Exploring Influence Of Learning Management System On Management Functions Of E-Leadership

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Abstract

The appearance of a new paradigm of e-leadership in which the Learning Management System (LMS) is used for management functions in schools. This research aims to explore principals' experiences and perceptions about LMS and how LMS is used in administrative and academic processes in private schools of Pakistan? This research was carried out in two phases. The first step was to perform semi-structured interviews with school principals. A phenomenological coding technique was used to code and interpret the qualitative data obtained through interviews. As a result, three themes emerged from thematic analysis. The three emerged themes of management functions of e-leadership were Rollover, school roll, and organizing school. In the second stage, the quantitative instrument (Closed-ended questionnaire) was developed based on themes that emerged from the first stage. The data screening and demographic features of respondents were tested using SPSS 22 and the measurement and structural model were analyzed through the Smart PLS. The instrument's validity and reliability were determined using smart-PLS and a quantitative survey of 124 principals. The results revealed that LMS with emerged themes has a significant impact on management functions of the 3P learning LMS. It concludes that the management function through this LMS enhanced the efficiency of the school principals.

KEYWORDS: Learning management system, Principals, Rollover, School roll.

Introduction

The rapid development of the internet and information technology since the end of the twentieth century has altered the dominant policy debates at various levels, including institutional, national, regional, and global (Robertson, 2005). The internet and digital technologies have set new
standards of innovation, global economic development, and social development. The fast development of software every moment has enriched and expanded the greater educational connectivity for institutions (Spring, 2008). The advent of digital technologies has become a modern force of change which is linking education to faster networks and escalating educational environments (Mohamad Mohsin, Hassan, & Ariff, 2014). According to Jameson (2014), the world faced by students, teachers, schools, and parents is radically changing as a result of the rapid growth of educational technology and social media use, to the point that online 21st century innovations must play a more significant role in education than ever before. The roles and responsibilities of the school heads have been impacted by digital technologies which are the current force of change in a significant fashion (Mohammed Sani, Ahmad Zabidi, & Husaina Banu, 2013).

Basically, the term e-leadership emerged in business and management then it is used in educational institutions. Traditional leadership theories, according to Avolio & Kahai (2003), may not be sufficient for effective leadership practices in a technology-mediated environment. As a result, the shift of leadership to e-leadership has inevitably resulted in reform activities being shielded. Das Gupta (2011) stated in his review about e-leadership from the year 2000 to the year 2011, there is consensus among the researchers about the term e-leadership as it was defined by Avolio & Kahai.

Why e-leadership?
The origins of educational management, specifically management using the most up-to-date information and communication technology in the context of cloud-based LMS applications, can be traced back to the twentieth-century General Theory of Administration. Administration, according to Peci and Sobral (2008), is the efficient and productive use of resources in an organization so that its goals can be met. In this regard, modern administration entails four interconnected tasks known as administrative functions: planning, coordination, management, and control, which are derived from prehistoric concepts by French administrator Henri Fayol in the early twentieth century (Fayol, 1990).

According to Kurlan & Egan (1999), there are three main leadership challenges according to the dominant E-setting. When workers don't truly exist, then they feel isolated from their workplace. It improves distance observing and discernments about distributive equity. The authors of several types of researches believe that these challenges endorse new leadership skills in the form of e-leadership. The emergence of e-leadership proposes four sets of changes with far researching significances (Avolio et al., 2003). First, the ICT increase has been adjusted from the hold of leaders to devotees. Junior staff now have access to comparative data that traditionally only managerial leaders had access to on a case-by-case basis, consistently before the leader. This situation forces leaders to be more vigilant in their decision-making. There are also various courses in which data streams at the moment. It tells us that e-leaders can no longer cope with data dispersion. When it comes to passionate data, the leaders should be prepared in the event that it has already been communicated. If a professional is dissatisfied with a leader's decision, the worker
can now make a previously unthinkable step. A specialist may talk with the top supervisory group pioneer or deliver a bother message to the entire workforce with a single click. In an educational setting, E-leadership enables a powerful leader to organize groups of teachers and other support staff, who in the past could keep such individuals disconnected and disordered. As a consequence, teachers and other workers have better access to information communication technology while they are teaching or performing other duties. This development has allowed quick and effective responses in students learning, wishes, and needs (Avolio et al., 2003).

Secondly, there is a more prominent gaze among the e-leaders and all educating and non-educating individuals. Along these lines, it tends to be filled by the e-climate that will make an interconnectedness among them (Avolio et al., 2003). A school worker may offer a conversation starter to the school head, day in and day out in settling their homeroom issues. Today's e-leaders are more cautious and dynamic in their collaboration with interconnected partners around reality's boundaries. In an educational association, virtual group gatherings can move like a pioneer and a devotee on occasion.

Third, the world of computerized electrification makes teamwork easy and open to all educational organizations’ workforces. A school leader can communicate with his top administration via email on a regular basis. He may also address the current situation as well as long-term problems with them. The head or pioneer will offer worldwide affirmation to a group's model vision in the trading of thoughts and arrangement of thoughts. When he inadvertently uses resemblances that don't ring true in various cultures, he brings up another point of view. (Avolio et al., 2003) on the planet. Fourth, the technological system of an educational organization provides school leaders tremendous control to reach out and touch everyone within an institution. In an e-environment communication through technology assist effectively among stakeholders when often the face-to-face connection is not possible. Everyone at any time can use tools of communication to share what might not quickly possible without it (Avolio et al., 2003).

