, the ability is still significant for challenging jobs. What these outcomes may imply will be discussed later.

The first hypothesis about the human capital of RMAs (H1) is that RMAs who mobilize self-leadership are more likely to show higher degrees of fit to their organization and job than RMAs who do not mobilize self-leadership. The above results about tenure and positions partly support this hypothesis because self-leadership has larger chances to occur among RMAs who are working for longer years and occupy higher positions. However, among the four independent variables, the problem-solving ability is not significant and the importance levels of the remaining three variables are different regarding tenure or positions.

The second hypothesis (H2) is that RMAs who mobilize self-leadership are more likely to show higher degrees of satisfaction with their job and the accompanying challenges than RMAs who do not mobilize self-leadership. This hypothesis is based on the theory that self-leadership leads to psychological benefits, such as job satisfaction, through intrinsic rewards coming from a challenging job, for example. The satisfaction and intrinsic rewards are measured by the two dependent variables of tenure and challenging job in this paper. The positive effects of decision-making, initiative, and adaptability on tenure have already been discussed above. For challenging job, adaptability, problem solving, initiative, and decision-making are all statistically significant in Table 7, which means that these attributes contribute to making the challenging job a reason why RMAs continue working. The results of the ordered logistic regression show that as the challenging work aspect becomes more relevant for RMAs as the reason to continue working, the ratio of RMAs who feel that adaptability is more important for performing their job to those who do not feel so increases 31% with all other factors held constant. The ratio becomes 52% regarding problem solving and initiative but decreases to 19% for decision-making. These positive associations between self-leadership and its theoretical outcomes, i.e., longer tenure and challenging job, suggest that as RMAs use their self-leadership more, they tend to have greater job satisfaction and a sense of intrinsic rewards, and thus, H2 is supported.

At the end of the Research Method section, this author predicted that the hypotheses are supported if the odds ratio becomes lower for the negative effect, i.e., inability to move. The results in Table 7 show that only one independent variable, i.e., initiative, is statistically significant at the $p = 0.10$ level. Its odds ratio is 0.79, which means, as failure in changing the job category becomes more relevant for RMAs as the reason to continue working, the ratio of RMAs who feel that an ability to take initiative is more important for performing their job to those who do not feel so decreases approximately 20% with all other factors held constant. This result conforms with the prediction, and the lower threshold of the p-value and statistical insignificance of the other independent variables may suggest that there is a weak or almost no association between being an RMA because of being unsuccessful in moving on and mobilizing self-leadership. However, further studies will be necessary with more appropriate dependent variables to evaluate negative associations.

These results suggest that the self-leadership of RMAs has positive effects on their performance and psychological state, such as job satisfaction through intrinsic rewards. RMAs with the attribute tend to show better fit to their jobs and organizations that results in longer tenure and higher positions. The attribute also helps RMAs to increase their job satisfaction and sense of intrinsic rewards, which takes the forms

of longer tenure and inclination to challenging, meaningful, and motivating jobs. Consequently, they are likely to successfully handle the complexities caused by the conflicting and contradictory subcultures of KIOs, establish footholds in the KIOs, and keep growing as professionals and individuals by their own initiative.

Discussion

This paper is intended to explain the work environment of RMAs in KIOs and the relationship between their human capital and professional survival and development in the environment. It particularly focuses on how self-leadership contributes to RMAs' willingness to continue committing to the job despite the problems caused by the organizational subcultures of free-thinking knowledge creation and control-oriented bureaucracy in KIOs. For the purpose, two hypotheses have been developed concerning how self-leadership affects the occupational and organizational fit of RMAs and their job satisfaction, both of which have been statistically tested with a dataset developed from the results of the RAAAP survey. The positive results of the hypothesis test provide answers to the two questions of this paper. First, what attributes and behavior patterns are helpful for RMAs to overcome the difficulties of the conflicting and contradictory subcultures in KIOs? Second, what implications do the attributes and behavior patterns have to human resources management practices in KIOs?

