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Author post-print (accepted) deposited by Coventry University's Repository

Original citation & hyperlink:

Cegarra-Navarro, J-G, Jiménez-Jiménez, D & Garcia-Perez, A 2019, 'An integrative view of knowledge processes and a learning culture for ambidexterity: Towards improved organisational performance in the banking sector', IEEE Transactions on Engineering Management, vol. (In-press), pp. (In-press).

<https://dx.doi.org/10.1109/TEM.2019.2917430>

DOI 10.1109/TEM.2019.2917430

ISSN 0018-9391

Publisher: Institute of Electrical and Electronics Engineers (IEEE)

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An integrative view of knowledge processes and a learning culture for ambidexterity: Towards improved organisational performance in the banking sector

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Abstract—Banks are the backbone of the financial sector and catalysts in the economic development of any country. Current changes in their global business ecosystem make of knowledge about the fund-supplying and fund-demanding parties of the society a key resource for the fulfilment of banks' investment and saving functions. This research addresses the relationship between performance and a learning culture that is supported by knowledge processes within the organisation. Given the relevance of this subject for organisations from most knowledge-intensive domains, this research has focused on the Spanish banking sector. Using a structural equation model, feedback received from 215 employees from 142 individual branches from a major banking institution in Spain was studied. The results of the data analysis show that in addition to maximising on what is already known about the customer base, employees' learning about the potential new stakeholders and also about the internal strategies, tools and techniques is directly related to the bank's performance which, in turn, influences economic recovery and socio-economic development. Results support that an active pursuit of learning within the context of the organisation is required for banks to remain competitive in the dynamic, global business ecosystem where international, national and local banking sectors operate.

Keywords—Organisational learning culture, ambidexterity, knowledge-based processes, business performance, financial sector, Spain

I. INTRODUCTION

The banking sector is an integral part of the economy of any country or region as it plays a key role in promoting and supporting its economic growth [1]. Despite often being described as mature organisations, banks operate in highly turbulent environments, which means that their operation and strategy is far from stable or predictable. The Spanish financial sector has been significantly challenged in recent years by the long-term effects of the global financial crisis that started in 2007 and had profound effects on the global economy. The crisis caused a significant slowdown in economic activity and the sudden collapse of a domestic housing boom that Spain had experienced. As a result, the banking industry has had to undergo (and is still undergoing) radical changes that are presenting serious challenges to banks [2]. For instance, banks are working hard to introduce significant new products (e.g. Real-time payment methods that agile the customer transactions; cognitive technologies and the mobile-first

experience such as voice authentication, fingerprint, and facial recognition; or robo advisory services such as providing details of the last transaction, and even giving some basic financial advice) but also some other disruptive organizational innovations (e.g. Blockchain to address security and fraud concerns; Internet of Things provides more telling data into consumer behaviour, on top of improving banking efficiency and productivity; or Cloud adoption and Platform as a Service to refine customer experiences whilst reducing implementation risks) that allow companies to adapt to a rapid digitalization, create an optimal customer experience for consumers and small businesses, identify risks and fraud or provide scalable services that can be easily adapted for any client and regulatory requirements. Furthermore, unlike many countries, Spanish banks had already accumulated at the start of the financial crisis, a large volume of contaminated assets, outstanding claims, unprofitable products, risky investments and a decline in their income statements. Thus, many banks did require public sector support and were challenged by the need to find ways of increasing their business performance.

In such a complex scenario, even when the Spanish financial sector is well into its recovery there is a need to address a number of new and emerging issues which include the rebuilding of the image and reputation of the Spanish banks. Furthermore, those banks that have survived the crisis must find more effective ways of running the business to increase profitability, attract new customers and meet the evolving needs of their existing customer base, as well as increasing their knowledge of risk and risk management practices [3], [4], [5].

A. Adaptability and culture in the financial sector

Adaptability would enable Spanish banks to be both innovative towards exploring new businesses opportunities and exploiting established opportunities for development of their business. This ability to simultaneously pursue both explorative and exploitative innovation -perceived by some as a crucial strategy for the long-term survival and success of organisations [6], has been defined as organisational ambidexterity [7], [8]. In this vein, organisational culture has become one of the central concerns for firms in their search for an approach to management which is effective in enabling such adaptability. However, culture is a heterogeneous element across different organisations, which guides the behaviour of companies towards either the exploitation of existing practices or the exploration of

new knowledge and related opportunities [9]. Both of such approaches, however, could contribute to the recovery of the country's confidence in their financial system and thus enhance its chances of success. In fact, those issues define in general terms the corporate culture of an organisation, which is recognised as an important component of any strategy potentially leading to its success [10]. Furthermore, the literature shows that banks must ensure that human resource management practices, culture and values are aligned with its corporate strategy [11].