**Learning Management System in Managing a School**

The development of priority of technologies in modern societies, information, and communication technologies have been reached at high priority in educational institutions as well (Demir, 2003). The principals in educational organizations started using different forms of technologies gradually in their management functions. These technologies took different forms for education functions like management systems (MS), management information systems (MIS), and the learning management system (LMS). An LMS is an internet-based software consist of various functions that helps all stakeholders in a school in their day-to-day activities. The functionalities of LMS are the mediated force that helps the headteachers/principals in managing and supervising teaching, learning, and other purposes of a school (Chatterjee, & Prakash, 2017). There are many LMS available on the internet at cost or free. The most common and widely used LMS are Blackboard, Moodle, Edmodo, Skillsoft, Schoology, and 3P learning. An LMS is comprised of two distinct parts: First is the server part that plays out the center usefulness (helps in making, overseeing and
the second part consist of user interface that keeps running inside LMS on the web (a cloud-based technology facilitate through figure tips only)

The adaptation of LMS in educational institutions and especially in schools has caused huge changes in the roles and working styles of educational leaders or supervisors (Telem, 1999). The LMS has changed methods of administration of the school heads in the regions of authority, the dynamic, outstanding task at hand, human resource management, correspondence, obligation, and planning (Gurr, 2000). Deliberately LMS frameworks help the supervisor in deciding the goals of the school, making long-term arrangements, disseminating assets, and shaping instructive strategies for the future, deciding exhibitions of teachers, and accomplishment of the school (Telem & Buvitski, 1995; Telem, 1991). Along these lines, LMS can likewise be utilized as an instrument to start and e-leadership of supervisors (Telem, 1999).

3 P Learning LMS
The Learning management system-3P Learning by 3P learning organization gave authority to the principals and head teachers to supervise their schools by using the following control features. There are different consoles for the principal, teacher, students, and parents. The principal console consist of the following catalogs:

1- School Roll
2- Admin Reports
3- Rollover
4- Course Admin
5- Security Settings

School Roll
As a principal or headteacher (supervisor) this is where a principal can manage all aspects of his school's enrollment. He or she has the power to add, delete, and reset students (tallying a mass unspecified express change), as well as allocate and unassigned classes to students and teachers. He may also switch between student, instructor, and class records to make adjustments to any of them. He can also print sign-in cards for the two students and the teacher in the School Roll zone, giving them easy access to their username and password key. He/she can also download his/her complete school roll, perform fast student and teacher exchanges, and determine how many licenses your school requires to remain operational (3P Learning, 2019).

Admin reports: The Admin Report is a spot for a school principal to monitor entire school uses and accomplishments. It is presently partitioned into three areas, with more reports to follow without further ado. Keep your eyes stripped. The School Use Report shows up, alongside the instructors’ names and introductions. A school head can get to any student’s report whenever; all he/she needs to do is tap on the line close to the class he is keen on, and a report will be delivered with their help places and confirmations acquired; he can even change the date on the report. A parent-teacher meeting can be conducted by clicking on the picture next to a student’s name, which
is an amazing method to use for the parent-teacher meeting. You can choose instructors, schools, and events in the Certificates tab and download understudy authentications in bulk. The behavior and use report gives you access to your school's "massive data," such as student achievement, focuses, authentications, selected verses intentionally completed with working out, time on the site, and so on. (3P Learning, 2019).

**Rollover:** It's never been easier to get your Mathletics classes for the new academic year. The new HTML Rollover will direct you through every step of the process, allowing principals to download, update, and re-arrange all of their school's data in one location. Instead of reordering records into the old Rollover matrix, the approach has been changed by encouraging school leaders to transfer records. The new structure will also inform the administrator if there are any inconsistencies in your data and where to find them so that an administrator can fix them, which is critical. (3P Learning, 2019).

**Course Admin:** The manager of the LMS currently can deal with the default courses that are dispensed to specific year levels. This element is particularly valuable in the event that you need to guarantee that all the teachers at your school are allowed the main outline, instructional program timetable, or subject material-changed course instead of the default public instructive arrangement. Before you set it as the norm, a supervisor will observe the course by clicking the blue catch on the right-hand side and then operating as required. (3P Learning, 2019).

**Security settings:** The Hall of Fame is one of Mathletics' most well-known features, and students are continually testing it out on Live Mathletics in the hopes of seeing their name in lights. Regardless, we put a genuine emphasis on the welfare of our students. You can choose how you want their names to appear on the anteroom of acknowledgement in the new settings menu:

- First name followed by the first introductory phrase (for instance, John S.)
- Just initials (for example, JS) • Just initials with surname first (for example, SJ) (3P Learning, 2019).

So go ahead and check out the latest Mathletics Admin console and some of the resurrected functions. You will usually visit the English language territory at the same stage if you need assistance. The command provided by LMS provides an environment in which a school principal can handle using the most up-to-date management tools. (3P Learning, 2019).

**Literature Review**
It is thought that by integrating an LMS with e-learning management, it would be possible to strengthen the planning, organization, management, and control of principals as well as e-learning processes. Belloni (2001) points out that a significant trend is the investment in IT, not only in the device, but also in the study of appropriate methodologies and training for their software. This focus highlights the need for research both in improving the efficiency and efficacy of existing control techniques and in developing new mechanisms for improving e-learning approaches. Vaz
(2007) adds to this notion by stating that an LMS becomes a well-defined and well-built pattern when it is used as a learning control application in the preparation, execution, and evaluation of a particular e-learning procedure. According to her, an LMS's primary emphasis is on the learner and the organization, and its primary functions include newbie control, mastering tasks, the process of e-learning evaluation, and mapping competencies of the organization presenting instruction. The atmosphere can also help with the control and management of user-learning activity relationships. The evolution of cloud-based LMS introduces new facets to the advancement and enhancement of e-learning management systems in terms of efficiency.

