Impact of Gamified Learning Platforms on Learning Motivation among Mid-Career IT Professionals: An Empirical Study

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Abstract - In the rapidly evolving Information Technology (IT) sector, continuous upskilling is essential for maintaining professional employability, yet sustaining learning motivation among mid-career professionals remains a critical organizational challenge. Drawing upon Self-Determination Theory (SDT) and the Theory of Gamified Learning, this empirical study investigates how the use of gamified learning platforms influences the learning motivation of mid-career IT professionals, examining the mediating roles of perceived autonomy, competence, and relatedness. Utilizing a quantitative, cross-sectional survey design, data were collected from 120 mid-career IT professionals predominantly situated in the Indian IT sector. Structural regression and bootstrapped mediation analyses reveal that gamified platform use exerts a strong, significant positive direct and indirect effect on learning motivation. Specifically, perceived autonomy and perceived competence emerged as robust parallel mediators, accounting for over 59% of the total indirect effect, whereas relatedness exhibited a marginal and weak influence. These findings suggest that gamification effectively fosters professional learning motivation when design mechanics prioritize self-direction and skill mastery rather than superficial extrinsic competition. Practical implications for corporate learning architecture and future research directions are discussed.

Keywords: Gamified Learning Platforms, Learning Motivation, Mid-Career IT Professionals, Mediation analysis

I. Introduction

The contemporary knowledge economy is characterized by unprecedented technological acceleration, rendering technical skills obsolete faster than at any point in history. Within the Information Technology (IT) sector, professionals face a continuous imperative to upskill and reskill to remain competitive. However, while early-career professionals often exhibit high intrinsic drive driven by career establishment milestones, mid-career IT professionals frequently encounter motivational plateaus. Weighed down by heavy project workloads, shifting organizational roles, and family responsibilities, this demographic often experiences a decline in voluntary engagement with traditional, compliance-driven corporate learning management systems.

To counteract declining engagement, organizations increasingly turn to digital gamification—embedding game design elements such as points, badges, leaderboards, and progress tracking into corporate learning environments. While a burgeoning body of research examines gamification in educational and K-12 settings, empirical evidence concerning corporate populations—and specifically mid-career technical professionals—remains remarkably sparse. Most existing studies treat gamification as a monolithic intervention, often neglecting the underlying psychological mechanisms that explain why certain design features motivate adult learners while others alienate them.

This empirical study addresses this critical gap by investigating the impact of gamified learning platforms on the learning motivation of mid-career IT professionals. Grounded in Self-Determination Theory (SDT) and Landers' theory of gamified learning, this research examines whether gamified platform utilization directly enhances learning motivation and whether basic psychological needs—autonomy, competence, and relatedness—mediate this relationship. By focusing on the Indian IT sector, this study provides actionable theoretical insights and practical guidelines for designing effective, age-appropriate digital learning ecosystems for experienced technology practitioners.

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II. Review of Literature

2.1 Conceptualizing Gamification and Gamified Learning Platforms

Gamification is most commonly defined as the use of game design elements in non-game contexts (Deterding et al., 2011). It differs from fully developed serious games because it embeds selected mechanics, such as points, badges, levels, leaderboards, progress bars, challenges, and narratives, into an otherwise conventional activity rather than turning the activity into a game (Landers et al., 2018; Werbach & Hunter, 2012). Seaborn and Fels (2015) note that the concept sits between several traditions, including human-computer interaction, motivational psychology, and instructional design, and that its definition continues to evolve.

In learning contexts, a gamified learning platform is a digital environment, such as a learning management system, a mobile learning application, or a corporate upskilling portal, where game elements are layered onto content to influence learner behavior and attitudes (Kapp, 2012). Bedwell et al. (2012) proposed a taxonomy of game attributes relevant to learning, including action language, assessment, conflict or challenge, control, environment, game fiction, human interaction, immersion, and rules or goals. This helps researchers describe which element they are studying rather than treating "gamification" as one undifferentiated intervention. This distinction matters because later evidence shows that different elements produce different psychological effects (Mekler et al., 2017; Sailer et al., 2017).

