Self-leadership and career success of R&D workers: Mediation of knowledge sharing and exploration

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Abstract

Given significant role of R&D workers in technological innovations and organizational performance, understanding their career success helps R&D organizations develop effective career development programs and facilitate individual innovators to formulate effective career strategies. Adding to literature on personal attributes and ability to achieve successful career, this research proposes a research model which focuses on self-leadership and its effect on subjective career success of R&D workers. Furthermore, to understand the mediatory path of how self-leadership influences career satisfaction, this study proposes to analyze organizational behaviors of knowledge sharing and exploration. The research results of this study will provide significant implications for human resource management and individual strategies for career development for R&D personnel.

Keywords: self-leadership, career success, knowledge sharing, exploration

1. Introduction

As employees showed a strong attachment to the organizations which provide effective career development support [25) 37) 59)], many organizations have paid strong attention to designing effective career development programs. Identifying predictors of career success is a key research endeavor to help organizations develop effective career development program [35) 59)] and individuals formulate successful career plan. Career success is a person's self-evaluation of the accomplishment of desirable work-related outcomes and the subjective apprehension and evaluation of progress in his or her career [20) 21) 51)].

Recognizing the importance of understanding careers success, existing literature examined numerous predictors at both individual level and organizational level. On the one hand, a short list of personal characteristics discussed influence of gender [47)], big-five personality [5)], proactivity [25) 35)], performance or achievement goal orientation [25) 35)], perceived career competency and employability [12)], and sense of calling [19) 29)]. On the other hand, the organizational and situational studies highlighted factors, such as learning culture [25)], senior mentoring [47)], and leaders support [25) 59)] to explain career success. Despite variety of existing approaches on career success, no prior study, to authors' best knowledge, examined the influence of *self-leadership* on career success. This study contributes to existing literature by investigating whether and how self-leadership affects career success in R&D organizations.

Given that individual R&D workers are an ultimate source of creative ideas and innovation in organizations [1) 10) 14) 41) 57)], a growing body of literature examined the types and influence of career development program for R&D workers [9) 13) 37) 43)]. Focusing on the personal dimensions on career success, this study proposes to evaluate the influence of self-leadership on career success of R&D workers. Self-leadership is a personal ability and strategy through which individuals navigate, motivate, and direct themselves toward achieving desired behaviors and outcomes [8) 22) 28) 32) 33) 46) 52)]. Self-leadership may promote R&D workers to recognize problems more effectively and propose the solutions creatively while helping them overcome hardships and uncertainties brought by innovation processes.

Furthermore, this study distinguishes itself from others by proposing to examine how R&D workers' self-leadership manifests itself in organizations, elucidating the critical paths of how self-leadership shapes career success. As career success of R&D workers heavily depends on contributions to knowledge creations and innovations, this research proposes to examine the mediation effect of knowledge sharing and exploration of R&D workers, all of which are significantly related to personal performance and innovations in R&D organizations.

As R&D is knowledge-intensive work that demands strong specialization among organizational members, effective knowledge sharing enables R&D workers to generate best possible solutions to problems by exchanging crucial knowledge with members [23)], leading to knowledge creation and higher organizational performance [15) 23) 30) 31) 55)]. This research proposes that R&D workers with strong self-leadership are more likely to be engaged in knowledge sharing with organizational members to advance personal knowledge assets, advancing personal career competency and career success.

In addition, applying the ambidexterity strategy developed at organizational level to individuals, this research examines influence of R&D workers' exploration. Exploration refers to challenging existing beliefs and experiment new approaches and methods to advance innovation [3) 4) 18) 36) 45) 48) 56)]. Proposing mediation influence, this study predicts that R&D workers with strong self-leadership are more likely to question existing approaches and explore new ones, and the exploration generate creative solutions to enhance personal career competency to achieve successful career.

Providing crucial implications to human resource management (HRM) of R&D organizations, this study will deepen understanding of the essential personal characteristics and abilities of R&D workers to achieve successful careers as well as the organizational behaviors that signify personal characteristics.

2. Theory

2.1. Self-leadership

Self-leadership is the self-influence process and strategy through which individuals navigate, motivate, and direct themselves toward achieving desired behaviors and outcomes [8) 22) 28) 32) 33) 46) 52)]. Self-leadership comprises cognitive strategies that enable individuals to influence their own thoughts and control behaviors to achieve higher personal as well as organizational performance [38)] (Neck and Houghton, 2006). Self-leadership manifests itself when individuals recognize a gap between current and desired situation and engage in specific behaviors patterns aimed at reducing the discrepancy [52)]. Self-leadership leads individuals to perceive a situation, motivate and control them to generate behavior, and then assess how the behavior changes the situation in a desired way [33) 52)].

