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1

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Training and development pathways: How self-perceived managerial competencies, selfefficacy and protean career orientation shape graduates' early career success

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Abstract

Purpose – This study aims to examine how shifting organizational dynamics and boundaryless career trajectories shape contemporary career paradigms, with a focus on protean careers. Grounded in social cognitive career theory, it investigates how protean career orientation, self-efficacy and self-perceived managerial competencies acquired through higher education influence subjective career success.

Design/methodology/approach – Using a two-wave longitudinal design conducted over three consecutive post-recession years, data was collected from management graduates of a large public university in Southern Europe through online surveys, with the second wave administered 9–12 months after the first. The hypothesized model was tested using structural equation modeling and moderated mediation path analyses implemented with the PROCESS macro.

Findings – Results from 243 alumni indicate that early career psychological resources – particularly self-efficacy and protean career orientation – significantly predict subjective career success. Moderated mediation analysis further shows that strong self-perceived managerial competencies amplify the indirect effect of self-efficacy on career success through protean career orientation.

Originality/value – This study extends existing research by showing that formal knowledge and competencies acquired through university-based training meaningfully shape subsequent career development and success. It highlights the importance of proactive, self-directed individuals with strong career self-efficacy while advancing theoretical understanding of the antecedents of subjective career success. The findings offer practical guidance for educators, practitioners and policymakers aiming to strengthen individuals' self-efficacy and career adaptability through enhanced higher education curricula,

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thereby cultivating adaptable, confident graduates who contribute to sustainable talent pipelines and institutional competitiveness.

Keywords Protean career orientation, Perceived self-efficacy, Managerial competencies, Subjective career success, Moderated-mediation model

Paper type Research paper

Introduction

The contemporary organizational landscape is characterized by rapid and continuous change, shaped by globalization, technological advancement and evolving patterns of employment (Hughes and Niu, 2021). These dynamics have fundamentally altered the nature of work, blurring organizational boundaries and challenging traditional career models grounded in stability and hierarchical progression. As a result, contemporary employees increasingly pursue protean careers – careers that are self-directed, flexible and guided by personal values rather than institutional structures (Hall, 1976; Baruch, 2014). This shift reflects a broader redefinition of career success, where individuals assume primary responsibility for managing their own professional growth, adaptability and employability (Kundi *et al.*, 2021).

Within this context, human resource development faces a pressing challenge: how to prepare and train individuals, particularly those in early career stages, to navigate increasingly non-linear and uncertain career trajectories (Obazuaye, 2024). Traditional organizational career systems offer limited support for such self-directed paths, highlighting the need to cultivate the competencies, mindsets and psychological resources that enable career adaptability and agency (Aljbour *et al.*, 2024). As calls intensify for human resources development to integrate learning, motivation and career self-management (Hite and McDonald, 2008), it becomes essential to understand the mechanisms through which early psychological resources influence career outcomes (Obazuaye, 2024).

Drawing upon social cognitive theory (Bandura, 1977), this study investigates how self-efficacy – the belief in one's capacity to execute actions required for desired achievements – affects protean career orientation (PCO) and, through it, subjective career success. Social cognitive theory emphasizes reciprocal interactions among personal factors, behavior and environmental influences, offering a useful framework for examining how individuals exercise agency in shaping their careers (Yoon, 2019).

Self-efficacy has been identified as a central determinant of motivation, learning and performance (Gibson, 2004; Schunk and DiBenedetto, 2021). Individuals with strong self-efficacy are more likely to pursue challenging goals, persist despite setbacks and adapt to complex work environments – all of which align with the attributes of a protean careerist. Despite the importance of self-efficacy, prior research has largely examined its direct effects on career outcomes, offering limited insight into the mechanisms through which self-efficacy shapes adaptive career orientations and subjective career success over time. As a result, less is known about how individual beliefs are converted into sustained career agency in early career stages.

Prior studies have demonstrated that proactive individuals with protean tendencies report higher subjective career success, commonly measured through career satisfaction (Abele and Spurk, 2009; Erdogan and Bauer, 2005). However, few studies have explored the antecedent conditions that foster the development of such orientations in early professional life. Moreover, while research often distinguishes between objective indicators of career success (e.g. promotions and salary) and subjective indicators reflecting personal satisfaction and fulfillment (Ng *et al.*, 2005), the processes linking early psychological and educational experiences to subjective success remain underexplored. In particular, existing work has paid

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limited attention to the role of competencies acquired through higher education as developmental antecedents of protean career orientation, and to how these competencies shape early career trajectories and evaluations of career success over time.

To address this gap, the present study develops and empirically tests a conceptual framework in which self-efficacy influences subjective career success indirectly through protean career orientation, with perceived managerial competencies – skills and knowledge acquired during university education – moderating this relationship. Integrating Holton's (1996) model of learning transfer, we conceptualize self-efficacy as a motivational driver that facilitates knowledge application and adaptive performance. This model aligns with contemporary human resource development perspectives emphasizing internal psychological resources as critical enablers of sustainable employability and lifelong learning (Richard, 2020). By adopting a longitudinal design, this study captures changes in career orientations over time and responds to recent calls for research on the boundary conditions of PCOand careerist behavior (Kim *et al.*, 2022).