Regarding the first question, the results show that RMAs with the attribute of self-leadership more successfully overcome the difficulties, and in this paper, the attribute specifically consists of an ability to "identify external changes early on, and developing strategies for managing change" (adaptability), to "identify problems and recommend solutions" (problem solving), to be "a 'self-starter', proactive rather than reactive, persistent in overcoming difficulties that arise in pursuit of a goal" (initiative), and finally, "to make good decisions with missing or incomplete information" (decision making) (RAAAP, 2016). Although each ability contributes to how long RMAs are working and what positions they occupy in KIOs to different degrees, those who are more willing to use these abilities tend to commit to their job more than their counterparts and with the loyalty, they overcome the difficulties caused by the cultural and occupational schisms in KIOs while taking on the challenges at work with positive attitudes. It can also be said that RMAs who are willing to mobilize their self-leadership are more resourceful as human capital to KIOs because they take the initiative to make the job intrinsically rewarding even when it is actually not.

Among the four abilities, initiative and problem solving deserve more attention. In

the test results, it seems that initiative is less important for RMAs in higher positions than adaptability, whereas the ability is more important than adaptability when they are working for more years. In regard to problem solving, the ability is significant only for the RMAs' tendency to favor challenging jobs but not for their tenure and positions. These differences are interesting because the majority of the respondents in the RAAAP survey answered that they thought those abilities were very important. A possibility is that there has been a status issue that prevents RMAs from fully using their initiative and problem-solving abilities to move up the career ladders in KIOs because research management and administration is a comparatively new profession (Kerridge & Scott, 2017, 2018), and the same situation makes adaptability more useful for them to occupy higher positions. On the other hand, to keep working for more years while committing to the challenging job, RMAs may need initiative and problem solving, as well as adaptability and decision-making abilities. If this inference is correct, it further supports the argument of this paper about the predicaments that RMAs face at the workplace and the need for self-leadership for their survival and development. However, further research will be necessary to prove it.

The second question of this paper concerns the implications of the above findings to human resources management (HRM) practices in KIOs, which will be important for RMAs and KIOs in a larger context. RMAs and KIOs are in increasingly complex environments with diversification of the profession and organizational forms as well as shifting relations with the public and funding agencies. Thus, it has become more important for KIOs to fully utilize the talents of RMAs, but conflicting and contradictory organizational subcultures make KIOs fail in doing so. As a result, RMAs are stuck in the middle of inconsistent expectations from researchers and non-research administrative workers, which hampers their contributions to the fullest degree. Under this condition, hiring RMAs with self-leadership is important for both RMAs and KIOs, because for the former, the attribute helps to overcome the difficulties in the work environment, including job-related stress and dissatisfaction with the job, and for the latter, it is helpful for employee and talent retention. In addition, self-leadership is essential not only for RMAs but also for professional and knowledge workers in general because the attribute seems to be part of a larger class of human capital that includes lifelong learning and self-development processes by the employees themselves and without being directed from above. In the diversified and complex environment surrounding research enterprises and KIOs, the resilience and initiative of RMAs are assets both for themselves and KIOs. How to select applicants with self-leadership is another question, but there are several known methods to assess the adaptability, problem-solving ability, initiative, and decision-making ability of applicants from psychometric exams to work-sample tests, although those are not necessarily fine-tuned for self-leadership.

Another implication to HRM practices concerns organizational support for the training and personal growth of RMAs, which is especially relevant to junior RMAs. The existing studies on HPWSs, human capital, and research administration emphasizes the importance of the organizational support of training not only for skills enhancement but also for trust relations with employees (e.g., Appelbaum, 2002; Appelbaum et al., 2000; Landen & McCallister, 2006; Lenihan et al., 2019). Considering that formal education and training for RMAs are uncommon because it is a new profession, Landen and McCallister (2006) and Lehman (2017) discuss that experiential learning and knowledge sharing and accumulation are helpful, such as mentoring, guidance from supervisors, on-the-job training, and participation in any community of practice of RMAs.

