Examination of Support Requests of University Students in Distance Learning during the COVID-19 Pandemic [†]

Cemal Aktürk [1] and Ceren Çubukçu [2,*]

[1] Computer Engineering Department, Gaziantep Islam Science and Technology University, 27010 Gaziantep, Turkey; cemal.akturk@gibtu.edu.tr

[2] Computer Engineering Department, Maltepe University, 34857 Istanbul, Turkey

[*] Correspondence: cerencubukcu@maltepe.edu.tr

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Abstract: The COVID-19 (SARS-CoV-2) pandemic required changes to be made, especially in formal education processes. In order for the students to stay safe and healthy, many educational institutions switched to the distance learning method for the rest of the semester and continued their education without any intermission. Due to this switch, there has been a rise in the usage of learning management systems, and as a result, students started to encounter technical problems, especially during the exam periods, or they simply wanted to obtain more information about academic or administrative issues. This study used frequency and percentage analysis methods and examined the support request tickets opened up by students during distance education. Resolving the encountered problems quickly and effectively is very important in order to protect the motivation of the learners and ensure their successes. It was seen in the study that the majority of the problems reported by the students were related to internet connection or to the problems occurred during exams. This study aimed to share experiences with the researchers and technical and administrative staff working in this field and to contribute to the current distance learning literature.

Keywords: distance learning; COVID19; support request; frequency analysis

1. Introduction

Distance education is the electronic delivery of education to students who are not physically exist in the same environment, with the support of satellite, video, audio, graphic, computer, and multimedia technologies [1]. The lecturer and the student continue their education activities with the mediation of internet technologies and come together on a platform called the learning management system (LMS). LMS is a software designed to administer, manage, and report education activities [2]. LMS can be divided into three groups. These are open source, proprietary or closed source, and in-house developed systems [3].

Open-source systems: Open source LMS means that the source code can be accessed by everyone and the system is free to use and open to the public. Open-source systems are distributed with its source code. There are around 50 platforms worldwide as open source LMSs. The most widespread of these are Moodle, Sakai, Atutor, Dokeos, Claroline, and OLAT [4]. The problem with open-source systems is that there are problems regarding their maintenance, system upgrade, security, and user support because they are free software applications. Especially in terms of user support, there are not enough experts to help the end users for solving system problems [4,5]. On the other hand, they are easier and faster to develop and cheaper to use.

Proprietary (closed-source) systems: Closed-source systems are developed for commercial reasons, and therefore the source code is closed to the public. The source code is only accessible by the company employees who develop the software. The most known

closed source LMSs are Blackboard, Webct, Enocta, eCollege, Desire2Learn, and Angel_Learning [6]. Blackboard is the most widely used closed-source LMS worldwide. In addition, in 2005, Blackboard acquired Webct. In order to use closed-source LMS systems, one must pay a license fee. However, not every school has the necessary budget for paying these license fees and thus they are less preferable in comparison to their open-source counterparts. Moreover, according to Aydin and Birogul's study [7], there may be security issues involved using these systems because the end users do not know what the source code is doing while working on the system.

In-house developed systems: As the name suggests, the software is developed internally by the institution itself using their own resources. If the institution has enough knowledge, budget, and the right human resources such as software developers and analysts, they may choose to develop their LMS themselves according to their requirements. Nevertheless, developing a brand-new software has its challenges because of the steps of the software development life cycle. While building a brand-new system from scratch, planning and requirement gathering, physical and logical design, code development, testing, and maintenance is required. Irrespective of all these difficulties, studies show that some institutions still choose to develop their own systems [8].

There are data privacy and system security problems in open-source systems, as mentioned by some studies due to the fact that they cannot provide the requirements of information security. Some of the problems stated by these studies are enhancing the system rights of students so that they can reach to the pages that only admins can reach, changing or deleting information such as the grades of students or personal information of students or accessing the confidential information of students and instructors [4]. Conversely, there are studies that suggest the opposite of this, and they state that open-source systems are very dependable because many software developers and system admins make a contribution to the development of them. Therefore, they become free from any security errors [4]. A total of 18 open source and commercial LMS were inspected by means of various dimensions in a study, and as a result, 6 LMSs consisting of Moodle, Dokeos, Learning Space, Kewl-Nextgen, Angel, and Blackboard were shown to be better [9]. Among these LMSs, Blackboard, Angel, and Learning Space are commercial, and the others are open source. As can be understood from these studies, all of the LMS systems have their advantages or disadvantages, and thus every organization should carefully consider their needs and choose a system accordingly.

