

## Determination and Validation of the ‘Organizational Learning Capabilities’ Scale in a New Context of Educational Institutes in Pakistan

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### Abstract

*Current trends in disruptive technologies and global migration are changing the landscape of education. Stakeholders around the world are meeting to discuss the need to transform schools from teaching organizations to learning organizations. Policy decisions require empirically tested instrumentation that provides reliable data as feedback from faculty and is useful for measuring their school’s organizational learning capability (OLC). The purpose of this quantitative study was to test the dimensions Jerez-Gomez et al.’s (2005) OLC survey in the context of educational institutes. Data were collected from teachers (n=150) out of 165 workings in public secondary schools (N=15) of Tehsil Wari district Dir Upper, Khyber Pakhtunkhwa in Pakistan. Results of the SEM analysis showed the instrument a reliable operationalization of OLC using a four-factor structure; managerial commitment (MC), systems perspective (SP), openness and experimentation (EX), and knowledge transfer and integration (TR). Gender showed as moderating the relationships of the independent variables with OLS.*

**Keywords:** dimensions of OLC, educational institutes, leadership role, organizational learning capability

## Introduction

“Schools nowadays are required to learn faster than ever before to deal effectively with the growing pressures of a rapidly changing environment. Many schools, however, look much the same today as they did a generation ago, and too many teachers are not developing the pedagogies and practices required to meet the diverse needs of 21st-century learners” (Schleicher, 2016, para. 1).

Schools are similar to other organizations, as their stakeholders desire the organization’s continuous development. Gaining a competitive advantage in the 21<sup>st</sup> Century world requires continuously changing the organization in terms of individual and organizational learning (OL) to sustain and expand (Yusoff et al., 2019). Further, Goh et al. (2012) performed a review of the literature in the area of organizational learning capabilities (OLC) and found “a positive relationship between learning capability and organizational performance”, (p. 93). They included recommendations for training leaders in knowledge management (KM) and for providing reliable measurement/accountability for workplace behaviors. Further, Schleicher (2016) reported “...a growing body of scholars, educators, and policymakers around the world is making the case that schools should be re-conceptualized as learning organizations”, (paragraph, 1). Kools and Stoll (2016) explained, “...a school as learning organization [SLO] can change and adapt routinely to new environments and circumstances as its members, individually and together, learn their way to realizing their vision”, (p. 10).

### **Theoretical Lens - Resource-based View (RBV)**

All theories are abstractions, models, or guesses about how things work, useful to a greater or lesser degree, in predicting future outcomes. Looking through the lens of resource-based view (RBV) theory, organizations focus on developing their primary resource, the workforce of human capital, to improve the organization overall (Wernerfelt, 1984). Knowledge-based theory, an outgrowth of the RBV, holds knowledge as 'the most strategically important of the firm’s resources' and as central to OL (Grant, 1996). As a single-factor theory, Grant asserts that a knowledge-based theory of value in an organization is the only logical approach because all outcomes are 'knowledge dependent' (p. 112).

As knowledge is increasingly seen as a strategic tool, organizations spend

large portions of their budget on employee education and training to learn new ideas, techniques, and skills (Becker, 1962). But does improving the individuals' skills automatically improve the organization? Hanson et al. (2021) tested a four-factor model for moving teacher skills, experience, and education into the organization, becoming intellectual capital (IC). The process required the development of positive social relations between employees and structural capital that gives administrators the power to hold teachers accountable. That is, there are processes such as OLC that are used to move the individual's capabilities into the organization.

### **Purpose**

OLC has shown extensive importance in the business world (Altinay et al., 2016). The concept and theory of OL, developed in the 1950s by economists, emphasized two key questions: "How can organizations learn?" and "What is the nature of learning carried out by organizations?" (Yavas & Celik, 2020, p. 821). Barnard (2020) warned there are challenges to the study of OLC including the need to develop an agreed-upon/understandable definition for OLC, the need to address the political nature of social organizations that influences the decision-making processes and faculty's ability to work together, and the need for high quality, systematic, empirical studies on the topic (Kools & Stoll, 2016; Schleicher, 2016).

This study was conducted to empirically test the reliability of a scale for measuring a culture of OLC in public secondary schools of Tehsil Wari district Dir Upper, Khyber Pakhtunkhwa and to develop implications from the data analyses for improvements in public schools. Though there are both public and private secondary schools in the context under study, this current study was conducted in 15 public secondary schools. The reason behind this is that public schools may have a greater need for further study to develop implications for improvements. This is supported by Awan and Zia (2015) stating, "Private schools are becoming more favorite and attractive for the majority of the students due to their better education systems, test criteria and knowledge creation vis-a-vis public schools, which comparatively very cheap but inefficient are losing their attraction" (p. 122).

