THE PREDICTIVE POWER OF MEANINGFUL WORK, CAREER SATISFACTION, JOB EMBEDDEDNESS, AND INNOVATION TOWARDS THE EMPLOYEES' PRODUCTIVITY STRATEGY

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How to cite this paper: Abdelwahed, N. A. A., & Alturki, M. S. (2025). The predictive power of meaningful work, career satisfaction, job embeddedness, and innovation towards the employees' productivity strategy. *Corporate and Business Strategy Review, 6*(4), 75–86.
https://doi.org/10.22495/cbsrv6i4art7

ISSN Online: 2708-4965
ISSN Print: 2708-9924

Received: 24.11.2024
Revised: 26.02.2025; 24.09.2025
Accepted: 21.10.2025

JEL Classification: L1, L2, L6, O3, Q5
DOI: 10.22495/cbsrv6i4art7

Abstract

The present study examines the effect of meaningful work (MW), career satisfaction (CS), job embeddedness (JE), and innovation (INO) on employee productivity (EP). The researchers followed scholars like Zanabazar et al. (2024) and Sumaryono et al. (2025) and based this study on quantitative methods. The data were collected from Egyptian higher educational institutions' (HEIs) employees using a survey questionnaire. Using path analysis of moment structures (AMOS), the study confirmed a positive effect of factors such as MW, CS, JE, and INO on EP. Besides, the mediation analysis demonstrates a mediating effect of INO in developing the association between MW, CS, and EP, but it does not mediate between JE and EP. The study's findings will assist in developing policies and plans to enhance the EP by encouraging and promoting employees' commitment to CS, JE, MW, and INO. The HEIs would launch and promote different training programs to enhance their employees' MW, CS, JE, and innovative ideas, ultimately leading to improved productivity, performance, and profitability. Finally, the domain literature would be enriched with this study's empirical contribution.

Keywords: Employee Productivity, Career Satisfaction, Innovation, Job Embeddedness, Meaningful Work, Organizational Success, Higher Educational Institutes, Strategy

Authors' individual contribution: Conceptualization — N.A.A.A.; Methodology — N.A.A.A. and M.S.A.; Software — M.S.A.; Validation — N.A.A.A.; Formal Analysis — M.S.A.; Investigation — N.A.A.A. and M.S.A.; Resources — N.A.A.A.; Data Curation — N.A.A.A. and M.S.A.; Writing — Original Draft — M.S.A. and N.A.A.A.; Writing — Review & Editing — N.A.A.A.; Visualization — N.A.A.A.; Supervision — N.A.A.A.; Project Administration — N.A.A.A.; Funding Acquisition — N.A.A.A.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

Acknowledgements: The Authors thank the King Faisal University for awarding the Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia [Grant No. KFU252579].

1. INTRODUCTION

In the arena of development, the enhancement of employee productivity (EP) is the aspiration of every organization. EP is an individual's capability to accomplish a high standard of task achievement competently, consistently bringing quality outcomes (Lee & Brand, 2010). It reflects not only the quantity of work completed daily but also the efficiency and impact of these tasks within the organization. Productive employees complete considerable amounts of work with speed and high efficacy, directly contributing to organizational success (Syahrir et al., 2024). In the context of higher education, it holds massive prominence and impacts institutional efficiency, academic outcomes, and student satisfaction. The EP can be enhanced through various modes and factors such as work engagement, career satisfaction (CS), supportive human resource management (HRM) practices, innovation (INO), conducive work environment, job embeddedness (JE), commitment, and meaningful work (MW) (Tjasmana et al., 2024; Nwankpa & Roumani, 2024). These factors make a substantial contribution to meeting organizational goals and enhancing educational quality. In the literature, there is significant emphasis on factors such as CS, JE, INO, and MW towards achieving a robust EP. More specifically, MW encompasses a deep personal connection to the job, where the tasks contribute significantly to their intrinsic value, making the work feel valuable and satisfying (Jena et al., 2019; Junça-Silva et al., 2022). Similarly, CS shows the employees' satisfaction, which they get from their organization in terms of the progress of career goals and success (Aytekin et al., 2016; Aytekin et al., 2022). Moreover, JE underlines the employees' attachment and tight connection with their organization, where they positively contribute to their organization (Dechawatanapaisal, 2021). Finally, INO is a massive predictor of EP, delivering novel and innovative ideas towards the productivity, success, and performance of the organizations.

In the domain literature, there are many constructs such as workplace culture, knowledge-sharing, job crafting, connectedness, personal growth, work engagement, intrinsic motivation, workplace spirituality, CS, MV, commitment, work dedication, organizational culture, work environment, JE, social support, INO, etc., suggested by the scholars that positively enhance EP (Nwankpa & Roumani, 2024; Zanabazar et al., 2024; Syahrir et al., 2024; Parmer, 2024; Aturu-Aghedo et al., 2024). However, the literature lacks an integrated approach that may combine diverse constructs such as MW, CS, JE, and INO towards EP in a single framework. Context-wise, Egyptian higher educational institutions (HEI) employees are ignored in an empirical assessment (Hussein & Mourad, 2014; Hadidi & Kirby, 2016). Hence, based on this deficiency, we raised the questions:

RQ1: What is the role of meaningful work, career satisfaction, job embeddedness, and innovation in developing employee productivity among Egyptian higher educational institute employees?