The contributions of this research are threefold. First, it highlights the formative influence of self-perceived managerial competencies gained through higher education, showing that these not only matter *per se* but also shape how psychological resources are translated into early career success, which underscores the enduring value of formal instruction at the transition between education and work. Second, it advances theoretical understanding by demonstrating that self-efficacy functions as an antecedent of PCO and indirectly predicts career success through protean career orientation, thereby clarifying the directionality of this relationship in early career contexts. Third, it offers actionable insights for practitioners and higher education professionals seeking to design curricula and interventions that strengthen self-efficacy, foster protean career orientation and enhance long-term career satisfaction.

Overall, this study addresses contemporary challenges of career uncertainty and self-directed development by highlighting the role of psychological resources – self-efficacy, managerial competencies and PCO – in fostering adaptive and sustainable career paths. It advances understanding of how these factors jointly enhance subjective career success while opening new directions for research on career development in an increasingly artificial intelligence (AI)-mediated labor market.

Theory and hypotheses development

Protean career orientation

PCO reflects an attitude of self-direction and intrinsic motivation, emphasizing individual goals and psychological success over external rewards and organizational structures (Hall *et al.*, 2018). This approach redefines traditional career paths by prioritizing flexibility, self-management and alignment between personal and professional values (Hall, 1976; Steiner *et al.*, 2019). Individuals with a PCO evaluate success through personal fulfillment and proactive self-development rather than hierarchical advancement (Kim *et al.*, 2022). For human resource development, this perspective aligns with the emphasis on self-directed learning and adaptability as core capabilities in volatile and boundaryless work environments (Kuijpers *et al.*, 2006). In contrast, traditional career orientations emphasize organizational loyalty, linear progression and extrinsic indicators of success such as promotions or salary increases.

Empirical evidence supports Hall's original proposition that protean careers are rooted in intrinsic work values – autonomy, achievement and self-determination (Gubler *et al.*, 2014; Hall *et al.*, 2018). Self-efficacious individuals, especially early-career professionals, tend to manage their careers autonomously, persist through challenges and align work with personal values – behaviors that are central to a PCO and predictive of career success (Bandura, 1997; Chin and Rasdi, 2014).

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The literature further conceptualizes PCO through three interrelated competencies: identity awareness, adaptability and agency (Hall *et al.*, 2018). Identity awareness enables individuals to align their careers decisions with personal values and goals (Hirschi *et al.*, 2017). Adaptability supports effective responses to change and adversity, with proactive coping mediating the relationship between PCO and career outcomes (Briscoe *et al.*, 2012). Agency involves taking intentional actions to achieve desired career outcomes (Bandura, 1997). From a human resource management perspective, these competencies inform developmental practices that foster self-reflection, adaptability and sustained performance in complex work contexts (Clarke, 2013).

Although research has linked PCO to organizational outcomes – such as commitment, employability and reduced turnover (Cortellazzo *et al.*, 2020; Gubler *et al.*, 2014) – the most consistent findings concern its positive association with subjective career success (Hall *et al.*, 2018). Objective indicators (e.g. salary and promotions) show weaker associations (Wiernik and Kostal, 2019), whereas subjective measures such as job satisfaction, well-being and career fulfillment are strongly and consistently predicted by PCO (Baruch, 2014; Nakra *et al.*, 2024).

Self-Efficacy and protean career orientation: a social cognitive theory perspective

Self-efficacy refers to an individual's belief in their ability to organize and execute the actions required to achieve desired outcomes (Bandura, 1977, 1997). It influences motivation, persistence and emotional regulation when facing challenges (Singh, 2009). Conceptually, self-efficacy and PCO share common ground – agency, autonomy and confidence in influencing one's career trajectory. While self-efficacy reflects belief in personal capability, PCO represents the enactment of this belief through self-directed and values-driven career behavior (Wiernik and Kostal, 2019). Accordingly, numerous studies report a strong relationship between these constructs (Hirschi *et al.*, 2017; Steiner *et al.*, 2019), though the direction of causality remains contested.

Some researchers argue that PCO enhances self-efficacy through proactive behavior and feedback from successful career actions (Baruch, 2014; Hirschi *et al.*, 2017; Ngo and Hui, 2018). Others, consistent with social cognitive theory, posit the reverse: that self-efficacy precedes and shapes PCO (Steiner *et al.*, 2019; Wiernik and Kostal, 2019). Building on Bandura's (1977) model, Holton (1996) conceptualizes self-efficacy as a motivational antecedent influencing learning, adaptability and performance. This perspective challenges traditional assumptions by proposing that confidence in one's abilities drives career self-management and adaptability – core elements of PCO – which subsequently contribute to career success (Jo *et al.*, 2023). Individuals with high self-efficacy are more likely to set challenging goals, seek opportunities and assume responsibility for their development, thereby exhibiting stronger protean orientations (Hall, 2018). Hence, we contend that self-efficacy influences career success indirectly through its effect on protean career orientation, rather than being a consequence of it.

Self-efficacy shapes how individuals interpret opportunities and risks, guiding their career interests, plans and outcome expectations (Lent, 2013). Those with high self-efficacy tend to view obstacles as challenges to master rather than threats to avoid, fostering persistence and self-directed career behavior (Bandura, 1997). Belief in one's competence thus provides the foundation for a protean mindset – encouraging individuals to pursue self-managed, value-driven and adaptive career paths that enhance subjective career success.

