Impact of Personal and Organizational Factors on Adoption of HRM System for Sustaining Innovation- A Suggested Framework for Indian IT Industry

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Abstract: *This paper tries to isolate the factors of creativity that affect innovation in the context of IT industry in India. A systematic literature review has been carried out using PRISMA guidelines as methodological procedure. The databases like Scopus, Google Scholar and ProQuest were searched to find out pertinent literature with the inclusion criteria restricted to English-language publications that had been published in peer-reviewed journals from 2010-2022. Reports, publications written in languages other than English, and non-academic researches have all been disqualified. The terms "factors of creativity," "factors of innovation", "factors of creativity and innovation","hrm system and sustaining innovation" were used to search databases where the terms "software industry in India" OR "IT industry in India" were specifically mentioned in the abstract or title. There have been multiple stages to the literature selection process. Initially, 4385 articles were found with the search. The number of articles was lowered to 140 in the following stage, which involved eliminating the articles based on their titles. Based on the abstracts, the number is further whittled down to 41 articles. After closely examining the complete contents of each article, finally 14 papers were selected to delineate the factors. An integrated conceptual model has been developed which proposes the adoption of HRM system to foster employee innovation behavior through two-way linkages with personal and organizational factors leading to creativity and innovation. This paper provides insights to HR personnel in the Indian IT industry intending to develop an HRM system that promotes and sustains innovation.*

Keywords: *Personal factors, Organizational factors, HRM System, Innovation, IT Industry, Systematic Review of literature*

Introduction

India's IT sector has long led the way in the trend of the world's digital transformation. The GDP contribution of this industry to India grew from 1.2% in 1998 to 8% in 2021–2022. Based on NASSCOM projections, this industry is expected to reach $227 billion by 2022 and has become

well-known worldwide. As a result of the emergence of new technologies like Artificial Intelligence (AI), Blockchain, Robotics, IOT, Machine Learning, and Cloud Computing, enterprises must retrain their workforce and develop new, creative products in order to keep up with India's digital revolution. However, until the IT industry comprehends and manages the factors and processes that drive innovation, it would be challenging for them to stay innovative over time. The efficiency and worldwide standing of the IT industry, in particular, primarily depend on its highly skilled labor force (Agrawal & Thite,2003; Sharma &Nambudiri,2020). Additionally, innovation is never possible without human interaction. In fact, a successful innovation is the result of an individual employee either alone or in a group absorbing a creative concept(Cirella & SHANI, 2012) . Despite the fact that India has long been a sought-after location for multinational corporations due to its vast pool of technical workers (Amabile, 1988; Çokpekin & Knudsen, 2012; Mumford & Gustafson, 1988; Shalley & Gilson, 2004; Malik et al., 2021;Varma & Garg, 2005), it is discovered that 1.4 million mid-level professionals, who usually have 8–12 years of experience, are resistant to change. Because of this, it is now crucial for the Indian IT sector to foster a culture by creating Human Resource Management (HRM) systems, which may help the employees to accept change and recognize their roles in it. It has long been believed that the foundation of a successful innovation is creative thinking (Amabile, 1983; Çokpekin & Knudsen, 2012; Mumford & Gustafson, 1988; Shalley & Gilson, 2004). Precisely speaking, these concepts of "creativity" and "innovation" are not interchangeable (Amabile, 1983; Anderson et al., 2014; Khan et al. (2022)). According to its most basic definition, innovation is the application of a creative concept (Amabile, 1983; Roberts, 2006).A basic formula has been proposed to establish the relationship: organizational innovation=individual creativity + implementation (Zhou & George, 2003). This is the discourse that illuminates the multifaceted nature of employee innovation behavior.

