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Data Article

Measuring e-learning systems success: Data from students of higher education institutions in Morocco

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\textbf{A B S T R A C T}

The COVID-19 pandemic has forced Higher Education Institutions (HEI's) to rethink the teaching approach taken. In response to this emergency state, Moroccan universities switched to the e-learning approach as an alternative to face-to-face education. At this level the assessment of e-learning systems success becomes a necessity. This data article aims to identify e-learning systems success determinants during the COVID-19 pandemic. The data was collected from students of the Moroccan Higher Education Institutions. The research data are collected via an on a self-administered online questionnaire, from a sample of 264 university students. The responses are collected from students of 12 Moroccan universities and 31 Moroccan educational institutions. The data were analyzed using a structural equation modeling method under the Partial Least Squares approach (PLS-SEM). Data analysis was performed using SmartPLS 3 software. Universities managers can use the dataset to identify key factor to enhance e-learning system success.

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Specifications Table

| Subject                      | Education management; Management Information Systems |
|------------------------------|--------------------------------------------------------|
| Specific subject area        | E-learner satisfaction; E-learning systems success; Social influence |
| Type of data                 | Tables and Figures                                      |
| How data were acquired       | A survey was carried out among students of the Moroccan Higher Education Institutions (HEI's). |
| Data format                  | Raw, analyzed and descriptive data                      |
| Parameters for data collection | The sample consisted of students of the Moroccan Higher Education Institutions. The questionnaire was self-administered via the Google Forms tool during the months of May and June 2020. |
| Description of data collection | The survey link was disseminated via social networks. |
| Data source location         | 12 Universities in Kingdom of Morocco.                  |
| Data accessibility           | Repository name: Mendeley Data                           |
| Data identification number   | http://dx.doi.org/10.17632/h9vdjh8tk7.2                  |
| Direct URL to data           | https://data.mendeley.com/datasets/h9vdjh8tk7/2           |

Value of the Data

- The dataset is useful because it helps to explore the factors that affect the E-Learning systems success in Higher Education Institutions (HEI's).
- This dataset can be used to enlighten Moroccan educational institutions managers on the importance of system quality and instructor quality as a key factor to improve perceived usefulness, e-learning systems use and e-learners satisfaction.
- The dataset will be useful for universities managers and policymakers to renovate practices in order to enhance e-learning system use, e-learners satisfaction, and e-learning system success.
- This dataset provides insights into diverse aspects of system quality, instructor quality, social influence, learner computer anxiety, perceived usefulness, e-learning system use, e-learner satisfaction, and e-learning system success.
- This dataset can be adapted for use in order to assess the e-learning system success in primary and secondary education.

1. Data Description

The constructs and measurement items used in this data article were drawn from previous research (Table 1). A questionnaire survey was carried out among Moroccan Higher Education Institutions (HEI's). The questionnaire was self-administered via the Google Forms tool during the months of May and June. The research data and questionnaire are available in Mendeley data on: https://data.mendeley.com/datasets/h9vdjh8tk7/2

Due to the lack of a sample frame, we have resorted to a non-probabilistic sampling method. This kind of method is used for practical reasons of accessibility and reduced cost. Table 2 illustrates the profile and characteristics of students who participated in this survey. A total of 264 responses from students were received, including 187 women (70.80%) and 77 men (29.20%). Almost half of the respondents to our questionnaire are undergraduate students (46.2%). The responses are collected from students of 31 Moroccan educational institutions affiliated with 12 universities (Tables 3 and 4). 25.67% of students indicate that they do not use any video conferencing systems and 17.05% among them do not use any online learning platforms. As an alternative, teachers refer to WhatsApp groups in order to interact with students, as they use YouTube videos for transferring knowledge. It is to highlight that Google meet and Zoom are the most video conferencing systems used in Moroccan HEI's. Additionally, Moroccan students use several online learning platforms such as; Coursera, Google Classroom, LinkedIn Learning, Moodle, and Udemy (Table 5).
Table 1
Measurement instruments.

