Effects of organizational learning on performance: the moderating roles of trust in leaders and organizational justice

Seok-Young Oh

Abstract

Purpose – *The purpose of this paper is to identify how organizational learning processes influence perceived organizational performance and examine the moderating roles of organizational justice and trust in managers therein.*

Design/methodology/approach – *This study develops a theoretical model to exhibit how knowledge acquisition and transfer activities influence perceived organizational performance. Data were collected from 515 respondents and analyzed by PROCESS macro for SPSS.*

Findings – *This study found that feedback learning flows are strongly mediated between learning stocks and organizational performance. It also found that organizational justice moderates the effect of learning stocks on organizational performance through feed-forward learning flows, while trust in manager moderates the effect of learning stocks on organizational performance through feedback learning flows.*

Research limitations/implications – *This study has a limitation in which it uses self-report data to measure all constructs. The objective measure may be necessary for future study.*

Practical implications – *The implications of this study are twofold. First, it finds that the higher organizational justice, the better the transfer of knowledge from the bottom up. When firms need to explore new knowledge, fairness in procedure and the distribution system is critical. Second, the higher the trust in management, the better the transfer of knowledge from the top down. The role of managers is instrumental in persuading employees and disseminating knowledge.*

Originality/value – *Combining functionalist and critical perspectives and developing a theoretical model, this study contributes to the understanding of how trust and justice facilitate learning activities within organizations.*

Keywords *Organizational justice, Knowledge sharing, Organizational performance, Organizational learning, Trust in manager*

Paper type *Research paper*

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Introduction

The concept of organizational learning (OL) has received significant attention over the past several decades. Given its the multi-disciplinary background (Easterby-Smith, 1997), the concept has been widely applied and broadly defined in research on processes of knowledge transfer (Huber, 1991; Nonaka, 1994), exploitation and exploration in organizational adaptation (March, 1991), learning capability (Chiva *et al.*, 2007), communities of practice (Brown and Duguid, 1991), power and political processes (Lawrence *et al.*, 2005), as well as interaction in multi-level learning (Crossan *et al.*, 1999). While scholarly perspectives may differ, most definitions of OL emphasize the interaction between individual-, group- and organizational-level learning (Milia and Birdi, 2010) and pay particular attention to the flow of knowledge sharing across levels. That is, the way in which new knowledge flows from the individual to organizational level and the simultaneous flow of existing knowledge from the organization to individual level (Crossan *et al.*, 1999;

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March, 1991). Multiple learning activities are produced by the social and psychological experiences of an organization's members and eventually lead to organizational change (Crossan *et al.*, 2011).

There is a large body of empirical research verifying the effect of OL on organizational performance (Milia and Birdi, 2010; Oh and Kuchinke, 2017; Prieto and Revilla, 2006) and the term "OL capability" – which refers to the organizational capability to learn – has gained attention for playing an important role in organization competitiveness, as it enables an organization to cope with unexpected business environments and improve performance (Chiva *et al.*, 2007; Jerez-Gómez *et al.*, 2005). However, several studies have criticized the prevailing approach to OL in the literature as too dependent on the functionalist perspective, which is why OL activities are shown to represent rational, value-free and predictable behaviors (Karataş-Özkan and Murphy, 2010; Örtenbald, 2002; Vince, 2001). Hislop (2005) has noted the assumption that people or groups are willing to share their expertise is unable to explain all the processes of OL, thus asserting that some OL literature neglects "people-related issues" (p. 43). This is particularly the case with regard to trust (Coopey, 1998), as well as equity and fairness (Kim and Mauborgne, 1998) – which is central in knowledge sharing situations that are reliant on people and norms in organizational settings. In their meta-analysis, Popova-Nowak and Cseh (2015) emphasize that few empirical studies use multi-disciplinary perspectives – such as a combination of the functionalist and critical perspectives – to explain OL processes and that OL scholars try to fit their own perspective to different paradigms.

Schilling and Kluge (2009) observe the OL process through a political lens and identify the lack of trust in an organization as the biggest barrier to the OL process. Introducing elements of power and politics, some constructivist literature has argued that the organization is a particular social space in which "situated learning" occurs and which can hinder or promote access to certain resources (Contu, 2013; Lave and Wenger, 1990). Even though "power" can provide the social energy necessary to promote individual intuition and group interpretation (Lawrence *et al.*, 2005), it can also suppress learning activities in form of unconscious repressed relations or explicitly suppressed system (Blackman and Sadler-Smith, 2009). The perceived unfairness of the system and mistrust in managers can be seen as a form of power and frustrated employees may react by not sharing their learning outcomes in a feed-forward or feedback learning flow process (Schilling and Kluge, 2009; Vince, 2001). According to Park and Kim (2015), the degree of knowledge sharing is dependent on the level of trust in social relations and structure of an organization. Consequently, trust in leadership and a decentralized system are necessary in facilitating the transfer of knowledge from the individual- to organizational-level and vice versa. Organizational justice is commonly regarded as trust in the system (Leventhal, 1980). Procedural and distributive justice are two key sub-constructs that indicate the perceived fairness of organizational procedures and the outcomes that its members receive (Niehoff and Moorman, 1993). Trust in management is also an important factor in the decision to share knowledge, and it is regarded as belief and expectation that a manager's reaction to a risky situation will result in the desired outcomes (Lewicki and Bunker, 1996).

This study adopts the concept of OL proposed by Crossan *et al.* (1999) and views OL as multi-level learning stocks occurring at the individual-, group- and organizational-level. Crossan *et al.* (1999) argue that the process of OL also exhibits a tension between the creation of new knowledge (feed-forward learning flows) and the utilization of existing knowledge (feedback learning flows). Moreover, both learning stocks and learning flows jointly influence organizational performance (Bontis *et al.*, 2002; Milia and Birdi, 2010). Although numerous follow-up studies have been conducted (Crossan *et al.*, 2011), few studies identify the role of trust and fairness – a fundamental element in the sharing and transfer of knowledge – in the relationship between learning stocks and learning flows. Recognizing that the functionalist perspective may be limited by its assumption that people

are willing to share their knowledge, this study explores this assumption and verifies whether the disposition to share knowledge is related to a sense of trust between employees and their organization.

