THE RELATIONSHIP BETWEEN E-LEARNING SERVICE AND STUDENT SATISFACTION A CASE STUDY AT THE SYRIAN VIRTUAL UNIVERSITY (SVU)

Salma GHASSAN AL AZMEH [*]

Department of Marketing, Faculty of Business Administration, Arab International University, Mazzeh-High Way, Damascus, Syria

Abstract. Purpose – This study aims at exploring the impact of electronic services provided by the Syrian Virtual University (SVU) on student satisfaction. Besides, this study seeks to determine the dimensions of both electronic services and customer satisfaction at the SVU, and to what extent these dimensions may vary in accordance with different personal characteristics among students.

Research methodology – A quantitative research method was adopted using an online questionnaire to collect data from students registering in different SVU programs.

Findings – Overall, results were analysed using the SPSS: 18. The results indicated that the relationship between all electronic services dimensions and student satisfaction at the SVU were positively significant except for the bulk SMS dimension. Electronic service dimensions are also all applied throughout the SVU (SMS- Web Request- Facebook- email- Electronic library- Website- Learning Management System) respectively. Besides, results show that neither electronic services dimensions nor satisfaction dimensions vary with regards to gender, speciality and age. Furthermore, satisfaction dimensions such as privacy and security – ease of use – order fulfilment – customer service – electronic service portfolio are all applied in the SVU.

Research limitations –The study in this paper is limited to only one university since the Syrian Virtual   University is the only virtual university in Syria. Also, the study focused only on university's students, and not it is administrative staff.

Practical Implications – the results of this paper are beneficial for the SVU future and other universities attempting to provide online services. Thus, results from advice the SVU to keep their services up-to-date with the latest technological improvements, especially the university's website. This could be achieved by making it more users friendly and ultimately improve students' satisfaction. Moreover, the SVU should highlight the bulk SMS service weaknesses and try to use it more efficiently. Furthermore, the SVU employees could use the results of this paper to segment their current and future services provided in the future correctly taking into account the differences between gender and other demographic factors.

Originality/Value – This study is one of the first studies to investigate the relationships between E-Learning services and student satisfaction in virtual environments, especially the Syrian Virtual Universities SVU. Moreover, this study investigates specific dimensions regarding both E-services and student satisfaction and brings up a reliable model for further research.

Keywords: E-Learning service, student satisfaction, Syrian Virtual University (SVU).

JEL Classification: I2, I23, M3, M31, M39.

*Corresponding author. E-mail: *puritysalma@gmail.com; s-alazmah@aiu.edu.sy*

Introduction

Nowadays, online educational systems are witnessing a significant growth which has been encouraged by the development of the internet and information technology that has modified the nature of education around the world (Adwan & Smedley, 2012). The World Wide Web (www) is becoming a valuable educational means that provides a unique educational experience for students. Online learning has developed as an alternative provider to traditional teaching methods specifically in the higher education. Thus, online learning has become an opportunity for providing online educational services (Ali & Ahmad, 2011).

Service quality is becoming an essential demand for students around the globe. Students are looking for a great learning experience, suitability, availability and flexible education programs in order to support their future career and lifelong learning. All these factors would ultimately leads to overall student satisfaction. In the higher education system, student satisfaction can be determined according to various criteria e.g. the instructor level of pleasure and the effectiveness of the whole educational experience student have come along with. The study of (Adwan & Smedley, 2012) concluded that the students who are highly satisfied with numerous aspects of e-learning courses are reported to show significantly higher levels of achievement than students with low level of satisfaction. In this essence, tutors of online learning courses can enhance their students' satisfaction by taking into account the primary factors of student satisfaction.

Researchers have advocated students' satisfaction to ensure virtual universities survival and growth (Adwan & Smedley, 2012). Virtual Universities integrate technology in order to deliver it is services into the whole university processes (Ali & Ahmad, 2011). Hence, student satisfaction must be considered as a key factor to be concentrated on by online universities management (Askar et al., 2008). Students should be treated as universities customers. Hence, their needs should therefore be fulfilled properly especially in the rapid technological development. In this vein, virtual universities should look for the best way to deliver the optimal E-Service portfolio for students in order to attain their satisfaction (Naaj, Nachouki, & Ankit, 2012; Croxton, 2014).

Electronic services provided by virtual universities have a key role in attaining student satisfaction (Askar et al., 2008; Ali & Ahmad, 2011; Naaj et al., 2012; Cheawjindakarn et al., 2013). The SVU has faced critical challenges since the start of Syrian crisis in 2011. The turbulence of electricity has become a major obstacle at SVU for staff, students and tutors. In addition, the Internet is another critical problem. Too many students traveled abroad with an ambition to continue their degrees. Moreover, students inside Syria are now facing difficulties regarding travelling from all Syrian provinces to the capital Damascus to follow up their university online requests readiness. Consequently, the SVU has established a new service to deliver proper E-Services to their students.

Virtual universities advocators around the world are increasingly facing radical technological changes when competing for E-services provided by an online university. In Syria, little focus has been given to online learning. This is mainly due to the fact that the SVU is the only one virtual university in Syria since 2001which, has been considered to be part of the Ministry of Higher Education. Although efforts are continually gathered in order to enhance it is services, private Syrian universities are not usually permitted to offer e-learning and thus competition is not effective. According to the above discussion, the study aims at

assessing the impact of electronic services provided by the Syrian Virtual University (SVU) on student satisfaction and to respond to the questions below:

1. What is the impact of E-Services on student satisfaction in the (SVU)?
2. How E-Service at the (SVU) vary according to different demographical characteristics between students?
3. How does student's satisfaction at the SVU vary according to different demographical characteristics between students?