Employee innovation behavior, as demonstrated by research, is a multi-step process that involves proposing new ideas, promoting, and putting them into practice (Monteiro et al., 2016; Scott & Bruce, 1994; Malik et al., 2021). Therefore, certain personal qualities or personal elements are needed in individuals who can think creatively and who can recognize problems and find solutions during the early stage of idea generation. These innovative people require funding or organizational approval to move further in the next step. The last step is creating a paradigm to make these concepts productive, substantial, and useful within the organizational setting(Kanter, 2009; Scott & Bruce, 1994). Thus, it becomes clear that personality-related aspects are crucial throughout the initial stages of the creative process. In order to successfully complete the process, organizational variables become more important starting in the second stage.

In the software sector, there are various models of human resource management. The 'Warwick Model'(Hendry & Pettigrew, 1990), the 'Michigan Model' (Fombrun et al., 1984), and the 'Guest Model' (Bratton et al., 2021) are a few examples. Everyone has discussed making the most use of available human resources. According to 'Choice model' (Analoui, 2017), human as well as organizational determinants for organizational innovation have been found equally important. Numerous past studies have also demonstrated that the collection of HR practices has a positive impact on the outcomes of innovation. For instance, there is a framework demonstrates the synergistic relationship between the innovative performance of employees and the effective application of HR strategies (Laursen & Foss, 2003). However, little or no research of this kind in the background of Indian IT sector has been done that makes it evident the way HRM system fosters the innovative behavior of employees, which in turn fosters innovation. Thus, the objectives of this study are, to examine prior research on innovation in the Indian IT sector in order to determine the success variables associated with employee creativity and

innovation and to recognize how these elements work together to affect the overall creative process following the implementation of an HRM system to support and maintain creativity that leads to innovation.

Research Method

In order to achieve the goal of this study a Systematic Literature Review (SLR) approach was adopted. It was confirmed that the systematic review procedure, was the ideal method for arranging and structuring the body of current literature in a way that was both transparent and unambiguous (Durst & Poutanen, 2013; Inkinen, 2016). The research has used Scopus database to explore the studies because Scopus is the database considered a good source for management and social science researches (Palomo et.al., 2017). Apart from this we searched Google scholar and ProQuest to identify other relevant papers, maybe not included in Scopus database. The terms "factors of creativity," "factors of innovation," and "factors of creativity and innovation", "hrm system and sustaining innovation" were used to search databases where the terms "software industry in India" OR "IT industry in India" were specifically mentioned in the abstract or title. The review's inclusion criteria were limited to English-language publications that had been published in peer-reviewed journals from 2010-2022. Reports, publications written in languages other than English, and non-academic researches have all been disqualified.

The literature selection process has undergone several phases. The quantity of literature has been reduced at each level to identify more publications that meet our predetermined criteria. 4385 articles were found with this search. The number of articles was lowered to 140 in the following stage, which involved eliminating the articles based on their titles. Based on the abstracts, the number is further whittled down to 41 articles. After closely examining the complete contents of each article, we ultimately chose 14 of them for our review. Figure 1 displays the PRISMA diagram introduced by Moher et al. (2009) to show the information flow across the four stages of SLR. (Source: Information flow across the various review steps, taken from Moher et al., 2009).
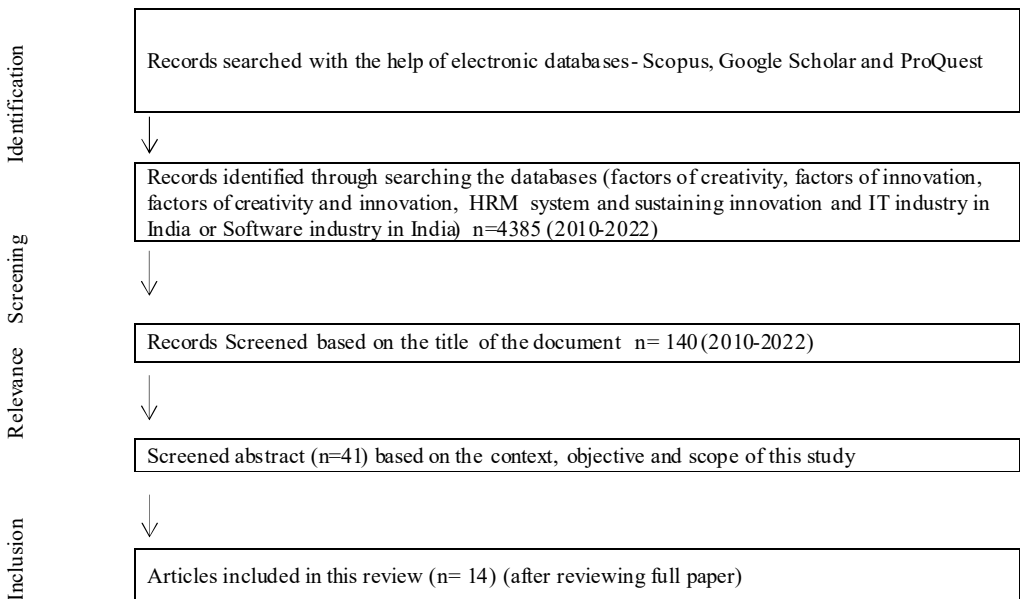