In this regard, the study of OLC, within the context of schools as learning organizations (SLO), is warranted. Therefore, the purpose of this study was to test the reliability and validity of a measurement scale, introduced by Jerez-Gomez et al. (2005), for its use in a new context, secondary schools in Pakistan. Additionally,

the authors provide implications, from the results of the analysis, for developing a school's OLC, thereby extending the literature on OLC to the new demographic of educational institutions.

### **Research Questions**

The overarching research questions of this study were:

1. Does the instrument tested in this study, in the context of Pakistani secondary schools, demonstrate reliability according to the predetermined indices selected?
2. What is the factor structure of the OLC measurement scale used in this study?
3. Is there a relationship between the proposed organizational learning capability (OLC) dimensions and gender, including as a moderating variable?

### **Literature Review**

Organizations use the challenges they face as incentives and direction for acquiring new knowledge to develop their staff to perform vital roles (Malik et al., 2018). OL is an approach incorporating continuous development of business practices and is achieved through managerial strategies necessary in a knowledge economy (Chadhar & Daneshgar, 2018). OLC, as an organizational level construct, can be observed when individuals work together as a team and share their knowledge, leading to improvements in the organization's effectiveness (Altinay et al., 2016; Jerez-Gomez et al., 2005; Fang et al., 2011). To accomplish organizational objectives, employees need to support each other in the context of the organization through teamwork and group problem solving, thereby reducing dependency upon the upper management (Goh, 2003; Hanson, 2017; Senge, 1990). For example, Barnard (2020) described dimensions promoting knowledge sharing in his model of OLC including "Leadership distribution, decision and sense-making processes, communication and feedback loops, the capacity to use information, type of problem-solving used, and stakeholder contributions" (p. 1256).

Models of OLC include operationalizing managerial practices that develop employee capacity to enhance their performance in the organization. As such, OLC

belongs to the category of organizational and managerial features that act as catalysts to move individual learning into an organization (Khalib et al., 2015; Marshall et al., 2009; Sayyed et al., 2010). A leader's capability in KM significantly adds to an organization's functioning when he or she facilitates the integration of OL. In the promotion of OLC, the organizational environment plays a crucial role (Jamil & Obeidat, 2019) allowing the organization to move toward increased creativity and efficacy (Wang et al., 2015). The OLC development process is reflexive. Organizations with OLC can improve the existing processes and, reciprocally, the development of their employees' skills (Garcia-Morales et al., 2007; Malik et al., 2018). Orth and Shuldiss (2021) tested the influence of OLC on resilience and found a strong effect on an organization's adaptive capacity.

### **Leadership Commitment (LC)**

In the last decades, leadership has gained importance in organizations (Jamil & Obeidat, 2019). Several factors have enhanced the need for managers to promote organizational transformation and improve workforce awareness including worldwide competition through globalization and the speed of technological progress (Yasir et al., 2016). A leader's skills are necessary for management, planning, and appraisal in ways that improve their employee workforce. Niqab et al. (2015) explained, "Effective leaders know that their journey is not a solo flight, so they use their skills to develop [their] faculty" (p. 36). Allameh et al. (2010) considered OLC the administrative and organizational aspects of an organization that act to enhance organizational learning practice. Therefore, it is of high importance for managers to acquire updated leadership skills before taking a position in the organization (Niqab et al., 2017; Piaw et al., 2014).

### **The Transformational Leader**

Aligned with the resource-based view theory, TL concentrates on the transcendent, instead of materialistic, traits of motivation, because leaders want to develop their supports' talents to attain the organization's goals (Northouse, 2013). To achieve this idealized inspiration, the TL is required to exhibit strong values and character as an example for the employees, because employees require evidence that they can trust their leader (Martin, 2015). Such leaders have the authority to change the attitude of the followers to achieve their common goal and to enhance the business activities (Muchiri & McMurray, 2015). Imran et al. (2016) reported on

the effect TL had on the OLC of commercial banks in Pakistan. This was supported by Khalifa and Ayoubi (2015), who explained that a leader's ability to stimulate employee motivation influenced promoting OLC.

### **Systems Perspective (SP)**

Organizations are increasingly focused on the development of systems that promote the intangible assets of knowledge development and sharing, over the tangible assets and outcomes of productivity (Niqab et al., 2020).

