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Employee Perceived Value in Retail Banking: Development and Validation of a Multidimensional Measure of the Employee-Side Foundations of Service Innovation

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Abstract:

Purpose: Employees are widely treated as the bridge between a bank's innovation intent and the customer's experience of it, yet employee-side value perceptions are rarely measured with a validated, context-specific instrument. This study conceptualises Employee Perceived Value (EPV) in retail banking and develops and validates a multidimensional measure of it.

Design/methodology/approach: A 21-item pool, derived from the literature and refined through expert review and a pilot study, was administered to 384 employees of five public and five private sector banks across ten districts of Jharkhand, India. The sample was randomly split into calibration (n = 192) and validation (n = 192) halves. Parallel analysis and maximum-likelihood exploratory factor analysis were applied to the calibration half; confirmatory factor analysis with robust maximum likelihood (MLR) and diagonally weighted least squares (WLSMV) estimation was applied to the validation half and the full sample.

Findings: A 10-item, three-dimensional structure emerged: Relational and Innovative Work Climate, Digital Channel Enablement and Branch Automation Technology. The model fitted the validation data well (MLR: CFI = .975, TLI = .964, RMSEA = .076, SRMR = .040; WLSMV: CFI = .998, RMSEA = .051), outperformed one- and two-factor rivals, and was invariant across the two random halves up to the scalar level. Composite reliabilities ranged from .83 to .94, average variance extracted from .60 to .83, and all heterotrait–monotrait ratios were below .75. The relational dimension was only moderately related to the two technology dimensions (φ = .34–.42), which were closely related to each other (φ = .73).

Originality/value: The study offers a validated EPV measure for bank employees in an emerging-market, semi-urban and rural setting. It shows that employees' relational value and technological value are distinct, so a single EPV score would obscure the human side of service innovation. Propositions linking each dimension to service innovation are advanced for future multi-source testing.

Keywords: Employee perceived value, service innovation, retail banking, scale validation, confirmatory factor analysis, India

Introduction

Retail banking in India has been transformed over the past decade by digital channels, unified payments, branch automation and, more recently, artificial intelligence (Reserve Bank of India [RBI], 2025). For banks, service innovation, the introduction of new or improved ways of creating value for customers, has become a principal source of differentiation in a market where products are easily imitated (Gustafsson et al., 2020; Snyder et al., 2016). A recurring conclusion of service-innovation research, however, is that technology alone does not produce innovation. New service offerings must be interpreted, adopted, adapted and delivered by employees, particularly those in branches who translate a bank's innovation intent into the customer's actual experience (Engen et al., 2021; Engen & Magnusson, 2015; Tai et al., 2021).

Service-dominant logic frames employees as operant resources whose knowledge and skills are applied to co-create value (Vargo & Lusch, 2004, 2016), and the service–profit chain links internal service quality to employee attitudes and ultimately to customer outcomes (Heskett et al., 1994). Empirical studies confirm that human-related factors such as leadership, frontline commitment, recognition and an innovation-supportive culture are among the strongest drivers of service innovation (Alosani et al., 2020; Kao et al., 2015; Tajeddini et al., 2020), and that human-related innovation can matter more to customers than technology-related innovation (Tai et al., 2021). What employees value in their work environment, and how far they see the bank's technology as enabling their work, should therefore be a foundational input to service innovation.

Despite this, the employee side of service innovation in banking is usually measured either indirectly, through managers' reports of organisational capability, or with borrowed scales of engagement, commitment or employer attractiveness (Berthon et al., 2005; Ronda et al., 2018) that were not designed for the service-innovation context. Measures that capture both the relational and the technological sides of employees' value perceptions are scarce, and those that exist come mostly from developed economies and metropolitan settings. Indian retail banking presents a distinctive context: public and private sector banks operate side by side, a large share of branches serve rural and semi-urban customers, and employees are simultaneously expected to deliver relationship-based service and to operate a rapidly expanding technology stack (Choudhary et al., 2023; RBI, 2025).

This study addresses that gap. We conceptualise Employee Perceived Value (EPV) as bank employees' evaluation of the relational and technological resources their workplace provides for delivering and improving service, and we develop and validate a multidimensional measure of it among 384 employees of ten public and private sector banks in Jharkhand, India. Three research questions guide the study. RQ1: What is the dimensional structure of EPV among retail bank employees? RQ2: Does the resulting measure show adequate reliability, convergent validity and discriminant validity? RQ3: Is the structure stable across independent subsamples, and is EPV better represented as a set of distinct dimensions or as a single global perception?