Figure 1: Literature selection procedure

Presentation of studies

A brief description of the literature included for this review is displayed in tabular form (Table 1).

Table 1: Overview of the studies included in the literature review

	Research objective	Methodology	Major findings	Journal
Khan et al. (2022)	To explore the specific role that workplace innovative culture plays in fostering employee creativity and innovation	481 responses were collected from different IT organizations and the proposed research model was validated through Structural Equation Modelling.	The culture of an organization determines its innovative capacity. The mutual trust, a tight-knitted workplace setting, flexible work schedule are the determinants of workplace innovation that affect employee innovativeness.	International Journal of Productivity and Performance Management,
Malik et al., (2021)	To understand the way a large MNE exchanges knowledge through AI mediated social exchange using effective global talent management (GTM) strategies.	A qualitative case analysis method was undertaken to study the data collected from an Indian Software company at Bengaluru.	A culture and strategy driven by innovation facilitated the social exchange of talent-specific knowledge by integrating knowledge-based data systems into AI applications that are talent-focused.	Journal of International Management
Arunachalam, V. (2021)	To study the subsequent changes in the IT Sector's growth in India and Analyze the need for innovation and competitiveness using the different framework	Secondary data were collected from different official database and two frameworks have been built on Government investment and global innovation index.	To add value to the company, IT firms must continuously foster sustainability and competitiveness. The political and economic policies of the country should be designed to encourage an atmosphere that encourages industry innovation.	Turkish Journal of Computer and Mathematics Education (TURCOMAT)
Sharma, & Nambudiri, (2020).	To understand how work engagement affects job crafting and innovativeness in the IT sector in India and to examine the moderating effect of perceived supervisory support and openness-to-experience in the relationships mentioned above.	JDR theoretical model and the broaden-and-build theory were used as bases for author's arguments. Using the survey method, field data from 377 IT professionals was gathered. The PLS method was used to test the model.	The authors explored a strong correlation in between job crafting behavior and innovativeness and work engagement.	Personnel Review
Hungun&Mani, (2019)	To investigate the factors those impact the adoption of innovation initiatives by small and medium-sized (SMEs) Indian software firms.	Every factor that matters for SMEs' adoption of innovation is found. After that, decision-makers from 213 SMEs provide primary data, and a multinomial logistic regression analysis is carried out.	SMEs use both closed and open innovation strategies. Adoption of the open innovation strategy is influenced by both firm-level characteristics as well as a few external factors. Some other external factors like culture and competition, influence the closed innovation approach.	Benchmarking: An International Journal
Bose I (2019)	knowing how employee engagement is influenced by team effectiveness and how this is mediated by an organizational culture that values creativity	A total of 633 data points were gathered from 19 software companies located in Kolkata, and the statistical method of choice was multiple regression analysis.	The relationship between employee engagement, innovative culture, team effectiveness, reward systems, and empowerment has been proven to be causative.	Drishtikon: A management Journal

