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The Human Side of Digital Hospitality: Engagement as the Pathway to Innovation

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Abstract: ***This study explores how digital skills, service climate, and training support shape service innovation in the hospitality industry, with work engagement acting as the connecting link. Drawing on the Job Demands–Resources (JD-R) model, data were gathered from 350 hotel employees to understand how these workplace resources influence employee behavior. Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to analyze the relationships among the variables. The results show that both digital skills and a supportive service climate help employees feel more engaged in their work, while training support also contributes, though to a lesser degree. The analysis further highlights that engaged employees are more likely to introduce new ideas and improve service delivery, making work engagement a key driver of service innovation. Overall, the PLS-SEM findings support all the proposed hypotheses and emphasize the value of building digital capabilities, creating supportive work environments, and fostering engagement to strengthen innovation in hospitality settings.***

Keywords: Digital Competencies**,** Service Climate**,** Work Engagement**,** Service Innovation**,** Job Demands–Resources (JD-R) Model

1. Introduction

Many of industries including hospitality industry is increasingly relying on digital technologies to enhance service efficiency. To target the competitive advantage it is very important to go for new and innovating inclusion of service in hospitality industry(Rivera, 2020). Employees who have knowledge on digital skills are be able to leverage technology to deliver innovative services. It not only innovate the services but also improves guest satisfaction and organizational competitiveness(Kara et al., 2013). However, technological capabilities, a supportive service climate, characterized by clear service expectations, recognition, and empowerment, has been shown to foster employee motivation(Foroudi et al., 2018) and creativity, leading to superior service outcomes (Schneider et al., 2017; Karatepe & Aga, 2016). Climate of organization helps to boost up and future growth. Furthermore the training part of an organization is also an element of essentials. Training support including knowledge, skills, resources needed to perform the duty together enhance the ability of employees performance. Ultimately employees performance can contribute better to service innovation. Research suggests that these organizational and individual factors not only influence performance but also affect employees' psychological states, such as work engagement, which is defined as a positive, fulfilling, and energetic work-related state of mind (Bakker & Demerouti, 2007; Schaufeli et al., 2002). Positive work related state of mind of employees can perform better in organisation hence can enhance the productivity of an organization also. Work engagement(Chou et al., 2018) of employees make them efficient to think better for the organization(Schaufeli et al., 2002). **RQ1:** How do digital competencies influence work engagement among hotel employees? **RQ2:** What are the effects of service climate and training support on work engagement in the hospitality sector? **RQ3:** Does work engagement mediate the relationship between digital competencies, service climate, training support, and service innovation?

2. Literature Review

2.1 Theoretical framework of Job Demands-Resources (JD-R) model

The main focus in this model Job Demand Resources(Bakker & Demerouti, 2007) is to provide sufficient resource to the employee so that employee not feel stress, burnout. Because if the employee feel stress, burnout then their motivation get reduced and productivity also get hampered. More job demand can lower the performance of the employees. That is why employee must get that of environment and work engagement so that the employee feel motivated and enhance their productivity. Training support , digital support from the orgainzation can reduce the stress level of employees. Sometime if the workload is more but the boss of the organization is supportive again the employees may feel motivated for the organization and can improve the productivity level. Work engagement has been empirically validated as a mediator between job resources, individual competencies, and organizational outcomes (Alfes et al., 2013).

2.2 Digital competencies and work engagement

The ability of effectively using of digital tools and technologies to create value for the organization, perform work tasks, adapt to changes are all related to digital competencies. Employees have higher digital competencies can perform(Park et al., 2021) better and empirical research validates the strong digital competencies demonstrate higher vigor, high absorption and higher vigor. Here the important factor is work engagement (Jung & Yoon, 2016)which motivates employees for better performance. So, the hypothesis is made

H1: Digital Skills positively influence the Work engagement

2.3 Service Climate and Work Engagement

Service climate refers to how employees perceive the organization's policies and everyday practices around delivering great service (Schneider et al., 2017). When that climate is positive where people feel recognized, supported by their team, and trusted to make decisions it creates valuable job resources within the JD-R framework, boosting employee engagement (Karatepe & Aga, 2016). Research shows that when employees feel backed by a strong service climate, they tend to have more energy and enthusiasm for their work, which in turn leads to better service outcomes and greater innovation (Alfes et al., 2013). Therefore the following hypothesis is made

H2: Service climate positively influences the work engagement.

