Career Choices of MNC Knowledge Professionals:

Single or Hybrid Path?

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Abstract

This empirical study seeks to investigate knowledge professionals' career preferences with respect to the dilemma of a single or a hybrid path. It incorporates two categories of research variables; the type of Research and Development (R&D) laboratories in which knowledge professionals are employed (i.e. asset exploiting or asset augmenting units); and the employee-related characteristics (i.e. age, education, gender, marital status). Research evidence is based on a large scale study of 921 professionals employed in 70 R&D units of MNC subsidiaries in Greece. A logistic regression model was run with the professionals' preference for a single or a hybrid career path formulating the dependent variable. Research findings indicate that the type of R&D unit, employee age and marital status constitute strong predictors of knowledge professionals' career choice on either a single or a hybrid path and thus, should be taken into consideration when formulating a human resources management policy. This paper contributes to the scant evidence provided by career literature hitherto with respect to the career choices of R&D knowledge professionals in MNCs. It is, further, seemingly the first study to incorporate the type of R&D units as a predictor of the single vs hybrid career choice.

1. Introduction

Career literature examination reveals that historically, authors have paid significant attention on career orientations from the perspective of stability. Schein (1978) views careers as stable throughout one's work life. In the same vein, other scholars describe careers as linear, specialized and continuous (e.g. Driver, 1982). However, these approaches have received criticism, which suggested that authors should further explore the diversity of employees' career experiences (Sullivan, 1999; Sullivan et al., 1998). The reasoning behind this criticism is based on the rapid changes that characterize work environment (i.e. corporate restructuring, internationalization, recession and technological advancements, Cappelli et al., 1997; Coovert, 1995; Rosenthal, 1995) as well as demographic trends such as more working women, part-time workers and married employees (Grover, 1999; Feldman et al., 1994; London & Greller, 1991). In response to that criticism, there has emerged a second stream that claims that individuals tend to have multiple careers in different organizations and areas (Arthur et al., 2005; Savickas, 2002; Fagan, 2001).

Even though the subject has been investigated for decades (e.g. Duffy and Dik, 2009), authors have not shed light on the career preferences of knowledge workers (Farris & Cordero, 2002) with respect to the dilemma of a single or a multiple career. Research community has scant evidence particularly on knowledge professionals employed in Multinational Corporations (MNCs) (Manolopoulos, 2006). This begets very little knowledge for MNC managers on employees' intentions and career path aspirations. Further, the elaboration of a research that investigates career intentions of knowledge professionals in MNCs is particularly important as these employees make up a significant fraction of the workforce in many economies

and their contribution is fundamental to organizational competitive advantage (Redpath et al., 2009). In this paper we examine the career paths of those professionals employed in research, development and engineering (RD&E) activities of MNCs.

A single career path reflects employee's devotion to a certain career (e.g. technical path) while a hybrid one represents his/her desire to follow multiple alternatives (i.e. technical to managerial career path advancement). This empirical study seeks to investigate knowledge professionals' career intentions with respect to the dilemma of a single or a hybrid path. This paper explores the factors that influence MNC knowledge professionals' preferences and seeks to provide utilitarian evidence to both researchers and managers.

In doing so, we have grouped the factors in two main categories, namely the types of R&D laboratories of MNC subsidiaries and the employee-related factors. First, we explore the types of R&D units that constitute the professionals' work environment and thus, can affect their desire to drive a different career or stay devoted to one. Surprisingly, the literature has mainly neglected R&D units' effect on this particular research area. R&D units of MNC subsidiaries may have been established to undertake adaptation work but increasingly evidence suggests that they can become active contributors to MNC innovation efforts worldwide (Pearce, 1999). Employees working in different R&D laboratories are likely to have different skills and talents. They are also expected to have different stimuli based on the characteristics of their work environment and therefore, they may shape differently their preferences on future career choice. Second, career literature has revealed that demographic variables can provide significant explanations of the career management (e.g. Petroni, 2000). In

line with literature directions, we incorporate four employee related variables; i.e. age, educational background, gender and marital status of the RD&E employee.

Career preferences with respect to the dilemma of a single or a hybrid path selection has not received attention and thus, this paper's contribution to the existing career literature is fourfold. First, it provides evidence on the under-investigated issue of career preferences of RD&E employees in MNCs. Second, it incorporates the influence of strategic roles of R&D units, which, to the best of our knowledge, has not been examined hitherto. Third, it adds to the debate of whether employees stay strictly on one route or desire the multiple alternative. Fourth, most of the existing empirical evidence relates to MNCs based in developed economies (mainly the US). Our study, contributes to the investigation of the phenomenon in advancing economies, as it was conducted in Greece. Greece is a European and Monetary Union country that has significant levels of human capital, which justifies why many MNCs establish R&D units. Finally, to the least of our knowledge this is the first empirical study that investigates the aforementioned subject in Greece.