Haryani & Gupta(2017)	To look at the connection between a software company's capacity for innovation and its technological orientation	Multiple regression analysis was employed to examine 254 samples collected from software experts of various levels.	This study shows that innovative methods, technology orientation, and company performance are positively correlated.	Pacific Business Review International
Anagha et al., (2016)	The impact of knowledge management and the innovation climate on employee motivation to innovate was examined in this study.	A sample of 483 software engineers from 18 software companies was included. Structural equation modeling technique was used.	Employee incentive to innovate is positively impacted by organizational commitment, knowledge management, and the innovation climate.	International Journal of Management Concept & Philosophy
Raman A,(2015)	Understanding how organizational learning and knowledge management techniques fit together promotes creativity in knowledge management	This study makes use of a sample of roughly 46 of the most prestigious knowledge firms in 2010.	Although it is not the only factor, the findings demonstrate that employees do perceive that knowledge management promotes technological innovation.	Journal of commerce & management thought
Rekha et al. (2014)	To identify and comprehend the elements that impact software company workers' entrepreneurial mindsets	A sample of 1880 workers from 376 Bangalore, India-based software companies was selected. SPSS 21 was utilized to examine the information gathered.	A combination of risk-taking, experience-based learning, inventiveness, and a positive outlook is what the study found to be an entrepreneurial mindset.	International Journal of Entrepreneurship
Malik, A .(2013)	The ability of a company to create, absorb, incorporate, and use new knowledge and information determines its capacity for innovation.	This research makes use of qualitative case study data from four Indian IT-enabled businesses.	Findings demonstrate that both internal and external factors affect a firm's ability to innovate: Internal factors: organizational learning process, etc. External factors: clients' and service providers' knowledge sharing etc	Journal of Economic &Social Policy
Kong (2013)	This study investigates how HR procedures affect the creation of knowledge and the growth of employees' capacity for learning for innovation in the Indian IT sector.	A qualitative study was carried out following the collection of samples from the top 11 ITSPs in India.	Human resource techniques are essential to organizational innovation in the software industry. Employers in this industry can gain a competitive edge by using the expertise and creative learning potential of their workforce, which might be a key component of their HR plans.	Knowledge managementResearch & Practice
P. Waychal et al. (2011)	To measure a person's capacity for invention	Regression analysis was selected as the favored statistical approach, and 441 samples were gathered from mid-level managers in IT sectors.	Employee creativity is influenced by a variety of demographic factors, including visioning, idea generation, ownership of the organization, internal and external networking relationships, etc.	International Journal of Business innovation & Research
Ojede et al (2011)	This study's primary goal is to distinguish the traits of innovators from those of adapters or imitators.	In this study, 69 entrepreneurs made up the sample. The statistical tool that was selected was regression analysis..	The findings suggest that the diaspora network, experience, and educational attainment are significant factors in identifying future innovators.	The IndianEconomic Journal

Facilitating factors of successful innovation

Table 2 lists the elements that appear to support organizational innovation in India's software sector as discussed in the articles we studied. The following dimensions can be used to group the components: HR, organizational, and personal factors.

Table 2: Facilitating factors of successful innovation

	Personal Factors	Studies
Risk taking ability	Entrepreneurial mind set	Rekha et al., 2014
Learning from experience		
Innovation ability		
Positive attitude		
Ability to generate idea	Creativity	P. Waychal et al. (2011)
Visioning		
Internal and external networking relationship	Entrepreneurial ability	
Ownership to the organization		
Stretch mind set		
Focus on tasks	Achievement orientation	
Decision making competencies		

