Journal of Informatics Education and Research
ISSN: 1526-4726
Vol 5 Issue 1 (2025)

Impact of Transformational Leadership and Creative Self-Efficacy on Innovative Work Behavior in Mobile Application Services

Dr Anuja Sehgal[1*]
[1]Chairperson Women Empowerment Committee, Noida Management Association, Noida
Prof. (Dr.) Neelam Saxena[2]
[2] Dean Academics, Institute of Management Studies, Noida
Corresponding Author: Ms. Anuja Sehgal[1]

Abstract

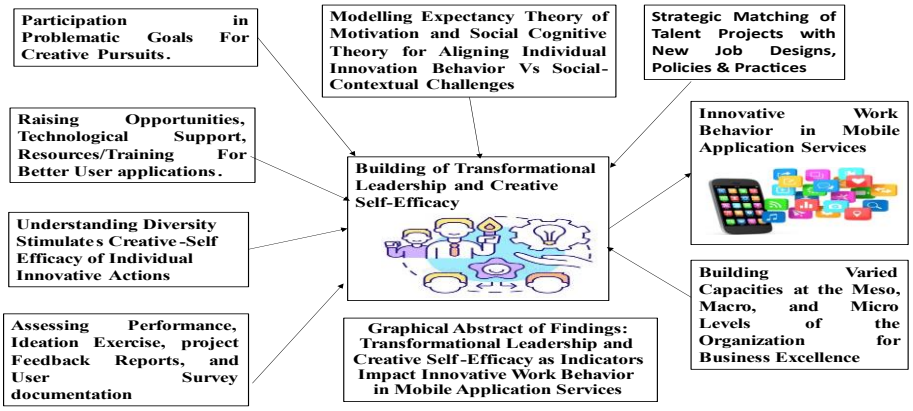
BACKGROUND: Hi-tech engineers in mobile application development services must sincerely endeavor intellectually to create real-value enterprising applications for potential societal problems.

OBJECTIVE: This paper gauges the dominating effect of transformational leadership of engineers on innovative work behavior for creative, valuable innovations and explores the effectual mediation of creative self-efficacy for innovative work outcome effectiveness.

METHODS: The study tidied 232 over 245 response data (94.7%) from engineer intrapreneurs working in location-based (mobile application development) service organizations for analysis (including 53.5% individual contributors and 46.5% engineer managers). Linear regression analysis was put together in SPSS (Statistical Intelligence Software) to decipher the extending interrelationships between variables.

RESULTS: The paper gives awe-inspiring information on the interdependent associations between ITL (Intrapreneur's Transformational Leadership Direction), ICE (Creative Self Efficacy), and IWB (Innovative Work Behavior) of these Hi-tech engineers. The study creates a sound understanding that other than transformational leadership development, round-the-clock fine-tuning of creative self-efficacy can advance razor-sharp efficiency in innovative projections.

CONCLUSIONS: Software companies should accelerate improvements in creative self-efficacy and transformational leadership training for their engineering intrapreneurs for offering better user experiences. Organizations must invest in hiring the right, skilling engineers with creative thinking power, and intelligent situation-specific solutions for conventional societal issues.



(Graphical Abstract Prepared by Author)

Keywords: Intrapreneur's Transformational Leadership, Creative Self-Efficacy, Innovative Work, Mobile Application Services, Linear Regression Analysis

JEL Classification: O32

1. Introduction

The location-based mobile application services are reshaping the world's way of living with the convergence of new technologies. A medley of new applications is being generated at speed with the creative brains, and ideation abilities of hi-tech engineers in the IT industry (Wyrtki et al., 2021). The innovative work efforts of hi-tech professionals are making unthinkable solutions possible for human life gratification. This study attempts to scout the motivations of Hi-Tech engineer intrapreneurs for transformational direction and creative self-efficacy in mobile application (location-based) software services to drive innovativeness. It advocates the worth of stimulating enterprising ideas within different roles to meet the recurrent wants of the community.

Past research has covered little on transformational leadership of Hi-tech engineer intrapreneurs and their innovation initiatives in technological companies (Birasnav, 2014; Hasanakbari et al., 2017; Lin et al., 2012). Recent research readings show concern for purpose-driven leadership action, constructive learning, independent visualization, and individual consideration initiatives for enhancing innovation capability under the hood of social learning, motivational self-determination, and social exchange theories (AlEssa&Durugbo, 2022; Bilal et al., 2021; Mehmood et al., 2020). These impactful theories influence relational, cognitive expansion, and autonomy to gather sufficient knowledge for innovative purposes (Wang et al., 2021).The social exchange theory created an open commitment to understanding the real triggers of alternate creative idea proposals in work projects that match new social-cultural expectations (Bai et al., 2016; Gong et al., 2013; Le & Lei, 2019). The paper presents thatpracticing engineer managers make active joint decision-making efforts for creative engagement in new activities, designs, processes, product applications, and experiential services to solve environmental problems(Zhu, 2017). It elaborates on the uniqueness of transformational empowerment, creative self-efficacy, collaborative exchange of expertise, chance opportunities, and ideation practices for capacity-building confidence in Hi-tech engineers to advance something new always(Dong et al., 2017).

It presents that not all Hi-tech intrapreneurs succeed in converting their ideas to innovative outcomes and the reason for inability is a lack of effective conviction, management skills, and tolerance of individual capacities. Organizations must hire and retain expert skills appropriately for maximum progress in location-based service applications(Ekuma, 2014;Zreen et al., 2021). The success of diverse innovative applications and usage (search and promotion, tracking, maps and navigation, edutainment) helps examine the robustness of individual-group creative efficacy, resource climate, and goal-ideation constraints that impact effective contribution in innovation

The paper intended to fill any research gaps by evaluating the following research focus areas:

1. To unfold the demographic particulars of sample Hi-tech engineer intrapreneurs
2. To frankly ascertain the value of mean ranks, reliability, and correlations of Intrapreneurs' Transformation Direction Leadership (ITL) Creative Self-Efficacy (ICE), and Innovative work behavior (IWB)
3. To test the interdependent effects of Hi-tech Intrapreneurs' perception of Intrapreneurs' Transformation Direction Leadership (ITL), Creative Self-Efficacy (ICE), and Innovative work

behavior (IWB) and Hi-tech Intrapreneurs' perception of ITL on Innovative work behavior with creative self- efficacy having mediating effect between ITL and IWB.

Henceforth, the research query of what specific remedies motivate better performance in Hi-tech intrapreneur engineers working in location-based services is addressed. The paper is composed of a conceptual review, applicable theories, test hypotheses, and methodology for data examination for impacting intellectual stimulation for innovation at work. The study has contributed to the self-understanding of engineers for responsible thinking, situational awareness, competence renewal efforts, and learning through impactful credible endeavors.

2. Theoretical Review

2.1 *Transformational Leadership Direction of Hi-Tech Intrapreneurs*

Transformational ability is drawn up as a skillful, responsible capability that dare-says the must-haves in society, effective communication, persuasiveness skills, and engagement with others for exceptional qualitative outputs (Cavazotte et al., 2013). Hi-tech intrapreneur leaders are often identified in crisis times for strategic ideological assertiveness, and information-seeking behavior to convert knowledgeable user experiences into practical innovation performance (Li et al., 2016; Le & Lei, 2019). They persistently break through work hindrances and draw on self-inspiration, wisdom, know-how, values, and interactive life experiences for mind-blowing innovations (Noor & Dzulkifli, 2013). They steadfastly upgrade on business/technical perspectives for reconstructing novelties.The attributes of transformational Hi-tech intrapreneurs include purpose-driven participation, learning actions, goal transparency, resource awareness, evaluation of alternate actions, and decisive risk ownership behaviors to improve innovation (Bilal et al., 2021). Their transformational leadership direction motivates the raising of principles, self-interests, and practical approaches to perform better in terms of visioning opportunities, intellectual stimulation(ideation-solution-finding), individualized influence (trustworthy relations), and individualized consideration (quality engagements) (Laglera et al., 2013; Klaic et al., 2020). It is argued that trustworthy relations with Hi-Tech Intrapreneurs incite them to take up extra-role behaviors beyond their usual work roles for community benefit missions that usher them toward distinctive outcomes (Mansouri, 2015; Mubarik et al., 2019; Gonzalez, 2022). The goal orientation in Hi-Tech Intrapreneurs purposively enables them to challenge old patterns to build new enabling techniques, opportunities, responses, and functional process approaches for achieving collaborative innovation in location-based services (Newman et al., 2018)

2.2*Creative Self-Efficacy*

Creativity is an action-centered, context-specific, constructive approach that produces unusual, beneficial ideas. Self-Efficacy is a person's diligent effort through self-owned capabilities to achieve high-value goals. Creative self-efficacy is the synthesis of novel visionary solutions, design-thinking approaches, self-competent attitudes, and felt experiencesto develop rational solutions to real-life problems (Royston & Reiter-Palmon, 2019; Uddin& Raihan, 2020). It is a blend of original imaginations with differential creative intention, and expressive motivation to develop something exceptional and of real value and effectiveness(Michael et al., 2011; Rahman Khattak et al., 2017). An assertive desire is to self-monitor persistent efforts for creative developments and make genuine decisions for forward-looking solutions for different situations (Henker et al., 2015; Permana&Astiti, 2018). The individuals consider the application of the signaling theory for routine motivational process information and feedback to improve communication for the generation of creative innovation decisions concerning different situational requirements (Abbas & Wu, 2019;N. K. Park et al., 2021).