The remaining of this paper is structured as follows. The second section discusses the theoretical background to the study and advances related research hypotheses associated with the types of R&D laboratories; and, with employee-related factors. The third section explores methodological aspects of this research. The fourth section presents and discusses the findings. The concluding section outlines the implications of the study for research and management practice; and, explores limitations and directions for future study.

2. Research Background and Hypotheses

2.1 Types of R&D units

In relation to the person-organisation fit theory (PE), a fit occurs when employee needs, desires and preferences are satisfied by the organisation (Caplan, 1987; Kristof, 1996). This is in line with the concept of "career exploration". Career exploration involves the exploration of the "self" (self-exploration), and the environment (environmental exploration), in determining one's career choice (Zikic & Richardson, 2007; Flum & Blustein, 2000; Jordaan, 1963). Based on this rationale, individuals tend to make work-related decisions and show a considerable preference for organisations and positions (i.e. environments) that match their personalities (i.e. selves). Extending this argument further, knowledge professionals working in different types of R&D laboratories are expected to choose dissimilar career paths.

In current study, we refer to two types of MNC R&D laboratories with respect to whether they are asset exploiting or asset augmenting. The laboratories characterized as asset exploiting fall into the type of "Support Laboratory" (SL), which is classified in the comprehensive typologies of Haug et al. (1983) and Hood & Yound (1982). These particular R&D units deal with the effective implementation of well-existing technologies and procedures of the MNC with a view to becoming embodied in the production process of well-established products. Hence, the central function linked to this Support Laboratory (SL) role is adaptation development of the product or its production process.

The second type of R&D laboratories refers to the units that are characterised as asset augmenting. The description of these laboratories match that of "Locally

Integrated Laboratories" (LILs) and "Internationally Interdependent Laboratories" (IILs) that have been incorporated in the studies of Haug et al. (1983) and Hood & Yound (1982). LILs seek to operate as a closely integrated part of a subsidiary in order to develop distinctive products. These units extend the scope of the subsidiary without adapting to the existing MNC technology. This suggests that LILs have a "productive" scope and a more empowered role than SLs (Papanastassiou and Pearce, 1999). Internationally Interdependent Laboratories refer to the provision of basic or applied research inputs into a programme of precompetitive work undertaken by the MNC. Unlike previous strategic roles, IILs have a close coordination not only with the subsidiary's functional departments but also with MNC laboratories in other countries; as well as with the parent laboratory. Both LILs and IILs seemingly accommodate the objective of a regional or global innovative approach for the whole MNC (Pearce, 1999).

RD&E employees in asset exploiting laboratories show higher levels of MNC embeddedness and apparently follow closely the mandates of the headquarters (Manolopoulos, 2006). They are instilled with the values of the MNC and show low levels of flexibility and autonomy in work-related tasks. This is additionally corroborated by the fact that they choose to seek international assignments only in parent laboratories rather than other MNC subsidiaries or host country R&D facilities (Manolopoulos et al., 2010). With respect to the person-organisation fit theory, we may assume that RD&E professionals working in asset exploiting units, may be reluctant to change career route and follow a dissimilar path. Having low responsibilities, they are more likely to experience their work as job security and show willingness to continue working in the same post. Further, other career directions such as the managerial path or the entrepreneurial one, necessitate high

levels of creativity, inspiration and flexibility. As these attributes are not in line with our speculations about the behaviour of asset exploitation units employees, we assume that they may not consider multiple careers as a possibility for them and follow a single path.

On the contrary, RD&E professionals employed in asset augmenting laboratories are quite autonomous, and their everyday tasks are largely unstandardised and not so formalised (Pearce and Papanastasiou, 1997). This is because the influence of headquarters in the operations of their R&D units is relatively weak. Given the likely autonomy and flexibility that these employees possess away from the parent firm pressure, one may expect that they will be in accordance with the significant levels of independence and leeway that other career paths (such as the entrepreneurial) incorporate (Steward and Roth, 2007). Thus, it is relatively possible for them to lean towards other routes, also. Consequently, they may show preference on various paths, and possibly, drive a hybrid career route.

Further, RD&E employees working in asset augmenting laboratories face particularly high uncertainty environments due to rapid technological changes (Hoyt & Gerloff, 2000). This is the case for the professionals in LILs and IILs, given that such employees have higher responsibilities compared to their colleagues in SLs, and thus, need to take initiatives and encounter directly the uncertain environment. Facing uncertainty, asset augmenting unit professionals realize that the R&D task is risky and equivocal (Gerloff et al., 1991). Regarding career decision making, the discouraging effects of such circumstances may lead them to shift away the technical route towards a hybrid career path. Altogether, we posit:

H1: Other things being equal, knowledge professionals employed in asset exploiting laboratories are more likely to prefer a single career path while knowledge professionals employed in asset augmenting laboratories are more likely to prefer a hybrid career path.

