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Linking unlearning with service quality through learning processes in the Spanish banking industry☆

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ABSTRACT

Knowledge, like other resources, can quickly become obsolete. Thus, actors in an economy must constantly update their knowledge to keep pace with ongoing changes in their operational environment. This study explores unlearning's influence on two forms of learning (i.e., exploration and exploitation of knowledge). The study also adopts a dynamic management focus to analyze the influence of these two individual learning capabilities and their ability to help firms align technology knowledge and relational knowledge. This study reaches important conclusions on unlearning's role in knowledge management. The study examines learning processes and knowledge stocks (i.e., technology and relational knowledge) that practitioners (managers) within service firms generate through their relationships with customers. This study explores how an unlearning context can help service firms align learning processes (i.e., exploration and exploitation) through an empirical study of 150 managers in the Spanish banking industry.

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1. Introduction

The strategic management literature defines absorptive capacity (ACAP) as a firm's "ability to recognize the value of new information, assimilate, and apply that information to commercial ends" (Cohen & Levinthal, 1990). Kim (1998) defines absorptive capacity as the learning ability and problem-solving skills that enable firms to assimilate knowledge and create new knowledge. Absorptive capacity is a function of the organization's existing resources, existing tacit and explicit knowledge, internal routines, management competences, and culture (Gray, 2006). Absorptive capacity results from a prolonged process of knowledge accumulation in conjunction with a strong ability to recognize and appreciate new valuable knowledge to produce more innovations.

Some scholars use the idea of knowledge assimilation or creation to characterize how prior knowledge may pave the way for future opportunities (Shane, 2000). Thus, knowledge creation and learning processes map out a path toward assimilating and deploying knowledge (Short, Ketchen, Shook, & Ireland, 2009). Consequently, these learning processes have a close relation with Zahra and George's (2002) notion of ACAP, and more specifically, to the realized absorptive capacity dimension (RACAP). RACAP refers to a firm's capacity to develop and refine the routines that facilitate the combining of existing knowledge and newly acquired and assimilated knowledge (Zahra & George, 2002). An exploitation capability supplements this transformation capability in RACAP. The exploitation capability refers to a firm's capacity to deploy the newly acquired knowledge in products or services. Doing so helps firms to improve their product/service offers, improve organizational procedures and processes, and ultimately achieve a financial profit.

Two classical dimensions define the ACAP term. Whereas the term potential absorptive capacity (PACAP) commonly refers to the capacity to acquire and assimilate knowledge, RACAP covers transformation and exploitation capabilities. "Transformation denotes a firm's capability to develop and refine the routines that facilitate combining existing knowledge and the newly acquired and assimilated knowledge" (Zahra & George, 2002, p. 190). Transformation thus involves inventing new interpretations of existing knowledge, adding new knowledge, and deleting pieces of old knowledge. Exploitation refers to "a firm's ability to harvest and incorporate knowledge into its operations" (Zahra & George, 2002, p. 190). RACAP reflects the firm's capacity to leverage absorbed knowledge and transform this knowledge into an innovation outcome such as new goods and services (Fosfuri & Tribó, 2008; Purvis, Sambamurthy, & Zmud, 2001).

Unlearning helps managers to reorient organizational values, norms, and behaviors by changing cognitive structures, mental models, dominant logics, and core assumptions that guide behavior (Cepeda, Cegarra, & Jimenez, 2012). Firms can thereby use unlearning to gain competitive. Thus, unlearning contributes by laying the foundation to improve quality. As Cepeda, Cegarra, Martinez, and Eldridge (2011) point out, to sustain quality in a dynamic environment, firms must be

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able to renew their knowledge bases. Consequently, organizations should create an internal context where they can value and combine the newly generated knowledge from firm–customer interactions (relational) and technology with existing knowledge to provide better services. This study analyzes these knowledge processes.

Thus, the study's contribution consists of analyzing the relationship between unlearning and core knowledge processes in the specific service domain (banking) so that these firms can improve the financial services they provide. The following sections of the study present the concepts of technology and relational knowledge. These concepts enable the linking of knowledge stocks to quality improvement capacity in the Spanish banking industry.

2. Conceptual framework

Organizations possess stocks of knowledge. These knowledge stocks represent knowledge within people and machines. Hence, this study's conceptual framework uses concepts such as relational knowledge and technology knowledge.