RQ2: How does innovation mediate the connections between meaningful work, career satisfaction, job embeddedness, and employee productivity among employees of Egyptian higher educational institutes?

The study explores the effect of constructs such as MW, CS, JE, and INO on EP among employees of Egyptian HEIs. The study findings would assist policymakers and higher education authorities in enhancing organizations' productivity, performance, and success. The study would help generate innovative ideas and notions to improve the capacity and skills of employees to produce more and more. Finally, the study outcomes would enrich and contribute to the field literature on management, business, and education by adding empirical evidence from the Egyptian HEIs.

The organization and structure of the paper are as follows. Section 2 reviews the relevant studies and develops the hypotheses. Section 3 discusses the methods employed in the study. Section 4 presents the results. Section 5 discusses the findings. Finally, Section 6 concludes the study.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Meaningful work

Work that is personally substantial and valuable to the individual, where job activities are perceived as valuable and essential. MW induces a sense of determination and fulfilment, as the tasks and responsibilities are associated with personal values and contribute positively to one's sense of worth and prominence (May et al., 2004). The domain literature consistently highlights the significance of MW as a driver of positive organizational outcomes in terms of productivity, performance, and success. MW boosts workplace spirituality in educational institutions and enhances employee commitment and satisfaction (Aturu-Aghedo et al., 2024). This sense of purpose also contributes to CS, mainly when JE and social support are present (Dechawatanapaisal, 2021). MW empowers individuals by promoting autonomy and purpose, which is augmented in flexible environments, leading to improved performance (Jena et al., 2019). Furthermore, it emboldens job crafting, reducing presenteeism and boosting productivity (Junça-Silva et al., 2022). In automated workplaces, MW preserves human skills and morale and adds value beyond automation's reach (Parmer, 2024). Especially in emotionally demanding roles, i.e., teaching, MW intensifies engagement and dedication (Zanabazar et al., 2024).

2.2. Career satisfaction

Career satisfaction shows an individual's positive perception of their career advancements and accomplishments. It imitates a sense of contentment derived from reaching personal career goals, experiencing success, and evolving toward career advancement (Greenhaus et al., 1990; Joo & Ready, 2012). CS has a massive contribution to enhancing both individual fulfilment and organizational performance in diverse contexts. For instance, education is linked to career capital and productivity, which boosts professional growth and job contentment (Aytekin et al., 2016). Besides, developmental networks are shown to support academics' CS by facilitating research productivity and collaboration (Aytekin et al., 2022). When

combined with JE and social support, MW strengthens CS by offering security and nurturing engagement (Dechawatanapaisal, 2021). Similarly, CS is also influenced by individual characteristics, i.e., a proactive personality and goal orientation, which aligns personal growth with organizational support (Joo & Ready, 2012). In the study of Greenhaus et al. (1990), equitable organizational experiences are indispensable for CS across diverse employee groups, while teacher innovativeness and effective instructional practices directly affect CS and job satisfaction (Ertaş & Pekmezci, 2025).

2.3. Job embeddedness

Job embeddedness mentions how employees feel a strong sense of connection, attachment, and interdependence with their organization, making it difficult to consider leaving (Song et al., 2024). It includes feelings of attachment, a sense of belonging, and the perception of potential challenges associated with leaving. JE often includes elements such as fit with organizational culture, connections with coworkers, and perceived personal investment in the organization (Dechawatanapaisal, 2021). Similarly, Kapil and Rastogi (2017) demonstrate that JE and work engagement predict job performance. Sekiguchi et al. (2008) highlight that JE enhances the effects of leader-member exchange on performance, reinforcing the idea that embeddedness strengthens employee-manager relationships. According to Song et al. (2024), JE mediates perceived organizational justice and job performance among young nurses and shows its role in linking fairness perceptions to positive outcomes.