Career success includes both subjective outcomes (e.g. satisfaction, fulfillment) and objective indicators (e.g. promotions, salary) derived from work experiences (Judge *et al.*, 1995). Individuals with strong PCO are better equipped to navigate changing career environments, prioritize personal meaning and growth over tangible rewards and achieve

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greater satisfaction by aligning their work with intrinsic values (Wiernik and Kostal, 2019; Chen and Jiang, 2023).

Therefore, we contend that PCO serves as a crucial link between self-efficacy and subjective career success, particularly in the form of career satisfaction. Thus, we propose:

H1. Protean career orientation mediates the positive relationship between self-efficacy and subjective career success.

The intervening role of self-perceived managerial competencies

McClelland's (1973) seminal competency framework underscores the role of individual capabilities in achieving job success, emphasizing that competencies are acquirable and developable through learning, which helps explain the lag between self-efficacy and performance across tasks of varying complexity. There is also empirical evidence suggesting the relationship between higher education, and career competencies and career development (Arghode *et al.*, 2020). In addition, recent studies extend this framework to higher education contexts, suggesting that alumni exhibit distinct career profiles that blend traditional (employer-centred) and protean (self-directed) orientations, alongside diverse levels of career competencies (Kim *et al.*, 2022). Individuals demonstrating a PCO combined with strong identity awareness tend to experience superior employability outcomes. Furthermore, higher academic engagement has been associated with stronger career competencies, supporting the view that competence development during higher education contributes meaningfully to later professional success (Ayoobzadeh, 2022).

PCO competencies – such as adaptability, continuous learning and self-responsibility – are critical for career success, they constitute transferable capabilities that enable individuals to navigate dynamic work environments (Downs *et al.*, 2024). However, vocational and career development research has often overlooked other key managerial competencies – such as analytical reasoning, decision-making and leadership skills – that play a pivotal role in early career transitions. This study addresses this gap by focusing on self-perceived managerial competencies acquired through higher education and their connection to career progression.

Self-efficacy theory (Bandura, 1977, 1997) distinguishes between beliefs in task performance and beliefs in one's capacity to acquire new skills, both of which are shaped by perceptions of learning effectiveness (Stajkovic and Luthans, 1998). While prior research has largely emphasized job search skills, limited attention has been given to how university-acquired managerial competencies influence long-term career success. Our study extends this discussion by proposing that the combination of strong self-perceived managerial competencies and a PCO fosters higher levels of subjective career success. Therefore, we propose:

H2. The interaction between protean career orientation and self-perceived managerial competencies has a significant and positive effect on future career satisfaction.

Our conceptual model further suggests that self-efficacy indirectly influences career satisfaction through protean career orientation, and that this relationship is amplified by perceived managerial competencies. Prior work conceptualizes perceived competencies as a generalized form of self-efficacy – reflecting confidence in one's ability to execute a wide range of tasks effectively (Gist, 1987). Perceptions of such competencies shape individuals' self-concept, behavior and worldview, reinforcing self-belief and enhancing motivation to act (Yamazaki *et al.*, 2018). In sum, awareness of self-perceived managerial competencies

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developed during higher education can significantly shape individuals' confidence, goal-setting behaviors and career evaluations. Those who perceive themselves as highly competent are likely to experience a stronger effect of self-efficacy on career satisfaction, particularly through the lens of protean career orientation. Therefore, we hypothesize:

H3. The self-perceived level of managerial competencies moderates the indirect effect of self-efficacy on future career satisfaction through protean career orientation. Specifically, the higher the perceived level of competencies, the stronger this indirect effect.

Finally, the increasing integration of AI within organizations underscores the growing importance of self-efficacy, protean career orientation and self-perceived managerial competencies for achieving career success (Bankins *et al.*, 2024a; Pandya and Wang, 2024). Individuals with high levels of self-efficacy and a strong protean orientation are better equipped to reskill, navigate career transitions and capitalize on AI-driven opportunities. Accordingly, this study emphasizes that psychological resources and perceived managerial competencies jointly enhance employability and subjective career success. See at Figure 1 the research model of this study.

Methods

Consistent with recent research using post-recession data from 2017 and 2018 (e.g. Wang *et al.*, 2024), this study examines how early career conditions shape job search behavior within this economic context. To achieve this, we used a longitudinal design comprising two waves of surveys spanning three consecutive post-recession years (2015–2017).

Sample and procedures

The target sample of this study were alumni from a southern European large public university. In the first survey wave (Time 1), responses were collected from 503 business administration alumni. Of these, 234 participants (48.3%) also completed the Time 2 survey and were therefore included in the final sample. Participants' average age was 25.4 years (SD = 5.0), with 92% aged between 22 and 30 years. Women represented 56.2% of the sample. Regarding relationship status, 5% of participants were married and an additional 10.7% reported living with a partner.