The study makes three contributions. First, it provides a parsimonious, psychometrically validated EPV instrument specific to retail banking, built using a cross-validation design that separates item purification from confirmation. Second, it shows empirically that employees' relational value and their technology-enabled value are distinct and only moderately related, which cautions against the common practice of summing employee perceptions into one score. Third, building on these dimensions, it develops propositions about how each facet of EPV is expected to contribute to service innovation, offering a measurement foundation for multi-source research that links employee perceptions to customer-rated innovation.

Theoretical Background

Service Innovation and the Role of Employees

Service innovation is now understood as a change in the way value is co-created among actors rather than as a discrete new product (Gustafsson et al., 2020; Lusch & Nambisan, 2015). In banking, it spans new service concepts, new client interfaces, new delivery systems and new technological options (den Hertog et al., 2010), many of which are digitally enabled (Barrett et al., 2015). Two complementary sources of service innovation are typically distinguished: technology-related innovation, such as mobile applications, self-service machines and automated back-office systems, and human-related innovation, such as new forms of advice, problem solving and relationship management (Tai et al., 2021).

Employees are central to both. In technology-related innovation they are the users and intermediaries who make new systems work in the branch and who help customers migrate to new channels (Larivière et al., 2017). In human-related innovation they are the sources of ideas and the implementers of improved service routines (Engen & Magnusson, 2015; Scott & Bruce, 1994). Reviews of employee involvement in service innovation show that employees contribute through idea generation, adaptation in use and the incremental improvement of practices, and that these contributions depend on how employees experience their work environment (Engen et al., 2021). Studies in banking specifically show that frontline staff, cross-functional teams and product champions shape

service innovation (Tipu, 2014), and that empowerment and slack resources determine whether innovation translates into service quality (Sok & O'Cass, 2015).

Conceptualising Employee Perceived Value

The concept of perceived value originates in marketing, where it denotes a customer's overall assessment of what is received relative to what is given (Zeithaml, 1988). Employer-branding research applied the same logic to employees, arguing that employees evaluate employers by the benefits the work environment provides (Berthon et al., 2005). Ronda et al. (2018) refined this into an employee-centric, means–end view in which concrete employer attributes generate functional and psychological benefits that, in turn, produce perceived value. Internal marketing research similarly treats the job and its environment as an internal product whose value to employees shapes their service behaviour (Gounaris, 2006; Lings & Greenley, 2005).

We extend these ideas to the service-innovation context and define EPV as employees' evaluation of the relational and technological resources that their workplace makes available for delivering and improving customer service. Three theoretical lenses support this definition. From service-dominant logic, employees are operant resources whose capacity to co-create value depends on the resources they can integrate (Vargo & Lusch, 2016). From the resource-based view, a supportive climate and well-functioning technology are firm resources that become sources of advantage only when employees can exploit them (Barney, 1991). From the job demands–resources model, social and technological job resources foster engagement and proactive behaviour (Bakker & Demerouti, 2007), which in turn underpin innovative work behaviour (Scott & Bruce, 1994).

Dimensions of Employee Perceived Value

The literature suggests that EPV in retail banking has both a human and a technological domain. The human domain concerns the relational and innovation-supportive climate of the workplace: collaboration within teams, recognition and reward, inclusion and belonging, peer relationships, ethical conduct and openness to innovative work practices (Berber et al., 2020; Ehigie et al., 2023; Fu et al., 2022). Such climate perceptions have long been linked to service delivery (Schneider et al., 1998) and to innovation (Amabile, 1988; Hurley & Hult, 1998). We label this dimension Relational and Innovative Work Climate.

The technological domain has two faces in a bank branch. The first concerns customer-facing digital channels, such as internet banking, mobile banking applications and Unified Payments Interface (UPI) services, which allow employees to resolve customer needs remotely and to migrate routine transactions out of the branch (Kamboj et al., 2021). The second concerns branch and back-office automation, such as cheque processing devices, automated cash handling systems, and smart debit and credit card technology, which reduce manual workload, improve accuracy and free employees for higher-value interaction (Hassani et al., 2018). From the employee's perspective, these are not simply technologies but job resources whose perceived usefulness shapes their willingness to use and promote them (Davis, 1989; Venkatesh et al., 2003). We label these dimensions Digital Channel Enablement and Branch Automation Technology.

Because the human and technological domains draw on different resources, we expect them to be empirically distinct. Because digital channels and branch automation are both forms of technological enablement, we expect them to be more strongly related to each other than either is to the relational climate. Whether these facets nonetheless form a coherent higher-order EPV perception is an empirical question that RQ3 addresses.