In this study, relational knowledge refers to the knowledge arising from a manager's relationship with his or her customers (Cepeda-Carrión, Cegarra, Martinez Caro, & Eldridge, 2011). Relational knowledge consists of the acquisition of knowledge from internal experience and from hours of experience in customer–manager relationships. Relational knowledge may take shape through an interpretation of the current situation and/or physical environment, which may be ambiguous, inconsistent, or complex. Managers may read these interpretations differently, which results in contradictory actions and misunderstandings. Relational knowledge may come from ostensibly unreliable sources that are in fact trustworthy. The recipient may ignore or internally readjust this knowledge. This reaction from the recipient may be the result of personal reasons such as personality differences or a lack of trust.

Designating a correct source as unreliable may also be the result of fixed and predetermined ideas. Alternatively, managers may draw the same incorrect conclusions and then make decisions assuming, incorrectly, that others possess the same knowledge.

Technology knowledge (t-knowledge) refers to a fuzzy set of skills—including information resources—that enable better use of technologies. T-knowledge arises from, and resides in, human activity (Herschbach, 1995), as Landies (1980) observes. While the intellectual factor is at the heart of the technological process, the process itself consists of “the acquisition and application of a corpus of knowledge concerning technique, that is, ways of doing things” (1980, p. 111). T-knowledge potentially provides technology users with the right answer in the right place at the right time (Cegarra, Cepeda, Martínez, & Salmador, 2011). 'For information communication technologies (ICT), the answer covers knowledge of operating systems and computer hardware and the ability to install and remove peripheral devices, install and remove software programs, and create and archive documents (Nohria & Gulati, 1996; Sharma, 2000; Szulanski, 1996).

Fig. 1 provides a synopsis of the previous arguments. This study examines the combination of factors that facilitate exploration and exploitation capabilities in knowledge creation. At the individual level, exploration and exploitation capabilities occur simultaneously and recursively and together constitute knowledge creation (Zahra & George, 2002).

2.1. Linking unlearning to types of learning

Researchers report that service personnel are likely to feel the burden of outdated knowledge (Gideon et al., 1999; Kadushin, 2004; Kadushin & Egan, 2001; Madigan & Tullai-McGuinness, 2004; Rushmer & Davies, 2004; Wilson, 1988). The existence of inappropriate knowledge influences the types of organizational learning available to firm members. Inappropriate knowledge causes members to share inappropriate assumptions about inappropriate routines. Furthermore, organizational members may adopt inappropriate approaches to scanning the business environment and may make mistakes when defining, meeting, and bringing ideas to fruition by introducing new services.

In light of the previous arguments, unlearning is an important trigger of a destabilization process in working environments. This process of destabilization and subsequent reconsolidation may be a means by which individuals update or modify established memories (knowledge). For example, unlearning may reveal managerial problems that employees may not want to express directly, such as excessively authoritarian managerial styles, lack of trust, and other dysfunctional aspects of an organization. Importantly, most prior organizational research describes unlearning as the result of some form of old learning's destabilization (Akgun, Lynn, & Byrne, 2006; Lee & Sukoco, 2011). Thus, the appropriateness and effectiveness of the types of organizational learning that service managers perceive depend on their ability and willingness to counteract the negative effects of inappropriate knowledge and combine prior knowledge (with appropriate adjustments for obsolete or inaccurate knowledge) with new knowledge. This leads to the proposition that the creation of an unlearning context in an organization enhances the ability and willingness of managers to engage in these learning activities.

Obviously, knowledge arising in a specific context (e.g., within a unit or department) is not necessarily unsuitable for jobs in different working environments. From this perspective, inappropriate knowledge could reveal potentially useful information about how the service firm and the firm members operate. For example, outdated knowledge is useful for conveying information to others, exerting a social influence, and entertaining (Cegarra & Cepeda, 2010; Cegarra et al., 2011). Outdated knowledge can create doubts about the efficacy and appropriateness of some individuals' mental models regarding organizational culture and organizational routines. In these circumstances, unlearning is an important trigger that destabilizes working environments. This process of destabilization and subsequent reconsolidation may update or modify established memories (knowledge). From this perspective, the existence of an unlearning context apparently provides support for managing an appropriate balance between exploration and exploitation of knowledge.

As in previous research (Carlson, Upton, & Reaman, 2006; Van der Bent, Paauwe, & Williams, 1999), this study attempts to show that for a given organization, knowledge (both external and internal to the organization) requires critical examination because of its potential relevance. As the previous discussion indicates, to obtain an updated view of a new knowledge structure and to understand its effects, managers have to examine the phenomenon from a number of different angles. If managers undiscriminatingly rely on internal knowledge, they are likely to become less creative (Sinkula, Baker, & Noordewier, 1997).