Creative- self-efficacy performance involves working on visualizing ideas, working on task design, making desired efforts in proficiency contexts, forcing persistent change efforts, and networking to develop something more practical, and significant(Christensen-Salem et al., 2021).

It is commonly perceived that Hi-Tech intrapreneurs unite with each other's intelligence, expertise, and multiple views to rationalize relevant aspects to build optimum applications (V. Ghosh et al., 2023).

However, industrial observation reveals reservations in intrapreneurs in expressing views/ideas due to insufficient experience in implementation or lack of conviction of acceptance of ideas by peer groups or management. It is maintained that there is a concentrated need to give them more interactive avenues to idea openness/exchange for transporting ideas for recognizing the creative potential of individuals to idea implementation (Fleck & Asmuth, 2021). It is emphasized that self-efficacy reinforces empathetic thoughts, sensitivities, and persevering actions in different problematic situations to direct resource optimization for task achievement (Djourova et al., 2020).

2.3 *Innovative work behavior*

Innovative work behavior is described as the forecasting of incredible original ideas, earnest goals, and self-competency approaches towards formalizing new processes, products, and techniques on the thrust of already existing conditions(Montani et al., 2014). It includes enabling trust, competition, experiential capability sharing, and teamwork in multiple roles for fearless execution(A. Agarwal, 2014; Lee et al., 2012). It involves the development of functional technical skills, management foresight, business research capabilities, training forethought, and business vision in intrapreneurs so that they can vigorously initiate role-model plans for innovation action in suitable project applications(Bagateeva&Akhmetzyanova, 2020).It involves daring imaginations to bring about pronounced, enterprising developments in intelligible work process plans to improve business practicability and competitive advantage. The Hi-tech intrapreneurs are prepared for innovative pursuits, proactive responses, creative problem-solving, and diversified workplace actions to serve focused customer requirements (Spanuth et al., 2020; Yang et al., 2022). They are trained to technically cooperate in constructive risk partnerships and inspirational management actions for considerations for improving tangible achievements (Klimczak et al., 2023). Henceforth, the motive of various abstractions was to encourage innovative work capabilities and coactive decisions that reinforce innovative work behavior in work projects(Elsbach, 2020). It is argued that it is imperative to recognize ideation-related discussions and differences in information capabilities within organizations (Magnanini et al., 2023; Widmann et al., 2018).

The research reflects that Hi-Tech intrapreneurs in mobile applications prefer to engage in task-oriented, skill-based developments, extensive research interactions, and experimentation on project applications to judge the user value of their conceived ideas(Op den Kamp et al., 2020).

2.4 *Mobile Application Services*

Several Software companies are working in the sphere of GPS (Global Positioning Systems) which is a multi-functionary, satellite-integrated, location determination system thatendorses information for Location identification, Navigation, tracking movement, Mapping (defining maps), and Timing certainty. Location-based (Mobile Application) Services are practicable for developing multiple human life solutions for routine situations like locating a retail outlet, ordering food online, tracking an employee offsite, etc. They offer new hopes, opportunities, possibilities, and realizations by integrating

smart, robust technologies(Chung et al., 2015; Huang et al., 2018). Thus, leading to better efficiency, effectiveness, productivity, and innovative achievements.

3. Hypothesis: Understanding of Interdependent Effects

3.1 *Transformational Direction and Innovative work behavior*

Hi-tech intrapreneurs knowledgeably stimulate a culture of differential sense-making through capacity sharing, personal initiative, user empathy, and impact innovative intention (Asad et al., 2021; Mokline, 2023). These intrapreneurs consider the know-how of human experiences to give transformation direction to their goals. Hence, they are involved in structured user interactions to gain an effective view of user perspectives(Ahmed et al., 2020). They resolve to improve organizational resources, raise innovation capabilities, indulge in new ideation engagements, and utilize available aptitudes to create upraised performance teams(Escribá-Carda et al., 2017; Kim et al., 2022). They recondition individual potential and reshape functional intentions, working practices, interpersonal connections, and inventive actions to fine-tune with customer demands for extraordinary achievements(Elkington & Booysen, 2015; Randel & Jaussi, 2019; Uphaus et al., 2021). The research advances that although individuals undertake innovative work behavior at different times, they need transformational direction, situational awareness, and psychological understanding of comparative planned work behaviors to develop differential innovation (Afshan et al., 2022). Hence, transformational inspiration, motivational direction, and skill upgradation consequently construct innovative work behavior. There are up-to-date studies on creative problem valuation that have intellectually inspired researchers to explore innovative work conditions, plans, and means of the individual, team, and, organizations(M. S. Khan et al., 2021).

They thrust on customized training, individual competency development, contextual interventions for alternative learning practices, quality ideation, and relevant job redesign to increase innovative capabilities for organizational innovation development (Shahriari et al., 2017; Dashuai& Bin, 2020). Innovative work behavior involves the intellectualization of novel idea solutions, deciding courses of action, buying support for product ideas, and then constructing the possible ideas into effective customer solutions. It involves coactive behaviors to integrate idea-views, understanding oppositions and criticism of disparate individuals/teams, and coevolving a combined approach for strategic innovative actions(Li et al., 2016; Jabbar, 2022).

Location-based service organizations conduct a lot of user research to collect personal views, interactive responses, and feedback on problem scenarios, and evaluate possible solutions to various problems. Hi-tech intrapreneurs conduct usability testing to know whether a particular innovation has been effectively developed. Some scattered research has been designed in the preceding times to determine the direct and favorable impact of self-leadership, and transformational direction on innovative work behavior. Therefore, the hypothesis is developed.

Hypothesis 1: *Transformational* Direction *will directly govern and positively influence Innovative work behavior*

3.2 Transformational direction and Creative Self Efficacy

Engineers possessing a high level of self-efficacy have the innermost strength and self-assertiveness to originate a positive innovation- climate with genuine leadership. They create trust, participative spirit, and consciousness among colleagues to give credence to their capacities with surety and conviction to turnaround performance in uncertain situations(Christensen-Salem et al., 2021). Creative self-efficacy excites resilient, goal-driven steps in disagreeable situations for long-term value. Literature studies

endorse that individuals perform better when they self-manage vital energies to optimize innovation (Farmer & Tierney, 2017). Thus, the Hi-tech intrapreneurs who have transformational thought patterns are determined and focused on actively achieving new, promising market visions and hopes. They rigorously focus attention on favorable beliefs and perspectives, existing resources, encourage diversity in views, and selection of appropriate workable projects that affect overall innovation direction (S. Ghosh et al., 2021; S. Park & Cho, 2022). They constantly reflect on the workability of knowledge solutions for practical improvement possibilities.