Organizational Factors	Studies
Technology Orientation	Haryani & Gupta (2017); Raman. A, (2015)
Resource Management	Anagha et al.,(2016)
Organizational commitment	Anagha et al., (2016)
Innovative org. culture and climate	Anagha et al., (2016); Bose I, (2019) ; Khan et al. (2022)
Organizational learning strategy	Raman. A, (2015) ; Malik A., (2013); Malik et al., (2021)
Quality Management Capabilities	Malik A., (2013) ; Bose I, (2019) ;
Employee empowerment	Bose I, (2019) ;
Team effectiveness	Bose I, (2019) ;
Sustainability and competitiveness	Arunachalam, V. (2021); Hungun & Mani, (2019)

Selected HR Practices	Studies
Recruitment, Training & development, Employee engagement, remuneration, Reward & recognition, talent acquisition & retention, Influencing employee behaviour,Knowledge management ,Succession planning, Employee engagement	Anagha et al., (2016); Bose I, (2019) ; Malik A., (2013); Sharma, &Nambudiri,(2020).

Discussion

Personal factors and innovation

It has been observed that employees' original ideas or creativity-related skills have a significant impact on innovation in organizations (Amabile, 1988). Employees are the ones who typically come up with the initial ideas for advancements in the IT business (Anagha & Magesh, 2016; Beneito, 2006). Numerous organizational disciplines have looked for methods to use this advantage to gain a competitive edge. Since employees require a certain mindset, it is crucial for the firm to foster creative elements in them as innovation arises from its human resources. The ability to innovate is one that combines a number of other individual qualities. Therefore, if a person has creativity, achievement orientation, an entrepreneurial mindset, and entrepreneurial skills, he is definitely inclined to generate new ideas and is likely to think out of the box (Rekha et al., 2015; Waychal et al., 2011). Creativity encompasses visioning and the capacity to develop ideas (Waychal et al., 2011; Arunachalam, 2021).The ability to take chances, learn from mistakes, and have an optimistic attitude are all components of an "entrepreneurial mindset" (Rekha et al., 2015; Hungun & Mani, 2019)). The ability to take initiative and network both within and externally is the foundation of entrepreneurial skills. Employees need to have an achievement orientation too, that includes a stretched mindset, task focus, and the ability to make decisions (Waychal et al., 2011). All of these depend on the organization's own culture and company's investment policy on human capital. The organizations need to pay attention to the employees' mental well beings in order to maintain a highly engaged workforce (Rekha et al., 2015; Malik et al., 2021)).

Organizational factors and innovation

Research has demonstrated that companies cannot innovate on their own. The degree to which their internal and external environmental elements interact, determines how innovative they can be (Malik, 2013a; Malik et al., 2021).

Specifically, the internal environmental aspects of the organization have been considered in this study. Businesses that produce software and other IT services must have new product and service development structures that are in line with the right mix of internal and external technology (Haryani & Gupta, 2017; Shepherd & Ahmed, 2000). Therefore, technology orientation broadly affects the innovative strategic orientation of an IT organization (Haryani & Gupta, 2017). Compared to other Indian industries, IT firms place a higher value on intangible assets (Anagha & Magesh, 2016; Khan et al. 2022). The knowledge resources are the intangible assets found in IT firms. It is believed that one of the most important factors influencing innovation is knowledge.(Anagha & Magesh, 2016; Raman, 2015; Rose et al., 2016). Slack resources, such as employee-allocated free time and incentives to access the knowledge base, raise the likelihood of staff participation in innovative endeavors. In this context, organizational commitment, or a committed organization, is crucial because it gives its workers all the tools they need to participate in the innovation process (Anagha & Magesh, 2016; Simpson, 2012). With knowledge management, staff members are able to provide a great deal of customer experiences (Raman, 2015; Hungun & Mani, 2019). Organizational learning heavily relies on the integration and interpretation of knowledge, and market-based organizational learning is critical to maximizing a firm's capacity for innovation (Malik, 2013a; Malik et al., 2021).Humans are the only creatures who may initiate knowledge, as it is exclusively human-generated. Innovation is the product of new knowledge that humans have created via extensive research and development efforts. Thus, knowledge and learning capacity for innovation, together with the industry's emphasis on human capital, constitute the foundation of HR strategy for India's IT sector (Kong et al., 2013; Arunachalam, 2021). Another intriguing finding from previous research is that workers in Indian IT companies have a certain level of mistrust and discontent with management's attempts to limit their drive to