H1. Unlearning has a positive association with exploitation of knowledge.

H2. Unlearning has a positive association with exploration of knowledge.

2.2. Linking types of learning to technology and relational knowledge

T-knowledge may include previous experience on installing and removing peripheral devices, and this experience may later influence the skills that individuals find necessary to operate certain technologies. Nonetheless, activity is what defines relational knowledge's drivers (e.g., trust, shared values, perspectives about business and life, and available time). Likewise, activity establishes and orders the framework where employees use technology (Herschbach, 1995).

A key question is whether the actions of exploring knowledge and exploiting knowledge directly affect relational knowledge and t-knowledge. In this regard, service firms that have developed a strong

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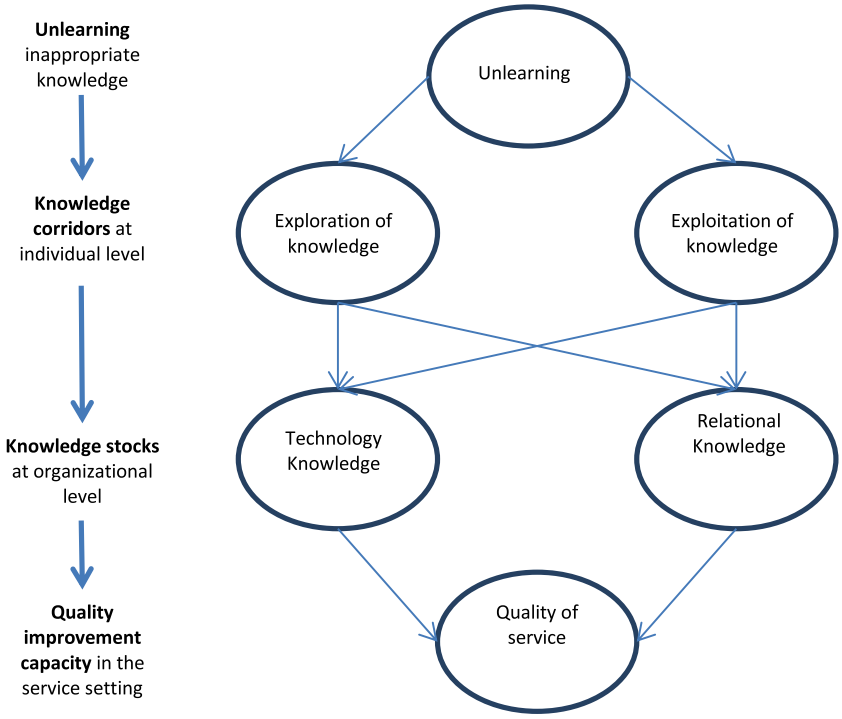

Fig. 1. The proposed research model.

culture may also be good at transferring, transforming, and updating knowledge, as well as modifying behavior to reflect new knowledge and insight (Garvin, 1993; Huber, 1991). From this perspective, organizational members placing emphasis on new knowledge structures (i.e., relational knowledge and t-knowledge) must first acquire information, assimilate this information, and transform this knowledge into new knowledge structures. In addition, exploration and exploitation involve both individual and organizational changes, so questioning the way of modeling the change process is useful. Furthermore, organizational learning may also stimulate knowledge application, which improves the accuracy of answers and customers' knowledge about the service on offer.

Consequently, achieving relational knowledge and t-knowledge requires the cooperation and involvement of the whole organization to make exploration and exploitation the initial steps toward new knowledge structures. Exploration and exploitation are management tools for achieving management goals. Managers, however, are not the only organizational members who need to think about how to achieve these goals or how to function differently.

H3. Exploration of knowledge has a positive association with relational knowledge.

H4. Exploration of knowledge has a positive association with t-knowledge.

H5. Exploitation of knowledge has a positive association with relational knowledge.

H6. Exploitation of knowledge has a positive association with t-knowledge.

2.3. Linking technology and relational knowledge to service quality

A considerable body of literature focuses on the relationship between knowledge and quality of service. In this regard, relational knowledge and t-knowledge are central to service firms' practice (Cepeda-Carrión et al., 2011). When managers possess good relational knowledge, they always choose to maintain a professional rapport with customers, uphold customers' dignity, and respect customers' privacy. Managers with poor relational knowledge, in contrast, have a weaker ability to comprehensively assess clients' circumstances. Thus, customers are more likely to distrust the service and proposed solution, leading to a lower degree of compliance to follow experts' advice. Regarding t-knowledge, this study follows the suggestion of Mort, May, and Williams (2003), who claim that t-knowledge can reduce the duplication of services and overhead costs of providing them.