B. Knowledge processes in organisations within the financial sector

Some of the problems experienced by banks in recent years were to a large extent related to the lack of managers' ability to make good use of the data being either generated by or simply stored in their information systems to detect the emerging problems and take appropriate measures [3]. It is in this context where the concept of knowledge processes -as understood by entrepreneurship scholars, gains relevance. Knowledge processes are structures (routines, procedures, values etc.) that provide knowledge workers with an opportunity for knowledge examination with the ultimate aim of either rejecting or adopting potential opportunities [12].

Most studies in the subject of the strategic entrepreneurship emphasise the need for an effective balance between knowledge processes. From the perspective of the financial sector, the strategy of individual banks can be very diverse [13]. For example, banks may find themselves investing too heavily in the adoption of knowledge through exploration processes whilst investing too little in mechanisms to facilitate the exploitation of appropriate knowledge [2]. As a consequence, employees -as knowledge workers, require the ability to engage in both explorative and exploitative processes that would influence future performance as well as the availability of learning structures that enable the use of current resources to address their day to day challenges [14], [15], [16].

In this study, the term 'ambidexterity' is used to refer to the simultaneous balanced pursuit of structures that are both explorative and exploitative in their relation to knowledge. Among such factors, [17] highlights the characteristics of the environment (e.g. uncertainty, competitiveness, turbulence), characteristics of the individual (e.g. employee, leadership) and characteristics of the firm (e.g. strategy, structure, culture, experience). We focus on individual and organisational factors such as knowledge sharing and learning culture to argue that knowledge workers need to actively develop a culture oriented towards learning within the organisation in order to align the knowledge-related processes with the achievement of the bank's strategic goals.

C. The focus and structure of this research

This research has therefore been set to understand how effectively an organisational culture that encourages learning can lead to knowledge processes that support performance improvements within institutions from a knowledge-intensive sector. The Spanish financial sector has been chosen as a typical example of a context characterised by a high degree of tacit knowledge, which relies on specialised expert knowledge and problem-solving know-how to deliver its products and services.

To achieve this aim it has been necessary to quantitatively analyse whether a learning culture has a positive effect on the implementation of processes related to the capabilities for sharing and reuse of finance-related knowledge, and how employees can mediate this relationship between culture and performance in the financial sector. Thus, organisational performance and its relationship with the presence of knowledge-related processes and a learning culture within organisations from the financial sector become the key concepts driving this research. This paper begins with a review of literature that examines the state of the art in knowledge-based processes and an organisational learning culture in organisations. This is followed by an empirical research within the Spanish financial sector, using structural equation modelling to test the hypotheses that define our approach to the study of relationships between culture and performance.

II. THEORETICAL BACKGROUND

Traditionally, it has been argued that learning and related knowledge processes have a significant effect on both performance and behaviour of individual employees. The argument acquires significant relevance in the context of knowledge-intensive sectors, often described on the basis of their workforce educational attainment levels [18]. Furthermore, it is argued that cultural norms and expectations are likely to determine the climate in which organisations may either encourage or discourage the acquisition and sharing of knowledge [1].

A. A learning culture and banks performance

The banking sector is a dynamic and competitive industry that has been transformed in pursuit of a greater orientation towards a culture of organisational learning, adoption of and adaptation to technological developments, and changes in the skills of its workforce [16], [19]. The effects of a learning culture on banks performance are conditioned by the type of practices and behaviours developed inside each bank as an organisation. Banks face a paradox of objectives in respect of market versus regulatory demands, which in times of crisis has increased their risk appetite when making financial innovations and creating complex financial products [4]. Thus, by the very nature of their business banks require a major commitment to the implementation of a learning-oriented culture leading to innovative knowledge processes. This means that a greater level of involvement of employees in knowledge management strategies is likely to increase both their willingness to remain committed to the same institution [20] and ability to transfer their learning on to others within the same bank.

Banks also need to promote existing and new mechanisms to engage in knowledge-related processes and foster a culture of organisational learning by putting into practice what has been experienced by their own employees [21]. In a recent research [2] highlight the need for banks to reconsider the importance of knowledge-based resources and take advantage of these assets to improve their services. Therefore, banks should continuously seek mechanisms that improve the quality of service as a fundamental prerequisite for the retention of valued customers [5]. In this case, contact between bank employees and with their customers is essential for the acquisition of new knowledge which can be translated into improved customer services [22].