Moreover, hypothesis should be formulated in order to answer the above questions as follow:

1. There is a significant impact of E-services dimensions and student satisfaction.
2. E-Service dimensions vary significantly according to different demographical characteristics between students.
3. Student satisfaction dimensions vary significantly according to different demographical characteristics between students.

This paper is considered important because it will provide a great contribution to the relationship between E-services and satisfaction. On one hand, although this topic has been thoroughly investigated in previous literature, there is a significant theoretical argument. Previous literatures that have tested this relationship show contradictory results, and barely exist in the Middle East. In this essence, this paper would add a necessary extension to the existing knowledge about the relationship between E-services and satisfaction. On the other hand, previous studies on student satisfaction at virtual universities are conducted only on industrial organizations, but not educational ones. However, the studies should shed the light on the higher education sector, which gives it an additional value to this paper.

This research starts by overviewing the previous studied on E-Services, student satisfaction and the association between them, and tries to bridge the gap that is tested in the study. The research methodology is fully discussed, and statistical analysis for the results is also clarified, and ultimately, the research provides a discussion, contribution and recommendations for future studies.

1. Literature review

1.1. Electronic Services (E-Service) in online learning

The primary purpose of higher education is creating and disseminating of knowledge to the development of the world through innovation and creativity, thus the higher education is aiming at meeting the needs of students (Ali & Ahmad, 2011; Dalati & Al Hamwi, 2016; Weerasinghe, Lalitha, & Fernando, 2017). This aim could be achieved by providing high quality services. The HETQM model for higher education total quality is a metric that it should be used to formulate the mission statement for the services provided by Higher Education Institutions; a generic mission statement could be "To provide quality education, research and related services to continuously satisfy stakeholders" needs and achieve excellence through TQM" (Ho & Wearn, 1996; Prasad & Jha, 2013).

Online learning consists of a huge range of applications and processes e.g. Web-based learning, computer-based learning, virtual classrooms, and digital collaboration. This consists of the

process of delivering content via the Internet, intranet/extranet (LAN/WAN), audio- and video-tape, satellite broadcast, interactive TV, and CD-ROM (Paulsen, 2002; Moore, Deane, & Galyen, 2011). Virtual learning provides various environments for learners with main characteristics of being dynamic, interactive, and having nonlinear access to a wide range of information (text, graphics, and animation, as well as including self-directed learning and online communication e.g. e-mail and forums (Kotzer & Elran, 2012; Paulsen, 2002; Moore et al., 2011; Nfila, 2005).

At the SVU different e-services were noted to be employed after reviewing the SVU services official website[1].The following section will provide a brief explanation about e-services applied at the SVU (Learning Management System (LMS), Moodle[2], Learning Management Content System (LCMS), SMS, Website, e-libraries, request system, social media). LMS facilitates student interaction in the classroom and its online activities, thus connecting students to other students and their tutors; empowering web-based sharing of paper materials, library resources, and even textbooks; while integrating learning activities with administrative systems (Monaliz, Hans, & Ana, 2014; Niwaz & Khan, 2013). Also, the SMS system is very effective to provide communication and administrative support. For instance, students can receive their final marks, news, exam schedule via SMS messages (Brooks, 2011; Premadasa & Meegama, 2013). Social media such as Facebook and Twitter are used to notify students with up to date issues (Rashid & Raj, 2006; Brooks, 2011). Virtual universities should also provide an official website with a private account for both tutors and students Moreover; each student has access to his online sessions and exams grades (Khattab & Fraij, 2005). In addition the website should therefore be up to date with regard to news and important announcements (Booth & Clark, 2009).

An e-mail list is an important service that allows both students and tutors to communicate easily. Mail lists are usually used to facilitate discussions among a group of people or information exchanges on a certain subject (Naidu, 2003). The SVU has used the (HORDE) email system.[3]

The SVU official web site is known as (SVUIS) which includes a new service giving students the ability to submit an online objection request on their assignments or final exam grades, they can also submit requests for any formal document from the university e.g., Grades, Transcript, Course Descriptions, Exam grade rejection, Assignment grade rejection etc. [4]. Students follow the instructions provided by the user guide to submit any request needed. This system offers students with chart flow of the request which they can track until their request is fulfilled.

Finally, the E- library is a vital e-service which includes various digital materials such as text, images, and videos. Moreover, it includes a set of techniques and services that help to collect, organize, retrieve, and preserve those digital objects for a community of users (Roy & Elfner, 2002; Nfila, 2005; Wang & Hwang, 2004). The SVU provides access to electronic libraries e.g., Emerald[5], Springer[6] on it is official website where students have an access to any article using their personal accounts (He, Mao, & Peng, 2006).