The above considerations also imply that relational knowledge and t-knowledge allow service firm members to gain a much deeper insight and to make better decisions. Mort et al. (2003) report that t-knowledge helps reduce customers' isolation by facilitating peer contact for both manager consultations and continuing education. For example, when service firm members use a technology system to maintain close relations with customers, they gain a powerful position. They gain such a position because they can exercise some control over data and information that they provide about themselves and they decide whether to engage in the relationship in the first place. Simultaneous, recursive, and joint use of relational knowledge and t-knowledge allows service firm members to deal with customers systematically (Lockamy & Smith, 2009), which in turn leads to better customer service and a higher level of perceived quality (Asubonteng, McCleary, & Swan, 1996).

H7. Relational knowledge has a positive association with perceived quality of service.

H8. T-knowledge has a positive association with perceived quality of service.

3. Methods

3.1. Data collection

The Spanish banking industry is an appropriate context to empirically test the research hypotheses. The banking sector is suitable because

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banking activities demonstrate learning capabilities. Banking is a highly knowledge-intensive industry and is therefore appropriate for identifying, analyzing, and evaluating different learning processes. The increasingly intense competition within this industry is forcing banks to seek new ways of leveraging their organizational knowledge. In addition to the competition within the industry, the relative intangibility of their products and services prompts the need to capture and retain customers by offering something extra and building a strong relationship.

The current crisis in the financial services industry is highly significant. Numerous banking takeovers and capitalizations are happening, with the number of company mergers (as a rescue measure, specifically in Spain) multiplying and the volume of crashes increasing. The full extent of this crisis remains unknown because of the unusually high speed at which key events have developed and enormous changes have occurred within a short time span, predominantly following the crash of Lehman Brothers in September 2008. The total number of banks operating in Spain at the time of the study (i.e., 2013) was 15, whereas just three years previously (2010) the sector comprised 110 entities.

Two main reasons led to the choice of the Spanish banking domain as a target for study. First, the necessity for intimacy between service providers (branch office managers) and customers in their commercial relationships is a critical motive for selecting this study sample, especially in Spain. Banking is a trust-based service, and these relationships endure. Second, the banking service is an ideal platform for learning because two or more individuals often work together with different resources and complementary capacities, which are learning facilitator factors (Fenwick, 2007).

The 15 banks met the requirements of the study (i.e., banks serving the public). Data collection followed a snowball sampling method with key respondent methodology, in accordance with the suggestions of an expert panel consisting of 15 eminent academics and 10 general bank managers. The unit of analysis is branch office managers from the 15 banks operating in Spain in 2013. Surveying took place from September 2013 to November 2013. In total, 200 branch office managers received telephone invitations to participate in the study, a process that yielded 152 questionnaires. Two of these questionnaires were unsatisfactory, so they do not appear in the final sample. Analysis therefore draws on data from 150 valid questionnaires.

3.2. Measures

The questionnaire design draws on the previous literature review. The unlearning context construct is a formative second-order construct. Three first-order factors or dimensions assess the unlearning context. These dimensions are consolidation of emergent understandings, the examination of lens fitting, and the framework for changing individual habits. A question that arises when taking a multidimensional approach (i.e., using second-order measures) is whether the model should represent these constructs as reflective or formative indicators. Indeed, understanding the construct's underlying essence, whether reflective (i.e., changes in the underlying construct cause changes in the indicators) or formative (i.e., indicators affect or cause the underlying construct), is an essential first step in modeling its structure (MacKenzie, Podsakoff, & Jarvis, 2005). Consequently, the choice depends primarily on whether researchers view the first-order factors or dimensions as indicators or causes of the second-order factor (Chin, 1998). The study adopts a formative view of this structure for the second-order construct. Thus, an increase in any dimension's level does not imply an increase in other dimensions' levels. The dimensions do not necessarily correlate; consequently, traditional reliability and validity assessments are inappropriate and illogical for a formative second-order factor with reference to its dimensions (Bollen, 1989). The measurement of the other four constructs (i.e., exploration of knowledge, exploitation of knowledge, technology knowledge, and quality of services) uses reflective indicators. Finally, modeling of the relational knowledge construct adopts a reflective second-order construct comprising two dimensions.