B. The importance of a culture of organisational learning for individuals' commitment to learning in banks

One of the most relevant aspects of a culture of organisational learning is that it encloses several kinds of behaviours, attitudes and competencies that value and promote learning [23], [24]. This is due, amongst many factors, to the need for an environment that promotes cooperation between individuals, in favour of knowledge sharing, and therefore stimulating learning [25]. That is, a culture of organisational learning facilitates knowledge management processes by promoting teamwork, cooperation and other activities leading to individuals' learning [26]. This culture would help individual employees share their own knowledge with others throughout the organisation using mechanisms such as dialogue, cooperation and workgroup processes [27], [28].

Employee learning also requires organisational support which aims to facilitate professional development [29], [30]. Regarding this, some studies have pointed to transformational leadership as a driver of creativity and empowerment of banks employees [24], [31], [32]. It can also be argued that a learning culture has the potential to foster organisational performance only when it supports the flexibility of organisation procedures, increases participation in the decision-making process and promotes values such as risk-taking and long-term vision [33]. A learning culture must therefore be clear and open to experimentation or diverse opinions, encourage the adoption of responsible risks, recognise the failures and learn from them, participation in decision making, and trust [34], [35], [36], [37].

Over time, positive attitudes towards the transfer of knowledge cease to be effective or even to exist in the workforce, particularly in those employees who perceive themselves as the holders of relevant knowledge. This issue becomes particularly relevant in bank branches and offices [38]. In recent years, there has been a generation gap in banking employees. Those more experienced in traditional banking activities may not necessarily have the computer skills or commercially-oriented attitude that comes natural to some within the new generations of banking employees. In this new context, banks and other financial institutions are seeking to attract new employees with a greater orientation toward learning. Under this framework, an organisational learning culture will promote a commitment to learning and a capacity for knowledge transfer among employees, which may foster the generation of organisational learning within the financial sector [39]. This has led to the definition of the following hypothesis:

H₁: A culture of organisational learning positively influences commitment to learning in the workforce.

C. Explorative and exploitative knowledge processes and their reliance on employees' commitment to learning

Although the combination of explorative and exploitative processes brings a number of challenges to organisations [40], organisational ambidexterity scholars have argued that engaging in both processes leads to organisational learning [41] and is crucial for the long-term survival and success of organisations [6]. A section of the literature refers to organisational learning as a set of explorative structures (e.g. meetings inside and

outside the company) that enables organisational members to interact with their customers to learn about new possibilities and challenges related to the use of innovative approaches [42].

On the other hand, exploitative practices are understood as the procedural knowledge essential to support processes such as development, decision making, production, efficiency, selection, implementation or execution [43]. Thus, organisational learning is perceived as a set of processes directly related to organisational ambidexterity as knowledge is normally created through a combination of explorative and exploitative structures [40], [44], [45], [46]. Moreover, the exploration of new knowledge is related to the pursuit of things that might come to be known, whereas the exploitation of available knowledge is related to the use of things already known [47]. As this study focuses on finance employees' perceptions, we argue that exploration and exploitation of knowledge are in fact processes through which employees interact with those tools that would allow them to create new knowledge, skills and processes as well as use existing knowledge, skills and processes [12].

Most studies in the subject of organisational learning emphasise the importance of a simultaneous development of both explorative and exploitative processes, as well as the creation of an effective balance between these for organisational performance [14], [16]. This is due to the fact that organisational learning requires new possibilities to be explored to ensure tomorrow's profits as well as the exploitation of old existing opportunities for today [40], [41]. In the context of a bank, knowledge exploration offers a complex and unified platform for interaction with customers [48], [49] which will in turn allow banks to get information about implementation or execution of new services.

Although there is widespread agreement about the importance of pursuing both sets of structures [14], [50] concerns have also been expressed by some researchers concerning the different sets of skills and capabilities required for achieving ambidexterity [17]. For example, while the returns of explorative structures are long term and uncertain, those from exploitation are more short term [40]. In addition, the managerial resources available within an organization at any given time are limited to be able to simultaneously manage different structures and processes [51]. This study recognises and addresses the dilemma of fostering a commitment to learning which allows for knowledge sharing by investigating cultural factors that simultaneously affect both exploration and exploitation.

Although effective and easy-to-use technologies have been important to achieve such balance [52], this paper adopts a knowledge-based perspective of such a balance which is supported by senior management and well-motivated employees within the organisation [53], [54]. In so doing, commitment to learning guarantees the solution of practical problems of an entity [55], [56]. Commitment to learning guarantees an open exchange of views [57] as well as the application of routines and procedures in a fair manner [26].