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[1] http://svuonline.org

[2] http://moodle.svuonline.org

[3] https://mail.svuonline.org/login.php

[4] https://requestsystem.svuonline.org

[5] Springer Link. (2019). Retrieved from http://link.springer.com

[6] Emerald Insight. (2019). Retrieved from http://www.emeraldinsight.com

1.2. Student satisfaction

Satisfaction concept have been discussed and measured by many scholars over the years and in numerous fields (Dalati, Raudeliūnienė, & Davidavičienė, 2017; Dalati & Alchasch, 2018). Student satisfaction however is defined as students' disposition by subjective evaluation of educational outcomes and experiences. Thus, student satisfaction can be defined as a function of relative level of experiences and perceived performance about educational services (Weerasinghe et al., 2017). In general, customer satisfaction components include different dimensions, which are suitable for most studies and especially this research because it suits virtual universities nature (Saha & Zhao, 2005; Yang & Peterson, 2004). To begin with, customer service is a key factor for student satisfaction. Therefore, virtual universities should enhances staff expertise to provide the right service at the time needed, also training for service providers should be of a special priority (Ganjinia, Gilaninia, & Tajani, 2013; Dalati & Alchash, 2018). Accuracy and order fulfillment of service promises, delivering the service on time required, and the ability to provide appropriate information to students in order to solve any problem, willingness to help students and provide prompt service (Naik, Gantasala, & Prabhakar, 2010; Dhman, 2011; Kumbhar, 2012). In addition, students' ability to use the official university website easily and to find their desired service and the information associated with it is considered as a key satisfaction dimension (Mehrabi, Javadi, & Samangoei, 2011). Moreover, e-service portfolio is a crucial dimension in e-learning experience which improves three main aspects for research students: academic development, research profile and social networking. An E-Portfolio empowers research students to take full control of their own learning and research journey (Le, 2012). Finally, Privacy and security is essential to prevent the inappropriate use or sharing of personal information such as student user name and passwords, students email, personal Information (Mehrabi et al., 2011; Kumbhar, 2012).

1.3. Electronic Services (E-Service) in online learning and student satisfaction

A review of e-services provided in previous studies of online learning literature upon student satisfaction concluded that there is a significant role for e-services and student satisfaction. Most of the recent work investigated key factors that affect student satisfaction (Askar et al. 2008; Kuo, 2010; Ali & Ahmad, 2011; Naaj et al., 2012; Cheawjindakarn et al., 2013). These studies focused on a number of specific factors that affect student satisfaction which include Learner to Learner Interaction – Leaner teacher interaction – Online Environment- Technical Support – Printing material – Face to Face Environment.

In general, most of the studies revealed a positively significant relationship between e-services provided by virtual universities and student satisfaction (Askar et al., 2008); Mellema, Smart, & Shull, 2009; Kuo, 2010; Ali & Ahmad, 2011; Banerjee, 2011; Giannousi, Vernadakis, Derri, Michalopoulos, & Kioumourtzoglou, 2009; Naaj et al., 2012; Kistow, 2011; Kuo, Walker, Belland, & Schroder, 2013; Croxton, 2014; Min & Khoon, 2014; King, 2013). In contrast, some studies revealed a moderate relationship between e-services and student satisfaction. Karimi and Ahmad (2013) showed a positive, moderate correlation between perceived learning and satisfaction.

With regard to the leaning Management System (LMS), Sabir, Akhtar, Bahadur, and Sajjad (2014) indicated that LMS has a positive significant impact on student satisfaction. While Ramayah and Lee (2012) concluded that "system quality, information quality and service quality have a positive significant effect on user satisfaction in an e-learning system". In addition; Shahin et al. (2007) results showed that technical support, learner interface, e-content and personalization have a significant positive effect on student satisfaction. These results are related to (Wang, 2003; Tarigan, 2011). In this essence (Mellema et al., 2009) indicated that "there were positive correlations between satisfaction with the discussion board, the posting of resources (Web sites and links) and other course-related information and the use of online quizzes or assessments with overall satisfaction with the online units completed". He also added that students who are satisfied with one element of online learning, will likely be satisfied with other online learning elements.

With regard to student interaction in the E-learning environment, on one hand, literature revealed that there is a significant positive relationship. Giannousi et al. (2009) indicated that 54% of the students were looking forward to join a second blended course. Also, perceived e-learner satisfaction was higher than the average indicating students' high satisfaction with the overall learning experience. This result is related to (Croxton, 2014). On the other hand, other studies, revealed a negative relationship between student interaction and student satisfaction. Kistow (2011) and Banerjee (2011) showed that students have stated that not all courses interesting when blended with technology. Also, there is a general perception across the institution, that not all courses require the same level of face-to-face interaction that is common at small liberal arts and sciences colleges. This result is related to (Kuo et al., 2013).

With regard to social interaction and online discussion, Irwin, Ball, Desbrow, and Leveritt (2012) showed that "students are receptive to incorporating Facebook into their academic lives and perceive benefits through enhanced communication, interaction, and flexibility in course content delivery and therefore improves student satisfaction". In this essence, AlHamad et al. (2014) revealed that students get advantages from online discussions through taking the chance to see how others understand a specific subject and compare it to their own understanding.

In regard to E-guidance, Wang and Hwang (2004) found that "Skillful guidance and tactical presentation from insightful involvement is required for designing the e-learning library". While Nevg (2001) added that the tutorial guidance seemed to have positive effect on students' motivational strategies in learning and helping them to develop more cognitive learning strategies.