### **Organizational Learning Supporting IC Development**

Intellectual capital (IC) and OLC are considered essential for organizational development (Allameh et al., 2010). Abbasi et al. (2014) empirically tested the relationship between OL and IC and found OL as a mediating variable, which "Can have a significant effect on the relationship between intellectual capital and labor productivity" (p. 791). OLC has been shown to increase the quality of an organization's data available for improved decision-making related to managing products and facilities, interactive consumer marketing policies, and strategies that boost organizational productivity (Peltier et al., 2013). Similarly, Hanson et al. (2021) reported that "A leaders' KM skills in developing positive school cultures promote the development of IC indirectly through positive school cultures that include [organizational citizenship behaviors]" (p. 49). For example, when there is a practice of OLC in organizations, employees were shown motivated to work with more dedication to improve their competencies through joint effort, risk-taking, sharing information, etc., aligned with organizational citizenship behaviors. Additionally, these employees were found to report higher work satisfaction (Cricelli et al., 2018).

### **Organizational Culture of Openness and Experimentation (EX)**

#### **OL Through Flexible Open Systems**

Souza and Takahashi (2019) explored OL in a higher education setting and agreed that OL "... is a dynamic and multilevel phenomenon... that involves changes in organizations, with social and psychological processes and knowledge flows ... Adapting to changes requires flexibility and agility" (p. 397 & 398). Similarly, the Leadership within Open Vital Systems (LOVS) model was developed through qualitative and empirical testing within the context of secondary schools

in a northwestern state of the US and in a higher education setting in a private university in the southwestern US (Hanson, 2017; Hanson et al., 2020). The LOVS model works through supporting a common vision of learning including "...healthy social norms to allow flexible structures and the ability for relational learning [necessary for] rapidly changing and complex situations such as within ... diverse school populations [and when implementing new technologies]" (pp. 250 & 251).

### **Transfer of knowledge and integration (TR)**

The organization must ensure that information and foundational knowledge developed is stored and further distributed (García-Morales et al., 2012). The mechanism for capturing storing and sharing knowledge can occur through "organizational learning in the form of single-loop learning, double-loop learning, 'community of practice' and SECI model" (Malik et al., 2018, p. 6). KM arrangements work together to ensure that the availability of knowledge remains in the organization even when an employee leaves (Sudharatna, 2015). KM is demonstrated by the administrator's capacity to promote organizational practices and schedules leading to OL (Gasson & Shelfer, 2007).

### **Information Technologies**

The information and communication technologies (ICT) component is captured in the structural capital dimension of IC (Hanson et al., 2021) and the TR dimension of the OLC model tested in this current study. Current advancements in information and communication technologies must be considered in this process, including artificial intelligence (AI), the use of big data analytics, and the integration of online learning management systems. Information technology in various forms has a vital role in supporting administrators' knowledge management (KM) proficiencies including "information systems, applications, [and] hardware infrastructure," (Broendsted & Elkjaer 2001 in Malik et al., 2018, p. 2). Communication technologies such as formal and informal social network platforms, texting, and online conferencing have been shown to facilitate the development of shared knowledge and to advance the speed of learning (Hanshaw & Hanson, 2018 & 2019; Lopez-Nicolas & Soto-Acosta, 2010; Mitić et al., 2017).

### **OLC Dimensions and Models**

To unify the field on the topic of OLC, table 1 provides a comparison and

contrast of OLC models identified from the literature with the Jerez-Gomez et al. (2005) construct of OLC, operationalized on the instrument tested in this current study. From a review of table 1, it can be seen that:

### **Managerial Commitment (MC)**

Only Yavis and Celik (2020) did not include an operationalized leadership dimension in their OLC model. Orth and Shuldis (2021) employed Jerez-Gomez' (2015) survey, used in this current study, to operationalize individual and organizational level learning capabilities. However, they excluded Items 3 and 4 (MC), Item 1 (SP), Item 1 (OE), and Items 1 and 3 (KT) in their study because of failure to meet indices or to avoid redundancy in Items on other measurement scales used in their study. Other constructions of the leadership dimension included in the reviewed studies included leadership distribution, learning, and obligation. Three models included a dimension of participative decision-making.

### **Systems Perspective**

SP was not operationalized as a comparable dimension of OLC in Fang et al., (2011) and models of Svetlik et al., (2007). Other model dimensions recognized the importance of an organization's vision, processes, orientation, configuration, thinking, common vision, objectives, learning, and sense-making.

### **Openness and Experimentation (EX)**

Comparable dimensions to EX were identified in all models and operationalized as an ability to learn from mistakes, experimentation, exploration, risk-taking, learning, and team orientation, communication, and feedback loops, working atmosphere or environment, culture, developing employees' knowledge and skills, inquiry, and continuous learning. Two models included the type of problem-solving used as an element of OLC. Fang et al. (2011) operationalized incorporation of knowledge from the External Environment that is similar to Jerez-Gomez et al. (2005) Items 2 and 3 (EX) and Barnard's (2020) dimension of Stakeholder Contributions (p. 1256).