This study mainly employs existing scales from the literature. The questionnaire constructs comprise the following concepts. To examine the two constructs of organizational learning (exploration and exploitation of knowledge), the methodology draws on the pre-defined dimensions of absorptive capacity (Zahra & George, 2002). Measurement employs a seven-point Likert scale from the study by Jansen, Van den Bosch, and Volberda (2005). This study works with two dimensions from this scale: acquisition and assimilation of new external knowledge. Six items assess effort intensity and direction in knowledge acquisition. In addition, four items measure exploitation and gauge the extent to which firms are able to analyze and understand new external knowledge. Ultimately, after a data cleansing process, three items form the exploration scale, and three items compose the exploitation scale.

To examine technology knowledge, the methodology draws on the pre-defined dimensions for technology slack (Nohria & Gulati, 1996; Sharma, 2000; Szulanski, 1996). The measurement of items uses a seven-point Likert scale. Technology knowledge consists of four items. Relational knowledge includes transformation and exploitation of knowledge as two reflective dimensions (Zahra & George, 2002). Item measurement uses a seven-point Likert scale from the study by Jansen et al. (2005). Twelve items initially assess how far managers can facilitate recognition of opportunities and consequences of customer knowledge for existing protocols, processes, and policies (Zahra & George, 2002). The scale gauges the managers' ability to incorporate customer knowledge into their operations. The final scale consists of three items for each dimension.

As per the previous discussion, the unlearning context comprises three dimensions: consolidation of emergent understandings, the examination of lens fitting, and the framework for changing individual habits. The measures relating to consolidating emergent understandings consist of six items from a scale by Cegarra and Sanchez (2008), adapted from Akgün, Byrne, Lynn, and Keskin (2007). These items describe the way management faces change, actively introduces change into the company through projects, collaborates with other members of the organization, and recognizes the value of new information or risk taking. The measurement of the examination of lens fitting uses five items. These items recognize the support of policies, rules, reporting, structures, and decision-making protocols that encourage the identification of problems, mistakes, and new ways of doing things. Finally, measurement of the framework for changing individual habits uses seven items. This scale focuses on employees' awareness of their mistakes, ways of thinking, and wrong behaviors in everyday attitudes.

The quality of service scale consists of nine items from Powell (1998). Research shows that quality of service's perceived measures can be a reasonable substitute for objective measures of performance and have a significant correlation with these objective measures (Geringer & Hebert, 1989; Hansen & Wernerfelt, 1989; Venkatraman & Ramanujam, 1987). Although self-report scales receive criticism, subjective scales have their own merits since objective indicators cannot achieve a high level of specificity in terms of industry, time horizon, and conditions in banking services.

3.3. Data analysis

Partial least squares (PLS) is an appropriate data analysis technique for this study because of the model and sample data characteristics. The model uses formative indicators, and data follow a non-normal distribution. Other structural equation modeling techniques (e.g., covariance-based models in LISREL or AMOS) are inapplicable in these circumstances (Diamantopoulos & Winklhofer, 2001). This study uses SmartPLS 2.0 to perform the analysis (Ringle, Wende, & Will, 2005). PLS methodology follows a two-stage approach (Barclay, Higgins, & Thompson, 1995).

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Table 1
Factor loadings of reflective constructs.

	Exploration of knowledge	Exploitation of knowledge	Relational knowledge	Quality of service	Technology knowledge	Unlearning
P9_1	**0.80**	0.63	0.47	0.39	0.50	0.52
P9_3	**0.76**	0.33	0.46	0.27	0.39	0.44
P9_5	**0.65**	0.40	0.39	0.23	0.34	0.32
P9_8	0.63	**0.94**	0.60	0.50	0.55	0.61
P9_9	0.61	**0.95**	0.48	0.45	0.47	0.55
P9_10	0.53	**0.94**	0.47	0.39	0.45	0.58
Transformation	0.56	0.51	**0.93**	0.52	0.61	0.56
Link Exploitation	0.54	0.51	**0.93**	0.52	0.59	0.59
P15_1	0.19	0.23	0.31	**0.77**	0.38	0.39
P15_2	0.39	0.39	0.48	**0.78**	0.42	0.38
P15_3	0.21	0.30	0.34	**0.75**	0.39	0.39
P15_5	0.42	0.42	0.49	**0.74**	0.47	0.43
P15_6	0.27	0.35	0.38	**0.72**	0.37	0.44
P15_8	0.28	0.33	0.48	**0.73**	0.44	0.42
P15_9	0.32	0.35	0.46	**0.78**	0.34	0.43
P15_10	0.27	0.37	0.42	**0.78**	0.32	0.52
P15_12	0.34	0.41	0.34	**0.68**	0.25	0.46
P8_1	0.48	0.42	0.58	0.47	**0.91**	0.47
P8_2	0.47	0.48	0.53	0.42	**0.94**	0.47
P8_3	0.51	0.44	0.55	0.40	**0.93**	0.46
P8_4	0.57	0.54	0.65	0.55	**0.87**	0.65
CEU	0.54	0.52	0.60	0.54	0.52	**0.89**
CIH	0.52	0.57	0.51	0.48	0.45	**0.89**
ELF	0.44	0.51	0.48	0.43	0.50	**0.80**