2.4 Training Support and Work engagement

Skills, knowledge, confidence, support of digital work are the part of training support. If the training support is strong to the employees then the employees can do better perform in organization(Schneider et al., 2013). To enhance employees' motivation and work engagement the role of training support is very much influential. Creative problem solving can be developed by Training support. Training support also can boost up better sieve delivery performance of employees if they are getting continuous upgraded training. Here is the hypothesis made on the basis of above discussion

H3: Training support positively influences the work engagement.

2.5 Work engagement as mediator

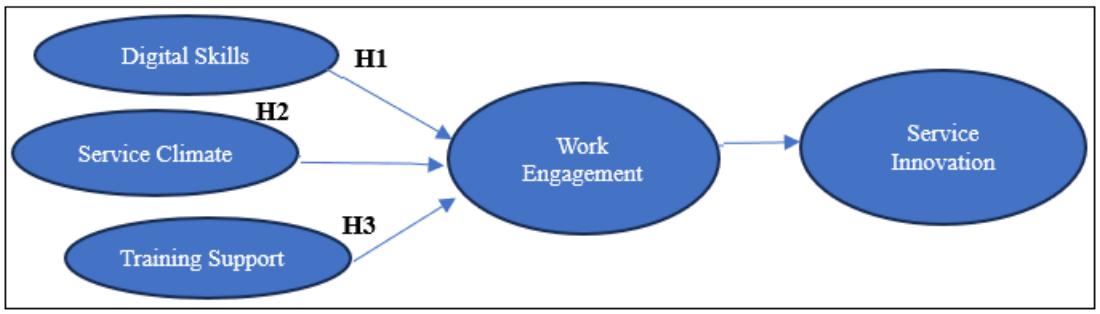
Work engagement states that it is the dedicated work related state. Positive and energetic work engagement(Noe et al., 2014) mediates the relationship between job resources such as digital competencies, training support environment, service climate and Service innovation. Empirical researches on hotel industry also signified that work engagement (Alfes et al., 2013)can be a mediator between resources of jobs and innovative service productivity(Abdou, 2025). Here the hypothesis made

H4a: Work engagement mediates the relationship between Digital skills and Service innovation.
H4b: Work engagement mediates the relationship between Service climate and Service innovation.
H4c: Work engagement mediates the relationship between Training Support and Service innovation.

2.6 Service Innovation

New and improved service concepts are the criteria which can implement and add value to the customers. New improved delivery methods, process, new service concepts add value to the guest satisfaction in hospitality industry. Research suggests that service innovation (Can et al., 2025)is driven by a combination of employee competencies such as digital skills, supportive organizational climate, and engagement levels (Li et al., 2020; Alfes et al., 2013).

2.7 Conceptual Framework



3. Methodology

This study is based on primary data of quantitative in nature. The study used here the theoretical framework of Job demand Resource model introduced by (Bakker & Demerouti, 2007) . The total of 350 hotel employees in frontline and managerial roles across five-star, four-star, and three-star hotels in major cities like Delhi, Mumbai and Kolkata are selected as sample data for this research study. The purposive sampling technique is used here to get the result. At least of six month experienced employees are selected for the study to get the better performance in the research study. Online and offline questionnaires are distributed among the hotel employees. Online questionnaire is filled by the help of social media such as linkedin, facebook, email invitations. Offline questionnaire is filled by the targeted hotels in these three mentioned cities. Participants were informed about the study objectives, assured of confidentiality and anonymity, and provided voluntary consent prior to participation (Israel, 2013). A pilot test was conducted for 30 hotels so that the questionnaire can be validated and reliable. After getting the clarity and reliability of the questionnaire minor change of wording and scale is done for the final scale data collection. For data analysis the software SMART PLS-SEM 4.0 is used(Ringle et al., 2014). A 5 likert scale signifying 1=Strongly Disagree, 2= Disagree, 3=Neutral, 4= Agree, 5=Strongly Agree is used in the questionnaire for the research study.

4. Data Analysis

4.1 Measurement model

The measurement model is the model which demonstrates the questionnaire or the instrument scale is reliable and valid. Here in this research study the reliability is checked by the software Smart PLS 4.0.