These organisational practices and behaviours, motivated by a learning culture, facilitate learning within the organisation [56], [58]. It is understood that employees should first explore

information if they are to acquire and interpret its meaning and transform it into knowledge [59]. This argument is also sustained by a number of empirical studies that have partially analysed the relationship between learning culture and learning within the organisation in different contexts [23], [27], [36], [60], [61], [62], [63]. However, in a dynamic sector such as the financial industry, learning and dynamic capabilities are not an option but an imperative [64]. Banks must develop and implement a set of beliefs and values which are conducive to exploiting knowledge, the encouragement and rewarding of innovative behaviours and innovation, as well as a climate of openness, allowing the adoption of new ideas and critical reflection.

Under the above scenario, banks that promote the exploitation of knowledge need a culture that fosters employees' learning and improves their capacity to adapt to environmental changes [65]. It is therefore expected that an organisational learning culture can help implement knowledge exploitative processes and on this basis, we propose the following hypotheses:

H₂: A commitment to learning positively influences the implementation of knowledge explorative structures.

H₃: A commitment to learning positively influences the implementation of knowledge exploitative structures.

D. Ambidexterity and its importance for organisational performance

Ambidexterity within the context of organisations is defined as "the state of being equally adapted in the use of both explorative and exploitative knowledge processes at the same time". The simultaneous use of both explorative and exploitative structures could allow banks to offer complete satisfaction regarding productivity and economy. This has been corroborated by different studies which have found a positive relationship between organisational learning and performance [26], [66] thus reinforcing the argument that the company's ambidexterity contributes to the generation of competitive advantage.

Explorative and exploitative knowledge processes enable access and reuse of those facts, information and knowledge that may have been created by different teams both inside or outside the organisation [67]. On the one hand, if employees do not exploit the knowledge acquired by the organisation, other potential stakeholders would not be able to benefit from it, and this would have a negative effect for the organisation and its competitiveness [68], [69]. On the other hand, organisations can proactively work on the exploration of new experiences and information from external sources, the sharing of such knowledge resources and the combination of current experiences with lessons learned by the organisation in the past. The presence of explorative and exploitative processes also encourages entrepreneurial activities by allowing organisations to innovate, create new businesses, and renew their operations.

The extant literature shows a close relationship between the presence of knowledge-related processes within the organisation and its performance, which points to the company's

ambidexterity as a key element for the improvement of the competitiveness of organisations. Also, performance improvements could be described in terms of both tangible (e.g. financial) and intangible (e.g. knowledge processes, a learning-oriented culture and other knowledge-based) benefits [70]. From this perspective, the presence of ambidexterity within the organisation allows knowledge previously acquired by other employees and subsequently released and assimilated by the company, to become part of the organisational memory, even when the individuals who created the knowledge are no longer available [71], [72]. Such ambidexterity can help in the development of new and current processes, the solution to problems and the improvement of current practices. Whether these are documented (e.g. general information, inventories, hiring the company policies, manuals of procedures, digital or electronic files) or undocumented (e.g. experiences, ways of thinking, attitudes about making a decision, opinions, anecdotes), new knowledge resources and related processes and solutions form the cultural heritage of the organisation [69]. Also, the presence of ambidexterity within the organisation may have a direct effect on the personal development of staff by enhancing their capabilities and skills in line with expectations of the individual and the business. Thus, it is widely understood that the company's ambidexterity may directly improve the overall performance of the organisation, its profits and market share [73], [74] and therefore become key components for the improvement of competitiveness of the organisation [75].

Despite the findings of such a growing number of studies with regard to the importance of ambidexterity for performance and the sustained competitive advantage of organisations, research has shown that such a relationship is not always direct. Based on a meta-analysis of prior studies on organisational ambidexterity and performance, [17] concluded that contextual factors and specific, methodological choice in each case play a moderating role between the two constructs. However, organisational ambidexterity remains particularly important for performance of firms which operate in dynamic environments [76], and for knowledge-intensive service or high-technology sectors [17].

In this sense, a bank that has effective mechanisms for becoming ambidextrous is likely to prevent the detrimental effects of outdated routines which may avoid the detection of changes [77]. Such a combination of explorative and exploitative processes would form the basis of an entrepreneur and ambidextrous behaviour that would improve not only the banks' success in the current socio-economic environment but also their adaptability to the emerging conditions of their global business ecosystem [77]. In this regard, a significant number of empirical studies have provided evidence of a positive relationship between knowledge processes and performance within organisations in different domains [43], [71], [73], [74]. Thus, the hypotheses put forward under this framework are:

H₄: The extent to which an organisation develops explorative structures will positively determine the levels of organisational performance

H₅: The extent to which an organisation develops exploitative structures will positively determine the levels of organisational performance

Figure 1 provides a summary outline of the above arguments.