2.2 Theoretical Foundations

2.2.1 Self-Determination Theory

Self-determination theory (SDT) is the framework most often used to explain how gamification affects motivation. SDT proposes that intrinsic motivation and internalized extrinsic motivation flourish when three basic psychological needs are satisfied: autonomy, competence, and relatedness (Ryan & Deci, 2000). In work settings, need satisfaction is associated with more autonomous forms of motivation and better engagement and performance (Gagné & Deci, 2005). Ryan et al. (2006) argued that the motivational pull of video games arises from the same three needs, which gives a theoretical reason for expecting game elements to support learner motivation.

SDT also supplies the cautionary side of the argument. Deci et al. (1999), in a meta-analysis, found that tangible, expected rewards tend to undermine intrinsic motivation. This raises the possibility that reward-centered mechanics such as points and leaderboards may produce short-term participation at the expense of enduring interest. Whether gamification supports or erodes motivation therefore depends on whether learners experience it as informational and competence-affirming or as controlling.

2.2.2 Theory of Gamified Learning

Landers (2014) proposed a theory of gamified learning in which game elements influence learning indirectly. Gamification changes learner behaviors and attitudes, and these in turn moderate or mediate the relationship between instructional content and learning outcomes. The model implies that motivation and engagement are the proximal outcomes of gamification and that learning gains follow only if the changed behaviors and attitudes are relevant to the instructional goals. This supports measuring learning motivation as the primary dependent variable in studies such as the present one.

2.2.3 Complementary Perspectives

Other theories complement SDT. Flow theory describes optimal experience arising when challenge and skill are balanced, with clear goals and immediate feedback (Csikszentmihalyi, 1990). These conditions are what well-designed progress indicators and challenge levels seek to provide. Self-efficacy theory holds that mastery experiences and feedback raise confidence in one's capability, which strengthens effort and persistence (Bandura, 1997). Andragogy emphasizes that adult learners are self-directed, bring prior experience, and are motivated by the immediate relevance of learning to work and life problems (Knowles et al., 2015). Together, these perspectives suggest that gamification for experienced professionals should emphasize autonomy, meaningful challenge, and relevance rather than decorative rewards.

2.3 Learning Motivation in the Workplace

Learning in the contemporary workplace is increasingly self-directed, technology-mediated, and continuous, which places greater weight on employees' own motivation to learn (Noe et al., 2014). Noe et al. (2014) reviewed the literature on workplace learning and highlighted the roles of learner characteristics, work environment, and the design of learning experiences in determining whether employees engage in development activity. For technology professionals, whose skills depreciate quickly as tools and platforms change, sustained learning motivation is a prerequisite for staying employable. Yet it is difficult to maintain once the first years of career-building are past.

2.4 Mid-Career IT Professionals as a Distinct Learner Group

Career-stage theory describes the middle years as a period of establishment and maintenance, in which professionals consolidate their position and may question whether to continue developing or to hold what they have (Super, 1980). Kooij et al.'s (2011) meta-analysis showed that work motives shift with age, with growth-related motives weakening and security-related motives strengthening. Taken together, these findings suggest that the motivation to invest in learning cannot be assumed to remain at early-career levels.

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Mid-career IT professionals also face specific pressures: fast technological obsolescence, heavy project workloads that leave little time for formal training, the need to move from technical to managerial or architectural roles, and competition from younger cohorts with newer skills. These conditions make the group a particularly relevant, and often underserved, audience for learning formats designed to be engaging, flexible, and efficient. Because their prior experience is extensive, they are also likely to be critical of learning designs that feel trivial or patronizing, which raises the question of whether game mechanics designed with younger or student audiences will transfer to them.

2.5 Empirical Evidence on Gamification and Motivation

2.5.1 Overall Effects

Early reviews were cautiously positive. Hamari et al. (2014) reviewed empirical studies and concluded that gamification generally produced positive effects, but that outcomes depended heavily on context and on the users involved. Subsequent reviews reached similar conclusions while also pointing to weak methodology in many studies (Dichev & Dicheva, 2017; Koivisto & Hamari, 2019). Meta-analytic evidence is more precise. Sailer and Homner (2020) reported small-to-moderate positive effects of gamification on cognitive, motivational, and behavioral learning outcomes, with the motivational effect smaller than the cognitive effect. Bai et al. (2020) likewise found a moderate positive effect on learning outcomes, and Zainuddin et al. (2020) reported generally favorable evidence on engagement and motivation. However, most of this evidence comes from school and university settings.