Table 1: The Reliability table

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Digital Skill	0.849	0.852	0.909	0.769
Service Climate	0.822	0.824	0.894	0.738
Service Innovation	0.841	0.844	0.904	0.759
Training Support	0.853	0.853	0.901	0.694
Work Engagement	0.881	0.881	0.926	0.807

The reliability(Ringle et al., 2014) is the consistency of the item of the instrument or the questionnaire. The reliability generates the chronbach's alpha value to validate. Reliability means if one respondent fills the data in different circumstances but the likert scale data given by that respondent should be similar in every different time. It means the respond answer should be same for every time that is the actual meaning of reliability in statistical word. The reliability value of chronbach's alpha is greater than 0.70 is good and more than 0.8 is very good. Here in this study the maximum number of reliability of the items showing more than 0.80 (Table 1) identified that the scale is reliable in nature. AVE is Average variance Extracted which signifies the convergent validity which should be more than 0.50. Convergent validity checks whether items that are supposed to measure the same construct actually correlate strongly with each other. It means the items must have strong correlation to measure the one construct. High value of AVE showing high convergent validity. Here in this study all the AVE values are greater than 0.50 showing high convergent validity (Table 1).

Table 2: HTMT (Heterotrait- Monotrait Values)

	Digital Skill	Service Climate	Service Innovation	Training Support	Work Engagement
Digital Skill					
Service Climate	0.814				
Service Innovation	0.708	0.783			
Training Support	0.690	0.757	0.691		
Work Engagement	0.817	0.852	0.827	0.742	

The discriminant validity is also important to show that all the constructs using in the research are different from each other. It means the constructs have low correlation with each other. Its main aim is to identify that all the constructs are truly different from each one. The HTMT method(Ringle et al., 2014) of discriminant validity should be less than 0.85 . Here in this study the values showing (Table 2) met the criteria of discriminant validity. It means all the constructs using in this study are different from each other.

Table 3: Fornell -Larcker method

	Digital Skill	Service Climate	Service Innovation	Training Support	Work Engagement
Digital Skill	0.877				
Service Climate	0.679	0.859			
Service Innovation	0.599	0.652	0.871		
Training Support	0.587	0.633	0.586	0.833	
Work Engagement	0.707	0.726	0.715	0.643	0.898

The table 3 of Fornell- Larcker also shows the discriminant validity by the square root of AVE values. The value in the table from each column and each row should be highest to met the criteria of Fornell-Larcker. Here the dataset again met the criteria and validate the discriminant validity. Multicollinearity (Table 4) means the overlapping(Ringle et al., 2014) among the independent variables. When the two independent variables overlap each other then it can identified by VIF (Variance Inflation Factor) states that the two variables are highly correlated with each other. The threshold limit of collinearity VIF value(Ringle et al., 2014) should less than 3 than it will be excellent it means not having any collinearity issue. Here in this research study all the VIF are less than 3 and it is signifying of having no multicollinearity issue.

Table 4: Collinearity table

	DS1	DS2	DS3	SC1	SC2	SC3	SI1	SI2	SI3	TS1	TS2	TS3	TS4	WE1	WE2	WE3
VIF	2.106	2.668	1.887	1.924	2.209	1.667	1.940	2.055	1.991	2.057	2.195	2.094	1.723	2.586	2.562	2.255

Table 5: R square and R-square adjusted

	R-square	R-square adjusted
Service Innovation	0.511	0.509
Work Engagement	0.639	0.636

R square tells how much changes or variation in dependent variable is explained by the independent variables. Here (Table 5) the value of R square describing in Service innovation is 0.511 signifies 51.5% variations are explaining by all the independent variables. Similarly in Work Engagement the R square value tell 0.639 describing 63.9% variations because of all Independent variables. R square adjusted values for service innovation is 0.509 and work engagement is 0.636 which are good signifying values(Ringle et al., 2014).