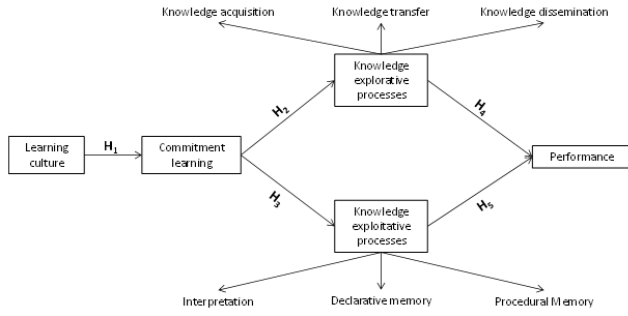


Fig. 1. Proposed conceptual model

III. METHODOLOGY

A. Population

This study focuses on Spain due to the country's recent involvement in a deep restructuring of its financial sector in order to increase competitiveness. Although the sample is limited to a single organisation, the present study uses the individual office as the basic unit of analysis. An office or branch makes up an independent unit with a different assigned human capital (managers, personal or commercial experts, administration and budget) in relation to other offices. These offices at the same time have different actions and orientations to learning. According to the information available at the time of the research, the employee base of the bank consisted of 550 employees distributed across 142 offices throughout Spain.

B. Data collection and sample

A structured questionnaire was designed and administered using a postal survey. Most members of each branch of the bank received a copy of the questionnaire which was structured to capture the information required to address each of the hypotheses set out in this research. The questionnaire contained the following sections: general information about the employee's role, information about human resource policies, organisational learning, employee behaviours and organisational culture.

The process of collecting the data was supported by a telephone control business. 219 responses were received in response to the survey. However, 4 of these were not complete, which reduced the number of valid responses to 215, later used to test the hypotheses of this study. We conducted an independent sample tests to alleviate the potential issues related to common method bias. The results of the analysis show that there are no statistically significant differences between the early and late respondents in terms of number of employees, sales volume, and age of company.

C. Measures

The questionnaire was designed, based on the relevant concepts identified through a review of the literature. For the measurement of each construct, a 5-point Likert scale was used. All scales were based on a review of the literature as follows:

- Organisational learning culture was computed using the scale developed by [27].

- Commitment to Learning is a measure of the extent to which employees are committed to learning, representing a collective vision that the organisation must learn. A reflective scale with five indicators based on the [78]'s study.
- Explorative Knowledge Management was measured as a second-order factor using the three scales that include knowledge acquisition and dissemination from [49] and knowledge transfer from [78]. These three explorative knowledge management processes facilitate the generation of new knowledge that could be used for improving the organisational performance.
- Exploitative Knowledge Management was computed as a second-order factor that includes assimilation, declarative memory and procedural memory from [49]'s study. This broad construct included knowledge management processes that facilitate the utilisation of previous knowledge for improving organisational operations.
- Organisations' results have been measured by using four indicators proposed in [79].

D. Analysis

This study used Partial Least Square (PLS) to analyse the data collected [80]. As shown in Table I, the first-order factor AVEs are in the range of 0.55–0.78.

TABLE I. RELIABILITY OF THE MEASURES

Construct	CA	SCR	AVE
Continuous Learning	0.831	0.888	0.666
Inquiry & Dialogue	0.883	0.911	0.632
Team Learning	0.858	0.914	0.780
Embedded System	0.812	0.876	0.639
Empowerment	0.901	0.924	0.670
System Connection	0.868	0.901	0.605
Leadership	0.912	0.932	0.694
Commitment	0.871	0.907	0.662
Acquisition	0.787	0.874	0.698
Dissemination	0.859	0.899	0.640
Knowledge transfer	0.842	0.888	0.613
Interpretation	0.814	0.891	0.733
Declarative memory	0.819	0.881	0.650
Procedural memory	0.737	0.834	0.558
Performance	0.854	0.891	0.577

Note: CA= Cronbach Alpha; SCR= Scale composite Reliability; AVE= Average Variance Extracted

The CRs indicate that all the reliability coefficients are greater than the threshold of 0.7. All the factor loadings are significant and acceptable, and are all greater than 0.5, indicating convergent validity of the measures [81]. For discriminant validity, we have compared the square root of the AVE. On average, each construct relates more strongly to its own measures than to others. At the end, all the measures allow us to use and test our hypotheses. We also confirmed the validity of the formative dimensions using the procedures suggested by previous literature [82], [83]. The indicators are not necessarily correlated, and consequently traditional reliability and validity assessment have been dismissed as inappropriate and illogical for a formative construct, with reference to its indicators [84].