Construct of self-leadership comprises three primary categories of strategies and abilities: behavior-focused strategies; self-observation; and self-reward [38)]. First, behavior-focused strategies are related with facilitating behavior management and, in particular, with self-motivation and self-control for performing necessary but unpleasant tasks. Second, self-observation is to collect and analyze information systematically to understand the cause and influence of one's own behaviors [32) 38)]. Effective self-observation lays a base for self-evaluation to modify behavior strategies. Third, and finally, self-rewards is to compensate oneself when individuals successfully achieved the targeted goals [32) 38)]. Reinforcing the motivation toward goals, self-rewards increase the value of personal goals and help individuals concentrate on the goals.

Strong self-leadership can bring a variety of positive personal as well as organizational outcomes [38)]. Self-leadership enhances individual sale performance by fostering self-efficacy [42)], facilitates development of organizational leadership [49)], and serves as a cognitive resource for strong entrepreneurship [39)]. In particular, self-leadership is strongly related to the innovative behaviors of individuals. Self-leadership can promote innovation as it help individuals overcome difficulties and obstacles posed by innovative initiative in organizations [6)]. Researchers also showed that self-leadership mediated the relationship between learning goal orientation and role innovation [11)].

2.2. Knowledge sharing

Knowledge sharing is the process of exchanging knowledge, which helps exploit the existing knowledge and explore new one by combining them together [7) 17) 31) 41) 53) 58) 60)]. Effective knowledge sharing enables organizational members to make best use of knowledge assets, contributing to organizational knowledge creating process [17) 58)]. Furthermore, knowledge sharing plays a critical role in creating firm specific knowledge by transforming individual tacit knowledge into explicit knowledge [41)]. The conversion process provides individual members with chances of absorbing new insights and ideas, fostering accumulation of firm-specific knowledge base. In the research of business strategy, effective knowledge sharing has positive influence on saving production costs, enhances innovation capabilities, improve service quality, and consequently, foster competitive advantage of organization [58)].

Recognizing significance of individual knowledge sharing, a growing body of innovation literature has investigated predictors of individual knowledge sharing of R&D workers. With respect to predictors, existing studies showed that the social networks and capital promote knowledge sharing [30) 60)]; the trust among team members fosters exchanging ideas and information [23)]; the social reputation facilitates access to knowledge [15)]; the psychological contract and organizational commitment have positive impact on knowledge sharing [55)]; and HR practices of incentives, and performance appraisal are positively related to knowledge sharing of R&D workers [31)]. Despite of increasing research, limitation of existing research is the paucity of understanding of individual characteristics [17) 58)]. As most knowledge sharing is done in an informal and spontaneous manner, personal abilities and characteristics can make a significant effect on knowledge sharing behavior.

2.3. Exploration

Construct of individual *exploration* originated from study of organizational ambidexterity in strategic management. Incepted in business strategy, organizational ambidexterity refers to a firm' capability to purse learning through two opposing sets of activities: exploiting existing competences and exploring new opportunities [2) 34)]. Although exploitative activities require refinement of existing patterns, explorative activities pursue search, variation, risk taking, experimentation, flexibility, discovery, and innovation [34)]. Recognizing applicability of organizational ambidexterity theory into micro units of analysis, researchers have tried to conceptualize personal ambidexterity to understand both personal as well as

organizational performance [3) 4) 18) 36) 45) 48) 56)].

Adopting ambidexterity at individual level, this study defines personal exploration as individual behaviors of challenging existing beliefs and decisions, create variety in experience, and experiment new approaches toward technologies and work process to advance innovation [36) 56)]. As the key aspects of innovation task necessitate creative thinking and exploratory action, exploration of R&D workers not only exert significant influence on individual innovative behaviors, but also comprises the essential dimension of organizational ambidexterity [4)].

Reflecting growing interests in understanding individual exploration, researchers investigated the influence of personal characteristics and abilities, for example, cognitive flexibility [18)], individual learning orientation [4)], and boundary spanning behaviors [56)], along with contextual factors, such as knowledge inflows [36)], structure of personal networks, such as density, content, and informality [3)], and high-involvement human resource systems in organization [45)]. Although existing literature provides some critical insights about predictors of explorative individual behaviors, the diversity of theoretical approach is limited and the evidence on the outcomes is sparse.

3. Hypotheses

As shown in Figure 1, this research proposes an integrative research model in which R&D personnel' self-leadership has a direct impact on career success and the relationship is mediated by both knowledge sharing and exploration.