4.2 Structural model

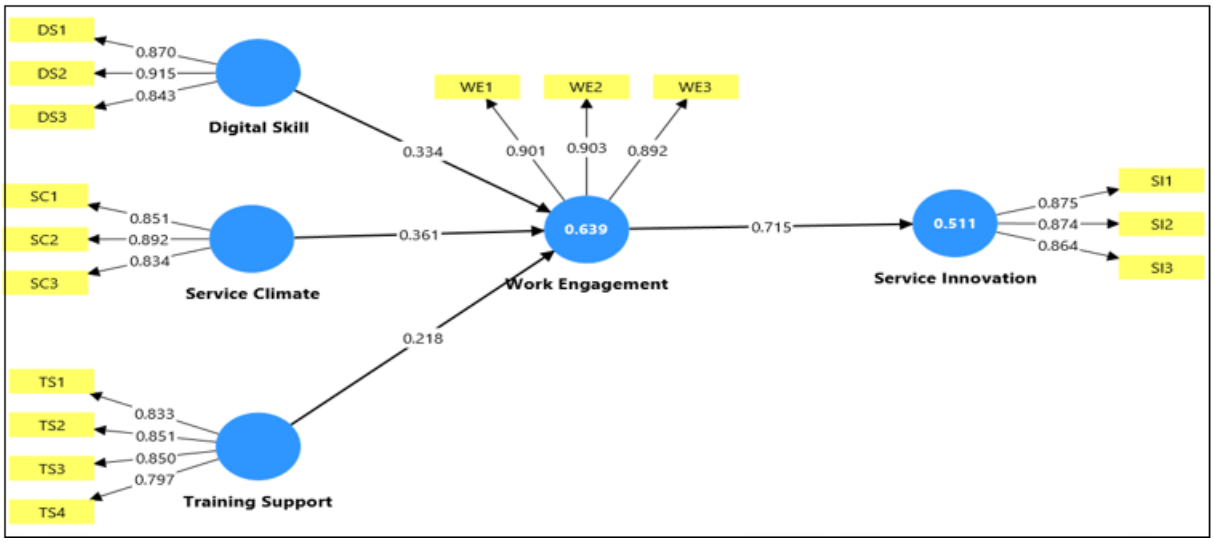


Figure 1: Graphical output of the proposed conceptual framework in smart PLS

All the outer loadings (fig 1) are more than 0.80 which met the criteria of outer loadings and the path coefficients from digital skill to work engagement is 0.334. The path coefficients from service climate to work engagement is 0.361. Training support to Work engagement path coefficient is 0.218. The path coefficient is 0.715 strong between work engagement and service innovation.

Table 6: Table of Hypothesis with Original Sample, Sample mean, STDEV, T satistics value and P values.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Digital Skill -> Work Engagement	0.334	0.333	0.061	5.506	0.000 (Supported)
Service Climate -> Work Engagement	0.361	0.359	0.067	5.404	0.000 (Supported)
Training Support -> Work Engagement	0.218	0.223	0.057	3.857	0.000 (Supported)
Work Engagement -> Service Innovation	0.715	0.716	0.039	18.172	0.000 (Supported)

From table 6 it signifies that Digital skills influences work Engagement. The value of original sample is 0.334 which is moderate in nature. Service climate also influences work engagement. Training support influences work engagement but the relation is weak. Work engagement influences services innovation and it is showing strong relation. All the t statistic values are greater than 1.96 and p values are less than 0.05 which is showing all the hypotheses are accepted.

5. Findings

Innovation in hospitality industry is very important to attract the guest. Service climate, digital skills and training support influences positively the work engagement. Furthermore, work engagement positively influences Service innovation. Service innovation attracts guests in five- star, four star, three-star hotels in the region. All the relation of hypotheses are accepted on the basis of statistical results. The findings show that digital skills play an important role in increasing employees' work engagement. When employees are comfortable with digital tools, they tend to feel more active and involved in their work. The results also suggest that a positive service climate further enhances engagement, as supportive and encouraging work conditions motivate employees to participate more wholeheartedly. Training support also contributes to engagement, but its influence is noticeably weaker compared to the other factors. The analysis further reveals that work engagement strongly promotes service innovation, indicating that employees who are more engaged are also more likely to contribute new ideas and improve service quality. Overall, the statistical outcomes confirm that all the proposed hypotheses in the study are supported. Other previous studies also mentioned service innovation(Can et al., 2025) is influenced by work engagement

6. Practical Implication

The owner of hotels, hospitality management policies, business regulators and employers have much implication by this research study and can apply to the respective area.

7. Limitation

This research study is based on cross sectional which is a limitation. In future longitudinal research can be done. Again the sample size is also very small. Other point of view such as job satisfaction, work life- balance these types of variables also can be included to get better result in future.

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Conflicts of interest
There is no conflict of interest with any other researcher and authors.

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