The first step requires assessment of the measurement model. This analysis relates to the attributes of individual item reliability, construct reliability, average variance extracted (AVE), and discriminant validity of latent variable indicators. The second step evaluates the structural model. The objective is to test the consistency of causal relationships in the model with empirical data. The bootstrapping procedure (Chin, 1998) enables testing of research hypotheses.

Analysis of the relationships between the different constructs and their indicators entails applying the latent model perspective, which models the latent variable as the indicators' cause. Indicators are therefore reflective for first-order constructs or dimensions, except for the unlearning context construct, which feeds into the model as a second-order formative construct.

With regard to the measurement model, the first step is to assess individual item reliability (Table 1). All indicators except two (p9_5; p15_12) exceed the threshold of 0.70 for each factor loading (Carmines & Zeller, 1979). Because PLS is a predictive and exploratory technique, however, these indicators' failure to exceed the threshold does not compromise the reliability of this study's measurement model as long as the other reliability scores exceed the threshold (Chin, 1998).

Results in Table 2 imply that all constructs are reliable. Values for both Cronbach's alpha and for composite reliability are greater than 0.7 (required in the early stages of research) and the stricter value of 0.8 (required for basic research) (Nunnally, 1978). The AVE should be greater than 0.5, meaning that the construct accounts for 50% or more of the indicators' variance (Fornell & Larcker, 1981). All constructs in the model exceed this condition (Table 2). A comparison of the AVE's square root (i.e., the diagonal elements in Table 2) with the correlations between constructs (i.e., the off-diagonal elements in Table 2) tests for discriminant validity. On average, each construct relates more strongly to its own measures than to others.

Evaluation of formative dimensions of the high-order construct unlearning context differs from the evaluation of unlearning context's reflective dimensions. The appropriate procedure for formative dimensions is an examination of weights (Mathieson, Peacock, & Chin, 2001), which is a canonical correlation analysis that provides information about how each indicator contributes to its construct (see Table 3). Weights need not exceed any particular benchmark because a census of indicators is necessary for a formative specification (Diamantopoulos & Winklhofer, 2001). The concern with formative dimensions is multicollinearity with overlapping dimensions, which may produce unstable estimates (Mathieson et al., 2001). Results of a collinearity test show that the variance inflation factor (VIF) scores for the second-order construct for three dimensions are below the standard cut-off of 3.3. In addition, data meet Fornell and Larcker's requirements (1981) for testing the formative dimensions' validity.

Table 2
Descriptive statistics and correlation matrix.

	Mean[a]	SD	CR	CA	AVE	1	2	3	4	5	6	7	8	9
1. Exploration of knowledge	5.67	1.21	0.77	0.78	0.55	0.74								
2. Exploitation of knowledge	5.43	1.23	0.96	0.94	0.88	0.63	0.94							
3. Consolidation of emergent u…[b]	5.71	1.31	0.93	0.92	0.74	0.54	0.53	0.86						
4. The framework for changing i…[b]	5.44	1.11	0.96	0.95	0.78	0.52	0.57	0.68	0.88					
5. The examination of lens fitting[b]	6.14	0.91	0.91	0.86	0.67	0.43	0.51	0.53	0.53	0.82				
6. Link exploitation[b]	5.41	1.22	0.86	0.74	0.67	0.55	0.51	0.54	0.52	0.42	0.82			
7. Quality of service	4.76	1.34	0.92	0.91	0.59	0.42	0.47	0.54	0.56	0.41	0.53	0.76		
8. Technology Knowledge	5.25	1.32	0.95	0.94	0.81	0.53	0.53	0.53	0.45	0.50	0.57	0.53	0.90	
9. Transformation[b]	5.38	1.25	0.85	0.73	0.66	0.56	0.52	0.53	0.43	0.48	0.60	0.51	0.62	0.81

[a] Mean = the average score for all of the items included in this measure; SD = standard deviation; CA = Cronbach's alpha; CR = composite reliability; AVE = average variance extracted.