As of now, minimal research has been advanced on the selection of appropriate workable individual and team projects. Faint research incidences are available to showcase the management of projects for end-user advantage to lead to creative performance (Kock et al., 2015). Mostly, the projects are chosen on emergent, compelling needs, market demands, and extensive customer-driven feedback (Denning, 2022). It is objectively analyzed that customer-focus inputs promote relational, spontaneous thinking for power action. Transformational direction helps individuals select appropriate projects for resolving existing problems together as a team and thus focuses on raising team innovation capabilities to improve the chance of positive initiatives for creative thought solutions(Leandro & Umana, 2021). Transformational direction inspires team members to collectively undertake complicated tasks for positive assuredness in reasoning novel deliverables while dissenting any views or context-specific factors that may not sound contributory towards innovative performance (Li et al., 2016). The studies have suggested a generative approach towards creativity building with a common understanding, information, and enlightenment of routine ways of customers as key to innovativeness (Yodchai et al., 2022). The centralization of all supportive information in a forethoughtful way and diverse cognitive inputs leads to reduced team conflicts, increased cooperation, and the implementation of an integrative organizational innovation spirit (Alegbeleye& Kaufman, 2022; Ashfaq et al., 2021; Beaty et al., 2021). The self-competent leaders, self-learn market requirements to intellectually experiment, unlock experiences, and strategize skills for better performance. They believe that with proper thought engagements, value concepts, and intellectual support mechanisms, they can surely remodel and renovate aspirational outcomes (Istiqomah&Wibowo, 2017; Milne-Ives et al., 2023).

. They can continuously renew individual ingenuity, organizational resources, and decisions towards idea building, development, and implementation for better problem handling (Ibus& Ismail, 2018). Hence, they can undertake diverse work activities, skills, and roles for creative performances. Therefore, the hypothesis as follows is developed.

Hypothesis 2:*Transformational* Direction will directly, and positively influence Creative Self-Efficacy

3.3 *Creative Self-Efficacy with Stimulating Effectuation Effect*

Engineers with a high-level of creative self-efficacy undertake critical tasks and unite for high-level innovative work behavior, and improved results (R.S & Surya, 2020). Hi-tech intrapreneurs often succeed in gathering aid from peer groups for idea endorsement to generate worthwhile outcomes. As various innovative user applications are developed and accepted in society, the confidence of intrapreneurs rises for more new developments. They attain workability at the workplace and workaround on advancing expertise-sharing on more and more projects while persevering effectively for optimization in innovation endeavors(Jena & Memon, 2018)

. The tolerant engagements on various innovation applications, lead to progressive communications, awareness of capabilities, interactive learnings, and enhanced developments. It is argued that engineer intrapreneurs take cumulative responsibility to converge strategically, individual opinions/views through an organizational learning context to formulate a successful change solution and hence design strategies that are aligned with management objectives (Srikanth & Jomon, 2020).

In location-based services, Hi-tech engineers' innovation doings are a result of cognitive thought patterns, several evaluative strategies, and personal risks to reach a possible innovative outcome that is user-friendly and leads to ease in life. The engineers visualize certain opportunities in uncertainties and create implementable, innovative change solutions(Puente-Díaz, 2016).

In harmony with social cognitive theory, Hi-tech Engineers realize the matching of self-competence with innovative result expectations to act with a shared commitment to knowledge creation wilfully. To persist with a raised level of self-efficacy, they set ideal standards in continuously striving to identify problem opportunities and jointly stimulating participative innovative behavior in a metamorphic way of life (Jiang & Chen, 2018; Djourova et al., 2020).

To unveil the relationship between transformational power and innovative work behavior, the study developed a hypothesis that individuals with high, positive creative self-efficacy will contribute toward better innovative work behavior. In location-based software services, innovative work behavior is dependent on solving user problems. Hi-Tech intrapreneurs possessing a high creative self-efficacy and greater self-confidence are always positive towards future possibilities and hence take considerable risks and endorsements for implementing possible ideas.

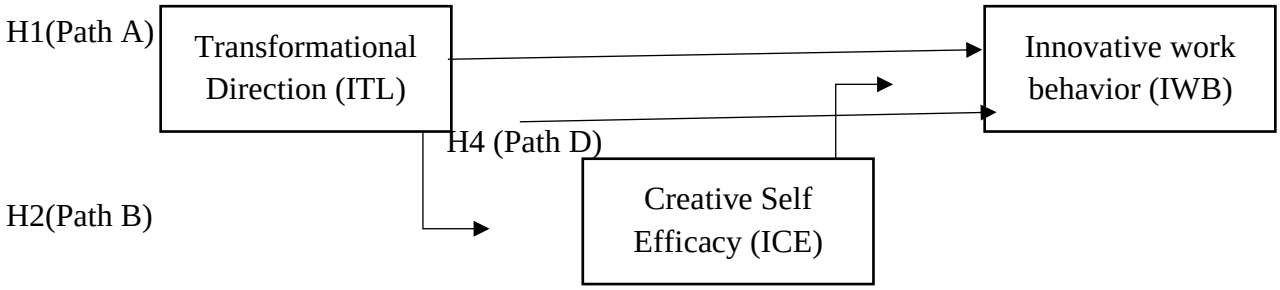
Hypothesis 3: To weigh the direct positive impact of Hi-tech Intrapreneurs' perception of Creative Self-Efficacy (ICE) on innovative work behavior (IWB)

Hypothesis 4: To weigh the step-wise impact of Intrapreneurs' Transformation Leadership Direction (ITL) and Creative Self-Efficacy (ICE) on Innovative work behavior (IWB), with creative self-efficacy having effectuating influence between ITL and IWB.

4. Main Research Methodology

This research examines the inter-relationship between transformational leadership, creative self-efficacy, and innovative work behavior in Hi-tech Engineers working on location-based services project organizations across India (Refer to Figure 1)

Figure 1: Test Model



Source: Author's Work

4.1 *Sample Portrayal and Collection*

The random working sample of 260 Hi-Tech intrapreneurs for research purposes was taken from location-based software (LBS) service companies based in Noida, Bangalore, Hyderabad, Delhi, and Gurgaon. A 40-behavioral statement questionnaire web-link was shared with Hi-Tech intrapreneurs during the year 2020-2021 to detect their perception of transformational direction, creative self-efficacy, and innovative work behavior from an organizational standpoint. 245 engineers working in software companies responded. The response of 232 engineers was spruced up (outliers removed) and normalized for the study.

4.2 *Research Measures*

4.2.1 Intrapreneur's Transformational Leadership Direction (ITL)

Transformational Leadership Directionwas appraised with a 20-behavioral statement scale developed by Conger & Kanungo, (1987). All hi-tech participants rated their actual beliefs on a 5-point Likert-scale (1 strongly disagree to 5 strongly agree). This scale's Cronbach alpha value is 0.874.

4.2.2 Creative Self-Efficacy (ICE)

Creative self-efficacy was reviewed on an 11-behavioral statement scale designed by Maciej Karwowski (2011). All hi-tech participants rated their actual extent of beliefs on a 5-point Likert- scale (1 being no to 5 definitely yes). This scale's Cronbach alpha value is 0.886.

4.2.3 Innovative work behavior (IWB)

Innovative behavior was assessed with a 9-behavioral statement scale designed by Janssen (2000, 2003). The scale includes a composition of three sub-scales (innovative ideas generating, magnification, and realizing). All hi-tech participants rated their actual beliefs on a seven-point Likert scale ranging from 1- strongly disagree and 7- strongly agree. This scale's Cronbach's alpha value is 0.962.

4.2.4 Control Variables

The qualification, service length, and work roles may have striking implications on innovative work behavior Previous researches provide that these are critical in improving the ideation process, creative development behaviors, and performance of individuals.

5. Data Analysis

Regression analysis was put together in SPSS (Statistical Intelligence Software) version 21 to decipher the extension of the interrelationships between the variables.

The Demographic specifications of Hi-Tech Engineers included core variables like gender, age, qualification, service length, work roles, nature of Location-Based Service Organization, and service location of the current organization. Gender was distributed at two levels Age, service length, and service location were distributed into five levels while qualification and nature of LBS organization were distributed into four levels, and work roles at six levels.

5.1 Demographic Specifications

The main specifications in demographic data shared (N =232, Males=73.3% Females= 26.7%). Female engineer Hi-Tech intrapreneurs are underrepresented in the study sample across 5 regions. The majority (77.2%) were graduate engineers and the rest were postgraduates. The majority (91.4%) of respondents were 20-43yrs of age. 124(53.4%) engineers were in routine software engineer work roles, rest of

108(46.5%) were above staff engineer roles. 62.9% of respondents belonged to Maps and Navigation and Information Services while the rest 37,1% belonged to application and tracking services.