2.4. Innovation

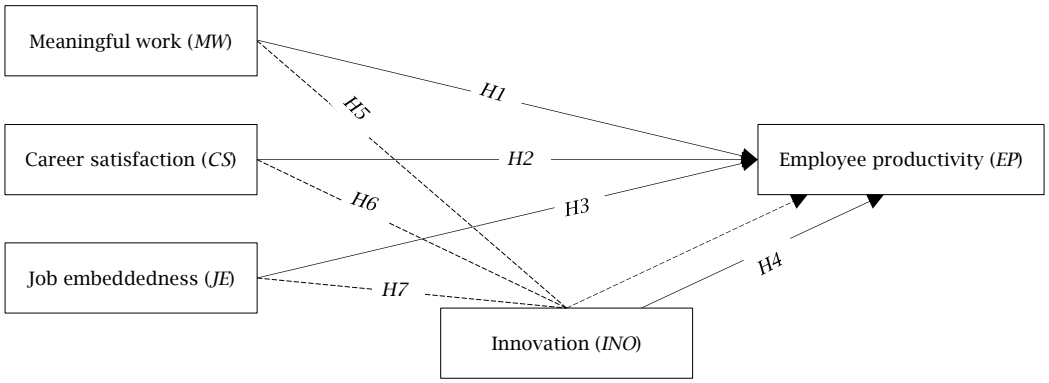
Innovation points out the continuous pursuit and implementation of novel ideas, products, and services, focused on a commitment to creativity, a proactive examination for innovative resolutions, and a willingness to take calculated risks (Ibrahim et al., 2022). It has strategic prominence as a market pioneer and invests in developing unique aids to create a competitive advantage (Ravichandran, 2018). INO is recognized as a massive factor that brings organizational success. Similarly, in six Latin American countries, INO significantly impacts productivity and drives economic growth (Crespi & Zuniga, 2012). According to Helm et al. (2010), INO is a critical mediator that develops the connection between performance and entrepreneurial orientation. Furthermore, Ibrahim et al. (2022) reveal that service INO positively impacts organizational performance by enhancing EP and job satisfaction, while Khan et al. (2022) realize the prominence of the culture of workplace INO in enhancing employee innovativeness and job performance. The factors, such as overtime work, employee satisfaction, and INO, enhance EP (Ko & Choi, 2019).

2.5. Employee productivity

Employee productivity underlines the effectiveness, efficiency, and quality of an employee completing tasks and achieving consequences (Ibrahim et al., 2022; Tjasmana et al., 2024). It incorporates a high average of task accomplishment, the capability to perform tasks quickly and professionally, consistently accomplishing or exceeding team targets, and upholding high-quality work consequences (Syahrir et al., 2024). EP is predicted through remote work, INO, and supported by effective knowledge sharing and digital tools, fostering INO (Nwankpa & Roumani, 2024). Syahrir et al. (2024) demonstrate that innovative work behaviours and organizational citizenship behaviour are massive predictors of productivity, followed by a supportive culture. Similarly, Tjasmana et al. (2024) find that visionary leadership and a disciplined work environment drive productivity through organizational INO.

In short, the domain literature underlines several constructs, i.e., job crafting, MV, connectedness, personal growth, work engagement, intrinsic motivation, workplace spirituality, CS, commitment, work dedication, organizational culture, work environment, JE, social support, INO, workplace culture, knowledge-sharing, etc., are the substantial and influential predictors of EP (Junça-Silva et al., 2022; Nwankpa & Roumani, 2024; Syahrir et al., 2024; Zanabazar et al., 2024; Aturu-Aghedo et al., 2024; Parmer, 2024). However, the literature still has massive gaps that need to be explored. No study has found an integrated approach combining the MW, CS, JE, INO, and EP in the literature. Furthermore, the role of INO in developing connections between MW, CS, JE, and EP has still disappeared. Contextually, among the employees of HEIs in Egypt, the investigation of these constructs still needs further verification. Egyptian HEIs confront massive challenges in terms of INO, innovative work behaviour, decent work, JE, work engagement and job self-efficacy, and CS towards EP (Hussein & Mourad, 2014; Hadidi & Kirby, 2016). Thus, there is a need to investigate EP through MW, CS, JE, INO, and EP necessary that how, despite several challenges, Egyptian HEIs' employees enhance their EP and INO, bring meaningfulness to work, CS, and JE. Furthermore, we conceptualized EP in HEIs as employees who are highly efficient and effective in fulfilling both academic and administrative roles. They bring quality education, student engagement, research output, administrative competence, and contributions to institutional goals (Ropes, 2015; Sumaryono et al., 2025). Thus, considering these gaps, the researchers developed a model (see Figure 1), which was proposed to be investigated among the employees of Egyptian HEIs. The study's conceptual framework comprises predictors such as MW, CS, JE, and INO, which are expected to be the best predictors of EP. Moreover, the predictive relevance of INO is further likely to reinforce these associations.

Figure 1. Conceptual model of the study



Source: Authors' elaboration.

2.6. Meaningful work and employee productivity

The MW construct is of massive prominence in the development of EP. In the empirical investigation of Junça-Silva et al. (2022), job crafting enhances MW, reducing presenteeism and improving performance. In contrast, the study of Lips-Wiersma and Wright (2012) offers a robust, structured framework for measuring MW's elements, i.e., personal growth and connectedness, which correlate with increased EP. Similarly, scholars like Zanabazar et al. (2024) and Aturu-Aghedo et al. (2024) demonstrate that MW promotes engagement among Mongolian kindergarten teachers. Workplace spirituality strengthens the link between MW and EP in an educational context. In Parmer's (2024) perception, increasingly automated workplaces boost MW, which is essential to counterbalance potential disengagement, thus maintaining productivity. The positive connection between MW and EP is underpinned by self-determination theory (SDT), which demonstrates that MW enhances intrinsic motivation, which in turn enhances EP. Employees who find their MW are more engaged and perform better (Gagné & Deci, 2005; Allan et al., 2016; Autin et al., 2022).

Consequently, the field literature endorses the positive influence of MW in developing EP. However, in the presence of other factors such as CS, JE, and INO, the predictive effect of MW needs severe contraction to explore. Henceforth:

H1: Meaningful work positively predicts employee productivity.