3.1. Self-leadership and career success

Self-leadership of R&D workers means individual ability to navigate, motive, and control themselves and is deeply related to proactive behaviors of challenging the status quo and improving current state [26) 33) 52)]. Basic elements of R&D activities are recognizing problems, generating new ideas, mobilizing supports, and producing effective solutions [6) 50)]. Thus, R&D workers with strong self-leadership are more actively engaged in the process of identifying crucial problems, seeking creative ideas for generating effective solutions, and mobilizing organizational support to implement the desirable solutions. Furthermore, as innovation processes are full of uncertainties and pose difficulties, obstacles, and frustration, the strong self-leadership helps R&D workers motivate and control themselves to overcome hardships, endure uncertainties, and implement innovative solutions successfully [6)].

Innovations driven by self-leadership positively affect individual career success as the contributions elevate the self-efficacy and performance evaluations in organization. R&D workers with strong self-leadership take initiative for change, are persistent in successfully generating new ideas and implement them, all of which enhance work performance [26)]. R&D workers with strong self-leadership challenge current level of performance and tries to advances it to a desired one while continuously pursuing learning and developing their work competency. High achievement comes to help R&D workers gain high employability and marketability in their career, forming a strong base to enhance career satisfaction [12)]. Thus, it is proposed that self-leadership has a positive impact on career success of R&D workers.

H 1: Self-leadership of R&D workers is positively related to career success.

3.2. Mediation of knowledge sharing

Innovation involves the process of recognizing notable problems, generating creative ideas, and implementing the solutions effectively. The successful engagement in the innovation process requires R&D workers to exchange ideas and information continuously with organizational members. Strong self-leadership drives R&D workers not only to formulate innovation goals and plan to achieve them, but also to actively exchange crucial information and skills useful for idea generation and implementation. Active knowledge sharing of R&D workers allows acquiring new insights and following up latest technological changes, responding to a rapidly changing technological environment timely. Thus, self-leadership of R&D workers is strongly related to knowledge sharing with members.

Knowledge sharing has a significant impact on career competency of R&D workers as exchanging knowledge with members allows generating creative ideas and acquiring tacit and experiential knowledge crucial for innovation [15) 23) 29) 30) 55)]. Information feedback and knowledge support of organizational members, such as supervisors and coworkers, help R&D workers enhance career competency as it facilitates the acquisition of experiential knowledge, career-related networks, and job-related skills [12)]. Acquiring knowledge, skills, and abilities enhances the career competency and employability of workers by obtaining high evaluation by current as well as prospective employer [12)]. In summary, strong self-leadership of R&D workers is crucial personal ability to drive learning and knowledge sharing in organizations, and the strong career competency of R&D workers enhanced by active knowledge sharing results in perceived satisfaction with their careers. Thus, it is predictable that active knowledge sharing is crucial mediator in the relationship between self-leadership and career success of R&D workers.

H 2: Knowledge sharing of R&D workers mediates relationship between self-leadership and career success.

3.3. Mediation of exploration

Self-leadership of R&D workers manifests itself in their inclination to challenge current state and improve or create a new one by effectively motivating and navigating their own behaviors [33) 52)]. Therefore, self-leadership strongly implies explorative learning by R&D workers. As advancing current state necessitates pursuing new opportunities and attempting different approaches, R&D workers with strong self-leadership should reconsider existing beliefs, create variety in work experience, and seek new solutions toward technological problems and research tasks [36) 56)]. Self-leadership encourages exploration of R&D workers as they not only take initiative of changes, but also keep persistency in creating new alternatives by controlling themselves against the uncertainties and instability inherent in innovation process.

Exploration is an essential strategic behavior of successful R&D workers. High environmental turbulence, caused by fast technological changes and competitive pressures, often demands exploratory learning and experimentation to achieve effective adjustment to changes [34)]. Explorative behaviors enable R&D workers to break out of old routines to overcome existing approaches and initiate new experimentations. Active exploration helps R&D workers accelerate the speed of learning, acquire new ideas and information, and generate creative solutions. Advancement in innovation performance ensured by exploration lays a concrete base to build career competency and enhance employability of R&D workers, leading to high career satisfaction [12)]. Thus, it is proposed that R&D workers' exploration mediate the relationship between self-leadership and career success.

H 3: Exploration of R&D workers mediates relationship between self-leadership and career success.

3.4. Sequential mediation of knowledge sharing and exploration

As previously discussed, R&D workers' knowledge sharing and exploration are both implicated in the relationship between self-leadership and career success. With respect to the relationship between two mediation factors, researchers suggested the influence of knowledge sharing on exploration. Sharing knowledge with organizational members can facilitate the exploration of searching, discovering, creating, and experimenting with new opportunities.