As such, this study has two main purposes. The first is to identify how both feed-forward and feedback learning flows are mediated in the relationship between learning stocks and organizational performance. In doing so, it seeks to contribute to the exploration of OL processes and verify that multi-level (individual, group and organization) learning capacities enhance organizational performance through knowledge sharing processes, namely, top-down and bottom-up learning flows. Secondly, this study investigates the moderating roles of organizational justice and trust in management in the relationship between learning stocks and learning flows in the mediation model. It contributes to our understanding of the importance of trust and organizational justice in the relationship between OL processes and organizational performance. In doing so, it illustrates that when levels of justice and trust are high, there is a stronger indirect association between learning stocks and organizational performance through both feed-forward and feedback learning flows.

Theoretical framework

This research adapts several theories proposed in OL literature in three ways. First, this study shares the perspective of resource-based theory, which is premised on the claim that organizations rely on embedded knowledge resources to achieve their competitive advantage (Barney, 1991). Many OL studies support the notion that learning occurs at multiple levels within an organization, namely, at the individual-, group- and organizational-level (Crossan *et al.*, 1999; Eraut and Hirsh, 2007; Jyothibabu *et al.*, 2010) and regard their distinct learning outcomes as competitive resources for survival (Jerez-Gómez *et al.*, 2005; Sabherwal and Becerra-Fernandez, 2003). Several scholars have argued that learning outcomes can be stored as specific types of resources at each level; in the form of tacit or explicit knowledge (Nonaka, 1994) at the individual-level, a shared mental model (Kim, 1993) at group-level and as a learning system and procedure (Nevis *et al.*, 1995) embedded in the organizational-level. These knowledge resources – the so-called "learning capability" at each level – become a driving force, motivating the organization to learn when it has a common goal or needs to make a change. Moreover, knowledge resources can serve to drive or facilitate knowledge sharing activities – particularly in the utilization of existing knowledge or the exploration of new knowledge, according to organizational strategy (Garcia *et al.*, 2003).

Second, this study adapts the critical view of OL. In addition to the study of society from a rational and objectivist perspective, the term "critical view" denotes rethinking and criticizing it from a social, historical and humanistic perspective (Hislop, 2005). From the traditional management position, knowledge resources at the individual- or group-level are shared with others to achieve a common goal in the name of strategy. From the critical viewpoint, however, the power and political contexts are fundamentally embedded in the social relations of organizations and learning occurs in response to such a "situated" work environment (Brown and Duguid, 1991). Since knowing is not separated from doing (Gherardi, 2000), learning is a critical factor in assessing how organizations privilege the humanistic values in constructing relationships, performing goals and allocating resources (Bierema and Callahan, 2014). Recent OL studies have recognized such power relations as enabling access to learning practices and sought to identify how organizations attempt to harness power relations to facilitate learning, and such attempts include ensuring a sense of fairness in participatory procedures, as well as building trust between managers and subordinates (Baxter *et al.*, 2017; Contu, 2013; Heizmann and Olsson, 2015). In this literature, organizational justice and interpersonal trust are identified as particularly important factors in knowledge sharing processes (Kim and Park, 2017; Park and Kim, 2015).

Third, this study also shares the position of several learning motivation theories. Equity theory is one of the critical motivation theories and suggests that learning occurs when an organization's members feel that they are treated fairly in the allocation of resources or through their participation in procedures (Adams, 1965). This is especially true in complex business scenarios, wherein organizational members cannot easily have clear understanding of organizational systems (e.g. reward systems) and tend to react more positively based on information about procedural fairness alone (Lind, 2001). Psychological safety, as proposed by Edmondson (1999), is another critical concept used to explain learning motivation theory used in this study. Psychological safety involves the common belief that an organization's members are safe despite their risk-taking behaviors and is a means by which employees alter their behavior to adapt to a changing environment (Schein, 1965). Trust and confidence in the workplace enable employees to overcome anxiety regarding idea sharing, particularly when the response of others contradicts their expectation. Psychological safety is implicit in the climate generated by the members of an organization and thus facilitates collective learning. As an analytical approach, it clarifies why people share their informal and formal knowledge with others (Edmondson and Lei, 2014). Notions of equity and psychological safety thus provide two motivation theories for why organizational members share their knowledge with others from critical viewpoint (Hislop, 2005).

Based on these three viewpoints, this study builds a research framework explaining how OL activities enhance organizational performance, as well as the roles of trust and organizational justice in OL processes. This study regards learning stocks and learning flows as resources for an organization. This study regards learning stocks and learning flows as resources for an organization. This research also uses this framework to consider the limitation of the functionalist approach – specifically the assumption that these resources can be rationally and strategically used to achieve performance – and applies a critical view that trust and organizational justice can moderate the effect of OL activities on organizational performance. This is elaborated upon through further recourse to extant literature, the following survey of which provides this study's hypotheses.

Literature review and hypotheses

Organizational learning: learning stocks and learning flows

The concept of OL has a variety of definitions depending on the academic perspective (Baxter *et al.*, 2017; Easterby-Smith *et al.*, 1998; Karataş-Özkan and Murphy, 2010; Örtenbald, 2002). While a consensus has yet to be reached, several key characteristics receive attention across the literature. First, the concept of OL is widely recognized as organizational capability, denoting how an organization deals with a dynamic environment (Chiva *et al.*, 2007; Mbengue and Sane, 2013). Regardless of its methods and processes, OL is regarded as critical in organizational competitiveness, which necessitates an effective response to environmental change. Second, learning takes place at multiple levels and is stored at the individual-, group- and organizational-level (Crossan *et al.*, 1999, Milia and Birdi, 2010; Sabherwal and Becerra-Fernandez, 2003). Although individual learning outcomes are a fundamental element of OL, groups and organizations learn from the positive or negative learning outcomes of individual members and preserve their own norms, values and culture. Third, two distinct types of learning activities take place in the process of adopting accumulated learning outcomes at each level: the feed-forward flow or exploration and the feedback learning flow or exploitation (Crossan *et al.*, 1999; Garcia *et al.*, 2003; March, 1991). While learning outcomes at the individual-, group- and organization-level are considered the possession of knowledge stocks that can be used individually or collectively shared within the learning subject, the two types of learning flows are regarded as processes of innovation or change facilitating the emergence of new organizational behaviors (Lloria and Moreno-Luzon, 2014; Prieto and Revilla, 2006).