Based on the aforementioned review, the relationship between student satisfaction factors in online learning that have been discussed by researchers, it has still largely a theoretical argument because online learning is a new experience in the Syrian education system. Moreover, there is a shortage of research on this field in the Middle East not to mention Syria.

2. Research methodology

The key goal of the current research is to test the impact of electronic services provided by the (SVU) on student satisfaction in the higher education sector. Thus, the paper used the quantitative research method to estimate causal relationships (Mack, Woodsong, MacQween, Guest, &

Namey, 2005). Various statistics were used in order to generalize findings to the whole research sample, such as explanatory factor analysis, reliability test using alpha chrnbach, regression models, independent sample t-test, Anova and Levene test (Sarantakos, 2004).

To determine the Electronic services dimension, which is the independent variable, the Multifactor Electronic services Questionnaire was developed by author (33 Items) based on scanning the Syrian Virtual University official web site (www.svuonline.org). Although the study of Weerasinghe et al. (2017) has highlighted various models for student satisfaction the researcher has adopted customer satisfaction dimensions (19 Items) from Yang and Peterson (2004) because those dimensions are suitable for the nature of virtual universities and the researcher did not find a holistic framework to be adopted.

The questionnaire items were tested using a five-point Likert scale ranging from 5 (strongly agree) to 1 (strongly disagree). The researcher added some factors that might affect student satisfaction and E-services dimensions (age, gender, degree) and which are mentioned in various studies (Askar et al., 2008; Naaj et al., 2012; Kistow, 2011; Kuo et al., 2013; Min & Khoon, 2014; Weerasinghe et al., 2017).

The questionnaire was originally in English, and then the researcher translated it into Arabic, and then it was peer reviewed by four Syrian academics to test whether the items were understandable and not ambiguous. Also, reliability was tested, the questionnaire was piloted Creswell (2012) on 25 students at the (SVU) using a random sample. The respondent data was coded and entered into SPSS 18.0 to be analyzed. Some answers were left blank, so they were not included in the calculation. The test revealed that all of the scales' dimensions of Cronbach's alpha scored more than 0.6. At this point the questionnaire was then reliable and ready to be distributed.

Data was collected from all undergraduate and postgraduate students enrolled at the SVU. Of 600 students enrolled at the SVU, 384 participants have completed an online questionnaire sent to them via a special mail list after attaining an official approval from the university presidency. Also, research respondents were contacted three times via; e-mail and the social media (Facebook[7] and Twitter[8]) respectively.

The demographic data of the sample used in the analysis is shown in Table 1. As shown in Table 1, 32 percent of the SVU students are aged under 20, 35.9 percent are aged between 20 and under 30, and 32 are aged above 30. Also, table the researcher shows that 46.6 percent are male and 53.4 are female. Finally, 52.1 percent are registered in bachelor programs and the rest 47.9 are registered in master programs.

Explanatory Factor Analysis (EFA) was performed to test the electronic service scale components and student satisfaction variables and to test the degree to which the items are tapping the same concept. Firstly, In order to test the instrument reliability the researcher conducted the reliability test using the SPSS: 18 and results in (Table 2) revealed Alpha Chronbach value for all the instrument component for both electronic services and student satisfaction were very high and above the recommended cut off 0.6, it means that, present date suitable to factor analysis (Iacobucci & Duhachek, 2003).

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[7] Facebook. (2019). Retrieved from https://www.facebook.com/svuonline.org

[8] Twitter. (2019). Retrieved from https://twitter.com/SVU_Syria

Table 1. Research sample characteristics (source: created by the author)

Demographic variables	Frequency	Percentage
Gender		
Male	179	%46.6
Female	205	%53.4
Student Age		
> 20	123	%32.0
Between 20 and under 30	138	%35.9
More than 30	123	%32.0
Student Degree		
Bachelor	200	%52.1
Master	184	%47.9

Table 2. Composite reliability for the research Constructs (source: created by the author)

Research constructs	No. of items	Composite reliability Alpha Chronbach
Electronic services components		
WRS	6	0.635
SMS	5	0.859
E-mail	5	0.692
LMS	4	0.862
Face book	5	0.703
EL	4	0.773
Web Site	4	0.815
Student Satisfaction components		
Customer Service	4	0.839
Order Fulfillment	5	0.770
Ease of Use	4	0.791
Service Portfolio	3	0.811
Privacy and Security	3	0.695

After that, to assess the EFA and sampling adequacy, the researcher use the SPSS.18 statistical package. First, the researcher applied the sampling adequacy test using (KMO), and Table 3 showed research sample size was adequate because (KMO) value was above the recommended cutoff (0.5). Then the researcher has conducted the (EFA) in order to investigate the validity of the research instrument, and results revealed that all factor loadings (Communalities) for all variables were high and above the recommended cutoff (0.3) and were statistically significant. Also, the Extraction Sums of Squared Loading were high and above the recommended cutoff (0.6)

Table 3. Exploratory factor analysis results for electronic services and student satisfaction components (Communalities, Extraction Sums of Squared Loading and KMO test). Note: Extraction Method: Principal Component Analysis (source: created by the author)