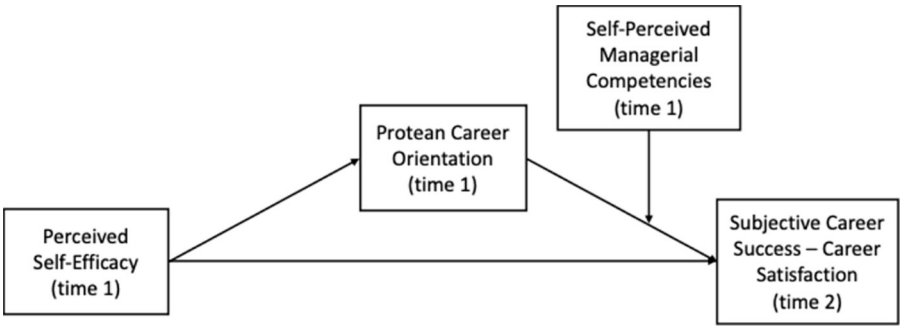


Figure 1. Hypothesized moderated-mediation model: Individuals' characteristics and orientation in predicting future subjective career success

Source: Authors' own work

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Data collection followed a structured two-wave procedure. Approximately four months after graduation, potential participants were contacted via email and invited to complete an online questionnaire. Respondents received a thank-you message and information about the second survey, which was administered 9–12 months later (approximately one year after graduation).

At Time 1, data were collected on the independent variable (perceived self-efficacy), mediating variable (protean career orientation) and moderating variable (self-perceived managerial competencies). At Time 2, data were collected on the dependent variable – subjective career success, operationalized as career satisfaction.

Prior to data collection, ethical approval was obtained from the university's legal advisory committee, granting permission to access alumni records. All participants provided informed consent after reviewing an online information sheet, and then completing a consent form.

Measures

Unless stated otherwise, all questionnaire responses were measured on seven-point Likert scales ranging from "strongly agree" (7) to "strongly disagree" (1).

Perceived self-efficacy was measured using Schwarzer and Jerusalem's (Schwarzer and Jerusalem, 1995) General Self-Efficacy Scale, which is composed of 10 items. Cronbach's alpha for this measure was 0.91. Sample items included: "I can always manage to solve difficult problems if I try hard enough" and "It is easy for me to stick to my aims and accomplish my goals." This scale captures a general sense of perceived self-efficacy and anticipates the ability to cope with everyday challenges and adapt to all kinds of life events.

PCO was assessed using five items from Baruch's (2014) Protean Scale. Cronbach's alpha for this measure was 0.71. Sample items included: "I am in charge of my own career" and "For me, career success is how I am doing in terms of my goals and values." This scale reflects the concept of PCO as defined by Hall (1976).

Career satisfaction was measured using the 5 items from Greenhaus *et al.*'s (1990) Career Satisfaction Scale. Cronbach's alpha was 0.89. Sample items included: "I am satisfied with the success I have achieved in my career" and "I am satisfied with the progress I have made toward meeting my income goals."

Self-Perceived managerial competencies were measured by taking the mean value of a competency framework that was previously validated among alumni (Baruch and Peiperl, 2000). We used 16 items to assess the graduates' self-perceptions of competencies such as oral and written presentations, cross-cultural knowledge, time management, negotiation and decision-making. Given the independence of these competencies, we computed the average to produce a single factor (Baruch and Peiperl, 2000). Cronbach's alpha for this measure was 0.89.

Control variables. We also collected background information from participants, including gender (0 = male, 1 = female), age and marital status (1 = yes, 2 = no, 3 = not married but living with a partner). These demographic variables are commonly used as controls when analyzing protean career choices and employee outcomes (Wang *et al.*, 2024).

Analyses

We tested our hypotheses using the PROCESS macro (version 4) for SPSS, developed by Hayes (2022) for conducting moderated mediation analyses. This macro enables path-analysis-based estimation of moderation, mediation and conditional process models. Using an ordinary least squares (OLS) regression-based analytical framework, PROCESS estimates coefficients and computes both direct and indirect effects in mediation models, as well as conditional indirect effects in moderated mediation models (Hayes, 2022).

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Specifically, Model 14 was used to test the moderated mediation hypotheses, while Model 4 was used to test the simple mediation hypothesis (*H1*).

Measurement model and common method variance. To assess the factor structure underlying the study's measures, we conducted a confirmatory factor analysis (CFA) using AMOS (version 27). To evaluate the potential influence of common method variance (CMV) arising from self-reported data, we applied Harman's single-factor test (Podsakoff *et al.*, 2012). According to this test, if CMV is a serious concern, a single-factor CFA model would yield better fit indices, suggesting that one factor explains most of the covariance among variables.

The results indicated that the single-factor model did not fit the data well [$\chi^2(523) = 2264.92$, $p < 0.001$; $\chi^2/df = 4.33$; CFI = 0.541; RMSEA = 0.120; TLI = 0.507; SRMR = 0.131]. In contrast, the hypothesized four-factor model – comprising self-efficacy, protean career orientation, career satisfaction and self-perceived managerial competencies – demonstrated a good fit [$\chi^2(512) = 868.89$, $p < 0.001$; $\chi^2/df = 1.70$; CFI = 0.906; RMSEA = 0.055; TLI = 0.897; SRMR = 0.059]. These findings confirm that the four constructs are empirically distinct.

We also assessed construct's reliability and the model's convergent and discriminant validity. All composite reliability (CR) values exceeded 0.80, indicating satisfactory internal consistency for all measures (Hair *et al.*, 2010). Convergent validity was established, as all average variance extracted (AVE) values were greater than 0.50 and lower than their respective CR values (Henseler *et al.*, 2009). Discriminant validity was also confirmed, as each construct's AVE exceeded its maximum shared variance (MSV) (Hair *et al.*, 2010). See Table 1 for detailed reliability and validity statistics.