Crossan and her colleagues (Bontis *et al.*, 2002; Crossan *et al.*, 1999; Crossan *et al.*, 2011) conceptualize the processes of knowledge acquisition and transfers as a 4I framework consisting of four sequential processes: intuition, interpretation, integration and institutionalization. These four processes are psychosocially and socially linked with one other and explain how learning occurs at the individual-, group- and organizational-level within an organization. This can be summarized as follows: intuition marks the beginning stage of learning and occurs at the individual level; its learning outcome is then extended to and developed at the group-level through the interpretation process; integration occurs when the outcomes of group-level learning are transferred to the organizational-level; finally, institutionalization describes the process through which this shared learning content is embedded throughout the organization in the form of norms, routines or procedures. In their strategic learning assessment map (SLAM), Bontis *et al.* (2002) term the learning that occurs within each of the three levels "learning stocks", while the learning that occurs across the levels is referred to as "learning flows". Learning stocks are distinguished from learning flows in that they are the form of knowledge – explicit or implicit – accumulated by learners through their interaction within a distinct context, while learning flow refers to the dynamic process amplifying or reifying the meaning of knowledge by sharing and assessing it (Bontis *et al.*, 2002; Prieto and Revilla, 2006). Two types of learning flows – feed-forward and feedback – have been highlighted as critical elements for strategic renewal (Benner and Tushman, 2015; March, 1991). Feed-forward learning (i.e. exploration) is the innovative organizational capability to continuously investigate new possibilities and occurs in the process of transferring knowledge from the individual to the group and organization. Feedback learning (i.e. exploitation) is the capability to improve existing competence by selection, adaptation and refinement and occurs when an organization distributes its accumulated knowledge to groups and individuals (Crossan *et al.*, 1999; March, 1991).

From a resource-based position, this study reveals how feedforward and feedback learning flows can be sourced and facilitated by learning stocks. In early research, two types of learning flows were considered to be incompatible (i.e. trade-off) or appropriately balanced based on a notion of its bipolarity at a single dimension (e.g. organization) (March, 1991). However, many studies have demonstrated that they can be independent, compatible and occur simultaneously (i.e. they display ambidexterity) in multiple dimensions of organizations (O'Reilly and Tushman, 2013; Turner *et al.*, 2013).

Multi-level knowledge acquisition is eventually homologous (Crossan *et al.*, 2011), in that knowledge resources tend to connect and influence one other (Kozlowski and Klein, 2000) and are adapted according to the situation (Barney, 1991). Thus, this study recognizes them as an integrated construct in measuring the degree of learning stocks in an organization. Unlike learning stocks, however, learning flows occur throughout an organization and represent the conversion of knowledge from tacit to explicit or the development of explicit knowledge to further explicit knowledge (Nonaka and Takeuchi, 2008). Feed-forward learning – that is, "learning from experiment" or "learning from possibility" – is initiated by individual insight, intuition or tacit knowledge and then converted to a group and organization's explicit knowledge through dialogue, conversation and cooperation. Feedback learning – that is, "learning from experience" or "learning expertise" – is converted from explicit knowledge at the organizational-level to tacit knowledge at the individual-level through diagnostic systems, such as norms and practices. Moreover, while learning stocks represent cognitive sense, learning capability and the intellectual capital within a level; learning flows indicate the transfer of learning and interactive knowledge sharing between levels (Crossan *et al.*, 1999). Thus, learning capabilities at the individual-, group- and organization-level allow organizations greater opportunities to explore new knowledge, while simultaneously serving to drive the improvement of existing knowledge by promoting different modes of knowledge conversion (O'Reilly and Tushman, 2013). Indeed, in emphasizing that the process of OL starts from knowledge acquisition, Huber (1991, p. 90) states that "more OL

occurs when more of the organization's components obtain knowledge". Meanwhile, Prieto and Revilla (2006) have noted that knowledge stocks provide good content for learning flows.

As such, the following two hypotheses are proposed:

H1. Learning stocks at the individual-, group- and organizational-level positively influence feed-forward learning flows.

H2. Learning stocks at the individual-, group- and organizational-level positively influence feedback learning flows.

The role of trust in management and the organization in organizational learning

Several studies adopting the critical view note that the concept of OL has been described from an overly functionalist perspective and that social and political perspectives have been overlooked in the processes of knowledge creation and application (Antonacopoulou and Chiva, 2007; Popova-Nowak and Cseh, 2015; Wang and Noe, 2010). The fundamental purpose of OL is organizational change, which can be achieved by removing oppressive relations and systems and implementing fairness in routine practices that promote voluntary participation in learning activities (Fenwick, 2003).

Several studies have explored what factors restrain the motivation of an organization's members to share their knowledge with others (Park and Kim, 2015; Santos and Steil, 2015; Schilling and Kluge, 2009). To effectively analyze the factors impeding the process of OL, for example, Schilling and Kluge (2009) consider power and politics as the main obstacles. Consequently, they use two factors to analyze OL barrier: the "actional-personal", which is related to the cognition and emotions of, as well as and relations between, people; and the "structural-organizational", which is related to the formal routines and practices of an organization. The results of their study show that these possible learning barriers could result from the lack of confidential relations, especially with management who can influence and enforce the thoughts and actions of employees; as well as the lack of fairness in the procedure and distribution system, which can cause organizational silence by withholding the opinions of an organization's members regarding organizational issues. From a similar stance, Park and Kim (2015) reviewed 133 relevant articles to identify the critical factors influencing knowledge sharing activities. They found that the majority of these factors can be classified under the people in and structures of organizations and that trust plays a fundamental role in facilitating the sharing of knowledge in both these categories. Jacobs and Coghlan (2005) have emphasized the role of management's attitude toward "listening" is important in facilitating knowledge creation in OL processes. Renzl (2008) identifies trust in management as having a positive influence on the sharing of knowledge within and between teams, particularly insofar as keeping confidence is necessary for a team to maintain its unique value within the organization. Kim and Park (2017) confirm the role of organizational justice – defined as the perceived fairness in procedure, distribution and interaction in the workplace – in enhancing knowledge sharing and encouraging innovative behavior.