Items No	Electronic Services Implementation Components	Commu-nalities	Extraction Sums of Squared Loading	KMO AND BARTLETT'S TEST
	Web Request System (WRS)	#	66.279	0.792
WRS1	The Web request system is considered as a modern electronic service	0.449		
WRS 2	The Web request system helps students to submit their request any time they want.	0.578		
WRS 3	The Web request system facilitates students transactions.	0.696		
WRS 4	The Web request system helps students to know at which step their request has arrived.	0.517		
WRS 5	Students can obtain their request completely via the Internet	0.450		
WRS 6	I face a lot of problems when submitting an e-request because of the complicated procedures.	0.087		
	Short Messaging System (SMS)	#	65.682	0.809
SMS 1	The SVU uses SMS service to contact students on timely manner	0.645		
SMS 2	The SVU uses SMS service to inform students with registration schedules.	0.834		
SMS 3	The SVU uses SMS service to inform students with exam dates.	0.848		
SMS 4	Students always receive SMS properly without any problems	0.710		
SMS 5	The SVU sends students user-name & passwords via SMS service	0.247		
	E-mail	#	65.244	0.620
E-mail 1	The SVU e-mail is considered as an official channel to contact with stakeholders	0.516		
E-mail 2	The SVU e-mail design is no easy to use	0.697		
E-mail 3	I face many problems when using the SVU email (e-mail becomes over quota easily)	0.717		
E-mail 4	The SVU uses the e-mail to advertise any new news	0.686		
E-mail 5	Students receives e-mails clearly without any technical problems	0.647		

Items No	Electronic Services Implementation Components	Commu-nalities	Extraction Sums of Squared Loading	KMO AND BARTLETT'S TEST
Moodle (Learning Management System)		#	70.922	0.762
EMS 1	The moodle (Learning Management System) facilitates the learning process.	0.584		
EMS 2	Moodle design is not complicated	0.712		
EMS 3	The moodle is clear and easy to use.	0.813		
EMS 4	The moodle helps categorizing and classifying the e-content properly.	0.728		
Social Media (Facebook)		#	72.812	0.610
Facebook 1	Social media usage is considered as an important communication tool.	0.664		
Facebook 2	Social media usage facilitates students with quick answer upon any queries	0.788		
Facebook 3	The SVU uses social media to inform students with any new news	0.835		
Facebook 4	The SVU social media page is always up to dated	0.845		
Facebook 5	The SVU social media is considered as the most flexible e-service compared to other e-services	0.509		
Electronic Libraries (eg, Emerald, Springer)		#	76.374	0.566
EL 1	The university registers in international electronic libraries (eg, Emerald, Springer) each year.	0.852		
EL 2	Electronic libraries help students preparing their seminars & homework	0.856		
EL 3	The SVU should register in Arabic e-libraries in addition to English e-libraries	0.788		
EL 4	The SVU registration in international e-libraries is not compromised to the level of e-content and learning process provided by the SVU	0.599		
Web Site (ISIS)		#	64.730%	0.719
Web site 1	The SVU official website design is clear	0.698		
Web site 2	The SVU official website facilitates reaching any information	0.731		
Web site 3	The SVU official website provides a separate section for advertising news	0.603		
Web site 4	The SVU official website is always up to date	0.558		

End of Table 7

Items No	Electronic Services Implementation Components	Communalities	Extraction Sums of Squared Loading	KMO AND BARTLETT'S TEST
Items No	Student satisfaction Implementation Components	#	67.770	0.793
Customer Service		#		
CS1	The SVU provides technical support in order to provide the best e-services for students	0.593		
CS2	The SVU compensate students if they face any technical problem using any e-service	0.600		
CS3	The SVU concentrated on problems student faces all the time when using e-services	0.738		
CS4	The SVU tries to solve any problem students face when using the e-services promptly	0.781		
Order Fulfillment		#	62.587	0.764
OF 1	The company performs the service correctly the first time.	0.613		
OF 2	My online transactions are always accurate.	0.578		
OF 3	The company keeps my records accurately	0.475		
OF 4	All web requests I ordered were delivered to me within the time and to the provision I have submitted	0.517		
OF 5	The SVU coordinator replies to my emails quickly and clearly	0.447		
Ease of Use		#	61.533	0.788
EOU 1	The SVU web site provides all kind of requests student wants to submit	0.650		
EOU 2	The SVU website & e-content are easy to use	0.571		
EOU 3	The SVU provides all options in order to complete any e-request or a process via the website	0.675		
EOU 4	The SVU provides electronic guides to facilitates using any e-service	0.566		
Service Portfolio		#	73.431	0.634%
SP 1	The SVU develops new services according to students needs and expectations	0.832		
SP 2	The SVU e-services are related to my needs and expectations	0.843		
SP 3	The SVU e-services facilitates completing any process without contacting any employee at the university	0.528		
Privacy and Security		#	62.235	0.666
P&S 1	There is no risk associated with my electronic transactions with the university	0.650		
P&S 2	The SVU will not use my personal data inappropriately	0.570		
P&S 3	I feel safe during any electronic financial transaction with the university	0.646		

The above analysis provides an important overview regarding the descriptive statistics needed to start testing any hypothesis. Moreover, sample adequacy test, reliability test and factor analysis tests are crucial to answer the research questions and finally discuss findings. In the following section hypotheses will be tested, research questions will be answered and results will be revealed and discussed.

3. Data analysis and empirical findings

To answer question number 1 and testing the hypothesis number 1, which tests the impact of electronic services on customer satisfaction, multiple regression analysis was conducted. The regression model for the E-services was stated as:

Student Satisfaction = β0 + β1 web request system + β2 bulk SMS + β3 Email +

β4 MOODLE + β5 Social Network + β6 Electronic Library + β7 site.