2.7. Career satisfaction and employee productivity

Career satisfaction is essential and influential in enhancing EP in different contexts and organizational settings. For academics, research productivity is a critical mediator, enabling them to build career capital and achieve CS, both of which are strongly tied to their job performance (Aytekin et al., 2016; Aytekin et al., 2022). In this context, a high level of personal and professional accomplishment reinforces EP through increased engagement and dedication (Albert et al., 2018). Similarly, career development opportunities and self-regulation mechanisms contribute to job satisfaction and productivity. Work environment and organizational culture are additional pillars that sustain job satisfaction and EP, which claims the positive role of autonomy, task variety, and supportive workplace dynamics. A positive work environment enhances employees' commitment by making them feel valued and supported, which, in turn, improves their engagement and performance (Syahrir et al., 2024). This connection underscores job satisfaction as both a driver and outcome of a productive work culture. Further, the impact of organizational resources such as developmental support, quality work-life balance, and perceived support reinforces the relationship between CS and EP. When employees perceive strong organizational support, they experience higher levels of satisfaction and loyalty, which motivate them to perform at their best (Soomro & Shah, 2019; Abdullahi et al., 2024). The connection between CS and EP is supported by the SDT, which demonstrates that MW and CS positively contribute to intrinsic motivation and boost EP (Gagné & Deci, 2005; Allan et al., 2016; Autin et al., 2022).

Consequently, CS is confirmed as a massive predictor of EP in several contexts. However, among the employees of HEIs in Egypt, this association further needs confirmation. Henceforth:

H2: Career satisfaction positively predicts employee productivity.

2.8. Job embeddedness and employee productivity

Job embeddedness is a robust factor that describes employees' attachment and commitment to their organizations. EP enhances EP by boosting a sense of belonging and meaning at work (Ng et al., 2023). JE not only directly influences productivity but also mediates and moderates the effects of other supportive factors. Domain studies reveal that embedded employees exhibit higher performance levels due to stronger connections with their work environment and professional relationships, which upsurge the perceived cost of leaving their positions (Ng et al., 2023; Sekiguchi et al., 2008). For instance, Sekiguchi et al. (2008) find that when JE is combined with positive leader-member exchanges and high self-esteem, employees are better able to leverage these supportive relationships, thus enhancing their productivity. Besides, embeddedness plays a moderating role, amplifying the effects of factors like organizational culture and social support on productivity. For instance, Daeli et al. (2024) note that employees embedded in an organization with strong work-life balance support show greater productivity gains, as these individuals are more invested in the organization. Younger employees often experience incredible productivity boosts from embeddedness, where age may influence how embeddedness

translates to performance (Ng et al., 2023). Employees benefit from embeddedness differently depending on organizational culture and socialization practices, enhancing productivity in cultures that promote fairness and organizational justice (Song et al., 2024). These findings underscore that JE strengthens EP by both directly increasing commitment to job roles and interacting with supportive organizational factors that allow employees to engage meaningfully and perform at their best (Kapil & Rastogi, 2017; Fan et al., 2024). Thus, based on knowledge existence and contextual gaps in confirmation of JE in an integrated framework and among Egyptian HEIs employees, we expect:

H3: Job embeddedness positively predicts employee productivity.

2.9. Innovation and employee productivity

Innovation is very important in developing organizations' performance, productivity, and prosperity. In the service industry, Ibrahim et al. (2022) link service INO to improved job satisfaction and productivity by claiming that supportive INO efforts contribute to a more engaged workforce. Khan et al. (2022) highlight the importance of a workplace culture that encourages INO, which enhances both employee innovativeness and productivity. Besides, Nwankpa and Roumani (2024) explore how remote work impacts INO and productivity, noting that knowledge-sharing practices play a crucial moderating role. Empirical evidence from small and medium-sized enterprises (SMEs) in Italy (Hall et al., 2009) and Latin America (Crespi & Zuniga, 2012) further supports the idea that INO drives productivity gains, particularly in resource-constrained environments. Furthermore, Tariq et al. (2024) highlight the significance of networking and digital INO in enhancing knowledge worker productivity. Innovative work behaviours foster organizational citizenship, indirectly improving productivity (Soomro et al., 2021; Abdelwahed et al., 2024).

As a result, the INO factor is a better predictor or mediator between several constructs and EP. However, the mediating contribution between CS, JE, MW, and EP still needs further confirmation, specifically among employees of HEIs in Egypt. Therefore:

H4: Innovation positively predicts employee productivity.

2.10. Innovation as mediator

Innovation can act as a critical mediator between MW and employee outcomes, such as productivity, CS, and JE (Helm et al., 2010; Junça-Silva et al., 2022). MW enhances employees' engagement and creativity, encouraging innovative behaviour, which drives productivity and satisfaction (Bhatti et al., 2022). Job crafting, as Junça-Silva et al. (2022) suggest, is one avenue where employees can restructure their roles to bring them into line with personal values, generating MW that encourages INO and improves performance. Moreover, when employees are embedded in their roles and feel secure, they are more likely to engage in innovative behaviours that enhance job performance (Wang et al., 2022). This INO pathway, underpinned by MW and JE, also increases CS as employees see positive outcomes and growth opportunities from their contributions (Ertaş & Pekmezci, 2025). As a result, the literature indicates that INO can effectively bridge the link between MW and essential employee outcomes, with JE further strengthening this relationship. Moreover, the domain literature also consistently shows an association between MW, CS, INO, JE, and EP. Hence, based on the mediating as well as the consistent positive association of INO with CS, JE, MW, and EP, we expect:

H5: Innovation mediates the connection between meaningful work and employee productivity.