**Table 1.** Comparison and contrast of dimensions of OLC found in the review of the literature

			OECD- UNICEF						
			Integrated	Haase,					
This current study Jerez-Gomez et al.,'s (2005)	Orth and Shuldiss (2021)	Yavas and Celik (2020)	Barnard (2020)	Model (Kools & Stoll, 2016)	Franco, and Félix (2015)	Fang et al. (2011)	Som et al. (2010)	Svetlik et al. (2007)	Swee (2003)
managerial commitment (MC)	managerial commitment (MC)		leadership distribution, decision making	learning leadership	leadership	participative decision making	leadership	taking part in decision taking	leaders' obligation
system perspective (SP)	system perspective (SP)	Cognitive processes – systematic learning	sense making	external learning system; common vision	organizational configuration		system thinking; shared vision and mission		rationality of objectives and visualization; an improved role for staffs; acknowledgement of new thinking; preparedness for experiments; collective problem-solving
organizational culture of openness and experimentation (EX)	organizational culture of openness and experimentation (EX)	transparency and accountability --ability to learn from mistakes	communication and feedback loops; problem solving; stakeholder contributions	innovation and exploration; a culture of inquiry; continuous and team learning; collaboration	organizational environment	risk taking experimentation; interaction with the external environment	employee's skills and competencies; teamwork; cooperation; organizational culture	risk management; experimentation; dealings with atmosphere	well-organized knowledge distribution
transfer of knowledge and integration (TR)	transfer of knowledge and integration (TR)	ways of storing, accessing, and processing information	capacity to use information	systems for collecting and exchanging knowledge and learning	knowledge distribution	dialogue	information communication technology; transfer of knowledge	exchange of ideas	well-organized knowledge distribution

### Transfer of Knowledge and Integration (TR)

Operationalization of dimensions in all the models favorably compared with the TR dimension including processes for storing, accessing, and processing information, and the capacity to use, exchange, and distribute information. Fang et al. (2011) included ‘dialogue’ and Svetlik et al. (2007) included ‘exchange of ideas’ as dimensions in their models, comparable to Item 1, ‘...failures are always discussed...’, Item 2, ‘...teachers talking...’, and reverse coded Item 3, ‘...in this school, teamwork...’ on Jerez-Gomez et al.’s (2005)

The following sections describe the methods, results of the analysis, discussion of the results, conclusions, implications for secondary schools in Pakistan, and recommendations for future studies.

## **Methodology**

### **Research Design**

This study used a cross-sectional survey design. In longitudinal research, data are collected for at least two points in time to allow the researcher to detect changes over time (Sedgwick, 2014 cited in Connelly, 2016). On the other hand, a cross-sectional study occurs at one point in time. Cross-sectional surveys can be considered a snapshot that gives a picture of what the researcher wants to study. Cross-sectional surveys have several advantages (p. 369). Surveys are flexible, as they can cover many different areas of human behavior and conditions, and can be used with many populations (Polit & Beck, 2014 as cited in Connelly, 2016). In addition, a survey is relatively quick to conduct when information is needed about what is happening currently.

### **Research Approach**

The deductive approach used in this study is commonly applied in quantitative methods and useful in testing hypotheses and drawing research conclusions from results of statistical analysis of quantified data (Johnson, 2001).

### **Strategy and Unit of Analysis**

Data was collected using paper and pencil Likert-style surveys, in the field at the school sites ( $N=15$ ). The unit of analysis was secondary school teachers ( $N=165$ ) in public schools in Pakistan during a single period, the school year 2017. Surveys are commonly used in social sciences for their convenience and ability to collect a large amount of attribute and self-report opinion information in a cost-effective and timely fashion useful to test hypotheses and generalize results of the analysis to a wider population (Sekaran, 2006). Questionnaire data is useful in testing relationships between variables, such as in this current study, testing the relationships between the factors of OLC as well as the reliability of the instrument for use in public secondary schools in Pakistan.

### **Sampling Design**

#### **Target Population**

The sample of teachers responding with complete and valid surveys ( $N=150$ ) was identified from random sampling ( $N=165$ ) out of a total of 287 teachers

working, drawn from a total of 15 Public Secondary schools in Tehsil Wari upper Dir, affiliated with the Board of Intermediate and Secondary Education (BISE) Malakand, Khyber Pakhtunkhwa, Pakistan, under the supervision of the provincial government during the school year 2017. Tehsil Wari is a hilly area; however, the schools are linked and accessible through a network of roads. Based upon the  $N:q$  ratio criterion, set by Jackson (2003) and Kline (2010),  $N$  is the number of cases and  $q$  is the statistical estimate. The required respondent sample size for the SEM analysis in this study would be  $16 \times 4 = 64$ , which was exceeded. The response rate was 91%, considered excellent (Babbie, 1990).