Although the concept of trust has received little attention in OL literature, based on the literature survey above, this study assumes that trust in managers and systems is a critical factor in enhancing the effect of learning stocks at the individual-, group- and organizational-level on feed-forward and feedback flows. This study regards the concept of trust in management as "a state of confident positive expectation on manager with respect to oneself in situation entailing risk" (Lewicki and Bunker, 1996, p. 117). This study also recognizes trust in systems as organizational justice, which refers to the perception of a member of an organization regarding the fairness of procedure (e.g. participation opportunity) and distribution (e.g. knowledge allocation) (Leventhal, 1980). From the perspective of psychological safety (Edmondson, 1999), a higher perception of common

trust (safety) in people and the organization increases the intention of individuals to share and dedicate personal knowledge and skills for the collective benefit, as well as to proactively adopt distributed knowledge from the upper-level to refine current work practices (Siemsen *et al.*, 2009).

Therefore, the level of trust in management and the organization moderates the relationship between knowledge stocks and knowledge flows. Consequently, this study proposes the following hypotheses:

H3. a) Organizational justice and b) trust in management moderate the relationship between learning stocks and feed-forward learning flows.

H4. a) Organizational justice and b) trust in management moderate the relationship between learning stocks and feedback learning flows.

Organizational learning and performance

Numerous OL studies have tested the effects of learning stocks and flows on perceived organizational performance (Bontis *et al.*, 2002; Milia and Birdi, 2010; Oh and Kuchinke, 2017; Real *et al.*, 2006). Since the concept of OL includes the organizational capability to deal with changing business environments, the potential effect of learning stocks and learning flows are critical predictors of organizational performance. Learning stocks – that is, the learning that occurs within a level – refer to specific competencies, norms, values and collective know-how that represent the potential capacity of the group or organization (Bontis *et al.*, 2002). According to Mills and Smith (2011), the specific knowledge and competencies, group dynamics, strategies and procedures that each learning subject possesses are expected to result in increased business performance. Moreover, the accumulation of heterogeneous and qualified knowledge has a high possibility of being unitized to correctly interpret the business environment and ensure that organizations find a strategy to move forward (Grant, 1991). Meanwhile, making the effort to explore new knowledge and use existing knowledge in purpose of the organization is a critical capability in response to a dynamic environment (O'Reilly and Tushman, 2008). Since the sharing of knowledge include both aspects of the process of knowledge creation and adaptation, feed-forward and feedback learning flows are key elements that lead to incremental change and organizational innovation (Benner and Tushman, 2015).

Several OL scholars have verified the integrated concept of OL that includes the influence of both learning stocks and flows on business performance (Prieto and Revilla, 2006; Real *et al.*, 2006). Although few OL studies examine individual effect of feed-forward and feedback learning proposed by Crossan *et al.* (1999) as separate from learning stocks, a number of management studies have explored the effects of exploration and exploitation on organizational performance (Boumgarden *et al.*, 2012; Junni *et al.*, 2013; Han and Celly, 2008; Lee and Huang, 2012). Moreover, unlike March's (1991) study – which regarded the relationship between exploration and exploitation as a trade-off – their findings emphasize *organizational ambidexterity;* that is, the organizational capability to simultaneously pursue and implement both exploration and exploitation (Raisch and Birkinshaw, 2008). Organizational ambidexterity facilitates positive organizational performance (Junni *et al.*, 2013) and can play a mediating role between knowledge stock and firm performance (Lee and Huang, 2012). According to Turner *et al.* (2013), a mechanism integrating learning-based resources (i.e. intellectual capital resource) – such as organizational, social and human capital – across multi-levels (organization, group and individual) has the inherent ability to enable ambidexterity and resolve tension between exploration and exploitation by creating actions that complement each other across the levels. Raisch and Birkinshaw (2008) have also explained how *organizational ambidexterity* is in the nature of such mechanisms and the organization and instinctively lead to incremental or radical change through holding individual (e.g. leaders), structural or contextual ambidexterity.

Thus, this study examines whether exploration (feed-forward learning) and exploitation (feedback learning) jointly and simultaneously mediate the relationship between learning stocks and organizational performance in the context of Korean business. Although the use of perceived measures of business performance has limited interpretation, previous studies have verified that the subjective measure of performance can be replaced by objective financial performance because of its consistent results (Dess and Robinson, 1984).

Therefore, this study proposes the following hypotheses:

H5. a) Feed-forward learning flows and b) feedback learning flows positively influence perceived organizational performance.

H6. Learning stocks at the individual-, group- and organizational-level positively influence perceived organizational performance.

Figure 1 illustrates the relationships of variables based on the six hypotheses (*H1–H6*), and the following hypothesis is proposed as follows:

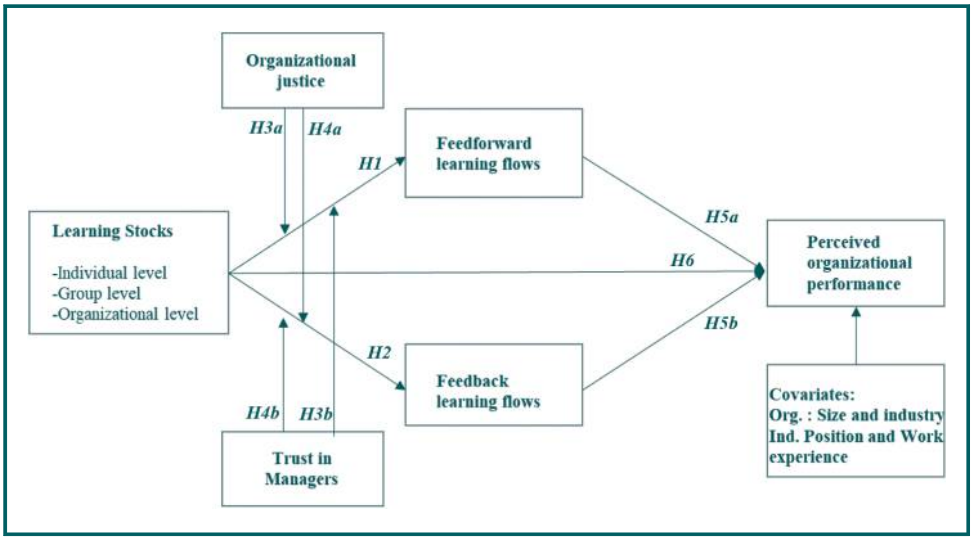
H7. The effects of learning stocks and organizational performance are mediated through a) feed-forward learning stocks and b) feedback learning stocks that are moderated by levels of organizational justice and trust in management.