H6: Innovation mediates the connection between career satisfaction and employee productivity.

H7: Innovation mediates the connection between job embeddedness and employee productivity.

3. RESEARCH METHODOLOGY

3.1. Research approach and respondents

Due to the massive and substantial prominence of the quantitative approach in diverse fields such as business, medicine, management, and social science research, we have applied it as a robust approach in the present study. This method is most common and involves evidence and facts in numbers and graphs with sophisticated statistics, with robust clarity. By recognizing this significance, various scholars like Syahrir et al. (2024), Zanabazar et al. (2024), and Aturu-Aghedo et al. (2024) adopted the same strategy to inspect the problems in the domains of EP, MW, CS, JE, and INO.

We targeted the employees of HEIs in Egypt as our suitable units of analysis. The Egyptian HEIs are critical drivers of INO in an economy that relies heavily on the EP (Hadidi & Kirby, 2016). The commitment of HEIs and employees boosts INO as they struggle to establish sustainable industry partnerships, highlighting the importance of a gap that educational staff could help bridge by enhancing university-industry collaboration and fostering entrepreneurial activity within academic settings. Therefore, higher education employees play a pivotal role in executing and sustaining these efforts, particularly when the projects lack strong institutional support structures (Hussein & Mourad, 2014). Moreover, they are ambitious to perform their MW, CS, and JE in developing and bringing robustness to EP and INO (Hassan et al., 2024).

3.2. Common method bias

We applied a single source of data collection using only survey questionnaires, as this method may create a few issues of response bias due to the employment of the same instrument by the same type of respondents. To overcome this critical issue, we used the variance inflation factor (VIF) to remove the matter of common method bias (CMB) (Kock & Lynn, 2012). Let's suppose, if the VIF ≤ 3.3, there is no bias or a negative effect of the single-source data. In our study, all values of VIF for the inner model seem to be less than 3.3 for all the variables of the study. Therefore, the employment of a single/source has no bias (see Table 1).

Table 1. Full collinearity

Variables	*Code*	*VIF*
Meaningful work	*MW*	2.124
Career satisfaction	*CS*	1.922
Job embeddedness	*JE*	2.002
Innovation	*INO*	1.719
Employee productivity	*EP*	2.933

Source: Authors' estimation.

3.3. Survey instrument and data collection

We used a survey questionnaire as a suitable tool for data collection. At the initial stage, we confirmed the worth and authenticity of the survey tool by conducting a pilot study, where we gathered 27 cases. We used Cronbach's alpha (α) and factor loadings to confirm the internal consistency among the items. As a consequence, we ensured the loading and alpha above 0.70, which confirmed the adequate reliability of the instrument. Furthermore, another aspect of the survey tool is validity, which is confirmed through getting respondents' feedback in the form of comments. Besides, we also got the services of field experts, specifically university professors who ensured the content and design of the study, where they gave their feedback with minor comments, and rectified them accordingly. As a result, the respondents gave their positive feedback, specifically, they easily understood the content and language of the questionnaire without mentioning any language barrier. Hence, the questionnaire is also ensured with great validity.

The researchers collected the cross-sectional data using offline and online methods. More specifically, offline data was collected through personal visits to various HEIs in Egypt, where the researchers targeted the employees who were faculty members and administrative staff. We use convenience sampling methods to reach participants quickly while using limited resources. Similarly, online data was collected from university employees' emails, WhatsApp groups, and Facebook pages. We maintained the accuracy of the respondents, and the questionnaire was approved by the Deanship of King Faisal University, Saudi Arabia, Vice Dean for Graduate Studies and Research Studies. Furthermore, we obtained permission to participate in this study. We continued to check their accuracy and judgment while using their answers, and then we signed their consent form. In this way, we collected 321 valid cases for the final evaluation.

3.4. Measures

All the study measurements are derived from the field literature, where we applied a five-point Likert scale (ranging from options from strongly agree to strongly disagree). More specifically, we borrowed six items from the study of May et al. (2004) to assess the *MW* factor. Similarly, we gauged *CS* on three items adapted from Greenhaus et al. (1990) and Joo and Ready (2012). We assessed *JE* on seven items borrowed from the study of Crossley et al. (2011) and Dechawatanapaisal (2021). Furthermore, the *INO* construct is evaluated on five items adapted from Hurley and Hult (1998) and Ravichandran (2018). Finally, we applied six items from Lee and Brand (2010) to evaluate the *EP* (see Table 2).