In this situation, the technical setup is critical; it is understood that one can identify management dimensions and provide information through techniques and appropriate technologies (Pimentel, Freitas & Siqueira, 2011). Demir (2006) conducted a survey study in 98 elementary schools in Turkey and found favorable results for the e-leadership of the principals. Chatterjee and Prakash (2017) conducted a qualitative study in Bangalore, India, to investigate the use of LMS by school heads for managing e-learning environments. Yan Piaw Yee Pei (2017) conducted research in Malaysia, it was the review of literature on e-leadership from 2000 to 2016. The fond that most of the researches were content analysis. Mostly were the quantitative studies where the only perception of headteachers was used to find the results of the researches. They suggest that there is scarce literature about e-leadership and there is a need for explorative studies in school education. As a result, it was discovered that there are gaps in e-learning theory, especially when it comes to the use of a learning management system (LMS) to manage school education, since none of the theoretical framework studies discussed this topic in detail. The recognition of this feature, which has been suppressed by literature, is worthy of attention, as it confirms the above-mentioned vision of Bach, Domínguez, and Walter (2013).

This study aims to examine the use of learning management systems in school management and to find out experiences and views of principals about mediation in the management functions of the e-leadership of the schools. In this aspect, the following research objectives were formulated:

- To explore the management functions of a school principal mediated by LMS.
- To examine the impact of the LMS on the efficiency (Management Functions) of the principals.
Conceptual Framework

METHODS
This was qualitative (interpretive) and quantitative (inferential) study that used an exploratory sequential mixed method approach. The shortcomings of one approach can be compensated for by the strengths of the other by integrating qualitative and quantitative approaches (Creswell, 2013). The study was split into two sections. Eight school administrators were interviewed in semi-structured interviews first. To gather the themes of e-leadership activities in schools, the data from the interviews were coded and analysed using qualitative data analysis. Second, quantitative survey research was conducted by involving 150 school principals. The quantitative data were analyzed using smart PLS and SPSS statistical analysis software. To accomplish the first goal, the interpretative exploration analysis technique was used. The interpretative technique elucidates the perceptions and perspectives of a small group of people in great detail and depth (Chua, 2016). The findings include the development of themes that arise unequivocally and without delay from the interview data, rather than from the researcher. (Conrad, 1995).

3.1 Population and Sampling
The principals of 150 private schools who have used or are using 3P-learning LMS were the target population for this research.
Phase I. (Qualitative)

Study participants
In phenomenological research, sampling is primarily used to identify respondents who have the potential to provide the researcher with the information needed to produce a phenomenon in the corpus data. As a result, a purposeful sampling method was used to select principals, most of whom were from private schools that had been using LMS for at least two years. The purposeful sampling method selects individuals or entities with the goal of better understanding the central phenomenon (McMillan & Schumacher, 1994). The study participants were ten principals saturation of in-depth interviews restrict to the eight participants, two principals, two vice principals, four coordinators. These participants had been using LMS for more than two years.

Research Instrument
According to Creswell (2013), the researcher is the primary instrument for gathering and interpreting knowledge from participants in qualitative study. Interview protocols were created by the researcher for semi-structured interviews with principals, vice-principals, and coordinators. The school principals’ interview procedure includes 15 questions about their e-leadership positions and participation in implementing the 3P-Learning LMS in the school.

Data collection and analysis
Eight principals were interviewed semi-structurally using their interview protocols. An introduction and closing questions were included in these interview protocols. The researcher introduced himself and his organization to the respondent in the introduction. I gave a description of the report, specifics about how the data was used, and guarantees about confidentiality. I also gave the respondent the chance to ask questions about the research. The researcher used their protocols to perform interviews with principals. The researcher probed principals with probing questions to learn about their perceptions and perspectives on the successful use of LMS. The interview process was continued by the researcher until saturation was reached. The saturation stage of the interview process occurred when the same response was given repeatedly. Meetings were conducted at the school in a dedicated private space to ensure a continuous meeting atmosphere. The researcher documented the interviews on audiotape and transcribed them himself. All of the interviews were transcribed after the researcher listened to them several times, and the files of transcribed interviews were typed in Microsoft Word. To provide exploratory and preliminary code assignments to the main participant results, the researcher used the exploratory coding technique of provisional coding.

The term "manage" means that the "learning management system provides administrative functions to LMS supervisors (Principals or Heads), such as access and monitoring of teacher and student accounts, as well as statistical resources" to LMS supervisors (Principals or Heads) (Abu-Shawar & AL-Sadi, 2010). Demir (2006) conducted a survey of 98 Turkish elementary school principals to learn more about their views on management and the LMS.
According to the findings, the LMS made a significant and valuable contribution to the school's process management. The management functions provided by the LMS make it simple to use information about school procedures. Chatterjee and Prakasha (2017) showed a qualitative analysis in Bangalore, India's schools. They assembled data from school administrators who utilized LMS. They found that the LMS turns into the main wellspring of data for rollover (educational plan, classes, homeroom instructors, and errand task toward the beginning of the year) and any remaining administration capacities, just as organized information. This information is only a couple clicks away and can be utilized in school measures. This information is refreshed with insights concerning instructing and learning capacities both automatically and manually. The LMS helps school administrators, teachers, students, and parents to keep in touch. The majority of the respondents in this study agreed with the above data that the LMS effectively encourages and improves the effectiveness of the principals in controlling all of the school's processes. In this study following principal participants (PP) reported that:

“I think at the beginning of the year there are some tasks which we complete for the whole academic year. As we know Curriculum planning is basic and even the first step in the initial stages of an academic year. Now, LMS reduces this burden in a way that class vise curriculum is already planned even if there is a need to rearrange it, we can do so according to our academic calendar of the school. For this, a homeroom teacher and subject teachers connected each other as a team to have everything of curriculum planned in LMS” (Principal Participant-3).