The data from Delhi NCR-Noida-Gurgaon-Delhi (56.2%), was more than Bangalore (29.3%), and Hyderabad (14.7%) (Refer to Table 1).

Table 1Demographic Specifications

Group No.	Main Considerations	Selected Groups	Response Count	Valid Count Percentage (%)
1	Gender	Male	170	73.3%
		Female	62	26.7%
2	Age Group	20-27	97	41.8%
		28-35	80	34.5%
		36-43	35	15.1%
		44-51	10	4.3%
		52+	10	4.3%
3	Qualification	B.E/BTECH	115	49.6%
		BSc Computer Science/ BCA	64	27.6%
		MSc Computer Science/MCA	3	1.3%
		M.E/MTECH	50	21.6%
4	Service length	1-5	94	40.5%
		6-10	77	33.2%
		11-15	47	20.3%
		16-20	7	3%
		21-25	7	3%
4	Work Roles	Software Engineer	58	25%
		Senior Software Engineer	33	14.2%
		Staff Engineer	33	14.2%
		Principal Engineer	53	22.8%
		Distinguished Engineer	22	9.5%
		Chief Architect	33	14.2%
5	Nature of LBS	Tracking Services	38	16.4%
		Maps and Navigation	90	38.8%
		Information Services	56	24.1%
		Application	48	20.7%
6	Service Location	Gurgaon	39	16.8%
		Noida	72	31%
		Delhi	19	8.2%
		Bangalore	68	29.3%
		Hyderabad	34	14.7%

Source: Author's Work

5.2 ***Value of mean ranks, reliability, and correlations of Intrapreneurs' Transformation Leadership Direction (ITL) Creative Self-Efficacy (ICE), and Innovative work behavior (IWB)***

Table 2 depicted that both ITL and ICE are positively(favorably) and significantly related to innovative work behavior. All the cronbach values are higher than 0.70. Hence all the scales have reliability. Age and qualification appear to be positively correlated with work roles. Service length has a positively high-rising correlation with Age and Work Role. ITL has a visible positive correlation with age, work role, and service length(Refer to Table 2). Creative self-efficacy is visibly negatively correlated with qualification, but positively with ITL.

Table 2: Mean, Standard Deviation, Reliability and Bivariate Correlations

Variables	Mean	S. D	C.A	Age	Qualification	Work Role	Service Length	ITL	ICE	IWB
Age	1.948	1.0637		1						
Qualification	1.806	0.8883		.118	1					
Designated Work Role	3.203	1.7327		.445**	.239**	1				
Service Length	1.948	1.0008		.941**	.101	.433**	1			
Intrapreneurs Transformation Leadership (ITL)	3.721	.5856	0.87	.240**	.031	.171**	.224**	1		
Creative Self Efficacy (ICE)	3.426	.4673	0.89	.117	-.009	.161*	.130*	.391**	1	
Innovative Work Behavior (IWB)	5.683	1.0776	0.96	.095	-.010	.076	.090	.450**	.541**	1

**. Correlation is Notable at the 0.01 level (2-tailed).
*. Correlation is Notable at the 0.05 level (2-tailed). C.A(Cron Bach Alpha)

Source: Author's Work

5.3 The interdependent effects of Hi-tech Intrapreneurs' perception of Intrapreneurs' Transformation Direction Leadership (ITL), Creative Self-Efficacy (ICE), and Innovative work behavior (IWB) and Hi-tech Intrapreneurs' perception of ITL on Innovative work behavior with creative self- efficacy having mediating effect between ITL and IWB.

Simple linear regression study analysis helped in assessing the hypothesis.

H1: To look at the direct, positive effect of Hi-tech intrapreneurs' perceptual understanding of Intrapreneurs' Transformation Direction Leadership (ITL) on Innovative work behavior (IWB)

A simple linear regression was formulated to predict Innovative work behavior (IWB) based on ITL. A significant regression equation was originated $F(1,230)=58.366$, p-value <0.05) with an R Square=0.202. Intrapreneur's predicted Innovative work behavior is 2.603+0.828(ITL) units when ITL is correlated with IWB. Intrapreneur's IWB escalated 0.828 times for every unit increase of ITL. This showed a positive effect of ITL on IWB.

H2: To know the direct, positive impact of Hi-tech Intrapreneurs' perception of Intrapreneurs' Transformation Direction Leadership (ITL) on Creative Self-Efficacy (ICE)

A simple linear regression was formulated to predict Creative Self-Efficacy (ICE) based on ITL. A significant regression equation was originated F(1, 230)=41.613, p-value <0.05) with an R Square=0.153. Intrapreneur's predicted Creative Self-Efficacy (ICE) is 2.264+0.312(ITL) units when ITL is correlated with ICE. Intrapreneur's ICE escalated0.312 times for every unit shoot-up of ITL. This showed a positive effect of ITL on ICE.

H3: To look at the direct, positive impact of Hi-tech Intrapreneurs' perceptual understanding of Creative Self-Efficacy (ICE) on Innovative work behavior (IWB)

A simple linear regression was formulated to predict Innovative work behavior (IWB) based on ICE. A significant regression equation was found F (1,230) =94.932, p-value <0.05) with an R Square=0.292. Intrapreneur's predicted Innovative work behavior (IWB) is 1.413+1.246(ICE) units when ICE is correlated with IWB. Intrapreneur's IWB escalated 1.246 times for every unit shoot-up of ICE. This showed a positive effect of ICE on IWB.

H4: To weigh the stepwise combined impact of Intrapreneurs' Transformation Leadership Direction (ITL) and Creative Self-Efficacy (ICE) on Innovative work behavior (IWB), with creative self-efficacy having effectuating influence between ITL and IWB

A simple linear regression was formulated to predict Innovative work behavior (IWB) based on the combined effect of ITL and ICE. A significant regression equation was found F (1, 230) =58.366, p-value <0.05) with an R Square=0.202 and F (1, 230) =64.192, p-value <0.05) with an R Square=0.359. Intrapreneur's predicted Innovative work behavior (IWB) is 2.603+0.828(ITL) units when ITL is correlated with IWB and Intrapreneur's predicted Innovative work behavior (IWB) is 0.356+0.518(ITL)+0.992(ICE), where for in step one every unit shoot-up in ITL-Transformational direction, a 0.518 improvement in innovative work behavior is apparent, all the rest variables remaining constant. In step 2, ICE (creative self-efficacy) was associated with IWB (innovative work behavior) (B= 0.992, p-value <0.05). For every bit of improvement in creative self-efficacy, there is a 0.992 rise in innovative work behavior.

The coefficient table portrays that the p-values of ITL and ICE are statistically significant as they show less than an alpha value of 0.05. (Refer to Table 3). This means that Hi-tech intrapreneurs will be able to hand-grip difficult, complex situations with confidence and resilience while showcasing innovative work behavior. They will be able to realize that complexity varies based on context, environment, and interactions. This requires intellectually empowered inclusiveleadership to drive critical thinking, ambidextrous learning skills, and collaboration (Liang, 2013; Mansoor et al., 2021).

Table 3 Coefficients

Details of Co-efficients[a]							
	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1 (Constant)	2.603	.408		6.379	.000		
ITL	.828	.108	.450	7.640	.000	1.000	1.000

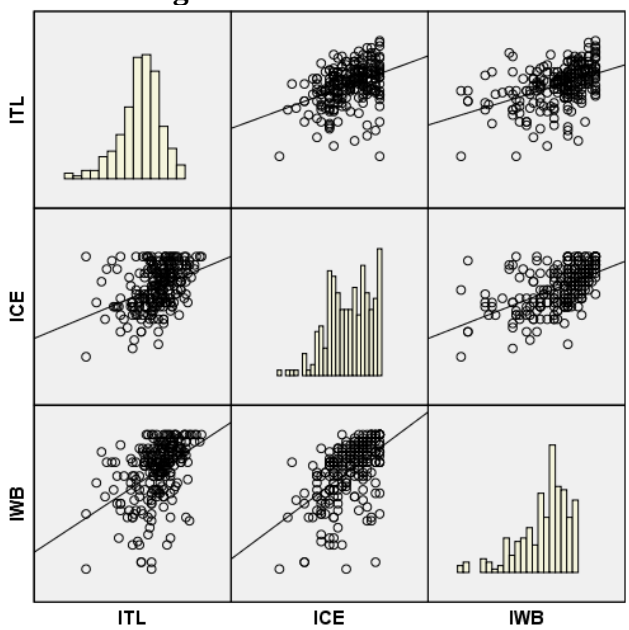
a. Dependent Variable: IWB							
		B	Std. Error	Beta		Tolerance	VIF
2	(Constant)	2.264	.182		12.415	.000		
	ITL	.312	.048	.391	6.451	.000	1.000	1.000
a. Dependent Variable: ICE							
3	(Constant)	1.413	.442		3.195	.002		
	ICE	1.246	.128	.541	9.743	.000	1.000	1.000
a. Dependent Variable: IWB							
		B	Std. Error	Beta		Tolerance	VIF
4	(Constant)	.356	.474		.753	.453		
	ITL	.518	.106	.281	4.896	.000	.847	1.181
	ICE	.992	.133	.430	7.487	.000	.847	1.181
a. Dependent Variable: IWB							

Source: Author's Work

Hence, the study positively weighs the hypothesis of the impact of Intrapreneurs' Transformation Direction (ITL) and Creative Self-Efficacy (ICE) on Innovative work behavior (IWB). The VIF (Variance Inflation Factor) values of all variables lie between 1 and greater than 1 which presents that multicollinearity is not present and the interdependent variables seem to be strongly intercorrelated and indistinct from each other.