Results

Our findings indicate that early career conditions – specifically, perceptions of self-efficacy and protean career orientation – are significant predictors of subjective career success, particularly career satisfaction. Furthermore, results from the moderated mediation analyses, which include self-perceived managerial competencies, reveal that stronger perceptions of one's managerial competencies amplify the indirect effect of self-efficacy on career success through protean career orientation. These findings extend previous research (Baruch, 2014; Hall *et al.*, 2018) by demonstrating that confidence in one's competencies enhances a self-directed, values-driven career orientation.

Table 2 presents the descriptive statistics and correlations among the variables in the research model. Notably, all predictor variables showed positive and statistically significant associations with career success–subjective career satisfaction.

The mediating effect of protean career orientation

A basic mediation analysis using ordinary least squares path analysis revealed that perceived self-efficacy indirectly influences career satisfaction through its effect on PCO (Table 3). Specifically, higher self-efficacy predicts a stronger PCO ($\beta = 0.49$, $p < 0.001$), and individuals with higher PCO report greater career satisfaction ($\beta = 0.25$, $p < 0.05$). The bias-corrected bootstrap confidence interval for the indirect effect ($\beta = 0.12$), based on 50,000 bootstrap samples, did not include zero (0.03, 0.23). A significant direct effect of self-efficacy on career satisfaction was also observed ($\beta = 0.24$, $p < 0.05$). Thus, *H1* is supported.

The moderating effect of self-perceived managerial competencies

Next, we examined whether these relationships were moderated by self-perceived managerial competencies (see Table 4). The conditional model – testing the impact of

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Table 1. Measurement model: construct reliability, convergent and discriminant validity

Variables	CR	AVE	MSV
1. Perceived self-efficacy	0.915	0.522	0.359
2. Protean career orientation	0.843	0.728	0.359
3. Self-perceived managerial competencies	0.893	0.736	0.015
4. Career satisfaction	0.974	0.926	0.163

Notes(s): CR = construct reliability; AVE = average variance extracted; MSV = maximum shared variance
Source(s): Authors' own work

Table 2. Means, standard deviations and correlations among study variables

Variables	Mean	SD	1	2	3	4	5	6	7
1. Gender	1.54	0.50	–						
2. Age	26.4	4.90	−0.12†	–					
3. Marital status	2.11	0.48	*0.15**	*−0.17**	–				
4. Perceived self-efficacy	5.60	0.84	−0.11	*0.13**	0.03	(0.91)			
5. Protean career orientation	5.41	0.89	−0.03	−0.11†	−0.01	*0.44***	(0.71)		
6. Managerial competencies	4.48	1.01	−0.04	0.12†	0.02	*0.35***	*0.30***	(0.92)	
7. Career satisfaction	4.69	1.34	*−0.13**	−0.05	0.03	*0.21***	*0.23***	*0.18***	(0.89)

Note(s): ***p* < 0.01; **p* < 0.05, $^{\dagger}p$ < 0.1 (two tailed). Cronbach *α*' values are shown in brackets on the diagonal
Source(s): Authors' own work

Table 3. Direct and indirect effects of perceived self-efficacy on career satisfaction through protean career orientation

Variables	*β*	Bootstrapping 95% CI LLCI	ULCI
Direct effects on Protean career orientation (PCO)			
Perceived self-efficacy (PSE)	*0.49****	*0.36*	*0.61*
Age	*−0.03****	*−0.05*	*−0.01*
Gender	−0.03	−0.25	0.19
Marital status	−0.07	−0.30	0.16
Direct effects on Career satisfaction (CS)			
Perceived self-efficacy	*0.24**	*0.01*	*0.46*
Protean career orientation (PCO)	*0.25**	*0.04*	*0.47*
Age	−0.02	−0.06	0.01
Gender	*−0.44***	*−0.79*	*−0.10*
Marital status	0.13	−0.24	0.50
Indirect effect of PSE on CS through PCO	*0.12*	*0.03*	*0.23*

Note(s): ****p* < 0.001, ***p* < 0.01, **p* < 0.05; LLCI = lower limit confidence interval, ULCI = upper limit confidence interval. 50,000 bootstrap samples. Process macro (Model 4)
Source(s): Authors' own work

perceived self-efficacy on career satisfaction via PCO moderated by self-perceived managerial competencies – confirmed the hypothesized moderated mediation.

H2 proposed that higher self-perceived managerial competencies would strengthen the positive relationship between PCO and subjective career success. Consistent with this

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Table 4. Moderation of managerial competencies on the indirect effect of perceived self-efficacy on career satisfaction through protean career orientation

Variables	β	Bootstrapping 95% CI LLCI	ULCI
Effects on Protean career orientation			
Perceived self-efficacy	*0.48***	*0.35*	*0.61*
Age	*−0.03***	*−0.05*	*−0.01*
Gender	−0.02	−0.24	0.20
Marital status	−0.08	−0.31	0.16
Effects on career satisfaction			
Perceived self-efficacy	0.23 *	0.00	0.46
Protean career orientation (PCO)	*0.30***	*0.07*	*0.52*
Self-perceived managerial competencies (SPMC)	0.11	−0.07	0.30
Interaction: PCO x SPMC	*0.22**	*0.03*	*0.41*
Age	−0.03	−0.06	0.01
Gender	*−0.40**	*−0.75*	*−0.05*
Marital status	0.12	−0.25	0.49
Index of moderated mediation			
Moderator	*Effect*	*LLCI*	*ULCI*
Self-perceived managerial competencies	0.11	0.02	0.21

Note(s): ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$; LLCI = lower limit confidence interval, ULCI = upper limit confidence interval. 50,000 bootstrap samples. Process macro (Model 14)
Source(s): Authors' own work

hypothesis, the interaction between self-perceived managerial competencies and PCO was positive and significant ($\beta = 0.22$, $p < 0.05$) in predicting future career success, thereby supporting *H2*.