Organizations should also consider the day-to-day operations of LMSs and how they are going to support incidents, problems, and infrastructure. Supporting LMS activities is called the service operational phase [10]. The service operational phase has five different processes. These are event management, incident management, problem management, application, and infrastructure monitoring and management of all these four processes [10]. Event management means handling all failures that occurred in the day-to-day IT operations or service requests and to minimize the impact of the failure [10]. Event management process are the focus of this paper because in this study, the support tickets opened by students, due to the problems they face when using LMSs, are examined.

2. Materials and Methods

Many changes came into our lives along with the global COVID-19 (severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)) pandemic. Governments took precautions in order to protect the health of their citizens and required everyone to transition their work, education, and social lives to online platforms. Millions of students all over the world switched to home schooling due to the shutdown of schools and obtained their education through distance learning environments such as television and the Internet. Some schools including universities were already using learning management systems (LMS) for their classes.

In this study, the problems students encounter when using LMSs were analyzed. A total of 74 support tickets created by 44 different students studying in Gaziantep Islam

Science and Technology University were investigated. The total number of students in the university was 150, since this is a newly founded university. The tickets created were categorized according to support code and type. Frequency analysis was performed according to the browsers of the end users and in relation to the courses they were registered to. In the next section, findings related to the analysis of these tickets are discussed. In the last section, conclusions are provided.

3. Results

When the support request tickets of the students were examined, we found that there were 74 registered tickets from 44 different students. When the messages describing students' demands from these tickets were analyzed, the types of support requests were classified and coded as seven problem tickets and three request tickets, as shown in Table 1. Tickets stating problems were coded as P1, P2, … P7, and information requests were coded as T1, T2, T3.

Table 1. Classified support request types and codes.

Code	Problem—Request Type
P1	Problems related to seeing questions
P2	Internet connection problems
P3	Problems about answers
P4	Examination grade problems
P5	Problems about questions
P6	Problems about saving the exam
P7	Synchronization problems
T1	Information request from student affairs office
T2	Information update request
T3	Repeat exam request

The frequency and percentage distribution of the support request codes are shown in Table 2. Although the number of support request tickets examined in the research were 74, the total of classified support types were 113. The reason of this is that students reported more than one problem in a support ticket. According to Table 2, the highest support requests from the students occurred in the P2 (internet connection problems) code with 37 items, and the P1 code (problems not seeing the exam questions) with 35 items. Approximately 18% of support requests were related to P3 (incorrect answer issues) and P7 (sync issues) codes. Students submitted only nine records (8%) for informational support requests (T code tickets). It is understood from the ticket subjects and codes that the majority of the problems were usually experienced during the exam periods.

Table 2. Frequency and percentage distributions of support request codes.

Problem Code	F	%	Request Code	F	%
P1	35	31.0	T1	3	2.7
P2	37	32.7	T2	5	4.4
P3	10	8.8	T3	1	0.9
P4	3	2.7			
P5	2	1.8			
P6	7	6.2			
P7	10	8.8			
Sum	104	92.0	Sum	9	8

Frequency and percentage distributions of the browsers used by the learning management system and used by the students while reporting the support request tickets are presented in Table 3. According to Table 3, the most preferred browser was Chrome with 40.9%. The second most preferred browser was Chrome Mobile with 29.5%. The least used browser for students who request support was found to be Mobile Safari. It is understood from Table 3 that approximately one-third of the students used a mobile browser.

Table 3. Users' internet browsers.

Internet Browser	F	%
Chrome	18	40.90
Chrome Mobile	13	29.54
Internet Explorer	8	18.18
Mobile Safari	2	4.54
Firefox	3	6.81
Sum	44	100

Distribution of support requests according to users' internet browsers are presented in Table 4. When the problems experienced by users on the basis of internet browsers were examined from Table 4, we found that Chrome users mostly requested support in P6 (exam saving problems) code, and those using Chrome Mobile and Internet Explorer browsers requested support mostly in P1 (non-question problems) code.