Method

Research Context and Sample

The study was conducted in Jharkhand, an eastern Indian state with a mix of urban centres and large rural and semi-urban hinterlands. Ten scheduled commercial banks were selected to cover both sectors: five public sector banks (State Bank of India, Bank of Baroda, Punjab National Bank, Union Bank of India and Canara Bank) and five private sector banks (HDFC Bank, ICICI Bank, Kotak Mahindra Bank, Axis Bank and IndusInd Bank). Branches were drawn from ten districts (Bokaro, Deoghar, Dhanbad, East Singhbhum, West Singhbhum, Giridih, Hazaribagh, Palamu, Ramgarh and Ranchi) and from rural, semi-urban and urban locations. Within strata defined

by bank and district, employees present at the branch who consented to participate were surveyed, which makes the design a stratified purposive–convenience sample. The minimum sample size was set at 384 using Cochran's (1977) formula, which also exceeds common recommendations for factor analysis (Worthington & Whittaker, 2006).

A total of 431 employee questionnaires were returned (339 from public and 92 from private sector banks). After removal of incomplete and invalid responses, 384 were retained for analysis, with no missing values on the EPV items. Table 1 presents the profile of the respondents. The sample was predominantly early- and mid-career: 75.5% were aged 40 years or below, 65.6% had 6–20 years of experience, and probationary officers (27.6%) and assistant managers (22.9%) were the largest designation groups. Women made up 37.2% of respondents, and 35.4% worked in rural branches.

Table 1 Profile of Employee Respondents (N = 384)

Characteristic	Category	n	%
Age (years)	20–30	128	33.3
	31–40	162	42.2
	41–50	66	17.2
	51–60	25	6.5
	Above 60	3	0.8
Gender	Male	241	62.8
	Female	143	37.2
Education	Higher secondary or equivalent	42	10.9
	Graduate	168	43.8
	Postgraduate	122	31.8
	Professional degree	52	13.5
Branch location	Rural	136	35.4
	Semi-urban	94	24.5
	Urban	154	40.1
Designation	Clerk	64	16.7
	Probationary officer	106	27.6
	Assistant manager	88	22.9
	Deputy manager	74	19.3
	Senior manager and above	52	13.5
Experience (years)	0–5	84	21.9

Characteristic	Category	n	%
	6–10	136	35.4
	11–20	116	30.2
	Above 20	48	12.5

Note. Percentages may not total 100 because of rounding.

Measure Development

An initial pool of 21 items was generated from a review of studies on employee-related drivers of service innovation and on technology use in banking (e.g., Alosani et al., 2020; Kao et al., 2015; Ronda et al., 2018; Tajeddini et al., 2020). Nine items covered relational and organisational aspects of the workplace (transformational leadership, team collaboration, inclusion and belonging, recognition and reward, innovative work practices, ethical work environment, peer relationships, training and development, and organisational commitment). Twelve items covered technologies used in retail branches, ranging from digital tools and artificial intelligence (AI) to online and mobile banking, UPI, automated teller machines, cash deposit and recycling units, cheque processing, cash handling, smart cards, utility bill payment and point-of-sale terminals (Appendix).

Content and face validity were assessed by a panel of two academic experts and one senior bank official, and the instrument was pilot tested with 30 bank employees from outside the main sample. Following the pilot, item wording was simplified where respondents found it complex. The questionnaire was administered in English and, for rural branches, in a Hindi version produced through translation and back-translation, using paper forms during branch visits and an online form where employees were unavailable in person. Following the original instrument design, the nine relational and organisational items asked employees to rate how important each attribute was to them (1 = not important, 5 = highly important), whereas the twelve technology items asked employees to rate their agreement that each technology supported their work (1 = strongly disagree, 5 = strongly agree). Because the two sets use different response anchors, scores are not compared across the relational and technology dimensions.

Analytic Strategy

Analyses were conducted in R using lavaan 0.6-17 (Rosseel, 2012), semTools and psych. Following recommended practice for scale development (Hinkin, 1998; Worthington & Whittaker, 2006), the sample was randomly split (seed fixed for reproducibility) into a calibration half (n = 192), used for exploratory analysis and item purification, and a validation half (n = 192), used for confirmation. The full sample was used for final parameter estimates.

In the calibration half, factorability was assessed with the Kaiser–Meyer–Olkin (KMO) statistic and Bartlett's test (Kaiser, 1974). The number of factors was informed by parallel analysis (Horn, 1965) and by the fit of competing exploratory solutions. Exploratory factor analysis (EFA) used maximum-likelihood extraction with oblique (oblimin) rotation, because the dimensions were expected to correlate (Costello & Osborne, 2005; Fabrigar et al., 1999). Items were retained if they had a primary loading of at least .50 and no cross-loading of .30 or more, and if their content belonged unambiguously to one theorised domain (Hinkin, 1998). Items whose residuals covaried strongly with other items in the calibration confirmatory model (modification index > 20), indicating redundancy, were also considered for removal.