2.5.2 Element-Level and Psychological Need Evidence

Sailer et al. (2017) experimentally compared specific game elements and found that they satisfied different psychological needs: for example, elements such as badges, leaderboards, and performance graphs were more strongly connected to competence, whereas narrative and avatar-type elements operated through other need pathways. Mekler et al. (2017) found that points, levels, and leaderboards increased performance on a task but did not raise intrinsic motivation or perceived competence, which suggests that behavioral activity can rise without a corresponding rise in motivation. In a field experiment, Hamari (2017) found that badges increased user activity on a trading platform, indicating that reward-type elements can drive engagement in naturalistic settings.

2.5.3 Negative and Mixed Findings

Not all studies are favorable. In a longitudinal classroom study, Hanus and Fox (2015) found that students in a gamified course showed lower intrinsic motivation, satisfaction, and empowerment over time, and performed worse on the final exam, than those in a non-gamified course. This is commonly read as evidence that competitive or reward-heavy mechanics can undermine motivation when they are experienced as controlling. Dichev and Dicheva (2017) concluded that evidence on long-term effects was insufficient and that the novelty of game elements could account for some early gains. Koivisto and Hamari (2014) found that perceived benefits of gamification varied by demographic characteristics such as gender and age, which reinforces the need to study particular user groups rather than generalizing from student samples.

2.6 Gamification in Corporate Training and the IT Sector

Armstrong and Landers (2018) examined gamification in employee training and development and argued that it holds promise but must be grounded in learning theory, with design choices matched to the intended psychological outcomes. They also noted that research on workplace populations lagged behind educational research. Within software engineering, systematic mapping studies have found that gamification has been applied to areas such as software process, testing, and education, but that many studies are exploratory and methodologically limited (Pedreira et al., 2015; Porto et al., 2021). Much of this work concerns developers' task engagement or student software engineering courses rather than structured upskilling for experienced professionals. As a result, the existing evidence says relatively little about how gamified learning platforms shape the learning motivation of experienced IT employees.

2.7 Research Gap

The reviewed literature supports the following observations:

1. Gamification generally has a modest positive effect on motivational outcomes, but the effect is moderated by design elements, learner characteristics, and context (Hamari et al., 2014; Sailer & Homner, 2020).
2. SDT offers a coherent explanation for both positive and negative effects, yet few studies test need satisfaction as the mechanism among working professionals (Sailer et al., 2017).
3. The empirical base is dominated by student samples, while workplace-focused evidence is thinner (Armstrong & Landers, 2018).
4. Evidence on mid-career professionals, a group with distinctive career-stage motives and constraints, is especially limited (Kooij et al., 2011; Super, 1980).
5. Based on the literature reviewed here, empirical studies focused on mid-career IT professionals, particularly in the Indian IT sector, appear scarce.

The present study addresses this gap by empirically examining how the use of gamified learning platforms relates to the learning motivation of mid-career IT professionals, using SDT as the guiding framework.

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2.8 Proposed Conceptual Framework and Hypotheses

Drawing on SDT (Ryan & Deci, 2000) and the theory of gamified learning (Landers, 2014), the study proposes that the use of gamified learning platforms influences learning motivation, directly and through satisfaction of the psychological needs for autonomy, competence, and relatedness. The following hypotheses are proposed:

- **H1:** The use of gamified learning platforms has a significant positive effect on the learning motivation of mid-career IT professionals.
- **H2:** The use of gamified learning platforms positively influences perceived autonomy, competence, and relatedness.
- **H3:** Perceived autonomy, competence, and relatedness positively influence learning motivation.
- **H4:** Perceived autonomy, competence, and relatedness mediate the relationship between gamified platform use and learning motivation.