innovate. Thus, in order to promote innovative capability, quality management capabilities must be given top priority (Malik, 2013a; Malik et al., 2021). Because they are essential to innovation and an organization's strategic outcome, human resources in this sector must be managed well (Bacon, 2001; Bontis & Serenko, 2007; Kong et al., 2013). A number of Indian IT companies have created HRM systems to manage their enterprises' talent. First steps in this procedure are recruitment and selection. After that, remuneration, performance reviews, and ongoing training result in the recognition and retention of skilled workers who can apply their expertise to advance the innovative outcomes of the company (Kong et al., 2013; Arunachalam, 2021). In addition to these strategic HR practices, other studies conducted in the back ground of Indian IT industry proposed that work designs that are built on empowerment and trust foster the generation of new ideas (Bose, 2019; Malik, 2013a; Schuler & Jackson, 1987). Therefore, through increased knowledge and learning capacities, flexible job designing, and quality management competencies along with human resource practices with a strong focus on attracting, selecting, developing, and retaining employees for the critical positions may boost the innovation process up (Kong et al., 2013; Malik, 2013a).

HRM System and Innovation

The collection of HR practices, that the company uses as part of its HRM system to support innovation within the company. For instance, the study mentions creativity, entrepreneurial mindset, and entrepreneurial abilities as personal variables. These factors either need to be fostered through specialized training programs or investigated at the entry level through strategic recruitment processes. Given that the HRM system for regulating innovation in IT companies includes both hiring and training (Kong et al., 2013), we can draw the conclusion that employee innovative behavior is fostered and sustained by the combination of the personal and HR elements, which are causally related. Regarding organizational considerations, a significant amount of human interaction is required for resource management and technology orientation. Intangible assets such as knowledge, human talent, social capital, and intellectual property now make up the majority of an organization's resources (Anagha & Magesh, 2016; Schoemaker & Jonker, 2005). These assets require people to be committed to the firm. Thus, it is imperative for firms to recognize and embrace elements such as employee fit within the organization, compensation, recognition and awards, opportunity to showcase abilities, nurturing talents, and professional development possibilities. And human resource managers are the only ones who can put these variables into practice using the hard and soft techniques (Anagha & Magesh, 2016; Sharma &Nambudiri, 2020). By influencing and managing employee behavior, human resource management is also in charge of creating an environment and culture that support innovation (Anagha & Magesh, 2016; Chen & Huang, 2009). Additionally, these intricate HR procedures enable some qualified workers and prospective employees to participate in the organization's strategic decision-making process; this is known as employee empowerment (Bose, 2019; Ghosh, 2013). Furthermore, maintaining team spirit is crucial in the IT sector. A creative software project's design and implementation depend heavily on the team's performance. According to the research, empowerment agreements increase team performance and employee engagement. If each member of the empowered team is rewarded and acknowledged for their unique contribution, they will create results and spark creativity (Ghosh, 2013; Sharma &Nambudiri,2020). This is a crucial responsibility for HR managers in all types of organizations. In general, an organization's knowledge management and learning orientation initiatives drive innovation in the IT sector. Three sets of values are used in this strategy: Dedication to learning-the company must provide funds for intangible resources such as training and development. Open-mindedness-the employee must be able to process data from both internal and external sources; A common

vision- necessitates discussions and the sharing of recently obtained information. Strategic HR practices can be used to assist new learning and skill development at all levels while providing training and encouraging a culture of Knowledge sharing among employees (Malik, 2013b; Malik et al., 2021).