| Variables                  | Adapted Items                                                   | Source |
|----------------------------|----------------------------------------------------------------|--------|
| System Quality             | SQ1 The e-learning system is easy to navigate.                  | [1]    |
|                            | SQ2 The e-learning system allows me to easily find the          |        |
|                            | information I am looking for.                                  |        |
|                            | SQ3 The e-learning system is easy to use                        |        |
| Instructor Quality         | IQ1 I use e-learning system as recommended by my instructors    | [2]    |
|                            | IQ2 I think an instructor's enthusiasm about using e-learning  | [3]    |
|                            | is stimulating my desire to learn                               |        |
|                            | IQ3 I receive a prompt response to questions and                |        |
|                            | concerns from my instructors in e-learning                     |        |
|                            | IQ4 I think communicating and interacting with my instructors  |        |
|                            | are important and valuable in e-learning                       |        |
|                            | IQ5 Generally, my instructors have a positive attitude to the   |        |
|                            | utilization of e-learning                                      |        |
| Social Influence           | SInf1 People who are important to me that I should use          | [4]    |
|                            | e-learning                                                     |        |
|                            | SInf2 People who influence my behavior think that I should use  |        |
|                            | e-learning                                                     |        |
|                            | SInf3 People whose opinions that I value prefer that I use     |        |
|                            | e-learning                                                     |        |
|                            | SInf4 My organization supports the use of e-learning            |        |
| Learner Computer Anxiety   | LCA1 Working with a computer would make me very nervous         | [5]    |
|                            | LCA2 I get a sinking feeling when I think of trying to use a    |        |
|                            | computer                                                      |        |
|                            | LCA3 Computers make me feel uncomfortable                      |        |
| Perceived Usefulness       | PU1 Use of the chosen e-Learning tool enabled me to              | [6]    |
|                            | accomplish tasks more quickly.                                  |        |
|                            | PU2 Use of the chosen e-Learning tool improved the              |        |
|                            | quality of my tasks.                                           |        |
|                            | PU3 Use of the chosen e-Learning tool enhanced the              |        |
|                            | effectiveness of my tasks.                                     |        |
|                            | PU4 As a whole, the chosen e-Learning tool is useful to me.    |        |
| E-Learning System Use      | ELU1 Retrieve information.                                     | [1]    |
|                            | ELU2 Publish information.                                      |        |
|                            | ELU3 Communicate with colleagues and teachers.                  |        |
|                            | ELU4 Store and share documents.                                 |        |
|                            | ELU5 Execute course work                                       |        |
|                            | ULU6 I currently use e-learning systems (1). Not at all; (2).   | [7]    |
|                            | About once a week; (3). Four or six times a week; (4). About   |        |
|                            | once a day; (5). Several times a day                          |        |
| E-Learner Satisfaction     | ELS1 E-learning is enjoyable                                   | [8]    |
|                            | ELS2 E-learning give me self-confidence                        | [9]    |
|                            | ELS3 E-learning satisfies my educational needs                 | [10]   |
|                            | ELS4 I am satisfied with performance of system                 |        |
|                            | ELS5 E-learning is pleasant to me                              |        |
|                            | ELS6 I am pleased enough with e-learning system                 |        |
| E-Learning System Success  | ELSS1 The system has a positive impact on my learning          | [11]   |
|                            | ELSS2 Overall, the performance of the system is good           |        |
|                            | ELSS3 Overall, the system is successful                        |        |
|                            | ELSS4 The system is an important and valuable aid to me in     |        |
|                            | the performance of my class work                               |        |
|                            | ELSS5 The system helps me to increase knowledge (increased     | [12]   |
|                            | knowledge)                                                    |        |
|                            | ELSS6 The system helps me to increase Self-reliance (self-      |        |
|                            | reliance)                                                     |        |