Figure 2 illustrates that higher levels of self-perceived managerial competencies amplify the positive effect of PCO on career success, as reflected by the steeper slope of the line.

H3 predicted that the indirect effect of self-efficacy on future career success via PCO would depend on the level of self-perceived managerial competencies – such that the relationship would be stronger when these competencies are high. The results at Table 4 support this prediction: the index of moderated mediation was positive (effect = 0.10), and the 95% bootstrap confidence interval (CI: 0.02–0.21), based on 50,000 bootstrap samples, excluded zero, thereby supporting *H3*.

H3 predicts that the indirect effect of self-efficacy on future career satisfaction via PCO is conditional on the level of self-perceived competencies: when these are high, this indirect relationship is stronger. Table 4 shows a positive index of moderated mediation (effect = 0.10), while the confidence interval (*CI*: 0.02–0.21) based on 50,000 bootstrap samples excludes zero, thus supporting *H3*.

Figure 3 visually represents the direct and indirect effects of perceived self-efficacy on career satisfaction (through protean career orientation), moderated by self-perceived managerial competencies. The vertical axis displays the effect of the independent variable on the dependent variable, with positive values indicating a positive relationship. The slope of the lines reflects how this effect varies depending on the moderator level. For the direct effect, a nearly horizontal line indicates no moderation, whereas for the indirect effect, the slope increases with higher levels of the moderator – highlighting the amplified influence of perceived self-efficacy on career satisfaction via protean career orientation. Figure 3 thus provides further support for *H3*.

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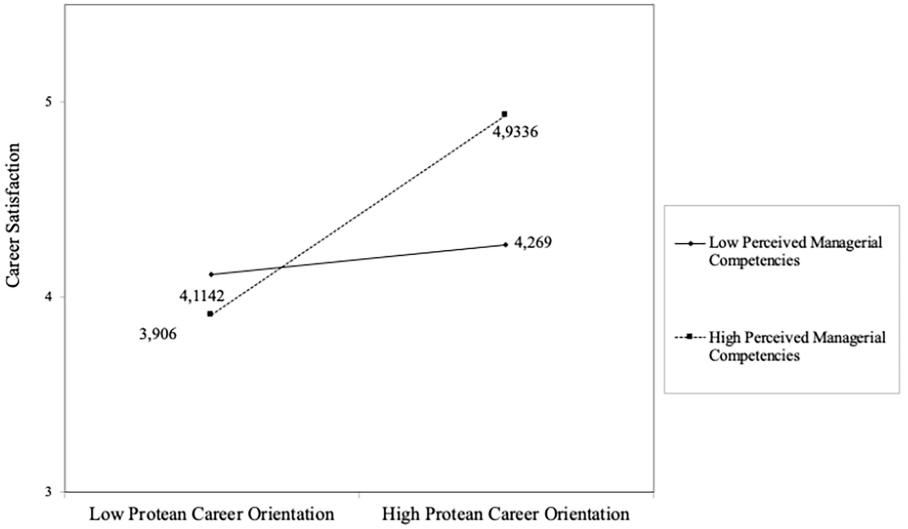


Figure 2. Interaction between protean career orientation and self-perceived managerial competencies in predicting future career satisfaction

Source: Authors' own work

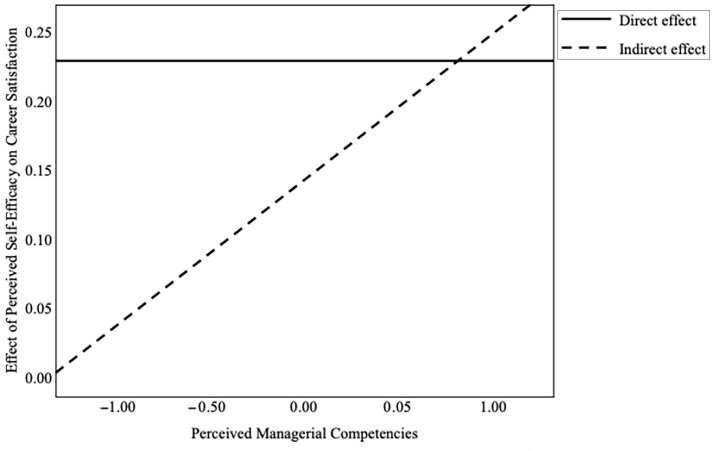


Figure 3. Visual representation of the conditional indirect and direct effects of perceived self-efficacy on future career satisfaction through protean career orientation

Discussion

Theoretical contribution

This study advances the ongoing debate on the relationship between self-efficacy and protean career orientation. Prior research has offered conflicting views: some scholars conceptualize PCO as an antecedent that enhances self-efficacy through greater personal agency, competence and adaptability (Briscoe *et al.*, 2012), whereas others position self-

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efficacy as a precursor to a PCO that fosters proactive career behaviors and reinforces both self-belief and success (Hirschi *et al.*, 2017; Ngo and Hui, 2018). Individuals with a strong PCO typically pursue self-directed and values-driven paths, which promote career satisfaction and perceived competence – factors that, in turn, sustain self-efficacy. Collectively, these perspectives emphasize learning and development as key mechanisms linking career competencies with motivation and positive career outcomes (Jo *et al.*, 2023). Our findings are broadly consistent with this stream of research in confirming the central role of self-efficacy and PCO in shaping subjective career success.