Through active knowledge sharing, R&D workers maintain continuous knowledge flows that serve as a major source of exploratory learning. Knowledge sharing plays the role of adding new knowledge into the existing base and assists in modifying current beliefs. Knowledge sharing facilitates R&D workers' personal efforts to develop and experiment with noble solutions to newly emerging, unprecedented problems. R&D workers' active knowledge sharing with organizational members not only adjusts the current base of knowledge but also increases the breadth of the knowledge base, significantly promoting individual explorative learning. Therefore, knowledge sharing and exploration are proposed as sequentially mediating the relationship between self-leadership and the career success of R&D workers.

H 4: The relationship between R&D workers' self-leadership and career success is sequentially mediated by knowledge sharing and exploration.

4. Measurement

As shown in Table 1, dependent variable of this research model is subjective career success and this research will adopt question items from existing literature which evaluate the extent to which R&D workers were satisfied with career success, career goal achievement, advancement, income, and capability recognition by organization [20) 21)]. The questionnaire items will measure the variables by using the 7-point Likert scale, and ask the respondent's profile, such as their gender, age, education level, and tenure of R&D work.

Independent variable of research model is self-leadership and this study will adopt questionnaire items from existing literature [22) 46)] and modify them to suit context of R&D organizations (Table 1). The measurement of self-leadership evaluates R&D workers' self-observation of work pattern, job progress, and performance, along with the self-goal setting and goal consciousness.

Mediation variable of research model is knowledge sharing and exploration of R&D workers. Regarding the measurement of knowledge sharing behaviors, this study will adopt items from existing studies [7) 31)] and adjust them to fit the R&D activities. The measurements ask respondents to evaluate exchanging know-how, people information, educated expertise, and official reports and documents.

Measurement of R&D workers' exploration will adopt items from existing literature [36) 45)] and modify them to suit R&D activities. The questionnaire items evaluate R&D workers' efforts to solve problems in different ways, search for new working methods, take risks, and purse the research requiring new skills and experiences.

Control variables of research model include gender, education level, and tenure (service in R&D organizations). These are generally recommended in previous research.