5-point Likert-scale: [Strongly disagree 0.1] - [2] - [3] - [4] - [5. Strongly agree].
Table 2
Profile and characteristics of respondents (n = 264).

| Attributes       | Characteristic | Frequency | Percentage (%) |
|------------------|----------------|-----------|----------------|
| Gender           | Female         | 187       | 70.80%         |
|                  | Male           | 77        | 29.20%         |
| Level of studies | BAC+1          | 60        | 22.70%         |
|                  | BAC+2          | 29        | 11.00%         |
|                  | BAC+3          | 122       | 46.20%         |
|                  | BAC+4          | 41        | 15.50%         |
|                  | BAC+5          | 8         | 3.00%          |
|                  | PhD Student    | 4         | 1.50%          |

Table 3
Universities of the students who participated in the survey.

| University                          | Frequency | Percentage (%) |
|-------------------------------------|-----------|----------------|
| Ibn Zohr University                 | 157       | 59.47%         |
| Abdelmalek Essaadi University       | 44        | 16.67%         |
| Mohammed First University           | 28        | 10.61%         |
| Chouaib Doukkali University         | 11        | 4.17%          |
| Cadi Ayyad University               | 7         | 2.65%          |
| Sidi Mohammed ben Abdellah University | 4      | 1.52%          |
| Mohammed V University               | 4         | 1.52%          |
| Hassan First University             | 2         | 0.76%          |
| Hassan II University                | 2         | 1.14%          |
| Sultan Moulay Slimane University    | 2         | 0.76%          |
| Ibn Tofail University               | 1         | 0.38%          |
| Moulay Ismail University            | 1         | 0.38%          |
| **Total**                           | **264**   | **100%**       |

![Conceptual framework](image)

**Fig. 1.** Conceptual framework.

2. Experimental Design, Materials and Methods

Fig. 1 illustrates the research hypotheses based on previous research. To test the research model, we used the Partial Least Squares approach. Because of the exploratory character and the small size of our sample, we have used the PLS-SEM as an appropriate method to analyze hypothesis and research model.

Fig. 2 summarizes steps of the structural equation modeling method under the Partial Least Squares approach [13-15].

For data analysis, we used the SmartPLS 3 software. Table 6 summarizes the convergent validity, according to several criteria: individual item reliability (>0.7), composite reliability (>0.7), factor loadings (>0.7) and average variance extracted (AVE>0.5). Likewise, the discriminant validity is ensured thanks to the Fornell-Larcker criterion (Table 7), and the cross-loading criterion (Table 8). In short, Fig. 3 shows the SEM-PLS estimation for the measurement and structural model.
Table 4
Educational institutions of the students who participated in the survey.