2.2 Employee Demographic Variables

Age. Employee preference on either a single career path or a hybrid one is mainly investigated in literature through the research conducted in the "career indecision" area (e.g. Creed & Patton, 2003; Patton & Creed, 2001). There is evidence that shows employee age as an important factor in the aforementioned field (Loughlin & Barling, 2001). However, to the best of our knowledge, the direct effect of employee age on the decisiveness of career options has not been investigated hitherto. Instead, the linkage can be elicited through the lens of other variables, which closely relate to the issue.

As Amundson (1995) claims, there are two main constructs that moderate an employee's career decision; self-efficacy and self-awareness. Both have been associated with employee's age. Based on the social cognitive theory, self-efficacy refers to individuals' beliefs about their ability to carry out courses of action required to produce specific attainments (as of Nilsson et al, 2002). These beliefs play a pivotal role, as they exert control over choice of behavior, persistence, affective states, and thought processes (Bandura, 1997). Self efficacy (as well as "career decision making self-efficacy" proposed by Hackett & Betz, 1981) has been presumed to be a causal antecedent to career indecision (Taylor & Popma, 1990; Betz & Voyten, 1997), that

is, a causal antecedent to being career decided or undecided (Hackett and Betz's 1981). The general notion that is suggested in literature is that professionals who feel efficacious in their work roles will be more strongly committed to a specific career that they choose (Cherniss, 1991). Further, empirical evidence suggests that individuals that score high in self-efficacy, show a higher degree of commitment to a specific career (i.e. a single path rather than a hybrid one) as they have a profound sense of job calling (Dik et al., 2008).

Research has evidently shown that as employees get older, they became more self-efficacious and mature in respect to career decisions (Crites, 1997; Luzzo, 1993a;1993b; Healy et al., 1987, Healy et al., 1985). This is even supported by Giannakos (1996) who identified self-efficacy differences among different age groups of younger individuals. Hence, we may speculate that older employees are more self-efficacious and consequently, more willing to drive a single career.

With respect to age and career decisiveness, except for self-efficacy, authors have pointed out the role of self-awareness. Self-aware individuals manage to define effectively their vocational identity, i.e. they have a stable picture of their interests, personality, and talents (Flum & Blustein, 2000). Self-awareness has been characterized as an 'internal career compass' providing direction (McArdle et al., 2007). Raskin (1994) posits that individuals have a clearer picture of themselves as they get experience with age. That is, we may assume that older individuals are more self-aware, and thus, they may tend to prefer a single rather than a hybrid career path.

Further, the relationship between age and career decisiveness has gained attention through the lens of other variables, also. McCathy and Garavan (2006) reported less behavioral change for the older employees. In the same vein, some authors investigating behavioral change in a close related field, (i.e. in career

development) found that older employees are less receptive to making changes (Ryan et al., 2000; McEvoy & Buller, 1987; Ilgen et al., 1979). In addition, older employees were found less open to new experiences compared to their younger colleagues (Warr et al., 1998). They also scored higher on consciousness. In line with the previous is the research of Costa et al. (1986) who also detected a negative relationship between age and openness to experience and a positive one between age and consciousness in a large possibility sample of 10,000 respondents. The latter finding of consciousness, which implies a more determined behavior, is also supported by Goldberg et al. (1998), McRae et al., (1999) and Yang et al. (1998).

Finally, based on attachment theory, it is proposed that younger individuals may still have close affectional ties with their families, allowing them to safely explore their environment and the career possibilities that it may hold (Blustein et al., 1995; Bowlby, 1982). Thus, it is implied that younger individuals favored by parental security, may tend to explore multiple career paths.

All previous findings regarding self-efficacy, self-awareness and behavioral change may imply an indirect effect of employee age on career decisiveness; that is, older employees may tend to aim at a single direction and be more decisive regarding career decision making. We can also assume such a relationship in the under-investigated employee subcategory of R&D knowledge professionals that is of interest to current research.

H2a: Other things being equal, older knowledge professionals are more likely to prefer a single career path while the younger ones are more likely to choose a hybrid path.

Educational Background. Employees' educational background and its effect on career choices has drawn some attention in career literature (e.g. Manolopoulos et al., 2011; Rajadhyaksha, 2005; Kim & Cha, 2000). Authors have investigated whether employees with technical specialization and employees with managerial orientation have received either managerial or technical education. However, their intentions over a single or a hybrid route have not been discussed.

Employees undertaken managerial education are mostly expected to either follow managerial posts (Li et al., 2007; Kim and Cha, 2000; Igbaria et al., 1991) or be engaged in entrepreneurial activity (Chianglin et al., 2004). Technical-oriented careers are mostly preferred by employees with technical background (Allen & Katz, 1992).