[b] They represent the dimensions of the second-order construct. Diagonal entries are the square root of the average variance extracted. Off-diagonal elements are correlations among constructs.

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Table 3
Weights of formative constructs.

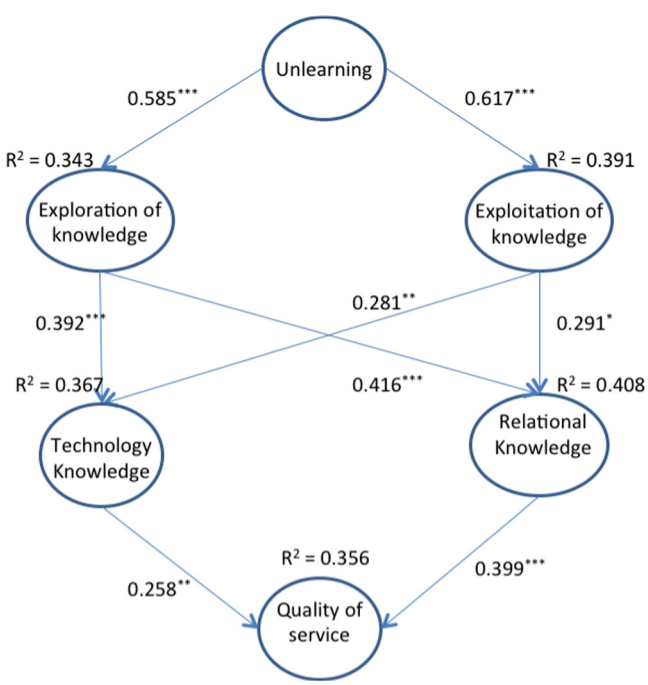
High-order constructs and their dimensions	Weights	Student's *t*
Unlearning context		
Consolidation of emergent understandings (CEU)	0.47	5.79
The examination of lens fitting (ELF)	0.25	3.47
The framework for changing individual habits (CIH)	0.56	6.45

4. Results

Fig. 2 presents a summary of the structural model resulting from the PLS analysis, showing the explained variance of endogenous variables (R^2) and the standardized path coefficients (β). All the relationships in the research hypotheses are significant, thereby supporting the hypotheses. Significance testing and modeling employs traditional parameter-based techniques (Chin, 1998) because PLS makes no distributional assumptions in its parameter estimation. One consequence of the comparison between covariance structural modeling approaches and PLS is that no proper overall goodness-of-fit measures exist for models using PLS (Hulland, 1999). Evaluation of the structural model depends on examining the R^2 values and the size of the structural path coefficients.

The *t* statistics from a bootstrap test with 5000 resamples test the stability of the path coefficient estimates. Table 4 shows model statistics, path coefficients, and *t* values corresponding to the level of significance from the bootstrap test.

Calculating the significance of the indirect path (which goes from the exploration and exploitation constructs to quality of service) provides a means of checking for the presence of indirect effects. This indirect path passes via relational knowledge and technology knowledge. Table 5 shows results of indirect effects and their significance (percentile bootstrap 95% confidence interval). Analysis shows that results support all indirect effects. The fact that all indirect paths are significant means that exploration and exploitation of knowledge have an indirect effect on quality of services through both relational knowledge and technology knowledge.



*p < .05; **p < .01; ***p < .001 (based on t(4999), one-tailed test)

Fig. 2. Estimated causal relationships in the structural model. $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$ (based on $t(4999)$, one-tailed test).

Table 4
Model statistics.

Model paths	Path coefficients	*t* values	R^2
Unlearning → Exploration of knowledge	0.585	12.33	0.34
Unlearning → Exploitation of knowledge	0.617	9.79	0.39
Exploration of knowledge → Relational knowledge	0.416	3.88	0.41
Exploration of knowledge → Technology knowledge	0.392	3.66	0.37
Exploitation of knowledge → Relational knowledge	0.291	1.78	0.41
Exploitation of knowledge → Technology Knowledge	0.281	2.79	0.37
Relational knowledge → Quality of service	0.399	4.15	0.36
Technology knowledge → Quality of service	0.258	3.07	0.36

$^{***}p < .001$. $^{**}p < .01$. $^{*}p < .05$. ns = not significant (based on a Student $t(4999)$ distribution with one tail). $t(0.05.\ 4999) = 1.645158499$. $t(0.01.\ 4999) = 2.327094067$. $t(0.001.\ 4999) = 3.091863446$.