| Educational institutions                                      | Frequency | Percentage (%) |
|---------------------------------------------------------------|-----------|----------------|
| National School of Commerce and Management of Agadir          | 112       | 42.42          |
| National School of Commerce and Management of Tangier         | 44        | 16.67          |
| Higher School of Technology - Laayoune                        | 25        | 9.47           |
| Higher School of Technology of Oujda                          | 21        | 7.95           |
| National School of Commerce and Management of El Jadida       | 11        | 4.17           |
| Higher School of Technology - Agadir                          | 8         | 3.03           |
| Higher School of Technology - Guelmim                         | 7         | 2.65           |
| National School of Commerce and Management of Dakhla          | 4         | 1.52           |
| National School of Commerce and Management of Oujda           | 3         | 1.14           |
| Faculty of Legal, Economic and Social Sciences - Oujda        | 2         | 0.76           |
| Faculty of Legal, Economic and Social Sciences - Salé         | 2         | 0.76           |
| Faculty of Sciences Dhär El Mehraz - Fez                      | 2         | 0.76           |
| Higher School of Technology - Essaourira                      | 2         | 0.76           |
| Higher School of Technology - Oujda                           | 2         | 0.76           |
| National School of Applied Sciences - Khouribga               | 2         | 0.76           |
| National School of Commerce and Management of Settat          | 2         | 0.76           |
| Ait Melloul University Campus                                 | 1         | 0.38           |
| Faculty of Legal, Economic and Social Sciences - Marrakech    | 1         | 0.38           |
| Faculty of Legal, Economic and Social Sciences - Souissi      | 1         | 0.38           |
| Faculty of Legal, Economic and Social Sciences of Ain Sebâa  | 1         | 0.38           |
| Faculty of Medicine and Pharmacy - Oujda                      | 1         | 0.38           |
| Faculty of Sciences - Casablana                               | 1         | 0.38           |
| Faculty of Sciences and Techniques of Marrakech               | 1         | 0.38           |
| Faculty of Sciences and Techniques of Mohammedia              | 1         | 0.38           |
| Higher Normal School of Fez                                   | 1         | 0.38           |
| Higher Normal School of Meknes                                | 1         | 0.38           |
| Higher School of Technology - Fez                             | 1         | 0.38           |
| Higher School of Technology - Marrakech                       | 1         | 0.38           |
| Higher School of Technology of Essaourira                     | 1         | 0.38           |
| National School of Commerce and Management of Marrakech       | 1         | 0.38           |
| Polydisciplinary Faculty of Larache                           | 1         | 0.38           |
| **Total**                                                     | **264**   | **100.00**     |

Table 5
Video conferencing systems and online learning platforms used in Moroccan universities.

| Video conferencing systems | Frequency | Percentage (%) |
|----------------------------|-----------|----------------|
| Google Meet                | 93        | 35.23%         |
| Zoom                       | 92        | 34.85%         |
| Big blue button            | 6         | 2.27%          |
| Cisco Webex                | 5         | 1.89%          |
| Other                      | 68        | 25.76%         |
| **Total**                  | **264**   | **100.00**     |

| Online learning platforms  | Frequency | Percentage (%) |
|----------------------------|-----------|----------------|
| Coursera                   | 47        | 17.80%         |
| Google classroom           | 45        | 17.05%         |
| LinkedIn Learning          | 41        | 15.53%         |
| Udemy                      | 23        | 8.71%          |
| Edx                        | 15        | 5.68%          |
| Khan Academy               | 10        | 3.79%          |
| Moodle                     | 9         | 3.41%          |
| DataCamp                   | 7         | 2.65%          |
| SKILLSHARE                 | 7         | 2.65%          |
| FUN MOOC                   | 6         | 2.27%          |
| MUN MOOC                   | 4         | 1.52%          |
| Lynda.com                  | 2         | 0.76%          |
| Easyclass                  | 1         | 0.38%          |
| Edrak                      | 1         | 0.38%          |
| OpenClassroom              | 1         | 0.38%          |
| Other                      | 45        | 17.05%         |
Fig. 2. Partial least squares approach steps.

Table 6
Convergent validity.