It is common sense today that support for training is critical to retain high-performance employees, but further implications can be added. First, self-leadership of RMAs may lead to training opportunities proposed and even designed by RMAs themselves instead of those set by mentors and supervisors. As repeatedly explained in this paper, not only positive but also proactive attitudes toward continuous, lifelong learning is a sign of willingness to change and grow, which is particular to workers with high-quality human capital (e.g., Lenihan et al., 2019). RMAs, as professional and knowledge worker with such human capital, are highly likely to identify what they need and want to invest their time (and cost, if possible) in professional and personal growth by themselves. In addition, the ever expanding job descriptions of RMAs may necessitate a "more global mode of problem solving" (Landen & McCallister, 2006, p. 76) than what mentors and supervisors have already assumed from their experience or the current states of their KIOs. In the changing environment, it is possible that well-informed RMAs, or even newer ones, know better about what is necessary for their own training. When RMAs make proposals for their training in such a situation, the initiative has to be appreciated.

Second, however, the bureaucratic subculture of KIOs may interfere with the proposals and initiative because "goals" are often narrowly defined in bureaucracy. Bureaucracy is an instrument for the rational pursuit of organizational goals, which allows little slack in terms of being goal-oriented at the individual and organizational levels. As a result, when the training proposed by RMAs is new to the formally prepared one, it is more likely turned down as being disoriented. This is paradoxical because self-leadership is supposed to help RMAs in conflicting and contradictory organizational subcultures. Here, the managers and leadership should acknowledge the opinions of the professional, knowledge workers about their self-development because the acknowledgement is fundamental to trust relations with employees and to their organizational commitment and retainment as follows.

The test results in this paper suggest that self-leadership contributes to longer tenure as far as RMAs are concerned, although the research on self-leadership is yet to examine its effect on organizational commitment and turnover (Stewart et al., 2011). In this regard, professional, high-performance workers commit to not only their jobs but also organizations when their voices are heard and they can trust the management, and their commitment is increased as they are loyal to and inclined to stay in their organizations (Alvesson, 2000; Appelbaum et al., 2000). In other words, a positive feedback loop exists between trust, tenure, and organizational commitment. For RMAs in the conflicting and contradictory subcultures of KIOs, to what extent they are allowed to use self-leadership is the touchstone for trust, which increases their organizational commitment, makes them continue working there, and again, it increases the commitment to their KIOs. Therefore, the managerial leadership of KIOs must at least allow RMAs discretion to rely on self-leadership as a means to overcome the difficulties caused by the organizational subcultures. On this point, it is unnecessary to fear the initiative on the side of employees because self-leadership is not threatening to organizational purposes. It is rather a proactive behavior to make an assigned task intrinsically rewarding so that its purpose can be attained as demanded even if the task is not very attractive to the RMAs themselves at first. The agency of RMAs should rather be appreciated than feared for KIOs to prevail in the increasingly complicated environments surrounding research enterprises.

Conclusion

In this paper, this author examined how the human capital of RMAs contributes to their professional survival and development in KIOs with contradictory and conflicting subcultures of free-thinking knowledge creation and control-oriented bureaucracy. KIOs, whose membership consists of different occupational categories from researchers, non-research administrative workers to RMAs, inherently have bureaucracy to some extent, and the duality in the organizational culture makes it difficult for RMAs to reach their fullest potential. Under this condition, RMAs are assumed to use their human capital, which is exerted in the form of self-leadership, to handle the difficulties and continue committing to their job. To verify the assumption, two hypotheses about the effects of self-leadership on performance and job satisfaction are developed and then tested with data taken from wave 1 of the RAAAP survey. From the results of the test, it is confirmed that RMAs with self-leadership tend to work for more years as RMAs, occupy higher positions in KIOs, and favor challenging jobs more than otherwise, and thus, they show higher fit and engagement to their jobs and organizations, although they encounter inconsistent

expectations by the cultural schism at the workplace as much as their counterparts do.

The findings have a few implications to the HRM practices in KIOs. First, it is important that KIOs hire RMAs with self-leadership who are adaptable, self-starters, problem solvers, and good decision makers because the attribute and behavior patterns are helpful for RMAs to professionally survive and grow in KIOs and for KIOs to retain and use the talents fully and long term. Both will contribute to the survival of KIOs in the ever-complicated environments surrounding research enterprises. Second, the self-leadership of RMAs may necessitate training opportunities proposed by themselves and beyond those prepared by KIOs. When the RMA's initiative is about to be hampered because of the bureaucratic subculture, the organizational leadership is expected to take necessary actions to develop shared understanding about organizational support of self-leadership and enhance trust between the professional workers and KIOs. Finally, it is found that the self-leadership of RMAs leads to their commitment and inclination to continue to work in KIOs in addition to maintaining job engagement, and the positive association starts with trust in the management. Since KIOs need talents and the commitment of RMAs for the organizations' own success in the complicated environment, it is crucial for KIOs to allow RMAs to use their self-leadership and build trust relations with KIOs.