Method

Participant and procedure

This study collected data from employees of top firms in Korea between August and September, 2017. The sampling was designed to collect personal perceptions of employees regarding their organizations in Korea. The study used a purposive sampling approach to collect data. In selecting its sample organizations, this study considered the types of industry (e.g. manufacturing, finance, distribution, IT, service and construction) and the size of organizations (e.g. large, medium and medium-small). As such, it selected firms that were listed in the top 500 companies in Korea and took into consideration the degree of experience organizations had of knowledge management, as well as that they had the requisite reputation to represent each industrial group. In total, 24 firms responded that they

Figure 1 The hypothesized model



were willing to participate in the study during the scheduled time. The HR managers at these firms were asked to select approximately ten participants familiar with the concept of OL and who had knowledge of both management and the performance of their organization. These HR managers were also asked to recruit other firms that were similar size, industry and experience to expand the number of participants in the study. A total of 515 informants were deemed eligible (of 850) and used in this analysis; this reflects a response rate 60.59 per cent. A self-reported online survey was used to collect the perceptions of individuals regarding their firms.

Approximately, 20.8 per cent of the 515 respondents work for super-large companies (i.e. companies employing more than 10,000 people), 40.4 per cent work for large companies (employing 1,000 to 9,999 people), while 22.9 per cent work for medium-small size firms (less than 299 employees). In terms of industry, 35.7 per cent of respondents work in manufacturing sectors and 31.7 per cent in service. With regard to the position of respondents: 24.0 per cent reported to be senior managers, while 50.7 per cent reported to be middle-managers, and 25.2 per cent reported to be junior managers. The average work experience of respondents in their current organization was 7.5 years. The characteristics of respondents are summarized in Table I.

Measures

Learning stocks and learning flows. To measure learning stocks, feed-forward learning flows and feedback learning flows, this study modified the SLAM items developed by Bontis *et al.* (2002). Of the original items, nine were adopted to measure learning stocks. These indicate the current knowledge, insight, sense of accomplishment at the individual- and group-level and the capacity of the system, structure and procedures at the organizational-level. To measure feed-forward learning flows, five items were adopted.

Table I Characteristics of respondents

Characteristics	*Respondents* N *(%)*
Size by employees	
More than 10,000	161 (20.78)
1,000 to 9,999	208 (40.39)
300 to 999	82 (15.92)
Less than 299	118 (22.91)
Industry	
Manufacturing	184 (35.73)
Service	163 (31.65)
IT	56 (10.87)
Finance	54 (10.49)
Distribution	36 (6.99)
Construction	22 (4.27)
Job level	
Senior managers	124 (24.08)
Middle-managers	261 (50.68)
Junior managers	130 (25.24)
Division	
HR	160 (31.07)
Sales and marketing	95 (18.46)
Research and development	56 (10.87)
Finance and service	56 (10.87)
Management planning	53 (10.29)
Production	46 (8.93)
Others	49 (9.51)

Note: $N = 515$

These indicate knowledge sharing between groups, knowledge transfer from the bottom to the top and the innovativeness of knowledge transferred from the bottom. A total of five items were used for feedback learning flows. These indicate knowledge distribution from the top to the bottom, goal sharing and the availability of organizational system and procedures.

To identify validity and reliability, a confirmative factor analysis (CFA) was conducted. In CFA, all 19 items show reasonable loading values (0.61-0.83) and model fits (χ^2/degrees of freedom (df) = 319.28, p = 0.000; goodness-of-fit index (GFI) = 0.92; Tucker–Lewis index (TLI) = 0.91; comparative fit index (CFI) = 0.93; root–mean–square error of approximation (RMSEA) = 0.08.) The learning stocks show acceptable composite reliability (CR) (0.78), average variance extracted (AVE) (0.52) and Cronbach's alpha (0.85). Both the CR and Cronbach's alpha should be greater than 0.70 (Nunnally, 1978), while the AVE should be greater than. 50 (Fornell and Larcker, 1981). Feed-forward and feedback learning flows also show appropriate CR (0.82 and 0.79), AVE (0.50 and 0.59) and Cronbach's alpha (0.73 and 0.81). All items used in this study were translated into Korean and the validity of its content verified through a forward and backward translation process (Chen *et al.*, 2005). All items are measured on a six-point Likert scale ranging 1 (strongly disagree) to 6 (strongly agree).

Organizational justice, trust in management and organizational performance. As the construct of organizational justice is related to trust in the organization, this study adopted six items from the procedural and distribute justice scale developed by Niehoff and Moorman (1993). The sentence terms were modified from "my manager" and "my team" to "my organization" for the purpose of this study. Sample sentences are: "all job decisions are made in a fair way", "my organization has a procedure to appeal job decisions made by a company" and "all decisions are applied consistently across all affected employees". The loading values of the items are between 0.74 and 0.83, while its CR is 0.96, AVE is 0.61 and Cronbach's alpha is 0.91.

The construct of trust in management is measured using five items developed by Podsakoff *et al.* (1990). The sentence terms are also modified from "I" and "my manager" to "We" and "(our) managers". For example: "In my organization, managers would never try to gain an advantage by deceiving workers", "In my organization, employees have complete faith in the integrity of their managers and supervisors" and "We feel quite confident that our leaders will always try to treat their employee fairly". The items show high loading values from 0.78 to. 85, while its CR is 0.94, AVE is 0.64 and Cronbach's alpha is 0.91.