Confirmatory factor analysis (CFA) used robust maximum likelihood (MLR), because several technology items were negatively skewed (skewness up to −2.09, kurtosis up to 4.13). As a robustness check, models were re-estimated treating the items as ordinal with the WLSMV estimator (Flora & Curran, 2004; Li, 2016). Fit was judged against conventional guidelines: CFI and TLI at or above .95, RMSEA at or below .08 and SRMR at or below .08 (Browne & Cudeck, 1993; Hu & Bentler, 1999). The hypothesised three-factor model was compared with a one-factor model and a two-factor model in which all technology items loaded on one factor, using scaled chi-square difference tests (Satorra & Bentler, 2001). Reliability was assessed with Cronbach's alpha (Cronbach,

1951) and composite reliability (CR), and convergent validity with standardised loadings and average variance extracted (AVE; Fornell & Larcker, 1981). Discriminant validity was assessed with the Fornell–Larcker criterion and the heterotrait–monotrait ratio (HTMT), with values below .85 taken as evidence of discriminant validity (Henseler et al., 2015; Rönkkö & Cho, 2022). Stability was tested through multi-group invariance across the two random halves (configural, metric and scalar). Finally, a second-order model was estimated to examine whether the dimensions reflect a common higher-order EPV perception.

Results

Item Distributions

Table 2 reports descriptive statistics for all 21 items in the full sample. The relational and organisational items had means between 3.47 and 4.23 with standard deviations above 1.0 for most items, indicating that employees discriminated substantially between attributes. The technology items had higher means (4.00–4.65) and were negatively skewed, which is typical of usefulness ratings in settings where the technologies are well established. No item exceeded |skewness| > 2.1 or kurtosis > 4.3, values within the range in which robust maximum-likelihood estimation performs well (Kline, 2016).

Table 2 Descriptive Statistics for the 21 Initial EPV Items (N = 384)

Item	Content	M	SD	Skewness	Kurtosis
EPV1	Transformational leadership	4.20	1.07	−1.51	1.50
EPV2	Team collaboration and culture	3.87	1.17	−0.94	−0.17
EPV3	Workplace inclusion and belonging	3.73	1.15	−0.64	−0.87
EPV4	Recognition and reward	3.62	1.27	−0.69	−0.78
EPV5	Innovative work practices	3.47	1.17	−0.57	−0.74
EPV6	Ethical work environment	3.55	1.20	−0.58	−0.81
EPV7	Peer relationships	3.70	1.14	−0.83	−0.38
EPV8	Employee development and training	4.02	0.94	−1.21	1.19
EPV9	Organisational commitment	4.23	0.84	−1.27	1.41
EPV10	Digital tools and productivity software	4.03	0.88	−1.18	1.32
EPV11	AI and automation adoption	4.00	0.96	−0.98	0.38
EPV12	Online banking access	4.65	0.68	−2.11	4.24
EPV13	Mobile app-based banking	4.53	0.57	−0.76	−0.42
EPV14	Digital payments and UPI services	4.52	0.66	−1.53	2.94
EPV15	ATM and smart teller machines	4.40	0.74	−1.38	2.05
EPV16	Cash deposit and recycling units	4.42	0.82	−1.55	2.02
EPV17	Cheque processing devices	4.39	0.80	−1.46	1.89

Item	Content	M	SD	Skewness	Kurtosis
EPV18	Automated cash handling systems	4.43	0.80	−1.59	2.29
EPV19	Smart card technology	4.41	0.77	−1.49	2.26
EPV20	Utility bill payment via banking channels	4.05	1.14	−1.10	0.05
EPV21	Point-of-sale terminals	4.20	1.08	−1.39	0.97

Note. EPV1–EPV9 were rated for importance and EPV10–EPV21 for agreement, both on 5-point scales. Kurtosis is excess kurtosis. AI = artificial intelligence; UPI = Unified Payments Interface.