Table 2. Measures

Variable	*Item details*	*Reference*
MW	*MW1*: The work I do on this job is meaningful to me.	May et al. (2004)
	MW2: My job activities are personally meaningful to me.	
	MW3: I feel that the work I do on my job is valuable.	
	MW4: The work I do on this job is worthwhile.	
	MW5: My job activities are personally meaningful to me.	
	MW6: The work I do on this job is very important to me.	
CS	*CS1*: I am satisfied with the progress I have made toward meeting my overall career goals.	Greenhaus et al. (1990), Joo and Ready (2012)
	CS2: I am satisfied with the success I have achieved in my career.	
	CS3: I am satisfied with the progress I have made toward meeting my goals for advancement.	
JE	*JE1*: I feel attached to this organization.	Crossley et al. (2011) and Dechawatanapaisal (2021)
	JE2: I am tightly connected to this organization.	
	JE3: I feel tied to this organization and want to be a part of it.	
	JE4: I am too caught up in this organization to leave.	
	JE5: I simply could not leave the organization that I work for.	
	JE6: It would be difficult for me to leave this organization.	
	JE7: It would be easy for me to leave this organization (r).	
INO	*INO1*: My organization is actively seeking innovative ideas.	Hurley and Hult (1998), Ravichandran (2018)
	INO2: My organization constantly invests in new products and services.	
	INO3: My firm encourages creativity.	
	INO4: My firm is often first to market with new products and services.	
	INO5: My firm encourages taking risk that will lead to new ideas.	
EP	*EP1*: I have a high standard of task accomplishment.	Lee and Brand (2010)
	EP2: I accomplish tasks quickly and efficiently.	
	EP3: My work outcomes are of high quality.	
	EP4: I always exceed our team targets.	
	EP5: I handle my job at a high level of effectiveness.	
	EP6: I complete large amount of work each day.	

Source: Adopted by authors from the literature.

4. RESULTS

4.1. Respondents' profile

The demographic profile of the respondents advocates a majority of males (n = 215 or 66.98%) over females (n = 106 or 33.02%). The age factor demonstrates a majority of respondents (n = 132 or 41.12%) as 31–40 years old, while the minimum respondents (n = 56 or 17.44%) were 20–30 years old. With regard to educational leave of respondents, the majority were bachelor's degree holders (n = 133 or 41.44%), while a minority of respondents had PhD degrees (n = 56 or 17.44%). Finally, the work experience indicator suggests a majority of respondents (n = 113 or 35.20%) had less than five years of experience, while only 9.97% (n = 32) have sixteen or more experience (see Table 3).

Table 3. Respondents' profile (n = 321)

Construct	*Category*	*Frequency (n)*	*Percent (%)*
Gender	Male	215	66.98
	Female	106	33.02
Age	20–30 years old	56	17.44
	31–40 years old	132	41.12
	41–50 years old	63	19.63
	51 years old and more	70	21.81
Educational level	Bachelor's degree	133	41.44
	Master's degree	132	41.12
	PhD	56	17.44
Work experience	< 5 years	113	35.20
	6–10 years	102	31.78
	11–15 years	74	23.05
	16 years and more	32	9.97

Source: Authors' estimation.

4.2. Measurement model

We utilized path analysis using the analysis of moment structures (AMOS) software as a massive and useful tool for data analysis (Hair et al., 2020). In the measurement model, we ensured the factor loading to notice the items' association attachment to each other (Hair et al., 2020). We noted the values of all the items as above 0.70 (> 0.70), which fulfil the required values (Hair et al., 2020). However, contrary to expectations, items such as *MW5*, *JE3*, *IN4*, and *EP2* did not appear with the required values, and hence, these were excluded. In addition, we ensured composite reliability (CR), where we found all excellent values above the threshold values (> 0.70) (Hair et al., 2020). Moreover, the average variance extracted (AVE) claimed its values exceeded the threshold of 0.50, regarded as adequate (Hair et al., 2020). Finally, to maintain a good worth of the measurement model, we confirmed internal consistency among the items through Cronbach's alpha coefficient (α), which appeared for all the variables as > 0.70, with fair values (Hair et al., 2020) (see Table 4).

We also ensured discriminant validity by observing the square root of the AVE in connection to the intercorrelations among the components (Chin, 2010). In this regard, we applied Fornell and Larcker (1981) to compare the value of AVE based on the squared correlation between the construct, where AVE scores exhibited as < 0.85, while the correlated scores of the constructs are in adequate ranges (see Table 5).

Table 4. Measurement model

Construct	*Item code*	*Loadings scores*	*CR*	*AVE*	*α*
MW	*MW1*	0.829	0.897	0.636	0.802
	MW2	0.812			
	MW3	0.799			
	MW4	0.782			
	MW6	0.763			
CS	*CS1*	0.847	0.866	0.683	0.819
	CS2	0.822			
	CS3	0.810			
JE	*JE1*	0.861	0.911	0.632	0.772
	JE2	0.839			
	JE4	0.802			
	JE5	0.792			
	JE6	0.761			
	JE7	0.706			
INO	*INO1*	0.817	0.868	0.622	0.746
	INO2	0.802			
	INO3	0.782			
	INO5	0.751			
EP	*EP1*	0.832	0.875	0.637	0.738
	EP3	0.819			
	EP4	0.782			
	EP5	0.758			

Note: Excluded items = MW5, JE3, INO4, EP2.
Source: Authors' estimation.