Despite these insights, prior studies have often overlooked the dispositional nature of self-efficacy. Rooted in social cognitive theory (Bandura, 1977), self-efficacy represents a relatively stable personal trait that shapes motivation and career-related attitudes (Sarwar and Hasan, 2015). Since PCO is also attitudinal (Hall *et al.*, 2018), it is reasonable to view it as partly shaped by such enduring traits. Our findings address this theoretical gap by showing that self-efficacy operates as an antecedent – rather than a consequence – of protean career orientation, thereby shifting attention from reciprocal reinforcement to early psychological foundations of career self-direction. This finding suggests that prior studies emphasizing reciprocal or mutually reinforcing dynamics between self-efficacy and PCO (e.g. Hirschi *et al.*, 2017; Li *et al.*, 2019) may have underestimated the foundational role of early self-beliefs, particularly at the transition from high education to work. This relationship underscores how internal psychological resources empower individuals to navigate unpredictable career contexts where traditional organizational structures no longer guarantee stability (Hughes and Niu, 2021). The results also reinforce human resource development perspectives advocating a shift from organization-centered to self-directed career management in boundaryless work environments (Hite and McDonald, 2008).

Supporting this view, Rodrigues *et al.* (2019) identify self-efficacy as a core self-evaluation essential for developing a protean orientation, while Hirschi and Koen (2021) describe it as a key antecedent of career adaptability and agency. Within social cognitive career theory, self-efficacy reflects confidence in one's ability to engage effectively in career planning and goal pursuit (Lent, 2013). Accordingly, individuals who believe in their capacity to shape career outcomes are more likely to adopt a protean career mindset (Wong and Mohd Rasdi, 2015). Although protean orientation may later reinforce self-efficacy through successful career experiences, our findings suggest a distal sequence: self-efficacy facilitates initial development of protean orientation, which subsequently enhances subjective career success.

A second major contribution concerns the role of self-perceived managerial competencies acquired through university education in strengthening the pathway from self-efficacy to career satisfaction. While prior studies have treated competencies primarily as direct predictors of employability or career outcomes (e.g. Kuijpers *et al.*, 2006), our findings show that competencies also function as contextual amplifiers, shaping the extent to which psychological resources are converted into adaptive career orientations and satisfaction. Our results show that these perceived competencies amplify the indirect effect of self-efficacy on career satisfaction via protean career orientation. Individuals who perceive their managerial competencies as strong are more capable of translating self-efficacy into adaptive, self-directed career behaviors, thereby achieving higher subjective success.

Prior research identifies managerial competencies as critical for employability (Van der Heijde and Van der Heijden, 2006) and career advancement (Asumeng, 2014), though their effects depend on self-awareness and self-reflection regarding one's strengths (Chong, 2013; Gerçek, 2024; Monteiro *et al.*, 2020). Yet, their moderating influence has remained

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underexplored. By emphasizing the subjective dimension of perceived competencies, this study illustrates how psychological and contextual factors interact to shape career outcomes.

Taken together, these findings extend existing career and human recourse development research in two important ways. First, rather than treating self-efficacy and PCO as mutually reinforcing dispositions, this study clarifies their temporal ordering in early career stages. Second, by identifying self-perceived managerial competencies as a novel moderator, the study reveals that competencies do not simply add to career success outcomes but condition how psychological resources translate into career satisfaction. This integrated perspective advances understanding of how dispositional, attitudinal and contextual factors jointly influence career development in contemporary work settings.

Practical implications

These findings hold significant implications for educators, practitioners and policymakers aiming to strengthen individuals' self-efficacy and long-term career adaptability. The established link between self-efficacy, protean career orientation and career satisfaction highlights the essential role of universities in cultivating confidence, autonomy and self-directed career mindsets (Kanar and Heinrich, 2024). Within higher education, faculty can apply self-efficacy principles to build students' belief in their professional potential through experiential learning – internships, mentoring and project-based courses that offer authentic challenges, role models and constructive feedback (Downs *et al.*, 2024). Such interventions should deliberately target mastery experiences, social modeling and developmental feedback, which are known sources of self-efficacy formation (Bandura, 1997).

Aligned with our findings, universities should promote managerial competency development through industry partnerships, alumni mentoring, workshops and management simulations. These initiatives enhance both practical and perceived competencies, amplifying the positive effects of self-efficacy on career satisfaction, by strengthening graduates' capacity to act on their career beliefs in uncertain and evolving work contexts. In particular, competencies related to decision-making, problem-solving, communication and self-management appear especially relevant in enabling graduates to translate career confidence into positive career outcomes. Inviting professionals to share real-world experiences can further increase students' confidence and provide tangible examples of successful performance (Healy, 2023). Real-world learning not only improves employability but also reduces performance anxiety, fosters self-confidence and encourages students to adopt a protean orientation characterized by adaptability and proactive career ownership.