Therefore, the results support the model. In other words, all antecedent variables, some of them directly (i.e., relational knowledge and technology knowledge) and others indirectly (i.e., exploration of knowledge and exploitation of knowledge), are the best way to explain the dependent variable variance (i.e., quality of service).

5. Discussion

Through an empirical study of 150 branch offices in the Spanish banking sector, this study examines how an unlearning context can help service firms align technology and relational knowledge. The study untangles the concept of knowledge and organizational learning by illustrating the processes behind the development of an organizational context.

The study's first contribution is to stress that service firms may be investing too heavily in the adoption of knowledge through exploration processes and investing too little in mechanisms to facilitate the unlearning of inappropriate knowledge. Regarding this finding, firms that consider the flow of knowledge creation as a linear process (i.e., unlearning → organizational learning → knowledge stock → knowledge use) can expect to achieve higher levels of quality in their services. Consequently, when establishing banking services, managers should encourage employees to unlearn knowledge rapidly as a first step and use new knowledge structures effectively as a second step.

The second contribution of this study relates to the results of the hypothesis testing. Findings suggest that the two types of learning (i.e., exploration and exploitation) are important, albeit not enough to create technology and relational knowledge. The significant positive association between the unlearning context and the framework for consolidating emergent understandings indicates that managers need to provide critical input to implementing a new technology. Managers should critically appraise proposals to implement new technologies, suggesting solutions and allowing experts to observe and intervene in discussions.

This study has some limitations. First, results provide only a snapshot of ongoing processes rather than measures of the same process over time. Second, although drawing on relevant, valid scales from the literature ensures that the constructs' definition is as precise as possible,

Table 5
Indirect effect statistics.

Indirect effects of exploration and exploitation of knowledge on quality of service	Point estimate	Percentile bootstrap 95% confidence interval	
		Lower	Upper
Exploration-RK-QS	0.166	0.076	0.256
Exploration-TK-QS	0.101	0.019	0.192
Exploitation-RK-QS	0.116	0.009	0.288
Exploitation-TK-QS	0.072	0.007	0.163

RK: relational knowledge; TK: technology knowledge; QS: quality of service.

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the constructs can realistically act only as proxies for an underlying latent phenomenon that is itself only partially measurable. Third, the model in this study is general and fails to capture the possible moderating effects of environmental turbulence and uncertainty. Prior research shows that the effect of cognitive factors on individual, group, and organizational performance can vary substantially with environmental conditions.

6. Conclusions

In summary, this study establishes important conclusions about unlearning's role in knowledge creation (organizational learning). The study considers learning forms and knowledge stocks (i.e., technology and relational knowledge) that bank managers generate through their relationships with customers. The results support the view that to create technology and relational knowledge and hence foster the adoption of new practices, banks must build and foster an unlearning context. One interpretation of this relationship is that through the unlearning context, banks allow individuals to adjust their mental models and the nature of the assumptions they share to break with current workplace culture. Managers need to create a context of continuous unlearning because old, outdated knowledge can impede adaptation to new configurations.

The considerations in the previous discussion lead to the argument that technology and relational knowledge allow banking firms to enhance service quality. This finding is important because the potential for any service firm to preserve and maintain the quality of its services greatly depends on its ability to acquire and assimilate new ideas. Managers may therefore find themselves trapped in a suboptimal stable equilibrium. Many overloaded managers may be investing too heavily in the development of technological breakthroughs, while preserving old beliefs and traditions. Results also reveal a positive association between technology creation, relational knowledge, and perceived service quality. New knowledge structures provide support to customer responsiveness and action. Knowledge structures provide support by retaining a broader range of potential responses. Therefore, they allow customers to capitalize on the broad variety that these new knowledge structures offer.

The financial sector, and more specifically the banking industry, is undergoing radical changes that are presenting serious challenges for banks to overcome the current financial crisis. Despite opportunities for the financial (and banking) industry to implement strategic management on the basis of knowledge, very few banks actually demonstrate a willingness to use their technology and relational knowledge. The results of this study should encourage banks to reconsider learning and knowledge, take advantage of these assets, and improve the services they offer their customers.

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