Proposed relationship model between the factors

Ten major components, divided into two groups in our suggested model (Fig.2)—personal and organizational factors—act as the precursors of a collection of HR practices known as the HRM system, which has the power to stimulate employee innovative behavior and foster innovation inside the company. According to the model, personal factors have the greatest impact on employee innovation behavior during the first stage, idea generation. During the second stage, idea promotion, the employee must enlist the assistance of organizational factors. These organizational factors, in conjunction with a variety of carefully chosen HR practices (HRM system), support employees' innovative ideas and help them to advance to the third stage, idea implementation, which fosters innovation. The HRM system also serves as a stimulus to improve the individual elements that support employees' idea generation.
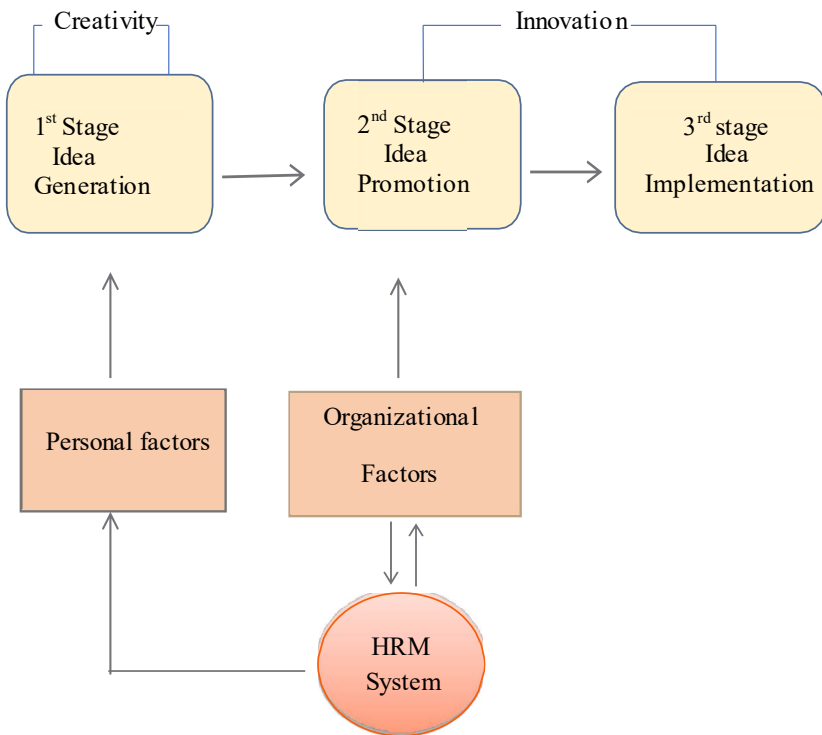

Figure 2: Conceptual framework

Conclusion

This study explores various factors affecting employee creativity and organizational innovations; segregates the factors in two categories like, Personal and Organizational and concludes that some selected HR practices (HRM System) can single-handedly regulate the Personal factors as well as can influence the Organizational factors leading to innovation. In order to remain relevant and competitive in today's market, creativity and innovation are trump cards for the organizations. To conduct research and advance market sustainability, every

organization cultivates and supports a research and development cell. However, the HR division has never been thought of as the primary regulator that can foster both creativity and innovation. The HR department may take the lead in the entire innovation process, from hiring a creative worker to seeing that person responsible for a successful innovation, either alone or with others. This research provides a conceptual framework which can be used by Indian IT sector for adopting a long lasting HRM system for creativity, innovation and sustainability. Like other studies, this study also has certain limitations. Firstly, this research relies upon secondary data. Additional research can collect primary data for concurrently exploiting the concept's value. Secondly, the conceptual framework that the research presents needs to be verified and validated in the context of Indian IT industry. Furthermore, other methodological angles like qualitative and quantitative approaches can be used to further validate the research findings and implications.

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