Exploratory Factor Analysis (Calibration Half)

The calibration data were suitable for factor analysis (KMO = .869; Bartlett's $\chi^2[210] = 3{,}773.77$, $p < .001$). The first three eigenvalues of the correlation matrix were 10.27, 3.28 and 1.39, followed by 0.99. In parallel analysis, the first two eigenvalues clearly exceeded the 95th percentile of eigenvalues from random data, and the third (1.39) came close to its random counterpart (1.51); in the full sample the third eigenvalue (1.49) exceeded its random counterpart (1.35), and a factor-based parallel analysis suggested up to four factors. Two-, three- and four-factor maximum-likelihood solutions were therefore compared (RMSEA = .151, .131 and .120; TLI = .722, .789 and .821, respectively). The four-factor solution did not add an interpretable factor, so the three-factor solution, explaining 65.2% of the variance, was examined in detail (Table 3).

Table 3 Three-Factor Exploratory Solution for the 21 Initial Items (Calibration Half, n = 192)

Item	F1 Technology	F2 Relational	F3 Payment acceptance	Decision
EPV1	.49	**.50**	−.14	Removed: cross-loading
EPV2	.15	**.77**	−.04	Retained for CFA
EPV3	−.02	**.82**	.05	Retained
EPV4	−.01	**.90**	−.02	Retained
EPV5	.07	**.83**	.05	Retained
EPV6	−.11	**.80**	.09	Retained for CFA
EPV7	−.11	**.88**	.10	Retained
EPV8	**.59**	.36	−.17	Removed: cross-loading
EPV9	**.78**	.07	−.28	Removed: content mismatch

Item	F1 Technology	F2 Relational	F3 Payment acceptance	Decision
EPV10	**.76**	.16	−.12	Removed: generic content
EPV11	**.55**	.15	.07	Removed: generic content
EPV12	**.78**	−.05	−.10	Retained
EPV13	**.66**	−.05	.09	Retained
EPV14	.41	.10	.33	Retained (domain item)
EPV15	**.71**	−.06	.21	Removed: mixed domain
EPV16	**.67**	−.07	.25	Retained for CFA
EPV17	**.68**	−.04	.36	Retained
EPV18	**.65**	−.01	.35	Retained
EPV19	**.73**	−.06	.30	Retained
EPV20	.10	.12	**.78**	Removed: two-item factor
EPV21	.12	.15	**.84**	Removed: two-item factor

Note. Maximum-likelihood extraction with oblimin rotation; primary loadings in bold. Factor correlations: F1–F2 = .35, F1–F3 = .44, F2–F3 = .16. Variance explained = 65.2%. Retained items were re-analysed in a focused EFA before CFA (see text).

The solution separated a relational factor, on which EPV2–EPV7 loaded cleanly (.77–.90), from a broad technology factor, with a third factor formed by only two payment-acceptance items (utility bill payment and point-of-sale terminals). Purification proceeded in three steps. First, items with cross-loadings were removed (EPV1, transformational leadership; EPV8, training and development). Second, items whose content did not fit the theorised domains were removed: organisational commitment (EPV9) loaded on the technology factor, which is substantively uninterpretable, and commitment is better regarded as an outcome of perceived value than as one of its components; digital tools and AI adoption (EPV10, EPV11) and ATMs and smart tellers (EPV15) described general-purpose or hybrid technologies that could not be assigned to either customer-facing channels or branch automation. Third, the two payment-acceptance items (EPV20, EPV21) were removed, because a two-item factor

is weakly identified and these services are delivered largely through merchants rather than within the branch. Two retained items showed secondary loadings at this stage: UPI services (EPV14; .33) and the three branch automation items (EPV17–EPV19; .30–.36 on the payment-acceptance factor). They were kept because their content is central to the theorised channel and automation domains, and their behaviour was re-examined once the payment items had been removed.

A focused EFA of the remaining 13 candidate items supported the three theorised domains. Consistent with expectations, the broad technology factor split into a branch automation factor (cheque processing, automated cash handling and smart card technology loading .84–.92) and a digital channel factor (mobile banking .99, with online banking and UPI loading .37 on this factor and .37 and .32 on the automation factor). The digital channel factor was therefore the least sharply defined dimension at the exploratory stage, and its stability was assessed in the independent validation half.

In the calibration CFA of the 13-item model, cash deposit and recycling units (EPV16) showed several residual covariances with digital channel items (largest modification index [MI] = 20.2), and ethical work environment (EPV6) shared substantial residual variance with innovative work practices (MI = 21.6). Both were removed. Team collaboration (EPV2) showed smaller residual covariances with EPV3 and EPV7 (MIs ≈ 7). Removing it slightly improved fit in the calibration half (CFI = .978 vs. .974; RMSEA = .069 vs. .070). It was retained in a sensitivity model (reported below), and the 10-item model without it was carried forward as the more parsimonious specification.