“Well there are many management procedures are there in our teaching, learning, and assessment system. Some of them which are more related to technology impossible to perform without technology and some are difficult to effectively use. This LMS helps to manage rollover activities related to academics and other functions for the new session. “Principal Participant-2.

“Yes, I suggest that let the learning be out of the walls of the classroom and spread student teacher and parent interaction for 24/7 to fulfill the requirements of the 21st century. But having the facility of LMS does not mean everything has become a piece of cake even then there are things whose functions need to be taken care of where technology does not help us it’s my point of view.  ” (Principal Participant-1).

"We have been working with the LMS the learning management system this is one of the wonderful systems that we were using it from primary to o levels. To use this system you want to ask me how to use the system. As I am a Mathematics teacher for middle school classes. So I can say that we used to upload the marks of the students in the assessment throw LMS so that parents may check how their children are performing in the school with beside learning management system also
help us to get to know that how students participating in activities" (Principal Participant-7).

“This system is web-based and online, so IDs and passwords of students, teachers, supervisor and IDs & passwords of the parents are the keys of the functions of this learning management system (LMS). All these peoples are on the same web page to be a part of this system. The interaction among the stakeholders is the key to the processes of the school. I think technology is not all about, it's the student’s teachers and supervisors to work according to the desire standards which I think fluctuating” (Principal Participant -4).

“We have started 3-P learning LMS in 2016 and we have introduced a depth of knowledge question change way of assessing students from level one to level four and that rely on the system which helps children a lot. Not before the LMS system was introduced. It changes short messages between parents and between students and between teachers. The system is outclassed. Then on a larger scale, we have signed homework on it, we have articles and read stories and giving them even asking question certain question in different subjects. Children enjoying and we're very happy researching topics watching videos and writing in detail answers so it is helping in a lot of ways. Let me It is reinforcing plus it making children go on in and developing students it makes highly technology-based. Yes, in your second part of the question we can see school roll functions and LMS assist them in the start and during ongoing processes” (Principal Participant -2).

The researcher coded each answer with different codes and write them in the margin area. After completing the first cycle the researcher developed the different groups of codes which makes some sense and named them with different categories. Then same sense groups of categories were arranged and named as a sub-theme and the essence of these sub-themes became the emergent themes of this research.

Results of thematic analysis
Three main trends emerged (Themes) from the principal's interviews based on the coding and categories. School Roll, Rollover, and School Organizing were the subjects.

Phase II. Quantitative part

Population and sample
From a total population of 250 schools using LMS, 150 schools were chosen as a study. The sample for this study was chosen using the purposive sampling technique. This sampling approach allows
the researcher to include only those schools in the sample that are utilizing all of the LMS's features and exclude those that aren't.

**Participants**
Participants for the quantitative segment were chosen from a total of 150 private schools. In this survey study, 150 principals were used as sample respondents. These participants were using the 3Plearning LMS, which included all of the necessary features for teaching, learning, and other administrative tasks.

**Instrumentation**
The quantitative participants were chosen from a group of 150 private schools. This survey study included 150 principals as sample respondents. These individuals were using the 3Plearning LMS, which included all of the necessary features for teaching, learning, and other administrative tasks.

**Validation of Instrument**
Respondent demographic variables, key technology leadership activities, and LMS use are all part of the survey instrument. The layout of the research instruments and their validation were driven by a study of related literature, observations (themes) from the first qualitative phase of the research, and expert opinions. According to Groves, Kalton, Schwarz, and Skinner (2004), a survey questionnaire should follow three different criteria.

- **Usability Criteria**
- **Content Guidelines**
- **Cognitive Requirements**

The country head of 3P Learning sent questionnaires to only those school principals who were using the full functionality of the LMS for the usability requirements. Subject matter experts study the questions for the quality criteria to see if their content is appropriate for testing the intended definition. It was also made a point that the respondents should be able to understand the questions and have enough knowledge to willingly respond.

**Data Collection**
For the method of handling the closed-ended questionnaire, the researcher approached the country manager of 3P learning. A closed-ended questionnaire was distributed to principals using the 3P Learning customer database from their country head office to gather data on their views of LMS and e-leadership and their support for improving school management. The questionnaire was sent to the principals of all of the LMS-using schools in the study. The self-developed questionnaire, which included self-assessment items assessed on a 5-point Likert scale, was the primary method for gathering quantitative data. The participants' responses were rated on a 5-point Likert scale ranging from strongly disagree to strongly agree. The questionnaire included demographic details such as participants' age, gender, qualification, experience, domestic and international schools, and
level of LMS use. The questionnaires sent via the 3P-learning office Lahore's emailing system were answered by 124 out of 150 principals, or 82.67 percent.