Further, Figure 2 shows the scatter plot matrix positive correlation effect between the different interdependent factors. Hence, intrapreneurs' transformational direction Leadership (ITL) and ICE (creative self-efficacy) can be reflected to reliably foretell the dependent variable- innovative work behavior (Refer to Figure 2).

Figure 2 Scatter Plot Matrix



Source: Author's Work

Table 4 grants that ICE (creative self-efficacy) was effectuated between ITL and IWB (innovative work behavior) (B= 0.430, p-value <0.05). Hence, for every unit shoot-up in creative self-efficacy, there is

0.430 mediation between ICE (creative self-efficacy) and IWB (innovative work behavior)(Refer to Table 4).

Table 4 Effectual Mediation

Details of Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	ICE	.430[b]	7.49	.000	.443	.847	1.181	.847

a. Dependent Variable: IWB
b. Predictors known in the Model: (Constant), ITL

Source: Author's Work

The summary of hypothesis substantiation is constituted in Table 5 which depicts the R-square value, that depicts the magnitude of alteration in the dependent variable innovative work behavior (IWB) as speculated from the independent variables (Transformational Direction Leadership (ITL) alone and with a combination of (Transformational Direction Leadership (ITL) and Creative Self Efficacy (ICE). In model 1, R Square= 0.202, Adjusted R Square=.199. The linear regression explains 19.9%. variance in IWB (innovative work behavior) data predicted from ITL.

Table 5 Summary of Hypothesis Tested Outcome

Model	**Regression Direction**	**R Square**	**p-value**	**Hypothesis Substantiation**
1	Path A ITL →IWB Dependent Variable: IWB Predictors: (Constant), ITL	0.202	> 0.05	H1 Substantiated
2	Path B ITL →ICE	0.153	> 0.05	H2 Substantiated
3	Path C ICE → IWB	0.292	> 0.05	H3 Substantiated
4	Path D ITL +ICE→IWB Stepwise Dependent Variable: IWB Predictors: (Constant), ITL, ICE	0.359	> 0.05	H4 Substantiated

Source: Author's Work

In model 4, R Square = 0.359 along with Adjusted R Square = 0.354. It explains 35.9%. variance in innovativeness at work data predicted from ITL and ICE.
Thus, it is argued that to motivate better performance in Hi-tech engineers in location-based software services, it is important that the engineers resolutely participate in problematic, bull-headed goals by reconstructing direction toward creative pursuits. They must gather continuous opportunities, technological support, resources, and training for advancements in confidence levels to implement effective and efficient user applications.

6. Findings and Deliberations

1. All the hypothesis predictions have come true.
2. The transformational direction of leadership was established to have a direct, affirmative(favorable) effect on innovative work behavior. This consistently shows that Hi-tech intrapreneurs with transformational engagement provide individualized stimulation and attention to innovative work behavior. They demonstrate clear action planning on unique social missions(Milne-Ives et al., 2023)
3. In location-based software services organizations, peer groups collectively recognize the strengths, capabilities, and capacities of individuals within organizations and invest in high-performance practices to make mission innovation worthwhile, interesting, achievable, and distinctive. The discussion elaborates that Hi-tech intrapreneurs with a raised intensity of creative self-efficacy show better innovative work behavior. Hence, they must continue to support economic expansion by identifying areas of change that can improve economic value of development.
4. It is argued that organizations must understand the diversity in creative self-efficacy of individuals on innovative actions through performance reports, ideation exercise reports, project feedback, and user survey documentation(Yang et al., 2022). These reports are based on the expectancy theory of motivation and social cognitive theory as they align individual innovation behavior with challenging social context.
5. It is reasoned that organizations' human resources and operation leaders must work strategically on matching talent projects with new job designs and redesigning policies/practices to hire right with future innovation in mind.
6. It is asserted that this research can support high-performance business practices according to emerging, technological developments and changing environments.
7. It is contended that continuous short-term, contractual work projects must be assigned to Hi-tech engineers to help them build varied capacities.
8. The building of dynamic creative capacities through varied thought exchange processes must be stimulated proactively at the meso, macro, and micro levels of the organization to achieve business excellence (Kumar Pradhan et al., 2021; Bilal et al., 2021).

7. Practical Scope and Implications

1. The study advances the future scope for visualizing possible strategic opportunities for engineer intrapreneurs involved in service innovations in location-based software services. It investigates the creative self-efficacy of Hi-Tech intrapreneurs for an inter-medial effect between self-leadership, transformational direction, and innovative work behavior.
2. The sample data is limited to Indian engineers working in certain, definite geographical regions of India only, thus restricting the generalizability of the results. These results could be validated in several other geographic settings in India.
3. The sample size of the data is too compact to form more optimistic conclusive evidence related to other contributory aspects concerning location-based software services like organizational routine practices, knowledge competencies, information exchange, and corresponding capabilities for increasing organizational intelligence to produce long-lasting sustainable excellence. With emerging technologies, engineers need to gain self-confidence in newer approaches (Listyanti&Hendarman, 2023).
4. It is realized that more interceding variables like commitment, user empathy, scenario planning, problem-solving, and creative approaches for better product innovations can be examinedto prevent possible execution errors or failures for sustainable excellence (Le & Lei, 2019). It is

suggested that network building within diverse groups might improve knowledge-sharing processes for creating applications that provide a long-term benefit (Anwar et al., 2019). There existdiscernible disparities in the perspectives of the immense potential and concepts associated with various applications.

5. It is advisable to execute a transdisciplinary observation of environmental deficiencies to create novel business model innovations with blended value propositions to create a sustainable business impact (Vo-Thanh et al., 2021)
6. It is professed that all concerns related to business, technical strategy decisions for enhancing social responsibility, worthiness, and perspectives to foster sustained business competitive excellence may be analyzed (Li et al., 2022; Listyanti&Hendarman, 2023).
7. It is asserted that leadership transforms organizations. Hence, project management capabilities, proactive leadership mentoring, and talent may be prudently enhanced to ensure sustainability (Bilal et al., 2021; Deng et al., 2023).
8. It is recommended that the determinants of influential innovation successes in varied sizes of firms in other countries be explored periodically in particular terms of purposiveness, risk and achievement to assess the inter-dependency of transformational direction, creative self-efficacy improvement in different contexts, and innovative outcomes (Bilal et al., 2021; Klimczak et al., 2023).
9. Any new practices to upgrade or co-develop resources, capabilities, and transformational leadership that help shape creative self-efficacy and innovation disposition may be recorded to evaluate differences in contributions toward well-being (Maria Stock et al., 2017; Fleck & Asmuth, 2021)
10. Academically the researchers can use insights to design interventions, training programs, and organizational practices that foster creativity and innovation, enhancing performance and competitiveness in the mobile application services industry (Ehrenhard et al., 2017; Draghici et al., 2021). They can adopt agile methodologies for application development and tailor designs as per the organization's context and industry trends (Isensee et al., 2022; Mokline, 2023; Tancredi et al., 2024).