Research on employees with managerial education does not provide evidence for mixed career routes (i.e. managerial and technical). That is, they intent to drive a single managerial route. Especially, MBA graduates are generally thought to have realistic self-concepts and thus, certain career directions (Simmering and Wilcox, 1995). Further, they are more focused and display high introspection when formulating career plans which imply their focus on specific career targets (Beutell & O'Hare, 2006). As Baruch & Peiperl (2000) identified, employees that hold an MBA degree score higher on self-efficacy compared to their colleagues that have different educational background. As discussed, higher levels of self-efficacy are associated with higher decisiveness in respect to career decision making (Betz & Voyten, 1997), which implies a single career preference.

However, MNC RD&E knowledge professionals, that particularly concern our study, select a technical-oriented career and thus, are most likely to hold a technical degree (Wynarczyk & Renner, 2006). Early work on RD&E careers reveals that the

most widespread utilised and assessed strategy for knowledge professionals is the "dual ladder". According to the concept, employees have two main alternatives, notably a career advancement linked to managerial responsibility or promotions to technical positions (Merton, 1957). Given that the managerial path is associated with higher status quo, prestige, social recognition and higher economic return, employees are expected to shift often to this path (Erdogmus, 2004); i.e. they are expected to drive a mixed, hybrid path.

H2b: Other things being equal, knowledge professionals with technical educational background are more likely to prefer a hybrid path while knowledge professionals with managerial educational background are more likely to prefer a single career path.

Gender. Career-related literature has shown considerable interest on the gender differences issue. The suggestion that depending on gender, employees display different career paths is not new and has already been investigated previously. However, gender differences on the issue of career decisiveness and especially on the choice between single or hybrid paths, has not been directly researched. Yet, authors have used several approaches that incorporate variables closely related to this issue, from which we could derive useful information.

The typical male pattern of working is a full time job, often for the same employer and for the entire career. Male employees basically aim at vertical advancement and external rewards (Mac Dermid et al., 2001). However, that is not the case for women. Female employees are more likely to pursue career goals focused

on individual learning and growth rather than organizational rewards (Sullivan, 1999; Still & Timms, 1998; Tolbert & Moen, 1998). They often give priority to a balanced blending of work and family responsibilities while trying to be self-fulfilled through their career (Reitman & Schneer, 2003).

Drawing on the previous arguments and extending them, several authors have labeled an individual's experience in work as job, career or calling, based on the subjective nature in which people attach meaning to their work (Duffy and Sedlacek, 2007; Heslin, 2005; Wrzesniewski, 2002). Female employees have most often been found to attach the most profound meaning in their work and experience them as an inner calling. The latter is the basic characteristic of a protean character, i.e. an individual who views his job as an obligation towards professional activity and has devotion to a higher ideal with a strong sense of purpose (Hall & Chandler, 2005). A protean career is a lifelong series of experiences, skills, learnings and transitions so that the individual can achieve the purpose of his existence (Hall, 1996). We may assume that such behavior fits the choice of a single career path (even though it may include job post transitions within same career), given that such individuals are more decided on the career they are meant to follow.

Authors argue that women's career choices embrace most of the characteristics that fit a protean career (Reitman & Schneer, 2003). These are basically self-awareness and adaptability (Vigoda-Gadot & Grimland, 2008) with women fitting more to the former. With respect to the study of Jamali et al. (2008), investigating managers and employees, women were found significantly more self-aware compared to men. Other factors found to influence career paths for women are consistent with the protean career; self-confidence (Rosenthal, 1995; Tharenou and Conroy, 1994); tendency to self-rate and self-promote (Hite and McDonald, 1995);

perseverance (Richie et al., 1997) and assertiveness (McDonald and Hite, 1996). Given the behavioral characteristics embraced in individuals that follow a protean career, it is more evident that women would prefer a single career path rather than a hybrid one.

Further, other approaches have yielded some rather equivocal results on career decidedness between men and women. Some authors draw on Bandura's 1977 self-efficacy theory and find that women displayed lower confidence in their abilities more often than men (Betz, Borgen, & Harmon, 1996; Gold, Brush, & Sprotzer, 1980). Lower self-efficacy, interests and persistence were reported in Arbona's (2000) study for both women and girls in particular career domains. However, more recent evidence finds that women display more self-efficacy and less career indecision than male individuals (Guay et al., 2003).