IV. HYPOTHESES TESTING

The structural model resulting from the PLS analysis is summarised in Table II, where the standardized path coefficients (β) are shown.

TABLE II. CONSTRUCT STRUCTURAL MODEL

Paths	Coef	Std. D.	T stad	Low Int	High Int
<i>Hypotheses</i>					
Learning culture → Commitment to learning	0.568***	0.054	10.604	0.478	0.653
Commitment to learning → Explorative KM	0.525***	0.053	9.882	0.434	0.610
Commitment to learning → Exploitative KM	0.389***	0.079	4.914	0.251	0.512
Explorative KM → Performance	0.203***	0.087	2.347	0.051	0.337
Exploitative KM → Performance	0.289***	0.077	3.734	0.173	0.427
<i>Second order Factor</i>					
Learning culture → Continuous Learning	0.780***	0.034	22.724	0.721	0.832
Learning culture → Inquiry Dialogue	0.797***	0.027	29.635	0.752	0.840
Learning culture → Team Learning	0.831***	0.026	31.498	0.785	0.872
Learning culture → Embedded System	0.594***	0.053	11.320	0.507	0.678
Learning culture → Empowerment	0.797***	0.033	24.044	0.737	0.845
Learning culture → System connection	0.804***	0.034	23.941	0.745	0.855
Learning culture → Strategic Leadership	0.869***	0.020	43.509	0.834	0.900
Explorative KM → K. Acquisition	0.607***	0.057	10.735	0.510	0.691
Explorative KM → K. Distribution	0.831***	0.027	31.045	0.786	0.872
Explorative KM → K. Transfer	0.843***	0.030	28.203	0.791	0.888
Exploitative KM → K. Interpretation	0.731***	0.050	14.671	0.643	0.803
Exploitative KM → Declarative OM	0.758***	0.045	16.735	0.679	0.828
Exploitative KM → Procedural OM	0.801***	0.034	23.750	0.742	0.852
<i>Moderation effect</i>					
Explorative KM → Performance	0.221***	0.088	2.507	0.066	0.362
Exploitative KM → Performance	0.298***	0.079	3.762	0.179	0.441
Exploitative*Explorative → Performance	0.128*	0.064	2.009	0.018	0.228

Note: *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$ (based on a Student's $t(4999)$ distribution with one tail: $t(0.05, 4999) = 1.645$, $t(0.01, 4999) = 2.327$, $t(0.001, 4999) = 3.092$); Bootstrapping based on $n = 5,000$ subsamples

The results support H_1 , indicating that organisational learning culture has a positive effect on commitment to learning, with a path coefficient (β) of 0.568 (t -value = 10.604). In this case, the values transmitted by a culture that favours learning will promote employees to have a commitment towards learning and are predisposed to promote learning processes that facilitate the creation of knowledge. Table II also show how commitment to learning has an effect on both the explorative knowledge management processes ($\beta = 0.525$; t -value = 9.882) and on exploitative knowledge processes ($\beta = 0.389$; t -value = 4.914). This confirms both H_2 and H_3 .

On the one hand, the commitment to learning will make it easier for employees to become involved in new knowledge creation processes. This means that employees will have the motivation to acquire, distribute and transfer their knowledge to other employees of the company, which will allow the organization to have new knowledge. On the other hand, the motivation for learning will facilitate the processes of understanding and storage of knowledge. These processes are essential, since in them resides the knowledge base for the development of the current operations that the company develops.

The last two hypotheses refer to the effect of these processes of knowledge management on the results of the company. On the one hand, with respect to H_4 , the results show that explorative knowledge management allows to create new knowledge ($\beta = 0.203$; t -value = 2.347), which will serve to develop new competencies that will be used for the creation of new products or the development of different activities. In relation to the H_5 , the use of existing knowledge resulting from processes of assimilation and organizational memory will be fundamental to increase efficiency in the activities of the company. The results also confirm this hypothesis ($\beta = 0.289$; t -value = 3.734) and emphasize the importance of these exploitation processes.

Although the importance of both types of learning for the development of the company's results is clear, it has been tried to verify the existence of a moderating effect that explains the advantages of ambidextrous positions. To analyse this effect, a new variable has been introduced as the result of multiplying the variable of explorative and exploitative knowledge management processes. This multiplier effect is calculated by SmartPLS, after standardizing both variables. As can be seen in Table II, the multiplier effect is positive and significant ($\beta = 0.128$; t -value = 2.009). This result supposes a strong support for the ambidextrous theories that suggest the existence of synergies that occur from the joint use of both learning processes. Figure 2 provides a summary outline of the above results.