Confirmatory Factor Analysis

Table 4 compares the hypothesised three-factor model with rival specifications. In the validation half, the three-factor, 10-item model showed good fit (MLR: $\chi^2[32] = 67.16$, CFI = .975, TLI = .964, RMSEA = .076, 90% CI [.050, .102], SRMR = .040), and fit was better still when the items were treated as ordinal (WLSMV: CFI = .998, TLI = .997, RMSEA = .051, SRMR = .042). The one-factor model (CFI = .632, RMSEA = .278) and the two-factor model that merged the two technology dimensions (CFI = .884, RMSEA = .158) fitted much worse, and scaled chi-square difference tests in the full sample favoured the three-factor model over both (three- vs. two-factor: $\Delta\chi^2[2] = 104.68$; two- vs. one-factor: $\Delta\chi^2[1] = 178.76$; both $p < .001$). The sensitivity model that retained EPV2 fitted less well in the validation half (CFI = .955, RMSEA = .095), supporting its removal.

Table 4 Fit of Competing Measurement Models

Model	Sample	χ^2	df	CFI	TLI	RMSEA	SRMR
M1: One factor (10 items)	Validation	487.98	35	.632	.527	.278	.175
M2: Two factors (relational; technology)	Validation	187.23	34	.884	.847	.158	.082
M3: Three factors, 11 items (EPV2 retained)	Validation	108.19	41	.955	.940	.095	.044
M4: Three factors, 10 items (final)	Calibration	54.24	32	.978	.969	.069	.039
	Validation	67.16	32	.975	.964	.076	.040
	Full	108.97	32	.969	.956	.084	.038

Model	Sample	χ^2	df	CFI	TLI	RMSEA	SRMR
M4 with WLSMV (ordinal)	Validation	48.03	32	.998	.997	.051	.042
	Full	75.37	32	.996	.995	.059	.040

Note. MLR = robust maximum likelihood (Satorra–Bentler scaled χ^2 and robust CFI, TLI and RMSEA reported); WLSMV = weighted least squares, mean- and variance-adjusted, with items treated as ordinal. Calibration and validation n = 192; full N = 384.

Reliability and Convergent Validity

Table 5 reports the final measurement model. All standardised loadings were high and significant in the validation half (.76–.96) and in the full sample (.74–.93). Composite reliability ranged from .83 to .94 and Cronbach's alpha from .82 to .94, exceeding the .70 benchmark. AVE ranged from .60 for Digital Channel Enablement to .83 for Branch Automation Technology, above the .50 threshold, which supports convergent validity (Fornell & Larcker, 1981; Hair et al., 2019).

Table 5 Final 10-Item EPV Measurement Model

Dimension and item	λ calibration	λ validation	λ full	α	CR	AVE
Relational and Innovative Work Climate (RIWC)				.91	.91	.72
EPV3 Inclusion and belonging	.84	.77	.80			
EPV4 Recognition and reward	.88	.86	.88			
EPV5 Innovative work practices	.85	.91	.88			
EPV7 Peer relationships	.88	.76	.82			
Digital Channel Enablement (DCE)				.82	.83	.60
EPV12 Online banking access	.72	.76	.74			
EPV13 Mobile app-based banking	.83	.89	.87			
EPV14 Digital payments and UPI	.72	.76	.74			
Branch Automation Technology (BAT)				.94	.94	.83
EPV17 Cheque processing devices	.89	.96	.93			
EPV18 Automated cash handling	.86	.92	.90			
EPV19 Smart card technology	.92	.89	.90			

Note. λ = standardised loading (MLR; all $p < .001$). α, CR (composite reliability) and AVE (average variance extracted) are from the full sample (N = 384); in the validation half, CR = .90, .84 and .95 and AVE = .69, .63 and .85 for RIWC, DCE and BAT, respectively.

Discriminant Validity

As Table 6 shows, the square root of each dimension's AVE exceeded its correlations with the other dimensions, and all HTMT ratios were below .85 (highest = .74 for Digital Channel Enablement and Branch Automation Technology). The two technology dimensions were strongly correlated (φ = .73, 95% CI [.62, .84]), but the upper bound of the confidence interval was well below 1, and the two-factor model that merged them fitted substantially worse (Table 4). The relational dimension was only moderately related to Digital Channel Enablement (φ = .34) and Branch Automation Technology (φ = .42).

Table 6 Discriminant Validity: Fornell–Larcker Criterion and HTMT Ratios (N = 384)

Dimension	RIWC	DCE	BAT
RIWC	**.85**	.35	.40
DCE	.34 [.23, .46]	**.78**	.74
BAT	.42 [.31, .52]	.73 [.62, .84]	**.91**

Note. Diagonal (bold): square root of AVE. Below the diagonal: latent correlations (φ) with 95% confidence intervals. Above the diagonal: heterotrait–monotrait ratios. RIWC = Relational and Innovative Work Climate; DCE = Digital Channel Enablement; BAT = Branch Automation Technology.