8. Conclusion

The regression analysis of the data responses of 232 Hi-tech engineer intrapreneurs significantly depicts a direct, favorable relationship with predictor variables (transformational leadership and creative self-efficacy) on the dependent variable (innovative work behavior) of Hi-Tech intrapreneur engineers in location-based software services in India. Though Hi-tech Intrapreneurs' transformation direction is positively needed for innovative work behavior, the constant refinements in creative self-efficacy can facilitate better, sharp-cut efficiency and motivation for future creative endeavors. The study demonstrated that engineer intrapreneurs can facilitate innovative work behavior through collaborative self-efforts, consistent situational evaluation, and ideation for suitable user-benefit initiatives (Elsbach, 2020). Additionally, the study synthesizes the relational motivation of relevant theories in the constant building of creative self-efficacy of Hi-tech intrapreneurs in technological companies. Hence, it is asserted that creative self-efficacy can have a forceful impact on translating transformational direction leadership into innovation performance and building business excellence(Ehrenhard et al., 2017; Le & Lei, 2019). It can create an open atmosphere for discussion, decisions, work development, and idea progression.

9. Conflict of Interest Statement

The involved authors have set out no probable conflict of interest.

10. Data Availability

The data procured for the study is available on call to the corresponding author but restricted for public sharing due to confidentiality reasons.

References

1 Agarwal, U. (2014). Examining the impact of social exchange relationships on innovative work behaviour: Role of work engagement. *Team Performance Management*, *20*(3/4), 102–120. https://doi.org/10.1108/tpm-01-2013-0004
2 Abbas, W., & Wu, W. (2019). The moderating role of intrapreneurial personality in relation between leader humility and innovative behavior. *Human Systems Management*, *38*(4), 329–337. https://doi.org/10.3233/hsm-190548
3 Afshan, G., Serrano-Archimi, C., Landry, G., & Javed, U. (2022). Am I worthy to my leader? Role of leader-based self-esteem and social comparison in the LMX-performance relationship. *Human Systems Management*, *41*(3), 341–356. https://doi.org/10.3233/hsm-211226
4 Ahmed, T., Khan, M. S., Thitivesa, D., Siraphatthada, Y., &Phumdara, T. (2020). Impact of employees engagement and knowledge sharing on organizational performance: Study of HR challenges in COVID-19 pandemic. *Human Systems Management*, *39*(4), 589–601. https://doi.org/10.3233/hsm-201052
5 Alegbeleye, I. D., & Kaufman, E. K. (2022). How team members' transformational leadership and effective followership work during team interactions. *Journal of Leadership Studies*. https://doi.org/10.1002/jls.21813
6 AlEssa, H. S., &Durugbo, C. M. (2022). Systematic review of innovative work behavior concepts and contributions. *Management Review Quarterly*, *72*(4), 1171–1208. https://doi.org/10.1007/s11301-021-00224-x
7 Anwar, R., Rehman, M., Wang, K. S., &Hashmani, M. A. (2019). Systematic literature review of knowledge sharing barriers and facilitators in global software development organizations using concept maps. *IEEE Access: Practical Innovations, Open Solutions*, *7*, 24231–24247. https://doi.org/10.1109/access.2019.2895690
8 Ashfaq, F., Abid, G., Ilyas, S., & Hasnain, A. (2021). How transformational leadership influences innovative behavior: the mediating role of psychological empowerment and proactivity of employees. *Independent Journal of Management & Production*, *12*(1), 241–264. https://doi.org/10.14807/ijmp.v12i1.1162
9 Bagateeva, A. O., &Akhmetzyanova, G. N. (2020). Model of developing the availability of engineers to innovative activity for high-tech industry. *International Journal of Engineering Research and Technology*, *13*(11), 3732. https://doi.org/10.37624/ijert/13.11.2020.3732-3735
10 Bai, Y., Lin, L., & Li, P. P. (2016). How to enable employee creativity in a team context: A cross-level mediating process of transformational leadership. *Journal of Business Research*, *69*(9), 3240–3250. https://doi.org/10.1016/j.jbusres.2016.02.025
11 Beaty, R. E., Zeitlen, D. C., Baker, B. S., &Kenett, Y. N. (2021). Forward flow and creative thought: Assessing associative cognition and its role in divergent thinking. *Thinking Skills and Creativity*, *41*(100859), 100859. https://doi.org/10.1016/j.tsc.2021.100859
12 Bilal, M., Chaudhry, S., Amber, H., Shahid, M., Aslam, S., & Shahzad, K. (2021). Entrepreneurial leadership and employees' proactive behaviour: Fortifying self determination theory. *Journal of Open Innovation: Technology, Market, and Complexity*, *7*(3), 176. https://doi.org/10.3390/joitmc7030176
13 Birasnav, M. (2014). Knowledge management and organizational performance in the service industry: The role of transformational leadership beyond the effects of transactional

leadership. *Journal of Business Research*, *67*(8), 1622–1629. https://doi.org/10.1016/j.jbusres.2013.09.006

14 Cavazotte, F., Moreno, V., & Bernardo, J. (2013). Transformational leaders and work performance: the mediating roles of identification and self-efficacy. *BAR - Brazilian Administration Review*, *10*(4), 490–512. https://doi.org/10.1590/s1807-76922013000400007

15 Christensen-Salem, A., Walumbwa, F. O., Hsu, C. I.-C., Misati, E., Babalola, M. T., & Kim, K. (2021). Unmasking the creative self-efficacy–creative performance relationship: the roles of thriving at work, perceived work significance, and task interdependence. *The International Journal of Human Resource Management*, *32*(22), 4820–4846. https://doi.org/10.1080/09585192.2019.1710721

16 Chung, S., Lee, K. Y., & Choi, J. (2015). Exploring digital creativity in the workspace: The role of enterprise mobile applications on perceived job performance and creativity. *Computers in Human Behavior*, *42*, 93–109. https://doi.org/10.1016/j.chb.2014.03.055

17 Dashuai, R., & Bin, Z. (2020). How does paradoxical leadership affect innovation in teams: An integrated multilevel dual process model. *Human Systems Management*, *39*(1), 11–26. https://doi.org/10.3233/hsm-190593

18 Deng, C., Gulseren, D., Isola, C., Grocutt, K., & Turner, N. (2023). Transformational leadership effectiveness: an evidence-based primer. *Human Resource Development International*, *26*(5), 627–641. https://doi.org/10.1080/13678868.2022.2135938

19 Denning, S. (2022). Leadership transformation reading list: insider guides to customer-centricity, Agile management and visionary innovation. *Strategy and Leadership*, *50*(1), 9–11. https://doi.org/10.1108/sl-11-2021-0121

20 Djourova, N. P., Rodríguez Molina, I., TorderaSantamatilde, N., & Abate, G. (2020). Self-efficacy and resilience: Mediating mechanisms in the relationship between the transformational leadership dimensions and well-being. *Journal of Leadership & Organizational Studies*, *27*(3), 256–270. https://doi.org/10.1177/1548051819849002

21 Dong, Y., Bartol, K. M., Zhang, Z.-X., & Li, C. (2017). Enhancing employee creativity via individual skill development and team knowledge sharing: Influences of dual-focused transformational leadership: Influences of Dual-Focused TFL on Creativity. *Journal of Organizational Behavior*, *38*(3), 439–458. https://doi.org/10.1002/job.2134

22 Draghici, A., Fistis, G., Carutasu, N. L., &Carutasu, G. (2021). Tailoring training programs for sustainability management based on the training needs assessment. *Human Systems Management*, *40*(4), 549–566. https://doi.org/10.3233/hsm-201012

23 Ehrenhard, M., Wijnhoven, F., van den Broek, T., & Zinck Stagno, M. (2017). Unlocking how start-ups create business value with mobile applications: Development of an App-enabled Business Innovation Cycle. *Technological Forecasting and Social Change*, *115*, 26–36. https://doi.org/10.1016/j.techfore.2016.09.011

24 Ekuma, K. J. (2014). Transformational Leadership: Implications for organizational competitive advantage. *International Journal of Human Resource Studies*, *4*(1), 276. https://doi.org/10.5296/ijhrs.v4i1.5710

25 Elkington, R., & Booysen, L. (2015). Innovative leadership as enabling function within organizations: A complex adaptive system approach. *Journal of Leadership Studies*, *9*(3), 78–80. https://doi.org/10.1002/jls.21414