Exploring gender and career maturity, with the latter being a good indication of whether employees choose a single or a hybrid path, researchers have come to mixed results. Most find that women score higher on career maturity (Luzzo, 1995; King, 1989; Alvi & Khan, 1983). However, others such as Archebe (1982), who researched in the Nigerian context, showed opposite results. Respectively, the exploration of the effect of gender on career decision status has not come to conclusive results. Some display higher results in terms of career certainty for young males (Kishor, 1981; Richardson, 1974), other show the opposite (Wallace-Broscious et al., 1994; Vondracek et al., 1990). Finally, there is evidence that no significance exists between the variables (Stead, 1989).

Although, the different approaches that have tried to explore the effects of gender on career decidedness do not yield cohesive results, we posit there is a movement towards the following belief: women seem to be more self-aware, they

mostly experience their work as a calling rather than as a job, they have a strong sense of purpose and show higher levels of career maturity, and consequently they fit more to the concept of the single career choice rather than the hybrid one. Hence, with respect to our concern on knowledge professionals, we assume that:

H2c: Other things being equal, male knowledge professionals are more likely to prefer a hybrid career path while female knowledge professional are more likely to choose a single path.

Marital Status. Prior research on marriage within the career literature has mostly focused on issues regarding job performance differences between married and single employees or their career preferences (Leung, 2006; Fairlie, 2005; Erdoğmus, 2004). To the extent of our knowledge, empirical evidence on the direct effect of marriage on employees' choice between single or hybrid paths has not yet been conducted.

However, research has investigated the level of willingness that married employees show to career changes when their spouses are obligated to be relocated geographically. We assume that this is indicative of their willingness to realize changes in their career life and be reluctant to a single path. Groeneveld (2008), focusing especially on the careers of diplomats, posits that until recently, spouses had simply been expected to give up their own career and follow a different one if their partner was offered an overseas post. However, he continues that with an increasing number of dual-career couples nowadays, this is not the case. As Reynolds & Benett

(1991) hold, spouses are not willing to give up their career when they encounter the aforementioned circumstances.

Further, marriage creates an environment of stability and avoidance in behavioral changes. This is why Felmlee (1984) posits that it creates such constraints that limit the possibilities of career mobility. Married employees (especially the female ones) are not willing to change their career route in the case of a job relocation offer, even for improved job opportunities (Bielby & Bielby, 1992; Markham & Pleck, 1986; Markham, et al, 1983). Thus, they may not be willing to be engaged to a multiple career route. Such a behavior can be attributed to either the involvement, satisfaction or attachment of the employee to his or her environment. Authors have displayed a negative correlation between the extent to which individuals are linked to other people (Mitchell et al., 2001) and their willingness to leave current job post (Feldman and Bolino, 1998; Fisher and Shaw, 1994; Noe and Barber 1993).

Except for the concept of job relocation which has most evidently been researched in literature, we may extent the argument to all possible cases of occupational changes of the spouses. We speculate that marriage provides the couple with such relationship constraints, that they are more likely to be reluctant to any major career shifts. The established notion we have of married individuals serves for the reasoning behind the former argument. A strong sense of belonging, the effort towards inner harmony, credibility (Sagiv & Scnartz, 2000) and attachment to job (Robins et al., 2003) as common married individuals' characteristics are in line with our speculation.

H2d: Other thing being equal, married knowledge professionals are more likely to prefer a single career path while single knowledge professionals are more likely to prefer a hybrid career path.

3. Methodology

Data collection

The sample for this study was drawn from the population of MNC subsidiaries based in Greece. The *International Capital (ICAP)* database was the sampling frame employed. This database is the most comprehensive sampling frame that exists in Greece. It provides the most accurate description of Greek industrial and service sectors and is commonly employed in studies involving MNC subsidiaries located in this country (e.g. Manolopoulos et al., 2007). In total, 317 subsidiaries of different MNCs were included in this database. The sectors of investigated subsidiaries incorporated automobiles and transport equipment, electronics and information technology, manufacturing, chemicals and pharmaceuticals, food and beverages, textiles and services. Examined MNCs originated from the EU, US, Japan and other European nations.

The study was conducted in two stages. The first stage involved a national questionnaire-based postal survey in order to identify MNC subsidiaries that had an R&D department. Questionnaires were posted to subsidiary CEOs in an attempt to acquire this necessary information. Out of 315 subsidiaries, 133 useable responses were collected (two questionnaires from the original 317 firms were returned

undelivered). Consequently, the effective response rate for this first stage is 42%, which is deemed to be perfectly acceptable when compared with similar postal surveys (Harzing, 1997). Among these 133 subsidiaries, 70 had an R&D department.