As the dependent variable, perceived organizational performance was measured using the five criteria used in management study (Dess and Robinson, 1984; Prieto and Revilla, 2006): growth in sales, profitability, service and product quality, customer satisfaction and corporate reputation in the past three years. These items show high loading values between 0.80 and 0.83, while its CR is 0.94, AVE is 0.67, and Cronbach's alpha is 0.91.

To identify the validity and reliability of justice, trust and performance, CFA is implemented. The model fits (χ^2/df = 534.49, p = 0.00, GFI = 0.88, TLI = 0.91, CFI = 0.92, RMSEA = 0.08). All constructs were measured using a six-point Likert scale (1 = strongly disagree and 6 = strongly agree). Although the original questionnaire used an odd number of ratings in the scale (i.e. a five- or seven-point Likert scale), this study used a six-point scale to reduce concern regarding the tendency of respondents to give neutral answers when they are unfamiliar with the organizational situation in a construct (Chang, 1994; Chomeya, 2010).

Control variables and data analysis. Based on the literature survey, the study used four covariates as control variables. The firm size and industry types were used to control firms' features, while position and years of work experience at the current organization were used to control respondent characteristics (Milia and Birdi, 2010; Real *et al.*, 2006; Swift and Hwang, 2013). The study conducted a log transformation for the years of work experience and dummy variables for firm size and industry types (each of criterion is "less than 99" and

"service industry"). A moderated mediation analysis was conducted to test hypotheses, PROCESS macro for SPSS v.2.16 was used to do so (Hayes, 2013). To verify the mediation effects of feed-forward and feedback learning flows on organizational performance, a multiple mediator model was designed with a first stage moderation model (Model 7). This study also conducted a bootstrapping test (5,000 resamples) for inference regarding mediation, moderation and the moderated mediation effect.

Results

Table II presents each construct's mean, standard deviation, skewness and kurtoses coefficient and correlations coefficient. Most learning constructs are statistically correlated with organizational justice, trust in management and perceived performance. The mean for organizational performance (4.00 out of 6) is relatively higher than others. Moreover, most informants perceive that knowledge accumulation (3.72) occurs more often than knowledge sharing (feed-forward 3.57 and feedback 3.60) at their organizations, and that trust in management (3.71) is more prevalent than trust in the organization (3.37).

To test the hypotheses model, ordinary least squares (OLS) regress path analyses were conducted (Hayes, 2013, 2015). All major variables were mean-centered and four covariates – that is, industry types consisting of six dummy variables, firm sizes with four dummy positions and years of work experience – are controlled. The first stage moderation models were tested. The models set two mediators (i.e. feed-forward and feedback learning) as dependent variables and used a moderator in each model (e.g. organizational justice). The results show that learning stocks are significantly associated with both feed-forward learning flow (β = 0.57 and 0.52, $p < 0.001$) and feedback learning flow (β = 0.56 and 0.51, $p < 0.001$) in each model.

In the moderation analyses, organizational justice also shows positive and significant association with both feed-forward learning flow (β = 0.28, $p < 0.001$) and feedback learning flow (β = 0.27, $p < 0.001$). However, interaction between organizational justice and learning stocks is only positively associated with feed-forward learning flow (β = 0.07, $p < 0.01$) and not with feedback learning flow (β = 0.04, $p = 0.26$). Meanwhile, trust in managers has a significant influence on both feed-forward learning flow (β = 0.08, $p < 0.01$) and feedback learning flow (β = 0.12, $p < 0.001$), while its interaction with learning stocks shows positive statistical significance in both flows (β = 0.07, $p < 0.05$ and β = 0.12, $p < 0.001$, respectively). Thus, *H1*, *H2*, *H3a*, *H3b* and *H4b* are supported.

To examine *H5a*, *H5b* and *H6*, organizational performance was set as a dependent variable and analyses were conducted. Learning stocks positively impact the dependent variable (β = 0.29, $p < 0.001$), while only one mediator – feedback learning flows – influence organizational performance (β = 0.26, $p < 0.001$). Feed-forward learning flows show weak influence on organizational performance (β = 0.11, $p < 0.10$). Table III summarizes these results.

Table II Statistical description and correlations

Variables	*Mean*	*SD*	*Skewness*	*Kurtoses*	*1*	*2*	*3*	*4*	*5*	*6*
1. Learning stocks	3.72	0.82	0.07	−0.34	(0.85)					
2. Feedforward	3.57	0.97	0.12	−0.50	0.59**	(0.73)				
3. Feedback	3.60	0.99	−0.11	−0.28	0.58**	0.60**	(0.81)			
4. Justice	3.37	1.06	−0.01	−0.40	0.56**	0.62**	0.62**	(0.91)		
5. Trust	3.71	1.10	−0.29	−0.40	0.53**	0.49**	0.51**	0.60**	(0.91)	
6. Performance	4.00	1.10	−0.43	−0.18	0.45**	0.45**	0.40**	0.35**	0.37**	(0.91)

Notes: $N = 515$; ** $p < 0.01$; SD: standard deviation; Cronbach's alpha is in parentheses

Table III Results of OLS regression moderated mediation analysis with confidence interval ($N = 515$)