III. Methodology

3.1 Research Design

This study employs a quantitative, cross-sectional survey research design to investigate the relationships between the use of gamified learning platforms, basic psychological need satisfaction (autonomy, competence, and relatedness), and learning motivation among mid-career IT professionals. A positivist epistemological stance was adopted to test the hypothesized structural relationships derived from Self-Determination Theory (Ryan & Deci, 2000) and the Theory of Gamified Learning (Landers, 2014).

3.2 Context and Sample

The target population comprised mid-career information technology (IT) and IT-enabled services (ITeS) professionals working in corporate environments, with a primary concentration in the Indian IT sector. Purposive and convenience sampling techniques were utilized via professional networks and digital corporate learning communities to distribute a structured online questionnaire.

Screening filters were applied at the outset of the instrument to ensure data validity. Respondents were required to:

1. Be currently employed in the IT/ITeS sector.
2. Possess a minimum of 5 years of professional IT experience (classifying them as mid-career professionals in accordance with career-stage frameworks; Super, 1980).
3. Have actively used a digital corporate learning platform incorporating game-like features (e.g., points, badges, leaderboards, progression tracks) within the preceding 12 months.

A total of 120 valid responses were retained for final analysis following rigorous data screening (as detailed in Section 4.1).

3.3 Measures and Instrumentation

All core study constructs were operationalized using multi-item scales adapted from established, peer-reviewed instruments in organizational psychology, educational technology, and motivational research. All items were measured on a 5-point Likert scale ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*).

- **Gamified Learning Platform Use (GPLU):** Measured using a 10-item scale adapted from Bedwell et al. (2012) and Werbach and Hunter (2012), capturing the perceived frequency and intensity of interaction with specific gamification mechanics (e.g., challenges, progress bars, feedback loops, levels) on corporate learning portals.
- **Perceived Autonomy (AUT):** Measured with a 5-item scale adapted from the Basic Psychological Needs at Work Scale (Gagné & Deci, 2005), assessing the extent to which learners felt choice, volition, and self-direction while using the platform.
- **Perceived Competence (COM):** Measured using a 6-item scale (Gagné & Deci, 2005; Ryan et al., 2006) evaluating feelings of mastery, effectiveness, and capability when navigating platform challenges and acquiring new technical skills.
- **Perceived Relatedness (REL):** Evaluated via a 6-item scale (Gagné & Deci, 2005) focusing on connection, peer interaction, and social visibility (e.g., leaderboards or collaborative challenges) within the learning environment.
- **Learning Motivation (LM):** Measured using a 10-item comprehensive scale adapted from Noe et al. (2014) and Ryan and Deci (2000), capturing both intrinsic drive and internalized professional motivation to engage in continuous upskilling.

3.4 Data Analysis Procedure

Data analysis was conducted using SPSS 28.0 and PROCESS macro (Hayes, 2022). The analytical workflow followed a rigorous two-step procedure:

1. **Preliminary Analysis:** Assessment of data normality, outlier detection, reliability analysis via Cronbach's alpha, and exploratory factor suitability (Kaiser-Meyer-Olkin measure and Bartlett's test of sphericity).
2. **Hypothesis Testing:** Simple and multiple linear regressions were conducted to test direct effects

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(H1, H2, H3) A parallel multiple-mediation model using 5,000 bootstrap resamples with percentile 95% confidence intervals was executed to evaluate the mediating role of psychological needs (H4). Robustness checks were performed to control for demographic variables and experience-band variations.

IV. Results

4.1 Data Screening and Respondent Profile

The dataset contained 120 responses. No values were missing, no respondent IDs were duplicated, all item responses fell within the 1–5 range, and no respondent gave the same answer to every item. All 120 respondents met the screening criteria: they worked in the IT/IT-enabled services sector, had used a digital learning platform in the past 12 months, and reported that their platform contained game-like features (A1–A3). All 120 responses were therefore retained.