Stability and Higher-Order Structure

The final model was invariant across the two random halves. The configural model fitted well (CFI = .976, RMSEA = .073, SRMR = .036), and constraining loadings ($\Delta\chi^2[7] = 10.91$, $p = .143$; $\Delta CFI = -.002$) and then intercepts ($\Delta\chi^2[7] = 5.45$, $p = .605$; $\Delta CFI = +.001$) did not worsen fit, which supports scalar invariance and indicates that the structure is not an artefact of the particular calibration subsample.

In a second-order model, the three dimensions loaded on a higher-order EPV factor at .44 (Relational and Innovative Work Climate), .77 (Digital Channel Enablement) and .94 (Branch Automation Technology), all $p < .001$. With three first-order factors, the second-order model is statistically equivalent to the correlated-factor model, so its value lies in interpretation. The pattern indicates that a global EPV factor is dominated by technological value: less than one fifth of the variance in the relational dimension ($.44^2 = .19$) is shared with the higher-order factor. Treating EPV as a single score would therefore largely obscure employees' relational value.

Common Method Variance

Procedural remedies included anonymity, separate questionnaire sections and different response anchors for the relational and technology items (Podsakoff et al., 2012). In Harman's single-factor test, the first unrotated component accounted for 49.1% of the variance across all 21 items and 50.2% across the final 10 items, close to the conventional 50% threshold. Because all items measure facets of a single construct, a strong general factor is expected and the test is of limited diagnostic value here (Fuller et al., 2016; Podsakoff et al., 2003). An unmeasured latent method factor model was not interpretable, because the method factor absorbed most of the Digital Channel Enablement variance. Common method variance therefore cannot be ruled out, but it would be expected to inflate rather than reduce the inter-dimension correlations, so it cannot account for the distinctness of the relational and technology dimensions reported above.

Discussion

This study set out to conceptualise and measure the value that retail bank employees perceive in their work environment as a foundation for service innovation. The findings answer the three research questions. EPV is best represented by three related but distinct dimensions (RQ1); the 10-item measure shows strong reliability and convergent and discriminant validity (RQ2); and the structure replicates across independent halves, with a higher-order EPV factor that is dominated by technological value (RQ3).

Theoretical Implications

First, the study gives the employee side of service innovation a validated measure grounded in service-dominant logic, the resource-based view and the job demands–resources model. Previous work in banking has typically inferred the employee contribution to innovation from managerial reports or from generic engagement and employer-branding scales (Berthon et al., 2005; Ronda et al., 2018). The EPV measure instead captures employees' own evaluation of the relational and technological resources they can integrate in serving customers, which is the mechanism these theories identify as the source of value co-creation (Bakker & Demerouti, 2007; Vargo & Lusch, 2016).

Second, the findings show that the human and technological sides of employee value are distinct. The weak relationship between the relational climate and both technology dimensions, together with the low loading of the relational dimension on the higher-order factor, implies that banks can have well-functioning technology that employees value while employees perceive limited recognition, inclusion or support for innovative practice, or the reverse. This supports the argument that technology-related and human-related service innovation are complementary rather than substitutable (Tai et al., 2021), and it qualifies studies that aggregate employee perceptions into a single index. Researchers using EPV should therefore model its dimensions separately or, at minimum, report them alongside any composite.

Third, the split of technological value into digital channel enablement and branch automation reflects the dual role of the bank employee in a hybrid service system. Digital channels move transactions out of the branch and change the employee's role towards advice and channel migration, whereas branch automation reduces manual workload within the branch (Huang & Rust, 2018; Larivière et al., 2017). That the two are strongly related yet empirically separable suggests that employees experience digital transformation as one broad process with two distinct faces.

Linking EPV to Service Innovation: Propositions

Because the study measured EPV from employees only, the effects of EPV on service innovation were not tested here; a previous attempt to estimate such effects by combining unmatched employee and customer samples cannot identify individual-level relationships. Drawing on the dimensional structure, we instead advance three propositions for multi-source research.

Proposition 1: Relational and Innovative Work Climate is positively related to employee-driven service innovation, such as idea generation and improvement of service routines, because recognition, inclusion and peer support provide the psychological safety and motivation that innovative work behaviour requires (Amabile, 1988; Kao et al., 2015; Scott & Bruce, 1994).