Index	*Coeff.*	*SE*	*95% CI*	
Mediator variable Model (DV = Feedforward learning flow)				
Moderator: organizational justices				
Learning stock (LS)	0.57***	0.05	0.47	0.67
Org. justice	0.28***	0.04	0.21	0.36
Justice × LS	0.07*	0.03	0.01	0.13
Size (less than 99)	0.05	0.12	−0.19	0.29
Industry (Service)	0.06	0.09	−0.13	0.24
Position	0.01	0.03	−0.04	0.06
Work ex	−0.01	0.01	−0.01	0.01
Constant	3.58***	0.10	3.39	3.77
$R^2 = 0.53$, $F(15, 499) = 37.65$, $p < 0.001$				
Moderator: trust in leaders				
Learning stock (LS)	0.52***	0.05	0.63	0.82
Trust in managers	0.08*	0.04	0.01	0.16
Trust × LS	0.07*	0.03	0.00	0.13
Size (less than 99)	0.09	0.12	−0.16	0.33
Industry (Ser.)	0.19****	0.10	0.00	0.37
Position	0.03	0.03	−0.03	0.08
Work ex	0.01****	0.01	0.00	0.02
Constant	3.28***	0.10	3.08	3.47
$R^2 = 0.50$, $F(15, 499) = 33.20$, $p < 0.001$				
Mediator variable Model (DV = Feedback learning flow)				
Moderator: organizational justices				
0.56***	0.05	0.46		0.66
0.27***	0.04	0.19		0.34
0.04	0.03	−0.03		0.10
0.10	0.12	−0.14		0.33
0.24*	0.09	0.06		0.42
0.02	0.03	−0.03		0.07
0.01****	0.01	0.00		0.02
3.30***	0.09	3.11		3.48
$R^2 = 0.54$, $F(15, 499) = 39.15$, $p < 0.001$				
Moderator: trust in leaders				
0.51***	0.05	0.61		0.81
0.12**	0.04	0.05		0.20
0.12***	0.03	0.06		0.18
0.04	0.13	−0.21		0.29
−0.00	0.10	−0.19		0.19
0.02	0.03	−0.04		0.07
−0.01	0.01	−0.02		0.00
3.55***	0.10	3.36		3.75
$R^2 = 0.50$, $F(15, 499) = 33.59$, $p < 0.001$				
Dependent variable Model (DV = Organizational Performance)				
Feedforward	0.11****	0.06	−0.01	0.23
Feedback	0.26***	0.06	0.14	0.38
Learning stock	0.29***	0.08	0.13	0.45
Size (less than 99)	−0.23	0.17	−0.56	0.10
Industry (Ser.)	0.15	0.13	−0.10	0.41
Position	0.03	0.04	−0.04	0.10
Work ex	0.00	0.01	−0.01	0.02
Constant	2.80***	0.29	2.23	3.37
$R^2 = 0.27$, $F(15, 499) = 12.55$, $p < 0.001$				

Notes: *** $p < 0.001$; ** $p < 0.01$; *$p < 0.05$ ****$p < 0.10$; DV: dependent variable; Work ex: years of work experience; Coeff: coefficient; CI: confidential interval

This study conducted additional bootstrapping analyses to identify the indirect effects between learning stocks and organizational performance through two types of learning flows. The results of these analyses show that there are significant indirect associations between learning stocks and organizational performance through feedback learning flows (β = 0.15, 95 per cent and BootCI 0.07–0.24 in the Justice model; and β = 0.19, 95 per cent and BootCI 0.09–0.30 in the Trust model). The results also indicate that they are significant above the means of organizational justice (4.43) and trust in management (4.81), as well as below the means (2.32 and 2.62, respectively). Thus, *H5a* and *H6* are strongly supported, while *H5b* is not supported but shows statistical influence on the performance at a 0.10 significance level.

This study also tested the moderated mediation effects – that is, whether the indirect association between learning stocks and organizational performance through two types of learning flows is dependent upon the level of organizational justice or trust in management. According to Hayes (2015), the index of moderated mediation is critical and formal evidence is needed to test whether the moderated mediation index that quantifies the association between an indirect effect and a moderator is zero. Moreover, if its confidential interval does not include zero, the index is statistically significant. The results show that organizational justice moderates the association between learning stocks and organizational performance through feed-forward learning flows (Index = 0.01, 95 per cent BootCI = 0.00-0.03). Meanwhile, trust in managers only moderates the relationships between learning stocks and organizational performance through feedback learning flows (Index = 0.02, 95 per cent BootCI = 0.00–0.04), even if trust in management show moderating effects on both feed-forward and feedback learning flows and mediation effects in their conditional indirect effect analyses. This means that there is an indirect association between learning stocks and organizational performance through feed-forward learning flows and that it does not depend on the level of trust in management. Hayes (2015, *p*[0].15) points out that even if the moderation effect is significant in a hypothesized test, the index of moderated mediation could not be statistically significant in the indirect model (or vice versa) because the latter explains the quantification of the association between the indirect effect and the moderator.

In summary, this study finds that the indirect effect between learning stocks and organizational performance through feed-forward learning flows is dependent upon the level of organizational justice, while the indirect association between learning stocks and organizational performance through feedback learning flows is dependent upon trust in management. Thus, the results support hypotheses 7a1 and 7b2. All statistical inferences for indirect and moderated mediation effects are present in Table IV.

Conclusion and implication

This study used Crossan *et al.'s* SLAM model (Bontis *et al.*, 2002; Crossan *et al.*, 1999) as an OL process to examine the relationships between learning stocks, their transfer (feed-forward and feedback learning flows) and perceived organizational performance. This study also hypothesized that greater levels of organizational justice or trust in management would result in a better association between learning stocks and organizational performance through feed-forward and feedback knowledge transfers. This study started to answer the question of what motivates people and groups in organizations to share or hoard their knowledge. In considering this question, this study was designed to identify whether trust in organizational systems and management plays a moderating role in the mediated relationship of learning flows between learning stocks and organizational performance from a critical OL perspective. The findings of this research make the following contributions.