Table 1 Respondent Profile (N = 120)

Characteristic	Category	n	%
Experience (years)	5–7	29	24.2
	8–10	48	40.0
	11–15	29	24.2
	More than 15	14	11.7
Age (years)	25–29	13	10.8
	30–34	37	30.8
	35–39	31	25.8
	40–44	25	20.8
	45 and above	14	11.7
Gender	Male	73	60.8
	Female	45	37.5
	Prefer not to say	2	1.7
Qualification	Diploma	4	3.3
	Bachelor's degree	26	21.7
	Master's degree	81	67.5
	M.Phil./Ph.D.	9	7.5
Organization type	IT services	40	33.3
	Software/product company	28	23.3
	Global Capability Centre	16	13.3
	IT consulting	13	10.8
	Startup	12	10.0
	IT-enabled services	11	9.2
Learning frequency	Daily	24	20.0
	Several times a week	39	32.5
	Once a week	33	27.5
	Several times a month	18	15.0
	Less frequently	6	5.0

The sample was concentrated among professionals with 8–10 years of experience (40.0%), and most held a master's degree (67.5%). Software developers/engineers formed the largest job-role group (33.3%), followed by data/business analysts (15.0%) and team leaders/managers (14.2%). Most respondents (80.0%) used digital learning platforms at least once a week.

4.2 Reliability and Suitability of the Data

Construct scores were computed as the mean of their items. Internal consistency was assessed with Cronbach's alpha. All five scales exceeded the conventional .70 threshold (Nunnally, 1978), with alphas from .883 to .970 (Table 2). Corrected item–total correlations were .75–.81 for gamified learning platform use (GPLU), .75–.81 for autonomy (AUT), .73–.79 for competence (COM), .65–.76 for relatedness (REL), and .84–.89 for learning motivation (LM), so no item weakened its scale. The Kaiser–Meyer–Olkin measure was .92 (Kaiser, 1974), and Bartlett's test of sphericity was significant, $\chi^2(666) = 3{,}811.10$, $p < .001$. Both indicate that the items were suitable for multivariate analysis.

4.3 Descriptive Statistics and Correlations

Table 2 Descriptive Statistics and Reliability of Study Constructs (N = 120)

Construct	Items	M	SD	Skewness	Kurtosis	α
Gamified learning platform use (GPLU)	10	3.01	0.75	0.16	−0.24	.949
Perceived autonomy (AUT)	5	3.00	0.80	−0.20	−0.45	.913
Perceived competence (COM)	6	2.99	0.77	−0.03	−0.61	.914
Perceived relatedness (REL)	6	3.01	0.74	−0.29	−0.51	.883
Learning motivation (LM)	10	3.00	0.82	0.02	−0.30	.970

Note. Scores range from 1 to 5.

Mean scores for all constructs clustered around the scale midpoint (M = 2.99–3.01), indicating neutral average perceptions of gamified platform use, need satisfaction, and learning motivation. Skewness and kurtosis values were within ±1 for every construct. Shapiro–Wilk tests did not indicate departures from normality for GPLU, AUT, COM, or LM (all $p > .05$). REL showed a slight departure, $W = .974$, $p = .022$, so bootstrap and heteroscedasticity-robust estimates were used to check the relevant results.

Table 3 Pearson Correlations among Study Variables (N = 120)

Variable	1	2	3	4	5
1. GPLU	—				
2. AUT	.47***	—			
3. COM	.51***	.16	—		
4. REL	.38***	.38***	.29**	—	
5. LM	.67***	.61***	.57***	.46***	—

Note. ** $p < .01$. *** $p < .001$.

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GPLU was positively and significantly correlated with all three psychological need variables and with learning motivation. All three need variables were also positively correlated with learning motivation. The correlation between autonomy and competence was weak and not significant ($r = .16$, $p = .084$), which suggests the two needs were perceived as largely distinct.