A nuanced understanding of how self-efficacy, perceived competence and protean orientation interact enables career counselors and HR practitioners to design targeted interventions that strengthen decision-making and support successful career transitions. Practically, this implies moving beyond generic employability training toward integrated interventions that simultaneously develop confidence, transferable managerial skills and career self-direction. These insights are particularly vital in an AI-driven work environment, where automation and intelligent systems continuously redefine job roles and required competencies (Pandya and Wang, 2024; Wang *et al.*, 2025). To prepare graduates for such contexts, universities and HR professionals should integrate AI literacy and digital adaptability into competency frameworks.

From a policy perspective, these findings suggest that investments in higher education and workforce development should not focus solely on technical skill acquisition, but also on strengthening psychological resources and perceived competencies that support adaptive career behavior. Embedding AI-focused projects, simulations and ethical reflections into

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curricula can foster the confidence and flexibility needed to navigate technologically mediated careers.

Finally, promoting self-directed and psychologically empowered career management yields benefits that extend beyond individual success. By cultivating adaptable, confident graduates, universities and organizations contribute to sustainable talent pipelines, institutional competitiveness and broader economic resilience. As younger professionals increasingly value meaning, flexibility and continuous growth over traditional hierarchical advancement (McDonald and Hite, 2008), educational and human resource systems must evolve to reflect these redefined notions of success. Mentoring, reflective learning and access to developmental social capital (Hezlett and Gibson, 2007) are essential strategies for supporting this shift toward more adaptive and self-managed career development.

Limitations and future directions

This study has several limitations that should be acknowledged. First, the specific nature of our sample – entry-level business graduates from a single large public university – may constrain the generalizability of the findings. Nevertheless, existing research underscores the critical role of business education and university-acquired competencies in shaping labor market outcomes (Rynes *et al.*, 2003). Accordingly, the findings should be interpreted as reflecting early career dynamics within a specific educational and institutional context rather than as universally generalizable patterns. Given that this field remains underdeveloped, further inquiry is warranted, and this study contributes to that emerging discussion. Although our two-wave design establishes temporal sequencing among variables, the possibility of reverse causality cannot be completely ruled out.

Second, the analysis was conducted exclusively at the individual level, which may overlook the broader complexities of the volatile, uncertain, complex and ambiguous (VUCA) labor market, as well as contextual influences on job search behaviors. Future research should adopt multilevel approaches that incorporate organizational-level factors, such as high-performance human resource practices (Toyata *et al.*, 2024), to capture a more comprehensive picture of career development processes.

Moreover, future research would benefit from adopting more robust longitudinal designs that incorporate multiple data sources and additional time points to assess potential bidirectional and dynamic effects over longer periods. Although our study employed a one-year interval across three consecutive academic cohorts, extended longitudinal analyses would provide deeper insights into how these constructs evolve over time. This is particularly relevant in the current context of economic volatility, and global uncertainty (Wang *et al.*, 2024), where early-career professionals may continually reshape career trajectories.

A further limitation relates to the reliance on self-reported measures, particularly regarding self-perceived managerial competencies. While self-perceptions are theoretically meaningful for understanding subjective career success, this reliance may also inflate observed relationships or reflect confidence rather than actual competence levels. This raises questions about whether the Baruch and Peiperl (2000) scale captures actual managerial ability or primarily reflects perceived self-confidence. Future studies could address this issue by including objective indicators – such as aggregate higher education performance data or supervisor evaluations – and by integrating organizational-level metrics once participants enter the workforce. Such an approach would enable the examination of how formal education and workplace contexts jointly shape career outcomes, thereby enriching job search and career development theories through the lens of social cognitive frameworks (Bandura, 1977).

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Finally, as AI continues to reshape organizational processes, job design and career trajectories (Bankins *et al.*, 2024b; Pandya and Wang, 2024), future research should investigate how these technological transformations interact with the psychological mechanisms identified in this study. In particular, scholars could examine how AI-related competencies – such as data literacy, algorithmic understanding and human–AI collaboration – combine with traditional managerial skills to influence self-efficacy, career adaptability and the development of protean career orientations. Integrating a human adaptability perspective into AI-driven contexts would extend existing human resource development and career development frameworks, illuminating how individuals sustain confidence, resilience and ethical awareness amid technological change. Such inquiry would advance understanding of sustainable careers and employability in hybrid human–machine workplaces.

Conclusion

This study integrates social cognitive and protean career theories to explain how self-efficacy, self-perceived managerial competencies and PCO interact to shape early-career success. Results show that self-efficacy indirectly predicts future career satisfaction through protean career orientation, clarifying its role as an antecedent rather than a consequence of PCO in early career stages, and that this relationship is systematically strengthened by high self-perceived managerial competencies. In doing so, the study moves beyond prior research by showing that perceived competencies shape the effectiveness of psychological resources in producing early career success. As digital transformation accelerates, these findings underscore the need to align psychological and technological perspectives in career development. Fostering self-efficacy, digital competence and a protean mindset is crucial for sustaining employability and well-being, enabling individuals to adapt confidently while supporting the growth of resilient, human-centered organizations in an AI-driven world.

Data availability

The data set will be available from the corresponding author on reasonable request.

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Ethics statement

Research ethical approval was obtained from the university's Legal Advisory Committee to access alumni records. Each participant provided informed consent by first reviewing an online information sheet detailing the study's purpose, procedures, participants' rights and data confidentiality. Subsequently, they completed a consent form, voluntarily agreeing to participate.

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