### **Sample Size**

According to Krejcie and Morgan, (1970), if there is a population of 190, a sample size of 165 will be enough for data collection. In this study, we have 150 of 165 sampled respondents with complete surveys. Therefore, the response rate was 91 %, which is excellent (Babbie, 1990).

### **Instrument**

For this study, the questionnaire, in its original form, was borrowed from Jerez-Gomez et al. (2005) with permission for use in public secondary schools in Pakistan. The OLC measurement scale operationalizes four sub-dimensions including Management commitment (MC), System perspective (SP), Openness and experiment (EX), Knowledge transfer and integration (TR), and is comprised of a total of 16 items. The Cronbach's alpha reliability and validity values mentioned in Jerez-Gomez et al. (2005) for each factor scale were MC ( $\alpha=.77$ ), SP ( $\alpha=.72$ ), EX ( $\alpha=.80$ ), and TR ( $\alpha=.78$ ), which are within the predetermined threshold range for acceptable scale reliability ( $\alpha>0.77$ ) (Nunally, 1978). Several previous studies have used the scale and investigated its effectiveness and trustworthiness (Liao & Wu, 2009). The demographic statistics of the respondents are included in the model.

Close-ended questionnaires comprising of these dimensions have been used for data collection. A reliable instrument contributes to the stability of the instrument or provides similar results upon repeated applications (Samani, 2016). Instrument validity was tested by a comparison of the factors with the literature (content validity), and construct validity by testing the convergent and discriminant validity of the results (Brown, 1996). Table 2 provides a summary of the key

concepts and their items. Appendix A provides the survey with all items included by dimensions.

**Table 2**

*Summary of Key Constructs, Sources of Questions, and the Number of Items*

Variable	Dimension	No. of Items	Source
Organizational Learning Capability	Managerial Commitment	5	Jerez-Gomez et al. (2005)
	System Perspective	3	
	Openness and Experimentation	5	
	Knowledge Transfer and Integration	4	

### Data Analysis Techniques

Data analysis techniques included correlation testing for descriptive statistical analysis, standard multiple regression, and structural equation modeling (SEM) to answer the research questions. Statistical software used included AMOS and SPSS vs 22.

## Findings

### Participant Demographics

Before the analyses were performed, descriptive statistics were reviewed and the normality of the data was assessed for use in parametric analysis (Creswell, 2009 & 2014). Among 150 respondents, in this study, 83% were male ( $n=125$ ) and 17% were female ( $n=25$ ). 11% of the participants were 25-30 years-of-age, 27% were 31-35 years, 31% were 36- 40 years, and 31% were > 40 years-of-age. In terms of professional qualifications, 11.33% of the participants were certified teachers (CT), another 41.33% held a bachelor of education degrees (B.Ed.), 34% had earned master's degrees in education (M.Ed.), while 13.34% of the sample held M.Phil, or other advanced diplomas in education. Considering the teachers' experience in the field of education, 4% of the sample had < 1-year experience, 21% had 1-5 years, 24% had 6-10 years, 23% reported 11-15 years, 18% had 16-20 years, and 10% had > 20 years' experience in education. Academic qualifications included undergraduate (3.34%), graduate (24%), and master's degree (67.33%), and higher degrees (5.33%).

## Reliability and Normality of the Data

### Testing the $H_{01}$ hypothesis

This section seeks to answer the question, “Does the instrument tested in this study, in the context of Pakistani secondary schools, demonstrate reliability according to the predetermined indices selected?” and provides the results of the test of the hypothesis. Cronbach’s alpha reliability for each factor scale was MC ( $\alpha=.77$ ), SP ( $\alpha=.72$ ), EX ( $\alpha=.80$ ), and TR ( $\alpha=.78$ ), which are within the predetermined threshold range for acceptable scale reliability ( $\alpha>0.77$ ) (Nunally, 1978). Table 3 demonstrates the estimations of Skewness and kurtosis ( $\pm 1.96$ ).

**Table 3**

*Estimation of Skewness and Kurtosis with Descriptive statistics (N=150)*

Variable	Minimum	Maximum	Mean	SD	Skewness	Kurtosis
(MC)	1.80	6.80	5.164	0.909	-0.896	.831
(SP)	2.33	7.00	5.151	0.975	-.511	-.101
(EX)	2.25	6.75	4.855	1.078	-.148	-.632
(TR)	1.50	6.75	4.923	0.964	-.562	.367

A review of the descriptive statistics revealed the data met the requirements for skewness and kurtosis ( $\leq \pm 2.0$ ). Therefore, there is sufficient evidence to support rejecting the Null in favor of the alternative, the reliability indices of the scale are within a predetermined range of acceptability.