The study model is shown in figure 1. Where:
b0 is the constant; β1, β2, β3, β4, and β5; are the sensitivity of research environment to changes in research courses, facilities, industry linkage, networking, and skills respectively; ε is the error term.

For the E-services dimensions, the results revealed a significant impact of E-mail, Facebook, MOODLE, Web Request System, Website, E-Libraries on student satisfaction (P-value = 0.000, 0.000, 0.003, 0.000, 0.02, 0.006 < 0.05 respectively), with a beta weight of 3.859. However, no significant impact was found for Bulk-SMS (P-value = 0.552 and 0.06 > 0.05, respectively) on student satisfaction (See Table 4).

In order to answer question number 2 and testing hypothesis number 2, whether E-services dimensions varies according to demographic variables (Age, gender, degree) is identified, both one sample t-test and independent sample t-test were applied. First of all, one
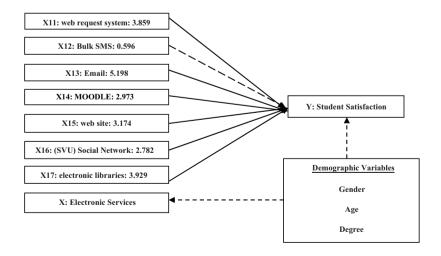

Figure 1. The study model developed by author

Note: Dashed lines indicate non-significant paths at 0.05.

Sample T-test was conducted to examine the level of e-services application at the SVU, and weather each component of e-services are above the cut off (3.4). As shown in Table 5 results revealed that all e-services components are applicable at the SVU properly since all of them exceeded the recommended cut off (3.4). However, the best dimensions applied at the SVU are SMS, WRS, Facebook, E-mail, EL, Web site, and Moodle respectively.

Then, independent sample t-test was used to compare male and female in term of E-services. Findings revealed that the mean of (web request system – E-Mail) for male was a bit greater than its counterpart for female. The differences between the two means was not statistically significant as assessed by independent samples t-test (P-value = 0.500, 0.621 > 0.05). Consequently, there are no significant differences in these dimensions between male and female. While the mean of (SMS, LMS, Face book, EL, Website) for female was a bit greater than the mean of male. The differences between the two means was not statistically significant as assessed by independent samples t-test (P-value = 0.736, 0.058, 0.854, 0.382, 0.325 > 0.05). Hence, there are no significant differences in these dimensions between male and female. Findings are presented in Table 6.

Table 4. The impact of E-services dimensions on student satisfaction: (MODEL SUMMARY) F-Anova analysis (source: created by the author)

E-Services Dimensions	Probability	β
Web Request System	0.000*	3.859
Bulk SMS	0.552	.596
E-mail	0.000*	5.198
MOODLE (LMS)	0.003	2.973
Electronic Library	0.006	2.782
Face book	0.000	3.929
Website	0.02	3.174

*indicates Significance at 0.05.

Table 5. One sample T-test for e-services according to student's demographic characteristics (source: created by the author)

Independent Variables E-services	One Sample T-Test		
	Mean	T	sig
WRS	4.4453	48.349	.000
SMS	4.6068	39.364	.000
E-mail	4.3724	38.359	.000
LMS	4.2813	39.414	.000
Facebook	4.3750	38.850	.000
EL	4.3411	39.364	.000
Web Site	4.3724	41.161	.000
Total e-services components	4.9387	41.161	.000

Table 6. Independent Sample T-test (Levenes Test of equality of variances) between e-services and student gender (source: created by the author)

Gender	Mean		t-test for equity means	
	Female	Male	T	Sig
WRS	4.4293	4.4637	0.676	0.500
SMS	4.6146	4.5978	0.337	0.736
E-mail	4.3610	4.3855	0.494	0.621
LMS	4.3220	4.2346	1.902	0.058
Facebook	4.3707	4.3799	0.184	0.854
EL	4.3610	4.3184	0.876	0.382
Web Site	4.3951	4.3464	0.984	0.325

For E-Services dimensions, the findings showed that the mean of (web request system – E-Mail) for bachelor was a little greater than its counterpart for master. The differences between the two means was not statistically significant as assessed by independent samples t-test (P-value = 0.223, 0.913 > 0.05). So, there is no significant difference in these dimensions between male and female. While the mean of (SMS – LMS – Face book – EL – Website) for master was a bit greater than bachelor. The differences between the two means was not statistically significant as assessed by independent samples t-test (P-value = 0.778, 0.156, 1.000, 0.261, 0.602 > 0.05). Hence, there is no significant difference in these dimensions between bachelor and master. Results are presented in Table 7.

Table 7. Independent Sample T-test (Levenes Test of equality of variances) between e-services and student degree (source: created by the author)

Degree	Mean		t-test for equity means	
	Masters	Bachelor	T	Sig
WRS	4.4130	4.4750	1.220	0.223
SMS	4.6141	4.6000	0.282	0.778
E-mail	4.3696	4.3750	0.110	0.913
LMS	4.3152	4.2500	1.420	0.156
Facebook	4.3750	4.3750	0.000	1.000
EL	4.3696	4.3150	1.126	0.261
Web Site	4.3859	4.3600	0.523	0.602

For E-services dimensions, one-way Anova were conducted to test if there is a significant difference for E-services according to age. The findings revealed that there is no significant difference for electronic services according to students Age since (P-value = 0.695 > 0.05). Results are presented in Table 8.