| Constructs               | Items     | Outer loading (≥0.7) | Cronbach's alpha (≥0.7) | rho_A (≥0.7) | CR (≥0.7) | AVE (≥0.5) |
|--------------------------|-----------|----------------------|--------------------------|--------------|-----------|------------|
| System Quality (SQ)      | SQ1       | 0.863                | 0.848                    | 0.852        | 0.908     | 0.766      |
|                          | SQ2       | 0.872                |                          |              |           |            |
|                          | SQ3       | 0.890                |                          |              |           |            |
| Instructor Quality (IQ)  | IQ1       | 0.747                | 0.819                    | 0.824        | 0.880     | 0.648      |
|                          | IQ2       | 0.821                |                          |              |           |            |
|                          | IQ3       | 0.812                |                          |              |           |            |
|                          | IQ5       | 0.837                |                          |              |           |            |
| Social Influence (SInf)  | SInf1     | 0.901                | 0.906                    | 0.913        | 0.934     | 0.779      |
|                          | SInf2     | 0.928                |                          |              |           |            |
|                          | SInf3     | 0.844                |                          |              |           |            |
|                          | SInf4     | 0.856                |                          |              |           |            |
| Learner Computer Anxiety (LCA) | LCA1  | 0.920                | 0.908                    | 0.910        | 0.942     | 0.845      |
|                          | LCA2     | 0.929                |                          |              |           |            |
|                          | LCA3     | 0.907                |                          |              |           |            |
| Perceived Usefulness (PU) | PU1     | 0.883                | 0.929                    | 0.930        | 0.950     | 0.825      |
|                          | PU2       | 0.922                |                          |              |           |            |
|                          | PU3       | 0.921                |                          |              |           |            |
|                          | PU4       | 0.908                |                          |              |           |            |
| E-Learning System Use (ELU) | ELU2  | 0.804                | 0.840                    | 0.845        | 0.893     | 0.676      |
|                          | ELU4     | 0.827                |                          |              |           |            |
|                          | ELU5     | 0.809                |                          |              |           |            |
|                          | ELU6     | 0.847                |                          |              |           |            |
| E-Learner Satisfaction (ELS) | ELS1  | 0.896                | 0.944                    | 0.945        | 0.955     | 0.781      |
|                          | ELS2     | 0.882                |                          |              |           |            |
|                          | ELS3     | 0.871                |                          |              |           |            |
|                          | ELS4     | 0.898                |                          |              |           |            |
|                          | ELS5     | 0.865                |                          |              |           |            |
|                          | ELS6     | 0.889                |                          |              |           |            |
| E-Learning System Success (ELSS) | ELSS1 | 0.878                | 0.929                    | 0.933        | 0.944     | 0.740      |
|                          | ELSS2   | 0.870                |                          |              |           |            |
|                          | ELSS3   | 0.875                |                          |              |           |            |
|                          | ELSS4   | 0.891                |                          |              |           |            |
|                          | ELSS5   | 0.869                |                          |              |           |            |
|                          | ELSS6   | 0.771                |                          |              |           |            |

As indicated in Fig. 4, the values of the coefficient of determination of the couple endogenous constructs; perceived usefulness, and e-learning system use are moderated, which are 0.499 and 0.447 respectively. In addition, the values of R² of the e-learner satisfaction, and e-learning system success are substantial, which are 0.690 and 0.789 respectively.
Table 7
Discriminant validity (Fornell-Larcker criterion).

| Constructs                      | ELS  | ELSS | ELU  | IQ   | LCA  | PU   | Slvf | SQ   |
|---------------------------------|------|------|------|------|------|------|------|------|
| E-Learner Satisfaction (ELS)    | 0.884* |      |      |      |      |      |      |      |
| E-Learning System Success (ELSS)| 0.832  | 0.860* |      |      |      |      |      |      |
| E-Learning System Use (ELU)     | 0.443  | 0.556  | 0.822* |      |      |      |      |      |
| Instructor Quality (IQ)         | 0.644  | 0.669  | 0.608  | 0.805* |      |      |      |      |
| Learner Computer Anxiety (LCA)  | −0.387  | −0.296  | −0.085  | −0.194  | 0.919* |      |      |      |
| Perceived Usefulness (PU)       | 0.782  | 0.815  | 0.446  | 0.629  | −0.347  | 0.909* |      |      |
| Social Influence (Slvf)         | 0.595  | 0.630  | 0.576  | 0.579  | −0.218  | 0.595  | 0.883* |      |
| System Quality (SQ)             | 0.661  | 0.670  | 0.418  | 0.574  | −0.318  | 0.625  | 0.456  | 0.875* |

* Root square of AVE.