Table 5. Discriminant validity

Variable	*EP*	*INO*	*MV*	*CS*	*JE*
EP	0.762				
INO	0.421	0.801			
MV	0.337	0.466	0.700		
CS	0.299	0.587	0.592	0.697	
JE	0.380	0.143	0.224	0.139	0.554

Source: Authors' estimation.

4.3. Structural model

With regard to path analysis, the study ensured a positive impact of *MW* on *EP* (*H1* = β = 0.667; p < 0.01), which supported the *H1*. Continuing the same, the analysis confirmed a positive impact of factors such as *CS*, *JE*, and *INO* on *EP* ([*H2* = β = 0.522; p < 0.01]; [*H3* = β = 0.052; p<0.01]; [*H4* = β = 0.084; p < 0.01]). Henceforth, *H2–H4* are accepted (see Table 6 and Figure 2).

Table 6. Path coefficients (direct paths)

No.	*Effects*	*Estimate*	*SE*	*CR*	*p*	*Decision (Yes/No)*
H1	*MW → EP*	0.667	0.159	4.204	0.000	Yes
H2	*CS → EP*	0.522	0.129	4.041	0.000	Yes
H3	*JE → EP*	0.052	0.014	3.703	0.000	Yes
H4	*INO → EP*	0.084	0.024	3.503	0.000	Yes

Note: p = significance level at p < 0.05, SE = standard error, CR = critical ratio.
Source: Authors' estimation.

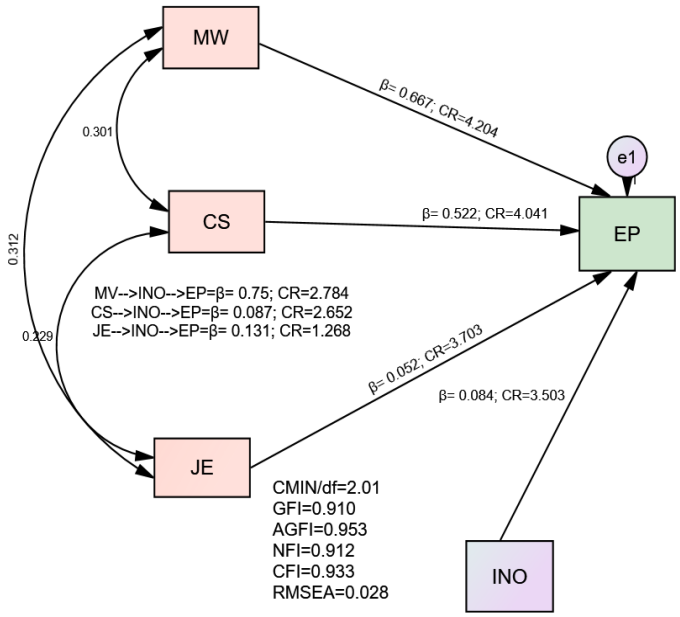
Moreover, the indirect path coefficients suggest a positive mediating effect of *IN* in creating the positive association between *MW* and *EP* and *CS* and *EP* ([*H5* = β = 0.075; p < 0.01]; [*H6* = β = 0.087; p < 0.01]). Thus, *H5–H6* are accepted. On the other hand, there is no mediating effect of *INO* in reinforcing the positive association between *JE* and *EP* (*H7* = β = 0.131; p < 0.01) (see Table 7).

Table 7. Path coefficients (indirect paths)

No.	*Effects*	*Estimate*	*SE*	*CR*	*p*	*Decision (Yes/No)*
H5	*MW → NO → EP*	0.075	0.027	2.784	0.005	Yes
H6	*CS → INO → EP*	0.087	0.033	2.652	0.008	Yes
H7	*JE → INO → EP*	0.131	0.104	1.268	0.205	No

Source: Authors' estimation.

Figure 2. Path analysis



Note: CMIN/df — ratio of chi-square minimum and degrees of freedom, GFI — goodness-of-fit index, AGFI — adjusted goodness-of-fit index, NFI — normed fit index, CFI — confirmatory fit index, RMSEA — root mean square error of approximation.
Source: Authors' elaboration.

5. DISCUSSION

The study investigated the effect of *MW*, *CS*, *JE*, and *INO* on *EP* among the employees of HEIs in Egypt. The findings of the study established a positive impact of *MW* on *EP*, which is supported by the domain literature, like Junça-Silva et al. (2022), Zanabazar et al. (2024), and Aturu-Aghedo et al. (2024), who confirmed the same findings. These findings demonstrate that employees of Egyptian HEIs are more motivated and engaged when work feels valuable and associated with personal and institutional goals. This sense of meaning increases job satisfaction, commitment, and well-being, jointly boosting productivity. Employees who perceive their work as "personally meaningful" and "important" are also less likely to experience burnout, reducing turnover and enhancing consistency in the workforce. In the educational sector, MW aligns with the broader mission of societal progress through knowledge and learning, which sustains employees' motivation and inspires proactive behaviours that benefit both students and the institution.