Table 8. Anova -Test of homogeneity of variance for total e-service and student age (source: created by the author)

Age	ANOVA	
	F	Sig
Total e-services components	0.364	0.695

Responding to the study question number 3 and testing hypothesis number 3, whether student satisfaction dimensions varies according to demographic variables (Age – gender – degree) is identified, both one sample t-test and independent sample t-test were conducted to compare male and female in term of student satisfaction. First of all (One Sample T-test) will be conducted in order to examine the level student satisfaction application at the SVU, and weather each component of e-services are above the cut off (3.4). As shown in Table 9, it can be concluded that all student satisfaction components are applicable at the SVU properly since all of them exceeded the recommended cut off (3.4). However, the best dimensions applied at the SVU are ease of use, privacy and security, order fulfillment, customer service, and e-service portfolio respectively.

Table 9. One sample T-test for student satisfaction components according to student's demographic characteristics (source: created by the author)

Dependent Variables: Student satisfaction	One Sample T-Test		
	mean	T	sig
Customer Service	4.2969	38.417	.000
Order Fulfillment	4.3490	38.963	.000
Ease of Use	4.4323	40.780	.000
Service Portfolio	4.2813	39.414	.000
Privacy and Security	4.3724	41.161	.000
Total student satisfaction components	4.2891	38.381	.000

Then independent sample t-test was conducted to compare male and female in term of student satisfaction. Results showed that the mean of (order fulfillment – service portfolio – privacy & security) for male was a little greater than its counterpart for female. The differences between the two means was not statistically significant as assessed by independent samples t-test (P-value = 0.099, 0.168, 0.057 >0.05). Hence, there is no significant difference in these dimensions between male and female. While the mean of (customer service – ease of use) for female was a bit greater than male the differences between the two means was not statistically significant as assessed by independent samples t-test (P-value = 0.288, 0.078 > 0.05). Hence, there is no significant difference in these dimensions between bachelor and master. Results are presented in Table 7 and table 10.

Table 10. Independent Sample T-test (Levenes Test of equality of variances) between student satisfaction components and student gender (source: created by the author)

Gender	Mean		t-test for equity means	
	Female	Male	T	Sig
Customer Service	4.3073	4.2849	0.478	.288
Order Fulfillment	4.3415	4.3575	0.329	.099
Ease of Use	4.4390	4.4246	0.284	.078
Service Portfolio	2.8439	3.2216	3.359	.168
Privacy and Security	2.6976	3.0428	2.563	.057

For student satisfaction dimensions, the results also showed that the mean of (customer service – ease of use – service portfolio) for master was a little greater than its counterpart for bachelor. The differences between the two means was not statistically significant as assessed by independent samples t-test (P-value = 0.452, 0.493, 0.764 > 0.05). Hence, there is no significant difference in these dimensions between bachelor and master. While the mean of (order fulfillment – privacy & security) for bachelor was a bit greater than a master. The differences between the two means was not statistically significant as assessed by independent samples t-test (P-value = 0.452, 0.030 > 0.05). Hence, there is no significant difference in these dimensions between bachelor and master. Results are presented in Table 11.

Table 11. Independent Sample T-test (Levenes Test of equality of variances) between student satisfaction components and student degree (source: created by the author)

Degree	Mean		**t**-test for equity means	
	Masters	Bachelor	T	Sig
Customer Service	4.3152	4.2800	0.753	0.452
Order Fulfillment	4.3315	4.3650	0.686	0.452
Ease of Use	4.4402	4.4250	0.300	0.493
Service Portfolio	2.8913	3.1383	2.181	0.764
Privacy and Security	2.7935	2.9183	0.921	0.030

For E-services dimensions, (One-Way ANOVA) were conducted in order to investigate whether there are significant differences for student satisfaction according to age. The results showed that there is no significant difference for student satisfaction according to students Age since (P-value = 0.356 > 0.05). Results are presented in Table 12.

Table 12. Anova -Test of homogeneity of variance for total student satisfaction and student age (source: created by the author)

Age	ANOVA		Test of homogeneity of variance	
Total student satisfaction	F	sig	Levene	Sig
–	1.035	0.356	3.764	.024

4. Discussion of results

The aim of this paper is to test the impact of electronic services provided by the SVU on student satisfaction. This study was implemented at the SVU in order to determine the level of electronic services and student satisfaction. In addition, this study aims to determine electronic services dimensions and customer satisfaction dimensions implemented at the SVU and the extent these dimensions vary according to students' personal characteristics. The findings suggest that there is a positive significant relationship between all electronic services dimensions and customer satisfaction from students' perspective at the Syrian virtual university except for the SMS dimension which had no significant relationship with student satisfaction. This result reflects the efficient usage of all e-services provided by the SVU which meet students' needs and facilitate their online experience. Also, this result correspond with prior research (Askar et al., 2008; Mellema et al., 2009; Kuo, 2010; Ali & Ahmad, 2011; Banerjee, 2011; Giannousi et al., 2009; Naaj et al., 2012; Kistow, 2011; Kuo et al., 2013; Croxton, 2014; Min & Khoon, 2014; King, 2013) which have revealed that e-services affect satisfaction significantly. However, bulk SMS service present that students are not satisfied with such service and thus the SVU should investigate it is weaknesses from students' feedback.