Figure 1. Research model

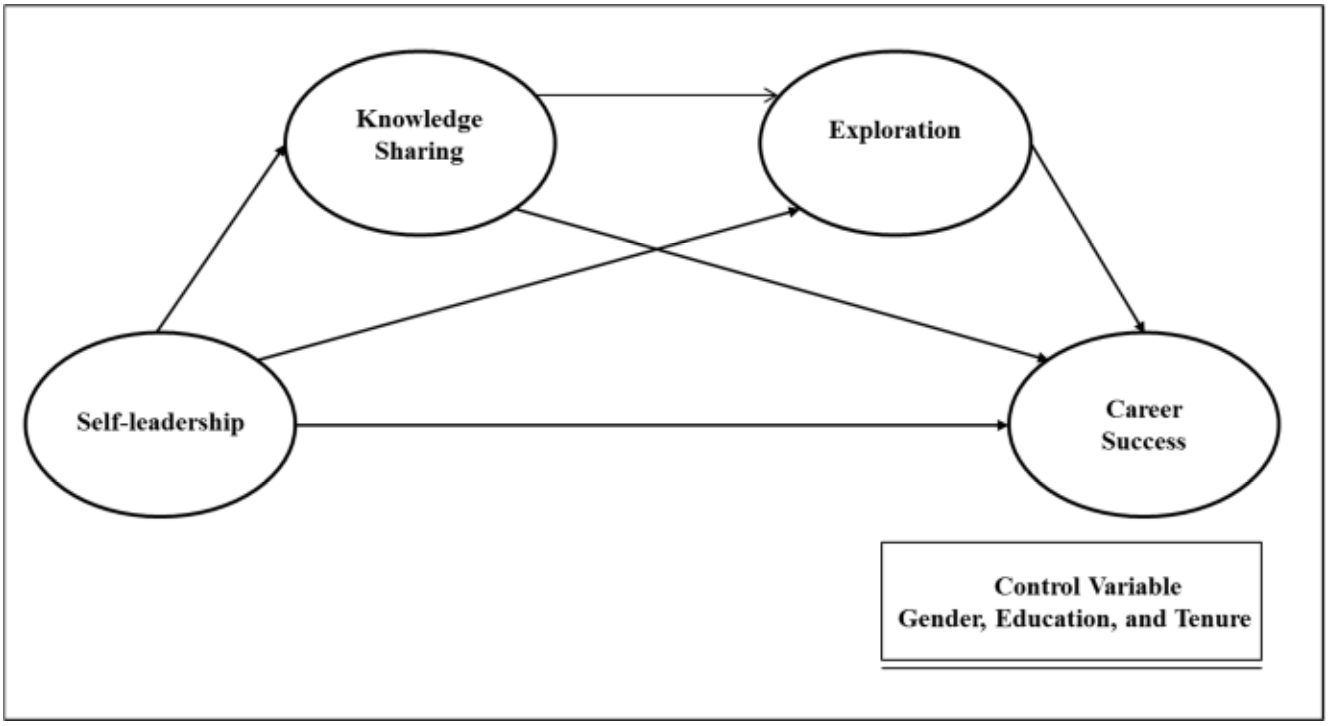

Table 1. Construct measurement

Measurement
Self-leadership(SL)
I make a point to keep track of how I am doing
I continuously think about my progress in my job
I continuously pay attention to how well I am doing
I establish specific goal for my own performance
I consciously have goals in my mind
Knowledge Sharing (KS)
I often share know-how learned from research with other organizational members.
I always provide know-whom information in research activities at the request of other organizational members.
I try to share my expertise learned from my education or training with other organizational members in a more effective way.
When I have learnt something new in research, I see to it that my organizational members can learn it as well.
Exploration (EX)
I try to solve problems in different ways
I search for new working methods and instruments
I pursue R&D activities requiring new skills and knowledge
I pursue R&D activities requiring innovativeness and creativity
I purse R&D activities that I can have new experiences
Career Success (CS)
I am satisfied with the success I have achieved in my career
I am satisfied with the progress I have made towards meeting my overall career goals
I am satisfied with the progress I have made towards meeting my goals for advancement
I am satisfied with the progress I have made towards meeting my goals for income
When compared with coworkers, my current capability is highly evaluated by organization

5. Discussions and conclusion

5.1. Theoretical implications

Understanding predictors of career success generates significant implications for developing effective career development programs as well as for formulating career strategies for individual employees. To explain successful careers of R&D workers, this study presents interrelationships of crucial variables that existing literature did not considered seriously. First, adding to literature of personal attributes and ability, this research could shed a new light on the influence of self-leadership of R&D workers. It will show that self-leadership is an essential base that motivates and directs personal behaviors to perform innovation and improve performance.

Second, identifying mediation variable may help understand the mechanisms of how the causal effect arises between key variable, beyond confirming whether and to what extent an explanatory variable has an effect on another variable. With the goal of identifying organizational behaviors signified by R&D workers' strong self-leadership, this study theoretically discussed the effects of knowledge sharing and exploration on building success careers of R&D workers. Research result will suggest that both active knowledge sharing and exploration could help R&D workers advance career competency to achieve career success. This finding is significant as it suggests how strong self-leadership of R&D workers manifests itself in positive organizational behaviors, bringing crucial implications to understanding meaningful paths to generate positive career outcomes.

5.2. Practical implications

One of the most crucial practical implications of this research is to provide useful selection criteria for HRM of R&D organizations. As individual researchers are an essential source of organizational creativity and innovation, it is the key to organizational success to attract and motivate effective employees. The research result of this paper will highlight the significance of self-leadership as an employee selection standard, suggesting that indicators of self-leadership can serve as effective criteria for selecting new employees. Furthermore, the analysis result provides HRM managers with critical insights about the types of positive organizational behaviors led by strong self-leadership. The research result will show that strong self-leadership of R&D workers engenders positive organizational behaviors of active knowledge sharing and exploration.

The research result further may advise that HRM should consider the self-leadership training as a core part of career development program. It was attested that individuals who received the self-leadership training showed enhanced personal and organizational outcomes, such as mental performance, positive affect, job satisfaction, while decreasing negative affect [40]. In particular, given the uncertainties and dynamic changes in technological environment, self-leadership training can help R&D workers achieve innovations by effectively managing their learning and exploration activities, while pursuing their career goals steadfastly and successfully.

5.3. Limitations and future research

Although this research model can contribute to the study on careers success by focusing on the personal characteristics and ability of R&D workers and their organizational behaviors, it may suffer from several limitations. Despite that the organizational level factors, such as learning culture and leaders' supports, may have either direct or moderating effect on individual career success, this research did not make sufficient considerations on theses organizational dimensions.

Future research can advance understanding of career success by expanding the scope of organizational variables and by examining their interactions with personal attributes in affecting career satisfaction. For illustration, as moderator, the leaders' support can intensify the influence of self-leadership on career success, because the supportive leaders facilitate employees to perform self-goal setting and self-planning in the pursuance of career goals. Thus, understanding interactions between personal characteristics and organizational variables may be a critical direction of future research to understand career success.

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