The study claimed a positive impact of *CS* on *EP*. These results are in accordance with several prior studies that confirmed the positive connection between *CS* and *EP* (Aytekin et al., 2016; Aytekin et al., 2022; Syahrir et al., 2024; Abdullahi et al., 2024). These results reflect that employees who feel satisfied with their career progress, success, and

progression tend to have a stronger sense of achievement, which fuels their motivation and engagement at work. This satisfaction aligns with personal career goals, growing commitment, and heartens individuals to put in more significant effort, which impacts productivity. Moreover, satisfied employees will likely experience higher morale, leading to better job performance and reduced stress. In higher education settings of Egypt, CS also reinforces loyalty to the institution, which reduces turnover and supports maintaining a stable, productive workforce focused on long-term goals. This placement between individual career growth and institutional needs nurtures a more productive and proactive work environment, benefiting both the employees and the educational institution.

The study's results established a positive effect of *JE* on *EP* among employees in Egyptian HEIs. These outcomes are accorded with domain literature like Ng et al. (2023), Daeli et al. (2024), and Fan et al. (2024). These results suggest that employees are more committed and motivated to contribute productively when they feel highly attached to their organization. This sense of embeddedness, imitated in feelings of attachment and connection, reduces turnover intentions and nurtures a sense of belonging, making employees more inclined to invest effort in their roles. Commonly, employees who feel "tied" to their institution are more likely to be involved in activities that support institutional goals, as their individuality is closely linked to their organizational role. Besides, the difficulty of leaving (as indicated by the unwillingness to quit) frequently leads employees to find long-term satisfaction and meaning in their current roles, encouraging them to make significant, sustained contributions. In Egyptian HEIs, this strong organizational attachment translates into stable, productive work that benefits employees and the institution by supporting continuity and nurturing a supportive, committed environment.

The effect of *INO* is also found to be a positive predictor of *EP*, which is supported by the literature (Ibrahim et al., 2022; Khan et al., 2022; Nwankpa & Roumani, 2024; Tariq et al., 2024). These results reflect that an environment nurturing INO boosts engagement, creativity, and job satisfaction, which enhances productivity. When institutions vigorously invest in new ideas, inspire creativity, and support risk-taking, employees feel empowered to contribute novel solutions and approaches. This enablement nurtures a culture of continuous improvement, motivating employees to apply their skills more effectively and take ownership of their contributions. Being part of an innovative organization inspires proactive problem-solving, as employees are more persuaded to identify and address challenges before they impact the institution.

The mediating effect suggests a mediating role of *INO* in shaping the association between *MW*, *CS*, and *EP*, but does not mediate the links between *JE* and *EP*. These results are in accordance with and in contradiction to several scholars like Junça-Silva et al. (2022), Wang et al. (2022), and Ertaş and Pekmezci (2025). These results demonstrate the positive contribution of INO in accomplishing organizational tasks with excellent robustness and efficacy.

6. CONCLUSION

The study's overall results confirmed a positive effect of constructs, i.e., MW, CS, JE, and INO, on EP. Moreover, the mediation analysis demonstrates a mediating influence of INO in shaping the association between MW, CS, and EP, but it does not mediate between JE and EP. The study highlights critical practical implications for enhancing EP in Egyptian HEIs. The study provides guidelines for the institutions to create roles that boost a sense of purpose, satisfaction, and incorporation into the work environment. Prominently, INO acts as a mediator in strengthening the link between MW and CS with EP, highlighting the value of nurturing an innovative culture to amplify the positive effects of MW and CS. However, as INO does not mediate the connection between JE and EP, organizations may need to address JE directly through other strategies to boost productivity. These understandings can guide policies and practices aimed at encouraging an appealing and innovative work environment to maximize EP.

The study deals with various theoretical implications for understanding the dynamics of EP in higher education settings. The study validates the worth of SDT by providing empirical insights in a developing context with constructs such as INO, CS, JE, and MW towards EP. The constructs such as MW, CS, JE, and INO all positively impact EP; it strengthens the value of these features within organizational behaviour and HRM theories. The mediating role of INO between MW, CS, and EP adds a new layer to existing frameworks, which recommends that INO be a critical enabler in translating individual satisfaction and purpose into actual productivity gains. However, the lack of a mediating effect of INO between JE and EP challenges expectations that INO universally enhances productivity consequences, which underlines that embeddedness may function independently of INO channels. This affects understanding calls for further examination of the unique pathways through which JE affects productivity, possibly inspiring future research on organizational and job characteristics that interrelate in different cultural and sectoral contexts, such as Egyptian higher education.

The study has certain limitations as it used only quantitative and cross-sectional data. The study did not use the concerned theory to support or underprop the conceptual framework of the study. The source of data collection is single via a survey questionnaire. Context-wise, the study is limited only to HEIs of Egypt, where employees are targeted for suitable survey analysis units. Finally, the results of the study are based on 321 cases.

In light of limitations, future investigations must use alternative methods, such as mixed methods, qualitative, and longitudinal studies, to validate this framework and results. The studies should apply domain theories to support the framework. Future studies should focus on other contexts, such as SMEs and the health sectors. Finally, the sample size should be enhanced in future studies to validate the results of the study.

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