**Demographics of the Study**

**Table No.1** Demographic information about principals at schools with international and domestic curricula.

<table>
<thead>
<tr>
<th>Variable</th>
<th>School Curriculum</th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>International</td>
<td>Domestic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N(%)</td>
<td>N(%)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>10(55.6)</td>
<td>8(44.4)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>61(57.5)</td>
<td>45(42.5)</td>
<td></td>
</tr>
<tr>
<td>Age (Years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 25</td>
<td>3(2.4)</td>
<td>2(1.6)</td>
<td></td>
</tr>
<tr>
<td>25 – 35</td>
<td>17(13.7)</td>
<td>14(11.3)</td>
<td></td>
</tr>
<tr>
<td>36 – 45</td>
<td>42(33.9)</td>
<td>30(24.2)</td>
<td></td>
</tr>
<tr>
<td>46 +</td>
<td>9(7.3)</td>
<td>7(5.6)</td>
<td></td>
</tr>
<tr>
<td>Educational Qualification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baccalaureate</td>
<td>0(0.0)</td>
<td>2(1.6)</td>
<td></td>
</tr>
<tr>
<td>Masters</td>
<td>60(48.4)</td>
<td>46(37.1)</td>
<td></td>
</tr>
<tr>
<td>M. Phil</td>
<td>9(72.6)</td>
<td>5(4.0)</td>
<td></td>
</tr>
<tr>
<td>PhD</td>
<td>2(1.6)</td>
<td>0(0.0)</td>
<td></td>
</tr>
<tr>
<td>Administrative Experience (Years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 2</td>
<td>1(0.8)</td>
<td>0(0.0)</td>
<td></td>
</tr>
<tr>
<td>2 – 6</td>
<td>14(11.3)</td>
<td>10(8.1)</td>
<td></td>
</tr>
<tr>
<td>6 – 10</td>
<td>40(32.3)</td>
<td>30(24.2)</td>
<td></td>
</tr>
<tr>
<td>10 +</td>
<td>16(12.9)</td>
<td>13(10.5)</td>
<td></td>
</tr>
<tr>
<td>LMS Experience (Years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 1</td>
<td>15(12.0)</td>
<td>14(11.3)</td>
<td></td>
</tr>
<tr>
<td>1 – 3</td>
<td>26(21.0)</td>
<td>18(14.5)</td>
<td></td>
</tr>
<tr>
<td>3 – 5</td>
<td>16(12.9)</td>
<td>11(8.9)</td>
<td></td>
</tr>
<tr>
<td>5+</td>
<td>14(11.3)</td>
<td>10(8.1)</td>
<td></td>
</tr>
</tbody>
</table>
Quantitative Data Analysis

The researcher used SPSS software to find general patterns in mean and standard deviation after collecting the data. The instruments' reliability and validity were assessed using Smart PLS. The t-test and ANOVA were used to see whether there were any major variations between and among the demographic variables in order to satisfy the study objective. In this analysis, the significance level was set at 0.05. Data was analyzed using Smart PLS version 3.2.8. Smart PLS was used to test the study hypothesis and verify the external model's validity and reliability (Ringle, Wende, & Becker, 2015). It's one of the most well-known mathematical methods for Structural Equation Modelling.

Findings and Results

The Measurement Model (Outer Model)

Content validity, convergent validity, and discriminant validity were measured to ensure that the measurement or outer model had sufficient validity and reliability. The model's content validity was reached when factor loading (see Table 1) was greater than 0.7. (Hair, Ringle, & Sarstedt, 2011). Cronbach's alpha is the lower bound, while composite reliability (CR) is the upper bound for the research model's internal consistency reliability (Hair, Risher, Sarstedt & Ringle, 2019). Cronbach's alpha, as well as CR for all variables, are all above the threshold value (minimum = 0.7), as shown in Table 2. This means that the current study's construct reliability and validity have been identified (Hair, Risher, Sarstedt, & Ringle, 2019). The convergent validity is retained (Hair et al., 2019) since all factor loadings were greater than 0.7 (Table 1) and the values of average variance derived (AVE) were greater than 0.5 (Table 2). This means that the group of items for each factor calculate the respective factor.

Table No. 1

<table>
<thead>
<tr>
<th>Factor Loading</th>
<th>LMS-RO</th>
<th>LMS-SR</th>
<th>LMS-SM</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMS-RO1</td>
<td>0.739</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS-RO2</td>
<td>0.710</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS-RO3</td>
<td>0.749</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS-RO4</td>
<td>0.783</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS-RO5</td>
<td>0.868</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS-RO6</td>
<td>0.737</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS-RO7</td>
<td>0.704</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS-RO8</td>
<td>0.761</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS-RO9</td>
<td>0.761</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS-SR1</td>
<td></td>
<td></td>
<td>0.649</td>
</tr>
</tbody>
</table>
LMS-SR2  0.756
LMS-SR3  0.774
LMS-SR4  0.756
LMS-SR5  0.772
LMS-SR6  0.820
LMS-SR7  0.700
LMS-SR8  0.680
LMS-SR9  0.690
LMS-SR10  0.737
LMS-SO1  0.833
LMS-SO2  0.806
LMS-SO3  0.835
LMS-SO4  0.898
LMS-SO5  0.838
LMS-SO6  0.689

RO = LMS use in the Rollover processes in a school.
SR = LMS use in the School roll activities of a school.
SO = LMS use in the School Organizing for the school functions.

Visual Representation of the Measurement Model (Outer Model)

Table No. 2 Construct Reliability and Validity
Cronbach’s Alpha Composite Reliability Average Variance Extracted(AVE)

|     | RO  | .908 | .924 | .575 |
|     | SR  | .901 | .924 | .671 |
|     | SO  | .910 | .921 | .540 |

Hypotheses testing of the data of perceptions of the principals.
Following directional hypotheses were tested to answer the quantitative objective of the study.