4.4 Hypothesis Testing

4.4.1 H1: Gamified Learning Platform Use and Learning Motivation

H1 proposed that gamified learning platform use has a significant positive effect on learning motivation. A simple linear regression showed that GPLU significantly predicted LM, $B = 0.73$, $SE = 0.08$, $\beta = .67$, $t(118) = 9.74$, $p < .001$, 95% CI [0.58, 0.88]. The model explained 44.5% of the variance in learning motivation, $R^2 = .445$, adjusted $R^2 = .441$, $F(1, 118) = 94.79$, $p < .001$, and the effect size was large ($f^2 = 0.80$; Cohen, 1988). Residuals were approximately normal (Shapiro–Wilk $p = .763$), independent (Durbin–Watson = 2.02), and homoscedastic (Breusch–Pagan $p = .524$). **H1 was supported.**

4.4.2 H2: Gamified Learning Platform Use and Psychological Needs

H2 proposed that GPLU positively influences perceived autonomy, competence, and relatedness. Three simple regressions were estimated (Table 4).

Table 4 Regression of Psychological Needs on Gamified Learning Platform Use (H2)

Outcome	B	SE	β	t(118)	p	95% CI	R^2	F(1, 118)
Autonomy	0.50	0.09	.47	5.71	< .001	[0.33, 0.67]	.217	32.66
Competence	0.53	0.08	.51	6.46	< .001	[0.37, 0.69]	.261	41.72
Relatedness	0.37	0.08	.38	4.42	< .001	[0.21, 0.54]	.142	19.52

Note. All models: $p < .001$.

GPLU significantly predicted all three needs, with the strongest association for competence and the weakest for relatedness. For relatedness, the Breusch–Pagan test indicated heteroscedasticity ($p = .010$), so the model was re-estimated with HC3 robust standard errors. The effect remained significant, $B = 0.37$, 95% CI [0.22, 0.53], $p < .001$. **H2 was supported for all three needs.**

4.4.3 H3: Psychological Needs and Learning Motivation

H3 proposed that perceived autonomy, competence, and relatedness positively influence learning motivation. A multiple regression with the three needs as predictors was significant and explained 62.0% of the variance in learning motivation, $R^2 = .620$, adjusted $R^2 = .610$, $F(3, 116) = 62.99$, $p < .001$, $f^2 = 1.63$. Multicollinearity was not a concern (VIF = 1.10–1.25), and the residual assumptions were met (Shapiro–Wilk $p = .572$; Durbin–Watson = 2.16; Breusch–Pagan $p = .177$).

Table 5 Multiple Regression of Learning Motivation on Psychological Needs (H3)

Predictor	B	SE	β	t(116)	p	95% CI	sr^2
Autonomy	0.50	0.06	.48	7.81	< .001	[0.37, 0.62]	.200
Competence	0.48	0.06	.46	7.59	< .001	[0.36, 0.61]	.189
Relatedness	0.16	0.07	.14	2.21	.029	[0.02, 0.30]	.016

Note. $R^2 = .620$. sr^2 = squared semi-partial correlation.

Autonomy and competence were strong, roughly equal predictors of learning motivation, each uniquely explaining about 19–20% of its variance. Relatedness was a significant but much weaker predictor, uniquely explaining 1.6%. Its significance held under HC3 robust standard errors ($p = .008$). **H3 was supported**, with the contribution of relatedness being modest.

4.4.4 H4: Mediating Role of Psychological Needs

H4 proposed that autonomy, competence, and relatedness mediate the relationship between GPLU and learning motivation. A parallel multiple-mediator model was tested using 5,000 bootstrap resamples with percentile 95% confidence intervals (Preacher & Hayes, 2008; Hayes, 2022). Effects were treated as significant when the interval excluded zero.

The total effect of GPLU on LM was significant, $c = 0.73$, 95% CI [0.58, 0.87]. When the three mediators were added, the direct effect decreased but remained significant, $c' = 0.30$, 95% CI [0.14, 0.45]. The full model explained 66.2% of the variance in learning motivation, $R^2 = .662$, $F(4, 115) = 56.37$, $p < .001$, with all VIFs below 1.74. In this model, autonomy ($B = 0.40$, $p < .001$) and competence ($B = 0.36$, $p < .001$) were significant predictors of learning motivation. Relatedness was not ($B = 0.12$, $SE = 0.07$, $p = .079$).