Table 4. Distribution of support request codes by internet browser.

Internet Browser	Problem—Request Codes									
	P1	P2	P3	P4	P5	P6	P7	T1	T2	T3
Chrome	1	3	4	1	1	7	2	1		1
Chrome Mobile	4		1	2	1	1		2	1	1
Firefox		2	1							2
Internet Explorer	8	1								
Mobile Safari 13.1	1	1								

The courses subject to the support request of the students are shown in Table 5. "AITT" is the course code representing Ataturk's Principles and History of Revolution and "ING" is the course code of English. According to Table 5, the most support tickets were regarding the English course and exam with 21 tickets. The second highest support request was for the Turkish language course with 14 tickets. Nine of the support tickets were related to academic counseling and information requests and were not dependent on any course.

Table 5. Distribution of support request codes according to the related course.

Course	Problem—Request Codes										
	P1	P2	P3	P4	P5	P6	P7	T1	T2	T3	Sum
Aitt	1	1				3	1				6
Ing	6	4	3	2		3				3	21
Turkish Language	6	1	3		2	1				1	14
Others	1	1		1		1	1	3	1		9

The relationship between the courses that students requested support for and the internet browsers they used is shown in Figure 1. When Figure 1 is examined, we can see that those using Chrome and Firefox internet browsers had the most problems in English language course. While this applies to the Turkish language course for those using

Chrome Mobile, Internet Explorer users had the same size of problems related to both Turkish and English language courses in their support requests.
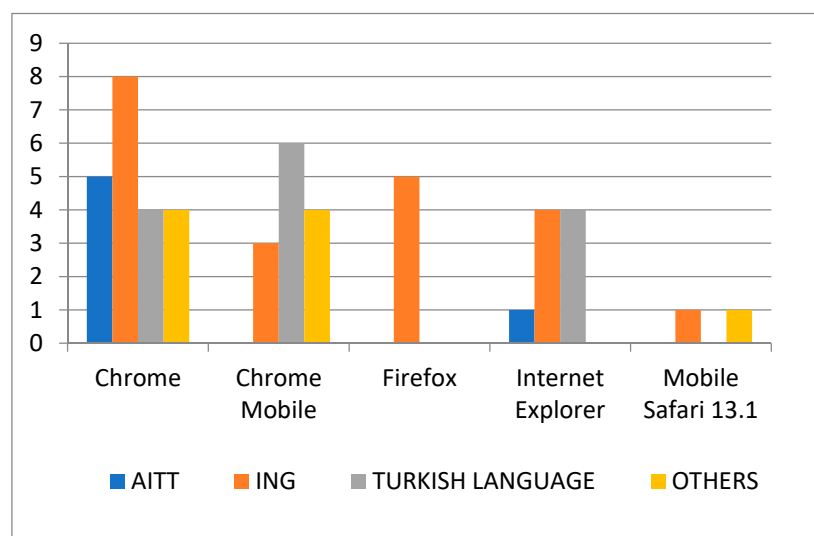

Figure 1. Distribution of support requests by related course and internet browser used.

4. Discussion and Conclusions

The COVID-19 epidemic, which has recently affected almost every stage of our lives, has also adversely affected the education system. Almost all countries in the world tried to continue formal education via the distance education method during the epidemic period. Since distance education is now an essential method of life, determining the problems of distance learners and resolving these problems quickly and effectively is very important in order to protect the motivation of the learners and ensure their successes. Learners naturally demand that the problems that directly affect their successes are eliminated immediately, especially during the exam periods, while transferring their technical, administrative, or academic problems to the relevant units through communication channels such as the learning management system or e-mail. It has been seen in the study that the majority of the problems reported by the students were related to internet connection or to the problems occurred during exams. If the problems of the students are not immediately responded to and the problems are left unresolved during the exam periods, it will be inevitable for the students to lose their confidence in the distance education system and their desire to work for the related courses. In this study, the support request tickets of the students about distance education and the statements of students in these tickets were analyzed and the problems encountered are presented in a classified way. Resolving the encountered problems immediately generates an important part of providing a perfect service to students in distance education. In this study, we aimed to share experiences with the researchers and technical and administrative staff working in this field and to contribute to the current distance learning literature.

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