Proposition 2: Digital Channel Enablement and Branch Automation Technology are positively related to the implementation of technology-based service innovation, because employees who regard bank technology as useful are more likely to use it fully and to promote it to customers (Davis, 1989; Venkatesh et al., 2003).

Proposition 3: The effect of technological enablement on customer-perceived service innovation is stronger when the relational climate is favourable, because technology creates innovation potential that employees convert into customer value only when they are motivated to do so (Sok & O'Cass, 2015; Tai et al., 2021).

These propositions can be tested by matching employees and customers at the branch level and aggregating EPV to the branch, or by adding employee-rated service innovation and innovative behaviour measures to the employee survey.

Managerial Implications

The EPV measure gives bank managers a short diagnostic of the employee-side conditions for service innovation. Because the relational and technology dimensions are distinct, the measure can reveal imbalances that a single engagement score would hide: for example, branches where employees value the technology but report weak recognition and little support for new ways of working. Such branches are likely to adopt new systems mechanically without generating the human-related innovation that differentiates service. Investment in recognition and reward, inclusive team practices and explicit support for innovative work practices is therefore as important as investment in technology. Separating digital channel enablement from branch automation also lets managers see whether employees find value in the channels they are asked to promote to customers, which matters for customer migration to digital banking in rural and semi-urban branches.

Limitations and Future Research

Several limitations should be noted. First, the data are cross-sectional, self-reported and from a single state, and the sample was stratified but non-probabilistic, which limits generalisability. Second, the relational and technology items used different response formats (importance and agreement). This was intended as a procedural remedy for common method variance, but it means that part of the distinction between the relational and technology dimensions may reflect format, and scores cannot be compared across them. Future studies should administer all items on a common format and test whether the distinction holds. Third, the Digital Channel Enablement dimension was the least sharply defined at the exploratory stage and rests on three items; adding items on channel migration and digital customer support would strengthen it. Fourth, the decision to remove team collaboration (EPV2) was informed by both halves of the sample, so the validation of that single specification step is not fully independent. Fifth, bank sector, branch location and job level were not available at the respondent level in the analysis file, so measurement invariance across public and private sector banks, which is an important question in Indian banking, could not be tested. Finally, the nomological validity of EPV, that is its relationships with service innovation, innovative work behaviour and customer outcomes, remains to be established through the multi-source designs outlined above.

Conclusion

Employees remain the medium through which banks turn technology and strategy into service innovation that customers experience. This study conceptualised Employee Perceived Value as employees' evaluation of the relational and technological resources their workplace provides, and validated a 10-item, three-dimensional measure among bank employees in Jharkhand. The relational climate and the two faces of technological enablement are distinct, and the relational side is easily lost in a global score. Measuring them separately should help researchers and banks understand, and strengthen, the human foundations of service innovation.

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Declaration of Conflict of Interest

The author(s) declare that there is no conflict of interest regarding the publication of this paper.

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Appendix

Initial EPV Item Pool and Final Retention

Table A1 Item Wording

Code	Item	Final dimension
EPV1	Leadership in my bank encourages positive change and innovation	—
EPV2	Employees work collaboratively to achieve service excellence	—
EPV3	I feel a sense of inclusion and belonging at my workplace	RIWC
EPV4	My contributions are recognized and appreciated by the management	RIWC
EPV5	My bank encourages innovative and forward-thinking work practices	RIWC
EPV6	Ethical values are strongly upheld in my organization	—
EPV7	I share harmonious and supportive relationships with my colleagues	RIWC
EPV8	My bank provides adequate training to enhance my skills	—
EPV9	I feel committed to the long-term success of my bank	—
EPV10	Digital tools and software help me improve my productivity	—
EPV11	Automation and AI-enabled systems support my work efficiency	—
EPV12	Internet banking systems are effectively implemented in my branch	DCE
EPV13	Mobile banking applications support efficient customer service	DCE
EPV14	Digital payment and UPI services improve transaction speed	DCE
EPV15	ATM and smart teller machines reduce customers' waiting time	—
EPV16	Cash deposit and recycling machines reduce manual workload	—
EPV17	Cheque processing devices improve operational efficiency	BAT
EPV18	Automated cash handling systems enhance accuracy	BAT
EPV19	Smart debit/credit card technology improves service delivery	BAT
EPV20	Utility bill payment services through banking channels are efficient	—
EPV21	POS terminals support smooth merchant transactions	—

Note. EPV1–EPV9 were rated for importance (1 = not important, 5 = highly important); EPV10–EPV21 for agreement (1 = strongly disagree, 5 = strongly agree). — = removed during purification. RIWC = Relational and Innovative Work Climate; DCE = Digital Channel Enablement; BAT = Branch Automation Technology.