The second stage of the study involved a survey on career preferences of knowledge professionals of MNC R&D laboratories in Greece. The questionnaire was pre-tested by two academics, two professional consultants, five MNC subsidiary CEOs and ten RD&E professionals. All these persons could spare considerable time to discuss the questionnaire. In the 70 R&D laboratories identified from the first stage of the study, all employed RD&E professionals were posted the questionnaire. At the end of each of the two months following the initial posting of the questionnaire to RD&E persons, a reminder letter was sent to all employees who had not replied yet. Out of the 948 initially posted questionnaires and following two reminders, 598 fully usable questionnaires were collected. In addition, a research assistant solicited telephone responses from 323 RD&E employees who did not respond through the post, bringing the total number of responses of full-time professionals to 921. Therefore, the effective response rate of the second stage of the research is a remarkable 97% (921/948). No statistically significant differences between respondents through the post, respondents through the telephone and non-respondents were obtained in relation to the number of R&D employees and years of operations of the laboratories. Consequently, response bias does not appear to constitute a threat to the results. Among the employees who responded, 850 are Greek citizens and 71 foreigners. The average age of respondents is 39.8 years with a standard deviation of seven. 433 (47%) of the respondents hold a technical degree, notably are graduates of technology-related universities or institutions specialising in physics, chemistry and biotechnology. Furthermore, 562 (61%) are men and 571 (62%) are married.

Statistical method and measures

In order to test the hypotheses, a logistic regression model was run with the career preferences of the RD&E employees. The dependent variable in the regression examination is the RD&E employees' intention to follow a single career path or a hybrid one. Respondents were asked to provide information on whether they show preference on multiple career paths or they are determined to select a single career during the period of three to five years to come (cf. Gardner, 1990).

The dependent variable was captured through a dummy variable whereby 1 reflects the knowledge professionals that have reported a desired hybrid path while 0 refers to the knowledge professionals that have shown preference for a single path. Out of 921 respondents in 70 MNC R&D units, 603 professionals (i.e. 65,5%) reported a preference for a single path whereas 318 (i.e. 34,5%) lean towards a hybrid route.

There are two sets of independent variables in the regression analyses, notably the types of R&D units and employee-related factors. Concerning the types of R&D laboratories, decentralized R&D activities can be characterized as either asset-exploiting or asset-augmenting. In the first category we include the effective application of the parent's creative inputs to host environments; whereas in the latter we include the generation of distinctive technological competencies. This variable sought to identify whether the laboratories are asset exploiting or asset augmenting. It was captured through a dummy variable whereby 1 refers to laboratories that adapt existing products and/or processes as only role or main role, and 0 otherwise.

In order to evaluate laboratories' role, respondents were asked to grade in a four-point Likert scale (4= only role, 3= main role, 2= secondary role, 1= not part of a role)

each of the following roles in terms of the importance in the operations of the R&D lab. The roles are as follows: (i) Adaptation of existing products and/or processes to make them more suitable to our markets and conditions (Asset exploiting) (ii) The development of new products for their distinctive markets (Asset augmenting) (iii) To carry out basic research (not directly related to the current products) as part of a wider MNE group level research program (Asset augmenting).

In relation to employee-related factors, the first variable of interest is the *age of the respondent* (*AGERES*). This variable was captured through a three-point Likert-type scale whereby knowledge professionals over 45 years old take the value of 3; professionals between 36 and 45 years old the value of 2; and, professionals under 36 years old the value of 1. The second variable that was examined is employee *educational background* (*EDU*). It was measured through a dummy variable whereby 1= an employee with a technical educational background, 0= an employee with a management (or other) educational background. The third variable of interest among employee-related factors is *gender* (*MALE*). This is represented through a dummy variable whereby 1= a male professional, 0= a female professional. The fourth examined variable is *marital status* (*MARRIED*), which is also a dummy variable whereby 1= a married respondent and 0= a single respondent.

There are three control variables that are employed in this research. First, the *nationality of the respondent* (NR) is measured through a dummy variable whereby 1= Greek employee and 0= foreign employee (e.g. Srivastava et al., 2007). Second, the *technological intensity of the sector* (*HIGHTECH*) in which the MNC subsidiary operates is captured through a dummy variable whereby 1= firm located in highly-intensive technological sectors and 0= a medium- or low-technology sector. Following the respective distinction of Pearce (1994), high-technology sectors

included MNCs in the telecommunications, electronics and information technology, chemicals and pharmaceutical industries. Third, *prior working experience* of the employee is measured through the logarithm of the number of years the RD&E professional has spent in related previous working experience (e.g. Dokko et al., 2009; Narayan & Steele-Johnson, 2007).

4. Findings and Discussion

Means, standard deviations and correlation patterns between the variables of current research are reported in Table I. The strongest positive correlation patterns were found to be firstly, the one between the marital status of the respondent and his/her age; and secondly, the correlation pattern between the gender of the employee and his/her age. The correlation between the age of respondent and the desired career path was the strongest negative one. Multicollinearity seemingly is not a source of bias and therefore, does not pose a threat to the regressions results reported in this paper.