Next, the ‘Kaiser-Meyer-Olkin’ (KMO) (Kaiser, 1974) measure of examining ampleness and ‘Bartlett’s Test’ of Sphericity (KMO  $\geq 0.60$ ,  $p \leq 0.05$ ) (Bartlett, 1950) were performed to determine whether the sample estimate was a fit for factor analysis. The quality of the relationship among the factors was also considered critical (Blaikie, 2003). In this case, the KMO-Value= .74 ( $p < 0.001$ ). Therefore, skewness, kurtosis, and KMO showed all values were within the preset critical values. The collected data was considered normal and parametric tests were considered appropriate for analysis of the data. Appendix B provides the scree plot. To address the objectives settled for this study the following analyses were carried out as proposed in methodology.

## Structural Equation Modelling

SEM was used to confirm the impact and to test the adapted model proposed by Jerez-Gomez et al. (2005) for reliable use in the context of Pakistani educational institutes using the sample data. To achieve this objective, Hair et al. (2009) suggested the following tests of fitness: absolute fit, incremental fit, and parsimonious fit. Each of the fitness tests has its specific index. Nonetheless, in this investigation, each test utilizes an index to confirm the proposed model in the local context. Results showed significant effects from all factors contributing towards changes in OLC. (2005). Table 4 provides the critical values for these indices and the observed test values showing significant effects from all factors contributing towards changes in organizational learning capability.

**Table 4**

### *Model Fitness Measurements*

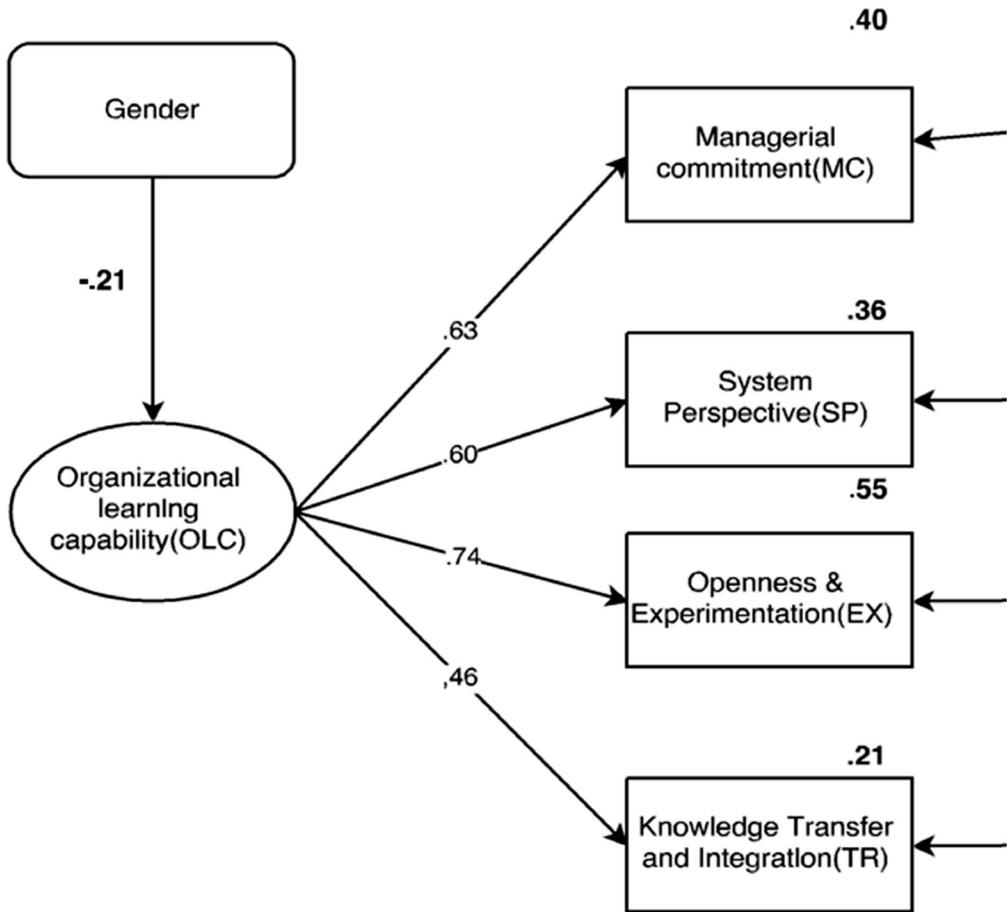
Absolute fit			Incremental fit			Parsimonious fit		
Fitness index	Critical value	Test value	Fitness index	Critical value	Test value	Fitness index	Critical value	Test value
RMSEA	< 0.10	0.09	CFI	> 0.88	0.93	ChiSq/ df	< 5	2.29