26 Elsbach, K. (2020). Giving ideas that won't get rejected: how personal identity relates to idea-taking in creative collaboration. *Innovation (North Sydney, N.S.W.)*, *22*(1), 12–38. https://doi.org/10.1080/14479338.2019.1626239

27 Escribá-Carda, N., Balbastre-Benavent, F., & Teresa Canet-Giner, M. (2017). Employees' perceptions of high-performance work systems and innovative behaviour: The role of exploratory learning. *European Management Journal*, *35*(2), 273–281. https://doi.org/10.1016/j.emj.2016.11.002
28 Farmer, S. M., & Tierney, P. (2017). Considering creative self-efficacy: Its current state and ideas for future inquiry. In *The Creative Self* (pp. 23–47). Elsevier.
29 Fleck, E., & Asmuth, J. (2021). Building capacity for creativity: Rediscovering the inner "superhero" as a mechanism for developing a creative mindset for entrepreneurial problem-solving. *Entrepreneurship Education and Pedagogy*, *4*(1), 82–95. https://doi.org/10.1177/2515127420912503
30 Ghosh, S., Muduli, A., & Pingle, S. (2021). Role of e-learning technology and culture on learning agility: An empirical evidence. *Human Systems Management*, *40*(2), 235–248. https://doi.org/10.3233/hsm-201028
31 Ghosh, V., Sengupta, T., Narayanamurthy, G., & Ishizaka, A. (2023). Examining collective creative self-efficacy as a competency indicator of group talent management: a study of SMEs in an emerging economy. *The International Journal of Human Resource Management*, *34*(6), 1182–1212. https://doi.org/10.1080/09585192.2021.1988679
32 Gong, Y., Zhou, J., & Chang, S. (2013). Core knowledge employee creativity and firm performance: The moderating role of riskiness orientation, firm size, and realized absorptive capacity: Personnel psychology. *Personnel Psychology*, *66*(2), 443–482. https://doi.org/10.1111/peps.12024
33 Gonzalez, R. V. D. (2022). Innovative performance of project teams: the role of organizational structure and knowledge-based dynamic capability. *Journal of Knowledge Management*, *26*(5), 1164–1186. https://doi.org/10.1108/jkm-03-2021-0259
34 Hasanakbari, M., Younesi, G., &Zohoori, M. (2017). Relationship between Transformational Leadership and Innovation. *International Journal of Science and Engineering Applications*, *6*(8), 194–200. https://doi.org/10.7753/ijsea0608.1002
35 Henker, N., Sonnentag, S., & Unger, D. (2015). Transformational leadership and employee creativity: The mediating role of promotion focus and creative process engagement. *Journal of Business and Psychology*, *30*(2), 235–247. https://doi.org/10.1007/s10869-014-9348-7
36 Isensee, C., Teuteberg, F., & Griese, K. M. (2022). Exploring the use of mobile apps for fostering sustainability-oriented corporate culture: A qualitative analysis. *Sustainability*, *14*(12), 7380. https://doi.org/10.3390/su14127380
37 Istiqomah, S., & Wibowo, A. (2017). The influence of learning orientation and leader heuristic transfer on employee creativity with creative self-efficacy as the mediating variable. *International Journal of Learning and Intellectual Capital*, *14*(2), 192. https://doi.org/10.1504/ijlic.2017.084080
38 Jabbar, B. F. (2022). Leadership style: Analyzing the influence of transformational leadership on organizational innovation. *Journal of Humanities and Education Development*, *4*(3), 172–184. https://doi.org/10.22161/jhed.4.3.21
39 Jena, L. K., & Memon, N. Z. (2018). Does workplace flexibility usher innovation? A moderated mediation model on the enablers of innovative workplace behavior. *Global Journal of Flexible Systems Management*, *19*(1), 5–17. https://doi.org/10.1007/s40171-017-0170-8
40 Jiang, Y., & Chen, C. C. (2018). Integrating knowledge activities for team innovation: Effects of transformational leadership. *Journal of Management*, *44*(5), 1819–1847. https://doi.org/10.1177/0149206316628641
41 Khan, M. S., Saengon, P., Charoenpoom, S., Soonthornpipit, H., &Chongcharoen, D. (2021). The impact of organizational learning culture, workforce diversity and knowledge management on

innovation and organization performance: A structural equation modeling approach. *Human Systems Management*, *40*(1), 103–115. https://doi.org/10.3233/hsm-200984

42 Kim, B.-J., Oh, S., Kim, T.-Y., Park, S., & Kim, T.-H. (2022). Dual-focused transformational leadership and individual creativity: moderating effects of team scout activity and individual perspective-taking. *The International Journal of Human Resource Management*, *33*(15), 3085–3112. https://doi.org/10.1080/09585192.2021.1900321

43 Klaic, A., Burtscher, M. J., & Jonas, K. (2020). Fostering team innovation and learning by means of team-centric transformational leadership: The role of teamwork quality. *Journal of Occupational and Organizational Psychology*, *93*(4), 942–966. https://doi.org/10.1111/joop.12316

44 Klimczak, K. M., Machowiak, W., Shachmurove, Y., & Staniec, I. (2023). Perceived collaborative risk in small and medium technology enterprises. *Journal of Small Business Management*, *61*(2), 540–559. https://doi.org/10.1080/00472778.2020.1799305

45 Kock, A., Heising, W., &Gemünden, H. G. (2015). How ideation portfolio management influences front-end success: Ideation portfolio management. *The Journal of Product Innovation Management*, *32*(4), 539–555. https://doi.org/10.1111/jpim.12217

46 Kumar Pradhan, R., Prasad Panigrahy, N., & Kesari Jena, L. (2021). Self-efficacy and workplace well-being: Understanding the role of resilience in manufacturing organizations. *Business Perspectives and Research*, *9*(1), 62–76. https://doi.org/10.1177/2278533720923484

47 Laglera, J.-L. M., Collado, J. C., & de Oca, J.-A. M. M. (2013). Effects of leadership on engineers: A structural equation model. *Engineering Management Journal*, *25*(4), 7–16. https://doi.org/10.1080/10429247.2013.11431991

48 Le, P. B., & Lei, H. (2019). Determinants of innovation capability: the roles of transformational leadership, knowledge sharing and perceived organizational support. *Journal of Knowledge Management*, *23*(3), 527–547. https://doi.org/10.1108/jkm-09-2018-0568

49 Leandro, D. J. D. T., & Umana, D. M. V. (2021). The impact of transformational leadership on the self-creative efficacy and intrinsic motivation in FINTECH organizations. *International Journal of Business and Management Research*, *9*(4), 448–456. https://doi.org/10.37391/ijbmr.090408

50 Li, V., Mitchell, R., & Boyle, B. (2016). The divergent effects of transformational leadership on individual and team innovation. *Group & Organization Management*, *41*(1), 66–97. https://doi.org/10.1177/1059601115573792

51 Li, X., Qiang, Q., Huang, L., & Huang, C. (2022). How knowledge sharing affects business model innovation: An empirical study from the perspective of ambidextrous organizational learning. *Sustainability*, *14*(10), 6157. https://doi.org/10.3390/su14106157

52 Liang, T. Y. (2013). Edge of emergence, relativistic complexity, and the new leadership. *Human Systems Management*, *32*(1), 3–15. https://doi.org/10.3233/hsm-130781

53 Lin, R.-J., Che, R.-H., & Ting, C.-Y. (2012). Turning knowledge management into innovation in the high-tech industry. *Industrial Management + Data Systems*, *112*(1), 42–63. https://doi.org/10.1108/02635571211193635

54 Listyanti, I. N., &Hendarman, A. F. (2023). Knowledge sharing behavior, team climate, and organizational learning culture as predictors of innovative work behavior. *International Journal of Management, Entrepreneurship, Social Science and Humanities*, *7*(1), 34–49. https://doi.org/10.31098/ijmesh.v7i1.1564

55 Magnanini, S., Trabucchi, D., &Verganti, R. (2023). Convergence in innovation: the perception of synthesis in articulating a new strategic vision. *Innovation (North Sydney, N.S.W.)*, *25*(3), 305–327. https://doi.org/10.1080/14479338.2021.2012478