**Hypothesis # 1** Gender & Management Functions of E-Leadership of Principals

H₁: Female principals will perceive LMS as a better system on sub-measures and on overall than male principals.

**Table No. 3**
Impact of LMS on Management Functions of E-leadership of Principals with Gender= 124 (Male=18, Female= 106)

<table>
<thead>
<tr>
<th>S #</th>
<th>E-leadership of Principals</th>
<th>Gender</th>
<th>Mean</th>
<th>S.D</th>
<th>t-values</th>
<th>Df</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RO</td>
<td>Male</td>
<td>1.836</td>
<td>1.278</td>
<td>.744</td>
<td>20.95</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>1.609</td>
<td>.8484</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>SR</td>
<td>Male</td>
<td>2.347</td>
<td>1.083</td>
<td>2.04</td>
<td>24.93</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>1.796</td>
<td>1.081</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>SO</td>
<td>Male</td>
<td>48.05</td>
<td>3.505</td>
<td>.276</td>
<td>29.84</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>47.08</td>
<td>3.802</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Total MF-LMS</td>
<td>Male</td>
<td>170.67</td>
<td>8.317</td>
<td>1.87</td>
<td>28.30</td>
<td>.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>167.46</td>
<td>9.760</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05

For the analysis, To see the effect of LMS on management functions of e-leadership scores as viewed by male and female principals of international and domestic curricula schools an independent sample t-test was conducted. There was significant difference in the scores concerning the sub-measure rollover (RO) for male (M = 1.836, SD = 1.278) and female principals (M = 1.609, SD = .8484); t (20.95) = .744, p = .05 ≤ .05. Similarly, there are significant differences in the sub-measures school roll and school managing functions. According to Lakens and Adolfi (2018) justified in their conclusion after authentic logic that this p-value considers significant when it goes in a large population. However, there was no substantial difference in expectations of the
effect of the LMS on e-leadership management functions between male and female principals. As a finding, the result is only slightly supportive of the hypothesis.

**Hypothesis # 2** International and Domestic Curricula schools & Management Functions of E-Leadership of Principals

H₂: Principals of international curricula schools will perceive LMS as more useful overall and on sub-measures than principals of schools that use domestic curricula.

**Table No. 4**
Impact of LMS on Management Functions of E-leadership of Principals with Curricula= 124 (International 71, Domestic= 53)

<table>
<thead>
<tr>
<th>S #</th>
<th>E-leadership of Principals</th>
<th>Curricula</th>
<th>Mean</th>
<th>S.D</th>
<th>t-values</th>
<th>Df</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RO</td>
<td>International</td>
<td>1.708</td>
<td>.9984</td>
<td>.927</td>
<td>120.9</td>
<td>.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Domestic</td>
<td>1.557</td>
<td>.8163</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>SR</td>
<td>International</td>
<td>2.016</td>
<td>1.207</td>
<td>1.68</td>
<td>121.9</td>
<td>.02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Domestic</td>
<td>1.698</td>
<td>.9047</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>SO</td>
<td>International</td>
<td>1.852</td>
<td>1.152</td>
<td>1.06</td>
<td>116.4</td>
<td>.28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Domestic</td>
<td>1.638</td>
<td>1.066</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>MF-LMS</td>
<td>International</td>
<td>1.866</td>
<td>.7816</td>
<td>1.66</td>
<td>113.6</td>
<td>.63</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Domestic</td>
<td>1.633</td>
<td>.7625</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05

To compare the effect of LMS on e-leadership scores perceived by principals of international curricula and domestic curricula private schools, an independent-samples t-test was used. There was significant difference in the scores concerning the sub-measure school roll (SR) for principals international curricula schools with (M = 2.016, SD = 1.207) and for principals of domestic curricula schools with (M = 1.698, SD = .9047); t (121.9) = 1.68, p = .02 < .05. There were no substantial differences between the views of foreign curricula schools and domestic curricula schools in the remaining sub-measures or overall.

**Hypothesis # 3** Age groups & Management Functions of E-Leadership of Principals

H₃: Older principals of domestic and international curricula schools will perceive LMS more useful overall and on sub-measures than younger principals, signifying a gradient of age.

**Table No. 5**
Impact of LMS on E-leadership of Principals with Comparison of Age groups.
One-Way Analysis of Variance (ANOVA Between groups) was used to explore the impression of age on the application LMS by principals. Variables were divided into four groups based on their age. (Category 1: < 25 years; Category 2: 25 to 35 years; Category 3: 36 to 45 years; Category 4: 46 + years, where first and second categories are considered to be younger principals and categories three and four consider to be older principals. There were significant differences about the impact of LMS on sub-measures and an overall with (RO): $p = .001 < .05$, SO: $p = .002 < .05$, SR: $p = .027 < .05$ and Overall: $p = .001 < .05$). Thus results signifying the gradient of age in favor of the hypothesis that older principals of domestic and international curricula schools will perceive LMS more useful overall and on sub-measures than younger principals.

**Hypothesis # 4 Qualification & Management Functions of E-Leadership of Principals**

H4: More qualified principals of both curricula schools will perceive LMS as more useful overall and on sub-measure than principals who are less qualified signifying a gradient of qualification.

**Table No. 6**

Impact of LMS on E-leadership of Principals with Comparison of Qualification.