Table 8
Discriminant validity - loading and cross-loading criterion.

|        | ELS   | ELSS  | ELU   | IQ    | LCA   | PU    | Slvf  | SQ    |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| ELS1   | 0.896 | 0.721 | 0.369 | 0.529 | −0.384 | 0.722 | 0.510 | 0.620 |
| ELS2   | 0.882 | 0.738 | 0.411 | 0.535 | −0.356 | 0.716 | 0.569 | 0.561 |
| ELS3   | 0.871 | 0.752 | 0.439 | 0.607 | −0.270 | 0.675 | 0.497 | 0.585 |
| ELS4   | 0.898 | 0.762 | 0.410 | 0.636 | −0.346 | 0.700 | 0.514 | 0.613 |
| ELS5   | 0.865 | 0.691 | 0.318 | 0.472 | −0.332 | 0.646 | 0.514 | 0.537 |
| ELS6   | 0.889 | 0.745 | 0.398 | 0.626 | −0.363 | 0.686 | 0.548 | 0.582 |
| ELU1   | 0.794 | 0.878 | 0.431 | 0.572 | −0.333 | 0.769 | 0.511 | 0.535 |
| ELU2   | 0.726 | 0.870 | 0.469 | 0.575 | −0.224 | 0.695 | 0.534 | 0.646 |
| ELU3   | 0.771 | 0.875 | 0.451 | 0.596 | −0.250 | 0.731 | 0.550 | 0.641 |
| ELU4   | 0.706 | 0.891 | 0.489 | 0.596 | −0.261 | 0.700 | 0.550 | 0.547 |
| ELU5   | 0.698 | 0.869 | 0.520 | 0.585 | −0.247 | 0.710 | 0.587 | 0.510 |
| ELU6   | 0.577 | 0.771 | 0.529 | 0.529 | −0.202 | 0.583 | 0.527 | 0.587 |
| IQ1    | 0.369 | 0.461 | 0.804 | 0.495 | −0.073 | 0.363 | 0.498 | 0.411 |
| IQ2    | 0.423 | 0.466 | 0.827 | 0.572 | −0.071 | 0.393 | 0.477 | 0.355 |
| IQ3    | 0.248 | 0.395 | 0.809 | 0.409 | 0.016 | 0.287 | 0.420 | 0.198 |
| IQ4    | 0.396 | 0.497 | 0.847 | 0.506 | −0.135 | 0.410 | 0.491 | 0.385 |
| IQ5    | 0.397 | 0.460 | 0.551 | 0.747 | −0.105 | 0.382 | 0.486 | 0.481 |
| IQ6    | 0.526 | 0.595 | 0.474 | 0.821 | −0.127 | 0.563 | 0.457 | 0.434 |
| IQ7    | 0.580 | 0.523 | 0.468 | 0.812 | −0.219 | 0.488 | 0.464 | 0.469 |
| IQ8    | 0.556 | 0.568 | 0.478 | 0.837 | −0.169 | 0.576 | 0.466 | 0.472 |
| LCA1   | −0.337 | −0.231 | −0.049 | −0.179 | 0.920 | −0.303 | −0.165 | −0.286 |
| LCA2   | −0.358 | −0.295 | −0.140 | −0.206 | 0.929 | −0.327 | −0.245 | −0.324 |
| LCA3   | −0.370 | −0.287 | −0.045 | −0.152 | 0.907 | −0.326 | −0.190 | −0.266 |
| PU1    | 0.716 | 0.688 | 0.367 | 0.576 | −0.345 | 0.883 | 0.565 | 0.628 |
| PU2    | 0.688 | 0.752 | 0.415 | 0.548 | −0.305 | 0.922 | 0.535 | 0.523 |
| PU3    | 0.707 | 0.748 | 0.426 | 0.570 | −0.303 | 0.921 | 0.526 | 0.508 |
| PU4    | 0.730 | 0.772 | 0.414 | 0.591 | −0.309 | 0.908 | 0.535 | 0.609 |
| Slvf1  | 0.490 | 0.525 | 0.496 | 0.472 | −0.234 | 0.486 | 0.901 | 0.374 |
| Slvf2  | 0.509 | 0.540 | 0.518 | 0.499 | −0.204 | 0.525 | 0.928 | 0.411 |
| Slvf3  | 0.545 | 0.567 | 0.434 | 0.446 | −0.153 | 0.532 | 0.844 | 0.353 |
| Slvf4  | 0.555 | 0.592 | 0.568 | 0.606 | −0.178 | 0.553 | 0.856 | 0.456 |
| SQ1    | 0.532 | 0.547 | 0.357 | 0.463 | −0.291 | 0.534 | 0.420 | 0.863 |
| SQ2    | 0.559 | 0.593 | 0.378 | 0.488 | −0.227 | 0.505 | 0.372 | 0.872 |
| SQ3    | 0.637 | 0.617 | 0.363 | 0.552 | −0.312 | 0.596 | 0.404 | 0.890 |