Table 6 Bootstrapped Indirect Effects of GPLU on Learning Motivation (5,000 resamples)

Pathway	Effect	Standardized	95% CI (unstandardized)
GPLU → AUT → LM	0.198	.180	[0.120, 0.282]
GPLU → COM → LM	0.191	.174	[0.107, 0.294]
GPLU → REL → LM	0.045	.041	[0.001, 0.093]
Total indirect	0.434	.395	[0.311, 0.568]
Direct (c′)	0.299	.272	[0.136, 0.452]
Total (c)	0.733	.667	[0.581, 0.870]

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Autonomy and competence were significant mediators. The total indirect effect was significant and accounted for 59.2% of the total effect of GPLU on learning motivation. The indirect effect through relatedness was very small, and its confidence interval only barely excluded zero, so this pathway should be treated as marginal. Pairwise contrasts showed that the autonomy and competence pathways did not differ from each other (difference = 0.007, 95% CI [−0.122, 0.123]). Both were significantly stronger than the relatedness pathway (autonomy vs. relatedness: 0.153, 95% CI [0.054, 0.257]; competence vs. relatedness: 0.147, 95% CI [0.054, 0.257]). Because the direct effect remained significant, the mediation is partial. H4 was supported, chiefly through autonomy and competence, with weak and marginal evidence for relatedness.

4.5 Robustness Checks

To test whether the findings depended on the inclusion of respondents with more than 15 years of experience, the analyses were repeated for respondents with 5–15 years of experience (n = 106). The results were substantively unchanged. GPLU still predicted learning motivation (B = 0.73, p < .001, R^2 = .434) and all three needs (B = 0.35–0.49, all p < .001). Autonomy and competence remained strong predictors of learning motivation, and relatedness remained weak (B = 0.16, p = .045). The indirect effects through autonomy (0.212, 95% CI [0.128, 0.303]) and competence (0.204, 95% CI [0.116, 0.311]) remained significant, as did the total indirect effect (0.457, 95% CI [0.326, 0.605]). The indirect effect through relatedness was no longer significant (0.042, 95% CI [−0.003, 0.093]).

The results were also stable after adjusting for experience, age, gender, qualification, organizational level, and weekly learning hours. GPLU continued to predict learning motivation (B = 0.69, p < .001), and autonomy and competence remained significant (both p < .001). The relatedness coefficient was no longer significant (B = 0.15, p = .067). Learning motivation did not differ across experience bands, F(3, 116) = 0.53, p = .662.

4.6 Summary of Hypothesis Testing

Table 7 Summary of Hypothesis Testing

Hypothesis	Result	Decision
H1: GPLU → LM	β = .67, p < .001	Supported
H2: GPLU → AUT, COM, REL	β = .47, .51, .38; all p < .001	Supported
H3: AUT, COM, REL → LM	AUT β = .48, COM β = .46, REL β = .14 (p = .029)	Supported (REL weak)
H4: AUT, COM, REL mediate GPLU → LM	Indirect via AUT and COM significant; REL marginal	Supported (partial mediation)

V. Discussion

5.1 Interpretation of Findings

The empirical findings of this study provide critical insights into how gamified learning platforms influence the learning motivation of mid-career IT professionals. Grounded in Self-Determination Theory (SDT) and Landers' (2014) theory of gamified learning, the results offer nuanced empirical support for the motivational mechanisms of digital upskilling tools in corporate contexts.

First, **H1 was strongly supported** ($\beta = .67, p < .001$), demonstrating that the use of gamified learning platforms accounts for 44.5% of the variance in learning motivation among mid-career IT professionals. This confirms that gamification is not merely a superficial engagement gimmick but serves as a powerful catalyst for professional drive, countering the well-documented plateauing of motivation during the middle career stage (Super, 1980; Kooij et al., 2011).

Second, **H2 was supported**, indicating that gamified platform use positively predicts the satisfaction of all three basic psychological needs: autonomy, competence, and relatedness. Consistent with Sailer et al. (2017), the strongest direct prediction was observed for competence ($\beta = .51$), highlighting that skill-testing challenges, immediate feedback, and level progression effectively reinforce an experienced professional's sense of mastery.