<table>
<thead>
<tr>
<th>Qualification &amp; E-Leadership</th>
<th>Sum²</th>
<th>df</th>
<th>Mean²</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>RO Between Groups</td>
<td>1.754</td>
<td>3</td>
<td>.585</td>
<td>.678</td>
<td>.56</td>
</tr>
</tbody>
</table>
One-Way Analysis of Variance (ANOVA Between groups) was conducted to compare the impact of LMS on management functions of e-leadership scores perceived by qualification group principals of private schools. According to their qualification, variables were divided into four groups. (Category 1: Baccalaureate; Category 2: Masters; Category 3: M. Phil; Category 4: Ph.D.). In the sub-measures rollover (RO), school roll (SR), school organizing (SO), and overall, there was no considerable difference in scores among the qualification groups of principals.

**Hypothesis # 5** Administrative Experience & Management Functions of E-Leadership of Principals

**H s:** Principals with longer administrative experience whether of domestic curricula school or international curricula school will perceive LMS more useful on sub-measures and overall than principals with shorter administrative experience, signifying a gradient for the administrative experience.

**Table No. 7**
Impact of LMS on Management Functions of E-leadership of Principals with Comparison of Administrative experience of E-Leadership
The effect of LMS on management functions of e-leadership scores as viewed by administrative experience group principals was compared using one-way ANOVA. Variables were separated into four categories according to their administrative experience (Category 1: < 2 years; Category 2: 2-6 years; Category 3: 6-10 years; Category 4: 10 + years, where categories one and two considered to be shorter experience group principals and categories three and four considered to be longer experience, group principals). In the sub-measures rollover (RO) and school handling (SO), as well as overall, there was no substantial difference in scores between the administrative division principals. There was a significant difference concerning the sub-measure school roll (SR) about the impact of LMS on management functions of e-leadership.

**Hypothesis # 6 LMS Experience & Management Functions of E-Leadership of Principals**

**H 6:** Principals with longer LMS experience whether of domestic curricula schools or international curricula schools will perceive LMS more useful overall and on sub-measures than principals with shorter LMS experience, signifying a gradient for LMS experience?

**Table No. 8**
Impact of LMS on Management Functions of E-leadership of Principals with the comparison of LMS experience of E-Leadership

<table>
<thead>
<tr>
<th>LMS Experience &amp; E-Principals</th>
<th>Sum²</th>
<th>df</th>
<th>Mean²</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>RO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups Within Groups</td>
<td>1.377</td>
<td>3</td>
<td>.459</td>
<td>.531</td>
<td>.66</td>
</tr>
<tr>
<td>Within Groups Total</td>
<td>103.7</td>
<td>120</td>
<td>.865</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>105.1</td>
<td>123</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05*
One-Way Analysis of Variance ANOVA was used to compare the means to see the impact of LMS on management functions of e-leadership scores perceived by LMS experienced group principals. Variables were separated into four categories according to their LMS experience (Category 1: < 1 year; Category 2: 1 - 3 years; Category 3: 3 - 5 years; Category 4: 5 + years). In terms of the mean scores, there was no substantial difference among the LMS experienced group principals in the sub-measures rollover (RO) and school Organizing (SO) and as an overall. There was a significant difference concerning the sub-measure school roll (SR) about the impact of LMS on management functions of e-leadership.

**Quantitative Results**

**Validity and reliability of the variables.** In Table No. 1, the validity and reliability of the three variables was examined. The three variables in measurement model analysis are latent variables that are reflectively defined by their indicators (items). When the items of each variable are I large, (ii) the factor loadings of each item are greater than 0.50, and (iii) the average variance derived (AVE) of the variable is greater than 0.50, the construct validity of the variable is achieved (Byrne, 2010; Kline, 2016). Table 3 shows that the construct validity of the three variables was achieved. In terms of Cronbach’s alpha internal consistency reliability, the variables were also consistent. If a variable’s Cronbach’s alpha is greater than or equal to 0.70, it is said to be internally consistent (Byrne, 2010). There was a significant gap in mean scores between male and female principal respondents’ views of the effect of LMS on e-leadership, concerning the sub-measures in which mean difference was significant with \( p = .05 \leq .05 \) (Table No. 3). This hypothesis was supported by three sub-measures through LMS, the results supported the hypothesis that male principals perceive LMS as a better system with a greater mean score as compared to female principals with a less mean score. So the directional hypothesis is a gradient in male perception. According to
Lakens and Adolfi (2018) when the p-value is marginal at $p = .05$ then it does not always mean not significant because considering population it may go to the significance instead.

The findings revealed a substantial difference in the scores for the sub-measure school roll (SR) as viewed by principals of international curricula schools and domestic curricula schools with international curricula ($p = .02 < .05$).

The results obtained through One-Way ANOVA showed that. There were significant differences about the impact of LMS on sub-measures and an overall with (RO: $p = .001 < .05$, SO: $p = .002 < .05$, SR: $p = .027 < .05$ and Overall: $p = .001 < .05$). Thus results signifying the gradient of age in favor of the hypothesis that older principals of domestic and international curricula schools will perceive LMS more useful overall and on sub-measures than younger principals.

There were no major differences in scores among the qualification groups of principals in the sub-measures rollover (RO), school roll (SR), school Organizing (SO), and overall, according to the ONE-WAY ANOVA analysis.

According to the findings of the One-Way ANOVA, there were no major differences in scores among the administrative group principals in the sub-measures rollover (RO) and school Organizing (SO), as well as overall. There was a substantial difference in the effect of LMS on management functions of e-leadership with the sub-measure school roll (SR) ($p = .001 < .05$).