Variable	Rubric		Mean	Std. Deviation	Min	Max	1	2	3	4	5	6	7	8	9
y	HYB	(1)	0,34	.108	0	1	1								
x_1	ASEXP	(2)	0,78	.654	0	1	-.457**	1							
x_2	AGERES	(3)	1.52	.775	1	3	.252	.185	1						
x_3	EDU	(4)	2.36	.854	1	3	.274	-.339**	-.181	1					
x_4	NR	(5)	0,92	.785	0	1	-.189	.206	-.153	.261	1				
x_5	MALE	(6)	.62	.449	0	1	.331**	-.327*	.488***	-.087	-.422**	1			
x_6	MARRIED	(7)	.60	.417	0	1	-.415**	.274	.509***	.336**	-.291*	-.368**	1		
x_7	HIGHTECH	(8)	.31	.107	0	1	.227	-.388**	-.232	.108	-.115	.177	-.085	1	
x_8	PWE	(9)	4,1	2,7	0,301	1,176	-.194	.109	.346**	-.164	-.094	.204	.109	-.216	1

** significant at .10, ** significant at .05, *** significant at .001*

Table I. Descriptive statistics and correlation coefficients

Table II presents the results of the logistic regression model. As discussed, the hybrid career path category consists of 603 respondents while there are 318 professionals included in the single career path category. The eight independent and control variables were regressed on the professionals' desired career path, which suggests the dummy dependent variable of the study. The estimation of variance inflation factors for the regression variables resulted in values close to 1, which are significantly lower than the accepted cut-off value of 10. This provides further support that multicollinearity does not constitute a problem to the results reported (cf. Netter et al., 1996). The pseudo R^2 value in the regression model is 22% which is satisfactory taking into consideration the cross-sectional and cross-national nature of the sample. The F ratio is large with corresponding statistically significant levels.

Variables	Regression Results (Ordered Probit)
x_1 - ASEXP	-747***
	(.225)
x_2 - AGERES	.554**
	(.251)
x_3 - EDU	.256*
	(.104)
x_4 - NR	-.624
	(.598)
x_5 - MALE	.385*
	(.164)
x_6 - MARRIED	-.482**
	(.204)
x_7 - HIGHTECH	.754
	(.601)
x_8 - PWE	-.332*
	(.181)
Pseudo R square	0.22
F	5.37***

n = 921

** significant at .10, ** significant at .05, *** significant at .001*

Figure in ( ) is standard errors

Based on the logistic regression model, the results show that hypotheses 1 and 2d are supported while the remaining are not. In the main, three out of five hypotheses showed strong statistical significance with the remaining two being weak predictors

for single vs hybrid career path preference of RD&E professionals. Specifically, the types of R&D laboratories variable was statistically significant at significance level of 0.01 and two out of four employee-related variables (namely age and marital status) were found to be significant at significance level of 0.05. The remaining two variables incorporated in the employee-related category, i.e. educational background and gender appear to be significant only at 0.1 level, suggesting that they are weak predictors of RD&E professionals' career path preference. Finally, prior working experience, which is controlled in current study provide likewise a weak prediction of the dependent variable.

As discussed, literature does not specialize in RD&E knowledge professionals and therefore, our conjecture on both employee-related factors that were found weak predictors (i.e. educational background and gender) was not strictly in line with the special needs and preferences of this particular employee category. Thus, the education and gender results may be attributed to this particular lack of RD&E career evidence in literature hitherto (Manolopoulos et al., 2011).

In line with our expectations in hypothesis 1 are the findings that knowledge professionals working in asset exploiting R&D units prefer a single career path. Respectively, their colleagues in asset augmenting laboratories were found to prefer a hybrid one. This is also in accordance with the literature that shape RD&E employees profile (Pearce and Papanastasiou, 1997). The results seem to contradict to the argument that less employee autonomy leads to job exit (Igbaria & Siegel, 1992).

The age of researcher was found to be a strong predictor (Loughlin & Barling, 2001), albeit not in the direction we have hypothesized. Hypothesis 2a suggested that older knowledge professionals would more likely prefer a single career path whereas younger ones would drive a multiple career route. However, the results indicate the

opposite; i.e. that older employees desire a hybrid career path and hence, the younger ones prefer to persist in a single career direction. These findings show that younger professionals aim at developing expertise in specific areas that they truly enjoy more than older ones (Kim & McLean, 2008). They present higher levels of excitement towards their career and need to be self-fulfilled through their work (Lewis et al, 1998). Following the same reasoning, older generations place more importance on job security (Kim & McLean, 2008) and thus, they are more willing to change career route in order to secure themselves. Further, career decisiveness, as discussed earlier, is positively related to one's levels of self-efficacy and self-awareness (Dik et al., 2008; Flum & Blustein, 2000; Betz&Voyten, 1997). Previously, we followed the notion that as age increases, self-efficacy increases (e.g. Crites, 1997), and therefore, individuals tend to be more career decided. However, the results provided in the current study show that older individuals are less career decisive, which may imply Mauer's (2001) argument that self-efficacy reduces with age.