The size effect ($f^2$) values are all acceptable, except the effect of system quality and perceived usefulness on e-learning systems use (Table 9). The system quality and perceived usefulness have no significant effect size on e-learning system use ($f^2 < 0.02$).

The predictive relevance ($Q^2$) values are all greater than zero, which makes it possible to conclude that the model has an acceptable predictive power [14]. Finally, the Goodness of Fit of the Model of this study is very strong (GoF = 0.674,868 > 0.36) [16].

According to SmartPLS outputs, it turns out that instructor quality contributes to the explanation of perceived usefulness, e-learning systems use, and e-learner satisfaction. Likewise, the
Table 9

Effect size.

| Constructs                        | f²              | Signification           |
|-----------------------------------|-----------------|-------------------------|
| System Quality                    | Perceived Usefulness | 0.207                   | Medium effect size |
|                                   | E-Learning System Use | 0.004                   | No effect size    |
|                                   | E-Learner Satisfaction | 0.074                   | Small effect size |
| Instructor Quality                | Perceived Usefulness | 0.218                   | Medium effect size|
|                                   | E-Learning System Use | 0.149                   | Small effect size |
|                                   | E-Learner Satisfaction | 0.066                   | Small effect size |
| Social Influence                  | E-Learning System Use | 0.123                   | Small effect size |
| Learner Computer Anxiety          | E-Learner Satisfaction | 0.035                   | Small effect size |
| Perceived Usefulness              | E-Learning System Use | 0.002                   | No effect size    |
|                                   | E-Learner Satisfaction | 0.374                   | Large effect size |
|                                   | E-Learning System Success | 0.249                  | Medium effect size|
| E-Learning System Use             | E-Learning System Success | 0.129                   | Small effect size |
| E-Learner Satisfaction            | E-Learning System Success | 0.372                   | Large effect size |
system quality has a positive and significant effect on perceived usefulness, and e-learner satisfaction. On the other hand, social influence has a significant effect on e-learning systems use. In the same, the perceived usefulness contributes to the explanation of e-learner satisfaction. In contrary, learner computer anxiety has a significant and negative effect on e-learner satisfaction. Finally, the perceived usefulness, e-learning systems use, and e-learner satisfaction greatly contributes to the explanation of e-learning system success (Fig. 5).

Ethics Statement

The consent of respondents was obtained. Participation in the study was voluntary, and participants could withdraw from the survey at any point. The online survey was completely anonymous and does not contain any information allowing identifying the participant.

CRediT Author Statement

Abdelaziz Ouajdouni: Conceptualization, Methodology, Software, Data curation & Analysis, Formal analysis; Omar Boubker: Writing - Original draft preparation, Investigation, Reviewing and Editing; Khalid Chafik: Supervision, Project Administration.

Declaration of Competing Interest

The authors declare that they have not known competing financial interests or personal relationships, which have, or could be perceived to have, influenced the work reported in this article.

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