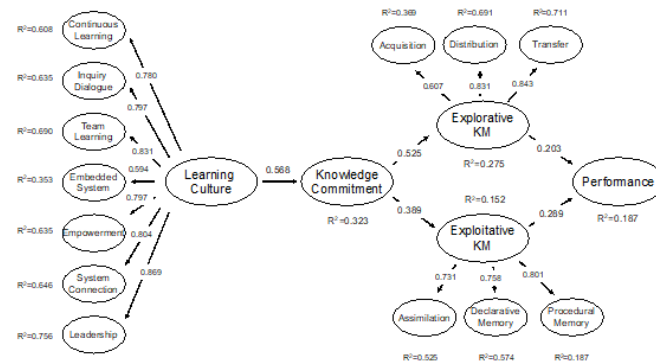


Fig. 2. Results of the empirical model.

V. DISCUSSION

This paper has examined the significance of individuals' knowledge exploration and exploitation processes, along with their effect on banks performance. One important contribution of this study has been an extension of the existing organisational learning models to include the ambidexterity challenge currently being faced by organisations. This has been achieved by adding to the analysis of performance a set of variables related to the presence of explorative and exploitative processes in the organisation. The results of this research suggest that explorative and exploitative processes are multifaceted constructs that fit into the organisational learning and performance frameworks proposed.

This can be achieved through the customisation of a strategy to fit the context of the organisation and which based on three key structures: 1) a framework for sharing interpretation through which individuals view and understand relevant situations; 2) a framework for the storage of declarative memory within the organisation; and 3) a framework for the consolidation of procedural memories. These structures support the creation of capacities to enable organisational members to use the knowledge learned for the purpose of addressing the challenges being faced by the business. This ties in with the views of [40], [44], [45], [46], who argued that a working environment where people have the freedom to learn from their own interpretations as well as from the experiences of others (that is, procedural and declarative memories) supports the utilisation and exploitation of knowledge.

The results of this research also support the view of the variable "explorative processes" as a customised construct based on three frameworks: 1) a platform for information acquisition; 2) a framework for information dissemination; and 3), a framework for knowledge transfer. A possible explanation for these findings may relate to the advantages and disadvantages of the explorative processes that result from different structural properties across the organisation. Whilst the first two frameworks (i.e. information acquisition and dissemination) render information about customers easier to understand and communicate, they expose the business to a potential information overload as a result of communicating too much information about customers and their needs to members of the organisation who may not necessarily be able to action on it. Also, the framework for knowledge transfer seeks to separate the relevant information from the noise and in doing so tries to avoid the risk of an information overload. Therefore, the three explorative processes complemented each other in a mutually reinforcing fashion, which enables organisational members to explore possibilities for mutually beneficial partnerships with customers [85].

With regard to the testing of hypothesis H₁, the results suggest that a learning orientation is required by organisations within the financial sector, and that this orientation has the potential to foster a series of new norms, values and behaviours that promote a commitment to learning. A plausible explanation for the significance of learning orientation in the financial sector may be related to the fact that the financial crisis has disrupted the traditional businesses models in this sector and it has been forced to look for new ways to recover and become sustainable

[86]. Under this framework, financial organisations that possess learning practices embedded in their everyday activities would have higher levels of employee job satisfaction and morale [67]. This, in turn, would improve the levels of adaptability required for banks to be simultaneously innovative towards exploring new opportunities while exploiting established businesses opportunities in their socio-economic environment.

Despite evidence of the value of balancing exploitation and exploration for organisational performance [87], research efforts have fallen short of providing a way to achieve such a balance. Some members of the organisation often fail to understand and filter the information received from the environment; while others are often unable to bring into common usage knowledge practices that contribute to the company's success [88]. By acknowledging the findings of [17] in terms of the importance of contextual factors and specific methodologies being used in organisations, the results of our study highlight the relevance of the commitment to learning in solving problems caused by conflicting demands between adjustment (exploitation) and versatility (exploration) previously argued by [6], which fully support hypotheses H₂ and H₃. This is an important contribution for the successful implementation of explorative and exploitative processes as managers cannot take for granted that explorative and exploitative practices will always be in place when the organisation needs to understand and meet emerging user needs.