Electronic service dimensions seem to be the most influential components applied at the SVU including (SMS – Web Request – Facebook – email-Electronic library-Website – Learning Management System) respectively. This result is consistent with what (So, 2009) and (Premadasa & Meegama, 2013) have indicated in their studies concerning the importance of SMS in improving student satisfaction. Results also stressed the fact that the SVU should concentrate on improving its website. These results correspond with prior researches (Ba & Johnsson, 2005; Kumbhar, 2012; Booth & Clark, 2009) which revealed that improving the website process improves customers' perception of the websites ease of use increases, service value and perceived control over the process which ultimately increase customer satisfaction. Moreover, results showed that technological capabilities embedded in the website are considered as critical factors to determine service quality and consequently customer satisfaction in an online environment. Also, the SVU administration should be committed to monitor its e-services and pay more attention to students opinion and feedback with each service (Rashid & Raj, 2006, O'Driscoll, 2012; Ann, Martin, & Clive, 2014; Fernandes, Ross, & Meraj, 2013; Ali et al., 2014; Peng & Samah, 2006). However, results showed that electronic services dimensions don't vary according to the effect of (gender, degree and age) from student's perspective. This results is not concurrent with the general pattern found in the previous studies where E-services dimensions varied according the effect of personal characteristics (Askar et al., 2008; Naaj et al., 2012; Kistow, 2011; Kuo et al., 2013; Min & Khoon, 2014). This highlights the conclusion that the SVU needs to pay more attention to apply all electronic services properly and at the same quality level in order to meet student's expectations (Ali & Ahmad, 2011; Kumbhar, 2012).

Finally, results show that satisfaction dimensions are all applied at the SVU (privacy and security – ease of use – order fulfillment – customer service – electronic service portfolio) respectively from students' perspective. This result corresponds with previous literature which revealed that all satisfaction dimensions undertaken in this study plays a vital role in

assessing service quality of e-service and customer satisfaction in e-service settings (Hermans, Haytko, & Stenerson, 2009; Ba & Johnsson, 2005; Sawang, Newton, & Jamieson, 2013; Corrall & Keates, 2011; Sánchez, Hueros, & Ordaz, 2013; Roca, Chiu, & Martinez, 2006). However, satisfaction dimensions do not vary because of the effect of (Gender, age and degree) for students. This result differs from the general pattern found in the previous studies (Askar et al., 2008; Naaj et al., 2012; Kistow, 2011; Kuo et al., 2013; Min & Khoon, 2014). This echoes one of the findings reached earlier, that the SVU should concentrate more on investigating student's needs, try to keep in touch with students and spread regular questionnaires in order to gain a holistic perspective on their needs and fulfill these needs accordingly. Also, the SVU should monitor electronic services provided temporarily by distinguishing students' needs variation according to their demographic and personal characteristics. Finally, as the SVU is an emerging market of online- learning, the top management should keep improving and creating new electronic services to keep up to date because of online learning continuous improvement nature.

Conclusions, limitations and recommendations

This article investigates the relationship between E-services and student satisfaction at the SVU. The researcher find that there is a positive significant relationship between all electronic services dimensions and customer satisfaction from students' perspective at the Syrian virtual university except for the SMS dimension which had no significant relationship with student satisfaction. Moreover, electronic service dimensions seem to be the most influential components applied at the SVU including (SMS – Web Request – Facebook – email-Electronic library-Website – Learning Management System) respectively. However, results showed that electronic services dimensions don't vary according to the effect of (gender, degree and age) from student's perspective. Finally, results show that satisfaction dimensions are all applied at the SVU (privacy and security – ease of use – order fulfillment – customer service – electronic service portfolio) respectively from students' perspective. However, satisfaction dimensions do not vary because of the effect of (Gender, age and degree) for students.

Obviously, the results of this paper are beneficial for the SVU future and other universities attempting to provide online services. Thus, results advice the SVU to keep their services up-to-date with the latest technological improvements especially the university's website. This could be achieved by making it more users friendly and ultimately improve students' satisfaction. Moreover, the SVU should highlight the bulk SMS service weaknesses and try to use it more efficiently. Furthermore, the SVU employees could use the results of this paper to segment their current and future services provided in the future correctly taking into account the differences between gender and other demographical factors.

The study in this paper is limited to only one university since the Syrian Virtual University is the only virtual university in Syria. Therefore, further studies may investigate more on comparing the SVU E-services to other E-services provided at other virtual universities among the Arab world and around the world. In addition, the study focused only on university's students, and not it is administrative staff. Consequently, future research could concentrate on other university members including administrative staff and academic staff

in order to attain holistic and more reliable results. Moreover, this study concentrates on the current services provided at the SVU. Thus, additional electronic services such as the electronic signature and the ability to receive any electronic request promptly via the internet from anywhere around the world could be new services to be added to the current study by further researcher because of the dynamic university nature and continues technological improvements applied at the SVU system (SVUIS). Finally, further studies should take into account an emerging demographic dimension which is students' location especially after the Syrian crisis where students used to travel abroad and thus, current E-services should be adopted and fulfilled differently.

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