First, this study finds empirical evidence that learning stocks and feed-forward and feedback learning flows jointly influence organizational performance in the Korean business

Table IV The statistical inference for conditional indirect effects and moderated mediation effects ($N = 515$)

Index		*Effect*	*Boot SE*	*95% BootLLCI*	*95% BootULCI*
Conditional indirect association at different values of the moderator					
Mediator: Feedforward learning flows					
Values of justice					
−1 SD below mean		2.32	0.06	0.03	−0.00	0.13
Mean		3.37	0.06	0.04	−0.01	0.14
1 SD above mean		4.43	0.07	0.04	−0.01	0.17
Values of trust					
−1 SD below mean		2.61	0.07	0.04	−0.01	0.15
Mean		3.71	0.08	0.05	−0.01	0.18
1 SD above mean		4.81	0.09	0.06	−0.01	0.21
Mediator: Feedback learning flows					
Values of justice					
−1 SD below mean		2.32	0.14	0.04	0.07	0.23
Mean		3.37	0.15	0.04	0.07	0.24
1 SD above mean		4.43	0.16	0.05	0.08	0.26
Values of trust					
−1 SD below mean		2.61	0.17	0.05	0.08	0.28
Mean		3.71	0.19	0.06	0.09	0.30
1 SD above mean		4.81	0.21	0.06	0.09	0.33
Moderated mediation effects						
Mediator	*Moderator*		Index			
Feedforward	Justice		0.01	0.01	0.00	0.03
	Trust		0.01	0.01	−0.00	0.03
Feedback	Justice		0.01	0.01	−0.01	0.03
	Trust		0.02	0.01	0.00	0.04

Notes: Boot SE: bootstrapping standardized error; LLCI: low-level confidence interval; ULCI: upper-level confidence interval

context. The results support those of previous OL research (Bontis *et al.*, 2002; Lee and Huang, 2012; Prieto and Revilla, 2006). This is especially the case in that this study identifies that the knowledge resources accumulated at individual-, group- and organizational-level are directly linked to organizational performance. Moreover, it finds that they influence performance through feedback learning flows – that is, in refining and developing existing knowledge and skills – rather than feed-forward learning flows, which explore emergent and challenging markets. However, that the perceptions of respondents indicated that both exploration and exploitation were relatively and similarly high (see Table II: 3.57 and 3.60, respectively) and that the results of this study also exhibit the weak but significant effect of feed-forward learning flows on organizational performance (see Table III: $\beta = 0.11$, $p < 0.10$), confirms the concurrent nature of feedback and feed-forward learning flows to some degree. These results also suggest that firms simultaneously pursue both feed-forward and feedback learning by allocating different roles of the levels against one another (Raisch and Birkinshaw, 2008). The results thus support previous research focusing on *organizational ambidexterity* (Turner *et al.*, 2013; O'Reilly and Tushman, 2013) and indicates that if firms maintain both feedback and feed-forward learning flows in their OL activities, they can simultaneously use these learning flows as a means of escaping the "success traps" and "failure traps" caused by the excessive effort on only one type of learning flow.

Second, this study identifies that trust in organizational systems – that is, organizational justice – plays an important role in improving the mediation effect of feed-forward learning flows, while trust in management is a critical moderator in increasing the mediation effect of feedback learning flows. In other words, the higher the procedural and distributive justice, the higher the mediating effect of feed-forward learning flows; while the higher the trust in

leaders, the higher the mediating effect of feedback learning flows. According to Cabrera and Cabrera (2002), organizational justice – especially individual perceptions of procedural justice – increases peoples' collective identity and accountability to prioritize group or organization interests over individual ones, thereby motivating them to share their knowledge for the organization's benefit. Morris (2001) has noted that transparent knowledge reward systems – such as "property rights on knowledge" – establish a sense of ownership and encourage to participate in innovative project. Thus, these results support the argument that trust in the system and procedure moderates the level of new knowledge exploration. Moreover, several studies support the claim that trust in management influences the degree of knowledge distribution in an organization. Renzl (2008) notes that trust in management reduces an individual's fear of losing their unique value and encourages employees to align their thoughts and actions with those of the organization. When knowledge is transferred from the top to the bottom, resistance to change occurs because it gives a rise to fear and anxiety (Schilling and Kluge, 2009). If the change does not result from "moral" violation, the emotional relationship (Swift and Hwang, 2013) – especially with managers who can help to interpret unfamiliar information and listen to grievance – is an important factor in dealing with resistance (Lewicki and Bunker, 1996).

Based on the results of this study, this paper makes some suggestions regarding the basic conditions that an organization *should* have to facilitate the sharing and transfer of knowledge, as well as how to maintain a balance between feed-forward and feedback learning flows to ensure strategical renewal. As argued by Vince (2001) and Crossan *et al.* (2011), it cannot be denied that OL activities are based on the dynamic interaction between politics and power relations. From a social constructionist viewpoint, OL refers to the process of collective construction of knowledge by individuals and the power embedded in the positions and systems consciously or unconsciously shape the practice of knowledge sharing, storage and application (Contu, 2013; Gherardi, 2000). Considering possible concerns about the sharing of knowledge in such power structures, the dimension of ethics and trustworthiness should be considered in OL processes that encourage the voluntary engagement of organizational members. Moreover, from a strategic position, management must formulate and refine its understanding of what it means to establish organizational justice and encourage trust in management in the context of OL. Management needs to strategically explore and use the particular roles of organizational justice and trust in management in facilitating the transition from learning stocks to different types of learning flows, as well as in promoting their joint effects on organizational performance. This serves as a possible answer to why people are silenced (Blackman and Sadler-Smith, 2009) and why they resist organization-initiated change (Karataş-Özkan and Murphy, 2010).

This study has a limitation in that it uses self-report data to measure all constructs, and this can result in common method bias (Podsakoff *et al.*, 2003). To overcome potential bias, this study ensured the representativeness of respondents so that they could answer as accurately and honestly as possible. Moreover, to check common method bias, this study conducted a Harman's single factor test and found six factors explaining 83.302 per cent of the total variance in this study's constructs, with a single factor explaining 40.925 per cent, which mean that the variance for one factor did not exceed the half of the total variance of all the constructs as well as the common method bias is not a major concern (Podsakoff *et al.*, 2003). Another limitation is that the study only focuses on a single directional effect of learning stocks on learning flows in the hypothesized model. This is because this study is designed to identify why people do not share their possessed knowledge with others, as well as the effects of knowledge accumulation on both exploration and exploitation. However, Bontis *et al.* (2002) mentions that both concepts could interact with each other – that is, learning flows can affect learning stocks. To minimize these conceptual limitations, this study reduced and modified items that represent knowledge accumulation, and bottom-up and top-down knowledge flows. As such, future study can identify their

interactive relationships with regard to the level of trust in organizations and explore the effect of OL activities on objective firm performance.

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