### Testing the $H_{02}$ hypothesis

This section seeks to answer the question, “What is the underlying factor structure of the OLC scale?” and provides the results of the test of the null hypothesis. Since test values were all within the threshold values and met the predetermined indices for fitness sufficient evidence was provided to reject the Null in favor of the alternative, the four-factor structure represents the underlying structure for the OLC scale. Results obtained through SEM technique showed a statistically significant and high correlation between dependent variable OLC and independent variable MC ( $r=.765$ ,  $p< 0.001$ ), SP ( $r =.683$ ,  $p< 0.001$ ), EX ( $r=.786$ ,  $p< 0.001$ ), and TR ( $r=.658$ ,  $p< 0.001$ ). Table 4 shows the  $p$ -values less than .05, strongly suggesting that all the four exogenous dimensions (predictors) have a statistically significant effect in explaining changes in the mean value of teachers’ perceived OLC (Kaiser,1974). Figure 1 provides the confirmed SEM for OLC by Jerez-Gomez et al. (2005) for use in Pakistani educational institutes.

**Figure 1**

*Structural Equation Model of the Dimensions of OLC with Gender as a Moderator*



**Multiple Linear Regression**

This question was analyzed using multiple linear regression; results of standard multiple regression are presented in Table 5.

**Table 5***Multiple Regression Weights*

			Beta Estimates	S.E	C.R	p-value	Result
OLC	←	MC	1.29	.30	4.30	<0.001	significant
OLC	←	SP	1.32	.31	4.23	<0.001	Significant
OLC	←	EX	1.83	.41	4.42	<0.001	Significant
OLC	←	TR	1.00	--	--	<0.001	Significant

The results show that these factors/dimensions were statistically significant in explaining changes in the dependent variable OLC. Furthermore, it was highlighted that EX showed as the main effect ( $\beta=1.83$ ,  $p<0.001$ ) on OLC.

**Gender as a Moderator****Testing the H<sub>03</sub> hypothesis**

This section seeks to answer the question, 'Is there a relationship between the proposed dimensions of organizational learning capability and gender as a moderating variable?' and provides the results of the test of the H<sub>03</sub> hypothesis. Gender was entered as a control variable from the SEM investigation to determine if there was a moderating effect between OLC and the four factors (MC, SP, EX, TR). The estimation of  $p$  (0.04) was less than 0.05, evidencing statistically significant results. Therefore, gender was considered to influence the relationship between OLC and (MC, SP, EX, TR). Table 6 provides the results of the analysis for gender.

**Table 6***Direct Effect for Control Variable Sex (Gender)*

Effect	Variables		Beta Estimates	S.E	C.R	p-value	Result
Direct effect	OLC	← gender	-0.25	0.12	-2.08	0.04	significant

Therefore, there was sufficient evidence to reject the null in favor of the alternative that there is a relationship between the independent variables, using gender variable as a moderator and the dependent OLC.

Following is a discussion of the results of the empirical testing, conclusion, implications, and recommendations for further study.

## Discussion

The main objectives of the analyses in this study were to test the dimensions of OLC as operationalized on the measurement scale tested and to confirm the reliability for use in the secondary schools in Pakistan, using gender as a moderator. Thus, the results of this study extended the literature on OLC to the new demographics of secondary educational institutions in Pakistan. The overarching research questions of this study were ‘does the instrument tested in this study, in the context of Pakistani secondary schools, demonstrate reliability according to the predetermined indices selected?’ ‘What is the factor structure of the OLC measurement scale used in this study?’ and ‘Is there a relationship between the proposed organizational learning capability (OLC) dimensions and gender, included as a moderating variable?’ The constructs understudy and hypotheses tested were developed from a review of the literature, researcher’s experience, and expert review, including the use of the Jerez-Gomez et al.’s (2005) OLC measurement scale, which operationalized an organization’s inclination to learn adapted for the context of teachers in the public secondary schools in Pakistan. The data collection design was random sampling using Likert-style paper-pencil surveys at the school site to collect teachers’ self-reports of their beliefs about their school.

## Model Confirmation

Results of the analyses were consistent with the literature, as it was determined the proposed model was a fit using SEM of the data gathered in this study, testing the null hypotheses, and results supporting rejection of the NULLs in favor of the alternative hypothesis (Borgman, 2012; Hanson et al., 2011).

## Correlation

From the results of this study, it has shown that there is high correlation between the dependent variable OLC and the independent variable MC ( $r=.765$ ,  $p< 0.01$ ), SP ( $r=.683$ ,  $p< 0.01$ ), EX ( $r=.786$ ,  $p< 0.01$ ), and TR ( $r=.658$ ,  $p< 0.01$ ). Among these correlations, the highest correlation was found between OLC and the variable EX. Five facilitating factors appeared to explain OLC: experimentation, risk-taking, interaction with the external environment, dialogue, and participative decision making.