56 Mansoor, A., Farrukh, M., Wu, Y., & Abdul Wahab, S. (2021). Does inclusive leadership incite innovative work behavior? *Human Systems Management*, *40*(1), 93–102. https://doi.org/10.3233/hsm-200972
57 Mansouri, N. (2015). Relationship between transformational leadership, Innovation, Learning and Growth, and Internal Process: Government Organizations. *International Journal of Science and Engineering Applications*, *4*(5), 282–286. https://doi.org/10.7753/ijsea0405.1010
58 Maria Stock, R., Zacharias, N. A., &Schnellbaecher, A. (2017). How do strategy and leadership styles jointly affect co-development and its innovation outcomes?: Senior management levers and co-development. *The Journal of Product Innovation Management*, *34*(2), 201–222. https://doi.org/10.1111/jpim.12332
59 Mehmood, M. S., Jian, Z., & Gilal, F. G. (2020). Entrepreneurial leadership and employee innovative behavior: Intervening role of creative self-efficacy. *Human Systems Management*, *39*(3), 367–379. https://doi.org/10.3233/hsm-190783
60 Memon, A., An, Z. Y., Memon, M. Q., & Yan, B. (2019). IT capability, capital availability and firm performance. *Human Systems Management*, *38*(3), 221–233. https://doi.org/10.3233/hsm-180463
61 Michael, L. A. H., Hou, S.-T., & Fan, H.-L. (2011). Creative self-efficacy and innovative behavior in a service setting: Optimism as a moderator. *The Journal of Creative Behavior*, *45*(4), 258–272. https://doi.org/10.1002/j.2162-6057.2011.tb01430.x
62 Milne-Ives, M., Homer, S. R., Andrade, J., & Meinert, E. (2023). Potential associations between behavior change techniques and engagement with mobile health apps: a systematic review. *Frontiers in Psychology*, *14*, 1227443. https://doi.org/10.3389/fpsyg.2023.1227443
63 Mokline, B. (2023). Organizational configurations in a crisis context: what archetypes in times of COVID-19 crisis? *Human Systems Management*, *42*(1), 89–104. https://doi.org/10.3233/hsm-211581
64 Mubarik, M. S., Naghavi, N., & Mahmood, R. T. (2019). Intellectual capital, competitive advantage and the ambidexterity liaison. *Human Systems Management*, *38*(3), 267–277. https://doi.org/10.3233/hsm-180409
65 Newman, A., Tse, H. H. M., Schwarz, G., & Nielsen, I. (2018). The effects of employees' creative self-efficacy on innovative behavior: The role of entrepreneurial leadership. *Journal of Business Research*, *89*, 1–9. https://doi.org/10.1016/j.jbusres.2018.04.001
66 Noor, H. M., & Dzulkifli, B. (2013). Assessing leadership practices, organizational climate and its effect towards innovative work behaviour in R&D. *International Journal of Social Science and Humanity : IJSSH*, 129–133. https://doi.org/10.7763/ijssh.2013.v3.211
67 Op den Kamp, E. M., Bakker, A. B., Tims, M., & Demerouti, E. (2020). Proactive vitality management and creative work performance: The role of self-insight and social support. *The Journal of Creative Behavior*, *54*(2), 323–336. https://doi.org/10.1002/jocb.368
68 Park, N. K., Jang, W., Thomas, E. L., & Smith, J. (2021). How to organize creative and innovative teams: Creative self-efficacy and innovative team performance. *Creativity Research Journal*, *33*(2), 168–179. https://doi.org/10.1080/10400419.2020.1842010
69 Park, S., & Cho, K. (2022). Agility and innovativeness: The serial mediating role of helping behavior and knowledge sharing and moderating role of customer orientation. *Behavioral Sciences*, *12*(8), 274. https://doi.org/10.3390/bs12080274
70 Permana, I. B. G. A., &Astiti, W. (2018). The impact of transformational leadership, learning organization and job autonomy on creative self-efficacy. In *Increasing Management Relevance and Competitiveness* (pp. 127–130). CRC Press.

71 Puente-Díaz, R. (2016). Creative self-efficacy: An exploration of its antecedents, consequences, and applied implications. *The Journal of Psychology*, *150*(2), 175–195. https://doi.org/10.1080/00223980.2015.1051498
72 Rahman Khattak, S., Saleem, Z., & Khan, H. (2017). Relationship between goal orientation and employee creativity: A mediating role of creative self-efficacy. *International Journal of Organizational Leadership*, *6*(4), 434–443. https://doi.org/10.33844/ijol.2017.60338
73 Randel, A. E., & Jaussi, K. S. (2019). Giving rise to creative leadership: Contextual enablers and redundancies. *Group & Organization Management*, *44*(2), 288–319. https://doi.org/10.1177/1059601119834089
74 Royston, R., & Reiter-Palmon, R. (2019). Creative self-efficacy as mediator between creative mindsets and creative problem-solving. *The Journal of Creative Behavior*, *53*(4), 472–481. https://doi.org/10.1002/jocb.226
75 Shahriari, M., Abzari, M., Nasr Isfahani, A., &Kianpour, M. (2017). Learning, innovation and high performance in knowledge-based firms. *Human Systems Management*, *36*(4), 285–295. https://doi.org/10.3233/hsm-171787
76 Srikanth, P. B., & Jomon, M. G. (2020). Developing managerial competencies: integrating work design characteristics and developmental challenge. *The International Journal of Human Resource Management*, *31*(22), 2808–2839. https://doi.org/10.1080/09585192.2018.1474937
77 Tancredi, C., Presta, R., & Di Lorenzo, V. (2024). Promoting sustainable behaviors through mobile apps: SBAM design guidelines. *Multimedia Tools and Applications*. https://doi.org/10.1007/s11042-024-18299-5
78 Uddin, M. A., & Raihan, T. (2020). The influence of creative self-efficacy, creative self-identity, and creative process engagement on the innovative behavior. *International Journal of Business Innovation and Research*, *1*(1), 1. https://doi.org/10.1504/ijbir.2020.10036364
79 Uphaus, P., Beringer, B., Siemens, K., Ehlers, A., & Rau, H. (2021). Location-based services – the market: success factors and emerging trends from an exploratory approach. *Journal of Location Based Services*, *15*(1), 1–26. https://doi.org/10.1080/17489725.2020.1868587
80 Vo-Thanh, T., Zaman, M., Hasan, R., Rather, R. A., Lombardi, R., & Secundo, G. (2021). How a mobile app can become a catalyst for sustainable social business: The case of Too Good To Go. *Technological Forecasting and Social Change*, *171*(120962), 120962. https://doi.org/10.1016/j.techfore.2021.120962
81 Wang, Z., Gao, M., & Panaccio, A. (2021). A self-determination approach to understanding individual values as an interaction condition on employees' innovative work behavior in the high-tech industry: Motivation, innovative work behavior, and values. *The Journal of Creative Behavior*, *55*(1), 183–198. https://doi.org/10.1002/jocb.444
82 Widmann, A., Mulder, R. H., & König, C. (2018). Team learning behaviours as predictors of innovative work behaviour – a longitudinal study. *Innovation (North Sydney, N.S.W.)*, *21*(2), 1–19. https://doi.org/10.1080/14479338.2018.1530567
83 Wyrtki, K., Röglinger, M., & Rosemann, M. (2021). Opportunity-led ideation: How to convert corporate opportunities into innovative ideas. *Creativity and Innovation Management*, *30*(3), 523–541. https://doi.org/10.1111/caim.12450
84 Yang, W., Green, A. E., Chen, Q., Kenett, Y. N., Sun, J., Wei, D., & Qiu, J. (2022). Creative problem solving in knowledge-rich contexts. *Trends in Cognitive Sciences*, *26*(10), 849–859. https://doi.org/10.1016/j.tics.2022.06.012
85 Yodchai, N., Ly, P. T. M., & Tran, L. T. T. (2022). Co-creating creative self-efficacy to build creative performance and innovation capability for business success: A meta-analysis. *Creativity Studies*, *15*(1), 74–88. https://doi.org/10.3846/cs.2022.13852

86 Zhu, Y.-Q. (2017). Why and how knowledge sharing matters for R&D engineers: Knowledge sharing for R&D engineers. *R and D Management*, *47*(2), 212–222. https://doi.org/10.1111/radm.12188

87 Zreen, A., Farrukh, M., & Kanwal, N. (2021). Do HR practices facilitate innovative work behaviour? Empirical evidence from higher education institutes. *Human Systems Management*, *40*(5), 701–710. https://doi.org/10.3233/HSM-201001