The results also support hypotheses H₄ and H₅, indicating that the presence of explorative and exploitative processes is fundamental in the banking sector, which is in a process of profound change in the way it performs its business processes and addresses its objectives. Processes including explorative and exploitative knowledge processes can lead not only to the discovery, evaluation and exploration of new opportunities but also to bringing into common usage routines and practices that contribute to the social cohesion and economic viability [87]. In such processes, banks would be expected to put a relatively similar emphasis on both explorative and exploitive processes which are known to bring a significant number of benefits to ambidextrous organisations. This means that the banking sector needs to encourage and develop a series of organisational processes that foster learning and make it possible for all stakeholders to manage change. Such a shift in strategy, structure, people, and culture would lead banks to simultaneously achieve both targets with a number of complementary and networked structures [1], [89].

As the figures in Table II suggest, the effect of commitment to learning on performance is mediated by explorative and exploitative knowledge processes. Thus, both processes play a mediating role between commitment to learning and performance. This means that companies should consider the role that employees are expected play in the learning process, and act accordingly. When employees are not engaged in the bank strategies, they are likely to avoid responsibility and commitment in any learning processes. Instead, employees who are committed to the success of the bank (or a particular branch) will be more likely to seek to acquire new knowledge and skills and also transfer that knowledge to others in different parts of the business. For instance, committed employees build a service brand through their communication and personal contact with

customers, as well as an interaction with their colleagues, facilitating a work environment which supports the required behaviours.

The research also has a number of implications for management practice. The most important of these is the confirmation that knowledge processes are unlikely to succeed where a culture that fosters knowledge management and organisational learning does not exist. From a management perspective, it is important to highlight that the learning abilities of employees is a factor which determines the strength of the relationship between the culture of the business and the realisation of knowledge management and organisational learning in the bank. It is individuals and their abilities who put the shared values and beliefs in the context of the activities of the bank. Thus, in order to succeed in the current environment, bank branches are expected to support a culture that places the profitable creation and maintenance of value for customers at the top of their agenda, while also considering the interests of all other stakeholders. This way, a learning culture could provide the norms that would lead to an increase in employees' learning abilities. This becomes an important outcome of the research, as taking employees' abilities to learn for granted could result in a lack of trust and high anxiety between at the bank's floor-level and managers, with poor learning abilities as the underlying cause. A learning culture can help managers become aware of the abilities available within the workforce, which in turn helps advance the organisation learning goals.

VI. CONCLUSION

This research has focused on individual and organisational factors such as knowledge sharing and learning culture to argue that knowledge workers need to actively develop a culture oriented towards learning within the organisation in order to align the knowledge-related processes with the achievement of the institutional strategic goals. The creation and nurturing of a learning culture within the organisation not only leads to the exploration of a wide range of opportunities and threats. It can also help the organisation learn from the resolution of operational problems which in turn is likely to have a positive effect on the performance of the firm. The findings of our research support the theory set out in the above theoretical discussion in relation to the impact of a culture of organisational learning on learning and performance of banks, as a type of institution that considers and treats knowledge as a core strategic resource. Even in these circumstances, it is recommended that practical measures in other industries are supported by additional study.

Additionally, we have learned that national cultural issues might influence the way organisations learn. In addition, we have been able to provide only a snapshot of ongoing processes and have not been able to examine measures of the same process over time. Taking into account these limitations, future research may incorporate the role of other environmental- and firm-level contingency factors that can affect the relationship between organisational culture and learning. For example, organisational learning is clearly influenced by the set of human resource management practices. Banks spend important resources on training in order to increase individual learning. This training can be provided via the Internet or Intranet courses, which

sometimes have little effect on employees. The study of those processes could help companies to create tools that foster organisational learning. Finally, the cross-sectional research design adopted by this study may not fully capture the dynamic relationships between the complementary assets and the outcomes of organisational culture and learning processes. Therefore, subsequent studies utilising a longitudinal design may better be able to reflect the complex relationships identified in this study.

In addition to the lessons learned, our research raises an opportunity for a new line of inquiry that has not been addressed in this context. This is related to the importance of existing and emerging technologies such as social software, artificial intelligence, virtual reality and augmented reality, which has the potential to further influence how management is practiced within and between organisations. In particular, we see potential for technology in mediating the relationship between ambidexterity, organisational learning and organisational performance, which are recommended for future research.

Finally, regarding the explorative processes, our findings show that the exploitation of knowledge requires managers' support.

ACKNOWLEDGEMENTS

The authors gratefully acknowledge the funding received from the Spanish Ministry for Economy, Industry and Competitiveness (Research Project ECO2017-88987-R) and BMN to support the conduct of this research.

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