## **The Best Predictor of OLC**

Statistical results of the dimension Openness and Experimentation (EX,  $\beta=1.83$ ,  $p=0.001$ ) explained the greatest amount of variability in OLC, followed by System Perspective (SP,  $\beta=4.68$ ,  $p<.001$ ), and Managerial Commitment (MC,  $\beta=1.29$ ,  $p < .001$ ). This is consistent with the literature on OLC; Goh and Richards (1997) considered the experimentation factor as trying out new ideas through changes in the patterns and processes of the work; Chiva and Alegre (2008) and Som et al. (2010) explained modifications caused during the learning procedure may stimulate, salvage, or provide insights for improving organizational performance; Yusoff et al. (2019) reported it necessary for organizations to continue the process of change while ensuring a stable structure to maintain the order and function while developing; Salas-Vallina et al. (2017) shared an individual's motivation to change is an outcome of new learning, and Table 1 showed all authors' OLC models included elements for the Openness and experimentation dimension.

## **Role of Gender as a Moderator**

A review of the literature revealed gender as a moderator showed varied effects, both positive and negative effects, as in this investigation. The respondents (educators) of this examination work in government schools in Pakistan, which is a gender-segregated society. This could be the fundamental motivation behind why there was an exceptional impact of gender on the connection between the four exogenous factors/indicators (MC, SP, EX, TR) and OLC in this examination. Contrasts can be found on the premise of gender orientation when comparing the results of this present study with a study conducted in Pakistan, which found that there was no statistically significant effect of gender on the relationship between principal leadership skills (PLS) and IC in secondary schools (Niqab et al., 2015). Finally, gender was not shown statistically significant as a moderator in empirical studies using Jerez-Gomez et al.'s (2005) scale on a sample in German and Austrian organizations (Orth & Shuldis, 2021).

## **Construct Validity of the Four OLC**

### **Factors for Use in Schools**

A review of the literature on knowledge sharing and development in secondary schools revealed OLC dimensions, identified in the measurement scale tested in this current study, compared favorably with Hanson's (2017) model of

organizational implicit theory development, Leadership within Open Vital Systems (LOVS); thereby providing an element of construct validity, through triangulation with the literature, on the topic of SLOs and the development of IC. Table 7 provides a comparison of model dimensions for Jerez-Gomez et al.'s (2005) OLC and Hanson's (2017) models.

**Table 7**

*Comparison of the Dimensions of OLC and the LOVS Model Tested in Schools*

<b>OLC Dimensions (Appendix A)</b>	<b>LOVS model (Hanson, 2017, pp. 150-156)</b>
Leadership Commitment (LC) operating through <ul style="list-style-type: none"> <li>• Transactional leadership style</li> </ul>	Vital Leadership operating through <ul style="list-style-type: none"> <li>• Transactional leadership and</li> <li>• Managerial leadership</li> </ul>
Systems Perspective (SP) – Structures support a <ul style="list-style-type: none"> <li>• common vision and</li> <li>• organizational identity</li> </ul>	Systems structures Formal – and flexible structures, processes, and schedules that provide predictability, safety, and resources to <ul style="list-style-type: none"> <li>• share knowledge</li> <li>• develop organizational identity</li> </ul>
Openness and Communication (OC) <ul style="list-style-type: none"> <li>• open to new ideas</li> <li>• adopts new practices</li> </ul>	Informal – structures that support <ul style="list-style-type: none"> <li>• open communication</li> <li>• build relationships that meet individual needs</li> </ul>
Transfer of knowledge and Integration (TR) <ul style="list-style-type: none"> <li>• teamwork</li> <li>• knowledge sharing</li> <li>• knowledge stays within in the organization when individuals leave</li> </ul>	<ul style="list-style-type: none"> <li>• team relationship development and</li> <li>• knowledge sharing and development into the organization</li> </ul>

**Conclusion and Recommendations**

This study added new information to the literature on the topic of OLC showing the results apply to a new context, educational institutions, which is useful for informing future directions for school administrators and research directions in the field. The results of this study showed the factors (MC, SP, EX, TR) have a high correlation with OLC, the main effect being, Openness and experimentation (EX,  $\beta=1.83, p < 0.01$ ). These results also showed an effect of gender on the relationship between exogenous (MC, SP, EX, TR) and endogenous (OLC) variables, which can be understood in light of the gender segregation in Pakistani society. Lastly, the results of the analyses demonstrated a statistically reliable fit with the proposed model.

Qualitative research is indicated to determine how individuals responding to the survey understand the constructs; a comparison of OLC and school mindset factors could potentially further validate the constructs of the OLC instrument dimensions (Niqab et al., 2019); and seeking links between OLC and IC to promote creativity, new information technologies, use of online modalities for knowledge transfer post-COVID-19, and the welfare of students' post-graduation is indicated (Niqab et al., 2020, p. 23).

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