In hypothesis 2d, we suggested that married knowledge professionals would more likely prefer a single career path, whereas unmarried ones would more likely follow a hybrid route. The results concord with our speculations and provide further support to literature. Individuals shape certain value systems which affect their occupational choice and vocational behavior (Walker et al., 1982; Brief et al., 1979). They seek careers that fit their value systems (Brenner et al., 1988), and therefore, provided that these values include stability, sense of belonging and inner harmony (e.g. Sagiv & Schnartz, 2000) especially within the Greek context, married employees show reluctance to change. Further, the reasoning that relationship constraints within marriage may not allow high levels of behavioral change is again in line with the idiosyncrasies of the Greek context in which the current study was conducted.

5. Conclusions

Implications

This study sought to explore R&D knowledge professionals' desire to follow either a single or a hybrid career path. It was undertaken among a large scale sample of 921 employees in R&D laboratories of MNC subsidiaries in Greece and resulted in a series of findings that suggest important implications for both researchers and managers.

The career-related literature suggests surprisingly scant empirical evidence on career orientation of this particular employee category. Especially in the Greek context, our study contributes through shedding light on a significantly neglected research area. To the best of our knowledge, this study is the first to include the types of R&D laboratories as a predictor of the career choice between a single and a hybrid path. In line with the person-organisation fit theory (Caplan, 1987; Kristof, 1996), the research findings display the importance of the incorporation of the work-environment in such a study. In addition, it provides stimulus for further future research.

This research is particularly useful to organizations as it begets several managerial implications. Schein (1982; 1978) viewed employees' careers as stable throughout their duration. On the contrary, Derr (1986) claimed that modifications in career paths exist always with respect to changes in environment. On the debate of employees' preference on a single, stable career or a multiple path, this research provides evidence that both options are possible depending on the applied

contingencies each time. Therefore, we posit that, at least in the Greek context, there is no clear tendency of knowledge professionals' choice on either a single or hybrid path. Instead, we claim that, in order to detect their employees' intentions, HR managers should pay attention on both work environment (i.e. types of R&D units) and employee-related characteristics (i.e. mostly, age and marital status). In accordance with the contingency approach (e.g. Zeffane, 1994), this implies that managers should handle each case differently, depending on the variables discussed. Despite that, previous research on career preferences related issues has focused mainly on employee characteristics, namely demographic factors (e.g. Petroni, 2000).

Further, it is noteworthy that MNC RD&E professionals constitute a special employee category that may be particularly different to other employee groups in respect to the desire for a single career path or a multiple one (Petroni, 2000). Hence, MNC managers that deal with career advancements (e.g. such as the dual ladder system), should take into consideration the probable intentions employees may have: RD&E professionals employed in asset exploiting units (i.e. SLs based on Haug et al., 1983) are more likely to be reluctant to a career change; whereas, their colleagues in asset augmenting R&D units (i.e. LILs and IILs based on Haug et al., 1983) may show a major need for change. This stems form the fact that these employees are characterized by high levels of autonomy and flexibility. Evidence suggests that managers should provide them with motives such as challenging tasks and opportunities for learning (Amabile et al., 1996) in order to increase their job satisfaction and limit their intentions for job shift (Amabile et al, 1996; Igbaria and Siegel, 1992). In addition, older professionals are of special interest. The results of this research imply that MNC managers should identify older professional devotion to current post as, particularly employees over 45, are likely to seek different career

paths. As regards married knowledge workers, they are less likely to lean towards a career change. Finally, we propose that MNC managers be indifferent to employee educational background or their gender, as both factors suggest weak predictors of professionals' intentions.

Limitations and future study directions

This study faces limitations that can provide suggestions for further research. Three of them are outlined in this section. First, the findings presented in this research may not be generalisable to other countries, as the study draws from MNC subsidiary operations in Greece. Hence, replication of this research in subsidiaries based in other nations with different levels of technological development is essential. Second, this study captures intended career preferences of knowledge professionals, which can be different from what employees actually did. Future research is likely to seek to discover the extent to which intended and realised career routes overlap. Third, further study should take into consideration features of the national context such as the level of technological advancement of a country and MNC subsidiary roles in this country (cf. Manolopoulos et al., 2007; 2010). Regarding the employee-related variables, results indicate the importance of two other variables that direct their behaviour in career decision making; namely, self-efficacy (Nilsson et al, 2002; Betz & Voyten, 1997) and self-awareness (McArdle et al., 2007). Hence, future research should take into consideration these variables in order to explore more profoundly their mediating or moderating effects on career decision making.

6. References

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