With the findings and implications, this paper also contributes to the existing research on research management and administration. First, by drawing on the existing research in organizational sociology and behavior, this paper describes RMAs as professional, knowledge workers with human agency who can be job crafters and take the initiative for professional and personal growth from within themselves. This approach provides a different view regarding RMAs from the many existing studies that focus on the functional roles, skills, and necessary trainings of the job. Second, in doing so, RMAs are put in the real-life conditions of working in KIOs, and their struggles and capabilities for survival as an individual and a profession are understood in the context of the work environment and organization. Finally, this paper clarifies how RMAs can use their agency and human capital for survival and how this initiative of RMAs contributes to the survival of KIOs in the complicated environment today.

However, there are limitations in this study and further research needs. First, the concept of self-leadership also covers individual cognitive processes, such as self-discipline, self-monitoring, self-efficacy, constructive thinking, and even self-talk (e.g., Prussia et al., 1998). This paper could not delve into such mechanisms that are deep within the minds of RMAs. Second, this paper could not fully grasp the issues of status of RMAs as a comparatively new profession in KIOs, although one of the

findings of this paper suggested that lack of the status might affect how RMAs use their initiative, problem-solving abilities, and adaptability. Third, self-leadership was treated as a form of human capital of RMAs in this paper, but human capital is a class of properties larger than an attribute, and thus, other attributes, abilities, and behaviors may help RMAs to survive and develop professionally. Further research is necessary to overcome these limitations while focusing on the human agency and human capital of RMAs.

Author's Note

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Endnotes

1. The existing research deemphasizes the importance of external standards for self-leadership compared to internal ones, but at the same time, the research seems to assume that workers with self-leadership satisfy externally-set requirements and do not use their human capital to exploit their organization (e.g., Carmeli, Meitar, & Weisberg, 2006; Pearce & Manz, 2005; Stewart, Courtright, & Manz, 2011).

2. Quitting is not always a direct outcome of job dissatisfaction because other variables may also work for the decision, such as job engagement due to self-leadership, as well as the conditions of the external labor market. The interest of

this paper is the conditions of the former.

3. On the other hand, measuring the performance of knowledge workers such as researchers and RMAs or calculating the value of intellectual capital is never an easy task, and there is no universally accepted method to satisfy the need (Chaminade & Catasus, 2007; Davenport, Thomas, & Cantrell, 2002; Drucker, 1999; Lewis, 2004; Pyoria, 2007; Ramirez & Nembhard, 2004). It has long been a concern in the management studies how to solve the gap between the market value and book value of a company by determining the value of intellectual capital and how to manage knowledge to turn intangible assets into tangible ones (e.g., Chaminade & Catasus, 2007; Drucker, 1999; Pyoria, 2007; Sanger, 2012).

4. Appelbaum (2002), Appelbaum et al. (2000), Belanger et al. (2002), and Giles et al. (2002) studied manufacturing workers to find out why some companies in the sector were successful while others were failing. However, their case studies also included KIOs, such as a medical device developer (Appelbaum et al., 2000), and the characteristics of HPWSs in the literature are the same as those discussed as positive human resource management practices common across industrial sectors today (e.g., Appelbaum et al., 2000; Makani & Marche, 2010; Prussia, Anderson, & Manz, 1998; Society for Human Resource Management).

5. Person-organization misfit is different from the person-job misfit that is caused by insufficient skills, knowledge, and abilities on the side of the employees.

6. The method of distribution, number of respondents, and their geographical ratio are according to Kerridge and Scott (2017, 2018).

7. Although it is theoretically meaningless, a pseudo R2 was checked with Tenure and all independent variables of the importance of soft skills in the RAAAP survey results. Even with all the explanatory variables, the pseudo R2 was 0.03, which suggests that the low value in Table 7 is likely because of discrete variables and their skewed distributions.

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