The means were compared using One-Way Analysis of Variance ANOVA results to see the effect of LMS on management functions of e-leadership scores as viewed by LMS experienced group principals. The mean scores of the administrative group principals did not vary significantly in the sub-measures rollover (RO) and school Organizing (SO) and as an overall. There was a significant difference concerning the sub-measure school roll (SR) about the impact of LMS on management functions of e-leadership with $p = .03 < .05$.

Discussion
According to the results of this study which was about the usage of Learning Management System in private schools of Pakistan. It intended to determine the experiences and perceptions of the school principals (Coordinators, Head Teachers, managers, supervisors, or Principals) about the impact of the LMS on the management functions that enhance the e-leadership of a school principal. The majority of the school principals involved in this research found the LMS they used in the school management functions practical, personalized and interactive. However, few of them mentioned clearly in their interviews that they used all functions of the 3P learning LMS. This may result from the fact that principals have insufficient education about the latest features of this LMS.

Jetton (1997) in his study involving school heads from Texas, Allen (2003) in his study involving principals from Ohio, Dowson (2001) in his study involving school supervisors from Louisiana, Goeltz (1998) in his study involving school managers from Idaho, Borruso (2000) in his study involving principals from New York showed that according to the principal's inefficiency in the use of LMS resulted from the insufficient updated knowledge about the latest features.

According to the experiences explored in the in-depth interviews, the principals elaborated the ways the LMS facilitating them in performing their management functions, for example, one
principal participant explained that personal ID's with passwords give us full command on using rollover tasks at the beginning of every academic year and every term as well. One principal participant also points out that all can be done easily in their accounts on the LMS, school roll activities are quite easily managed through these innovative techniques of this kind of software. LMS improves the effective use of time and enhances the efficiency of all managerial functions. Furthermore, appropriate techniques and practices for using LMS are needed to achieve the goal of incorporating high-quality management functions of an e-leadership in schools. A principal console in the 3P learning LMS should include e-competence training, successful curricula, enhancing lifelong learning, building long-term relationships among users, cultivating positive mindsets, developing a compelling mission and vision for networking, and promoting the full use of the 3P learning LMS, among other things.

The themes that are created are limited in scope and application because they are derived from data (Chua, Tie, & Zuraidah, 2013). In light of this statement, it's important to remember that the themes developed as a result of this research aren't meant to be used in all schools or to be compared to current standards in the implementation of education research in schools by interested parties. It can, however, be used as a guide by educational institutions that are adopting an e-learning framework to strengthen management functions in e-leadership activities. The data revealed three parameters (Roll Over, School Roll, and Managing School) that describe the management functions of e-leadership in schools.

In the quantitative part
The aim of this study was to find out how LMS can help principals with their e-leadership management functions and improve their performance. This part of the present research demonstrates the following areas as the inferences derived from the quantitative part of the study.

➢ This study explores that the male principals perform significantly better in a sub-measures rollover, school roll, and managing school through the LMS. Therefore we can conclude that LMS has a positive impact on e-leadership as perceived by male principal not favoring hypothesis..

➢ The research specifies that international curricula school principals are better at using LMS in their management processes. Therefore we can accomplish that in the perception of international curricula school principals LMS has positive impact and gradient toward the hypothesis.

➢ According to this research, there are substantial gaps in performance between older and younger principals. (Age category one and Age category two) in all of the sub-measures. The principals who are above 35 years (Age category three and Age category four) age have shown better performance on the use of LMS in the management function of e-leadership. It may conclude older school principals generally perform better than younger principals using LMS in management functions of e-leadership in their schools supporting the age gradient.

➢ It is found that there is a significant difference in the sub-measures school roll about the impact of LMS on management functions of e-leadership. It can infer that more
administrative experienced principals are using LMS better as compare to less administrative experienced principals which gradient to experience.

➢ This research supports the view that there is a significant difference concerning the sub-measure school roll (SR) by the more LMS experienced principals about the impact of LMS on management functions of e-leadership

Conclusion
To enhance the quality of e-leadership activities, schools must take steps to improve the components of rollover and school roll that are adopted and rewarded self-e-learning initiatives, stimulate e-cooperation between staff and clients, improve the e-teaching and learning atmosphere for a better workplace, build channels for networking among users, and make networking an opportunity and a basis for e-leadership.

As this study explored those male principals shown better performance in using LMS for the management functions through it, so it is recommended to enhance the female principal’s response to LMS, there should be inserted innovative and effective LMS features learning program.

Since the results of this research concerning LMS impact on management functions of e-leadership signify a gradient of age. It is acclaimed that a mature educational leader of more than thirty-five years may be preferred for high profiles e-leadership positions in schools.

The results in sub-measures related to the administrative group of principals identified that more administrative experience is a favorable factor in the use of LMS. So for the school hiring authority may consider the administrative experience a positive element for the position of e-leadership.

Educators and researchers may use this data to recognize unsolved problems or concerns in the literature, as well as determine potential research directions in the area of e-leadership management functions by using LMS. It assists educators in better comprehending the idea of successful e-leadership as well as the factors that affect it. The study's strength is that it suggests a method for further validating the phenomenological model in order to strengthen its generalizability. Since the results of this study are restricted to the characteristics of the school sample and the 3P learning e-learning framework, more e-leadership studies must be done in other locations and areas to provide a more comprehensive image of e-leadership management functions.

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Jetton, R. C. (1997). The impact of the principal's attitudes toward the implementation of computer-related technology and restructuring as perceived by Texas high school principals in the Region IV Service Center area. Doctorate Thesis. Texas A&M University