Third, **H3 was supported**, confirming that perceived autonomy and competence are robust, roughly equal predictors of learning motivation, while relatedness exerts a much weaker, albeit significant, influence ($\beta = .14, p = .029$). For mid-career professionals—who are inherently self-directed and burdened with heavy project workloads—platforms that afford control over *what, when, and how* they learn (autonomy) while validating their technical acumen (competence) are significantly more effective at driving motivation than platforms emphasizing social comparison or team-based relatedness.

Fourth, **H4 was supported via partial mediation**. Autonomy and competence served as powerful, statistically significant parallel mediators, accounting for the majority of the indirect effect of gamified platform use on learning motivation (total indirect effect = .434, representing 59.2% of the total effect). Conversely, the indirect pathway through relatedness was marginal and weak. This aligns with Mekler et al. (2017), suggesting that while external leaderboards and social badges may drive baseline activity, deeper motivational internalization among mature professionals stems primarily from self-direction and competence affirmation.

5.2 Theoretical Implications

This study contributes to the literature in three vital ways. First, it extends gamification and SDT research beyond the

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traditional domain of K-12 and university student samples (Hamari et al., 2014; Sailer & Homner, 2020) into the high-stakes, rapidly evolving corporate IT sector. Second, it answers the call by Armstrong and Landers (2018) by empirically testing psychological need satisfaction as the underlying mechanism linking platform design to motivational outcomes among working adults. Third, it highlights the distinct psychological profile of mid-career professionals, demonstrating that structural design elements must prioritize competence and autonomy over superficial extrinsic rewards to avoid the motivational erosion observed in prior longitudinal studies (Hanus & Fox, 2015).

5.3 Practical and Managerial Implications

For Chief Learning Officers, HR leaders, and instructional designers in the IT sector, these findings offer actionable guidance for designing effective upskilling portals:

- **Design for Competence and Autonomy:** Corporate learning portals should feature modular, self-paced learning paths with clear diagnostic assessments and incremental skill challenges that validate technical mastery, rather than forcing rigid compliance training.
- **Calibrate Extrinsic Rewards:** Given the risk of undermining intrinsic motivation with heavy-handed rewards (Deci et al., 1999), leaderboards and competitive badges should be implemented cautiously or made optional for senior technical staff who may find them patronizing.
- **Tailor for Time Constraints:** Mid-career professionals face acute time scarcity. Gamified micro-learning modules that deliver immediate professional relevance and flexibility are far more likely to sustain engagement than time-consuming, gamified simulations.

5.4 Limitations and Future Research

Several limitations should be noted. First, the cross-sectional design limits causal inferences, although robust regression and bootstrapping techniques were applied. Future research should employ longitudinal or experimental designs to track motivational shifts over extended upskilling lifecycles. Second, the sample size (N = 120) and concentration within the Indian IT sector limit generalizability; cross-cultural comparative studies across global tech hubs would provide valuable boundary conditions. Finally, future studies should disaggregate specific game mechanics (e.g., points vs. narrative vs. badges) to evaluate their individual efficacy among diverse technical cohorts.

VI. Conclusion and Implications

The rapid pace of technological obsolescence in the IT sector places immense pressure on mid-career professionals to engage in continuous, self-directed upskilling. This empirical study investigated the impact of gamified learning platforms on the learning motivation of 120 mid-career IT professionals, utilizing Self-Determination Theory as an overarching explanatory framework.

The findings confirm that gamified learning platform use exerts a strong, significant positive effect on learning motivation, both directly and indirectly through the satisfaction of basic psychological needs. Specifically, perceived autonomy and perceived competence emerged as powerful psychological conduits that explain how gamified design features translate into sustained professional learning drive. In contrast, relatedness played a minor role, indicating that mid-career tech professionals are primarily motivated by self-directed mastery and capability validation rather than social competition or community badges.

Ultimately, gamification in corporate IT training is most successful when it respects the professional maturity and autonomy of experienced engineers, architects, and managers. By moving beyond superficial rewards and focusing on competence-building, instructional designers can successfully leverage gamified platforms to future-proof the technical workforce.

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