

EXAMINING THE FACTORS AFFECTING THE USE OF WEB 2.0 APPLICATIONS FOR EDUCATIONAL PURPOSES IN JORDANIAN UNIVERSITIES

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ABSTRACT

This study aims to examine the factors influencing the use of Web2.0 technology in the Jordanian university education system. The study investigates the impact of eight factors of Web 2.0 usage in education, namely feeling of need, motivation, working conditions, saving time, organizational resources, changeability, competitiveness, and skills. A42-item survey was developed for the purpose of the study, a random sample method was used which was completed by 189 participants. PLS software was subsequently used to analyze the data. The study results indicate medium levels of Web 2.0 usage in education in Jordanian universities. The study's findings further demonstrate that working conditions, organizational resources, changeability, and skills are the most critical determinants of Web 2.0 adoption in Jordanian universities and universities in general. The study further reveals that the use of Web 2.0 applications as teaching aids has a significant impact on learner performance. The main recommendation of the study is that universities acquire the IT infrastructure necessary to adopt Web 2.0 applications (internet, computers, and software) and that they train their teachers to use Web 2.0 applications effectively to enhance the learning experience. Moreover, conduct follow-up research in this field to identify other factors that may impact the adoption of Web 2.0 applications.

Keywords: Web 2.0, Learning Process, Learners' Performance, Jordanian Universities.

INTRODUCTION

The evolution of information and communication technology (ICT) has deeply impacted many, if not all, aspects of human life. Education is among the areas that have been most profoundly impacted. ICT has led to unprecedented availability and transferability of information via web technology, allowing teachers and learners to communicate easily, among other benefits. It has consequently become an indispensable part of many classrooms (Almekhlafi & Almeqdadi, 2010). There has been considerable research suggesting that when used effectively, ICT can lead to increased creativity and innovation in teachers and learners, which can in turn result in improved learning outcomes (Kachelhoffer & Khine, 2009). Recent decades have seen Web 2.0 applications become increasingly widely used as collaborative tools to support learning. Interactivity has emerged as one of the unique benefits of Web 2.0 applications, an opportunity that has caught the imagination of educators worldwide (Tyagi, 2012). Baro (2013) describes the main features of Web 2.0 as open communication, decentralization of authority, freedom to share and reuse, and the market as a conversation. The concept of Web 2.0 was described for the first time in 2004 by Dale Dougherty. The media industries are an important part of the creative industries and driving change.

While Web 2.0 technology has rapidly spread throughout the world, many developing countries have yet to properly utilize its benefits, particularly in the field of education. Many prior studies have researched the factors affecting Web 2.0 adoption using technology

acceptance models, such as technology acceptance model (TAM) and unified theory of acceptance and use of technology (UTAUT). Balaguer (2016) argued that teachers need to have the tools and the means to assist their students and observe their progress. From my practical reality in Jordanian universities, the social media technologies such as blogs and wikis are not most popular in the Jordanian universities and they are hardly used in education, Moreover, new technology such as Zoom and Microsoft team were not used until the beginning of 2020. Finally, I noticed that there are many obstacles in using Web 2.0 in the educational process, hence the idea for this study came. The present study aims to examine the extent to which Jordanian universities use Web 2.0 tools, the factors determining the adoption of Web 2.0 applications, and their effect on learner performance. The study seeks to provide valuable results and recommendations to non-Jordanian universities. After an extensive review of pertinent literature, related studies, and technology acceptance models, the following factors were selected for the study in order to achieve the research objectives: feeling of need, motivation, working conditions, saving time, organizational resources, changeability, competitiveness, and skills (Isfandyari-Moghaddam & Hosseini-Shoar, 2014). The main question of this study is: what are the factors that affect the adoption of Web 2.0 in Jordanian universities?

LITERATURE REVIEW

The term Web 2.0 describes a wide range of applications, including social networking sites, blogs, wikis, YouTube, Really Simple Syndication (RSS), and many other applications available on the internet and through Information and Communication Technology (ICT) (Barnes et al., 2012). Organizations around the world have made extensive use of these applications for various activities and become increasingly dependent on them for internal and external communications. This widespread use is indicative of the significant benefit that organizations can derive from the use of Web 2.0, especially in the field of communication and cooperation (Stocker et al., 2007). In fact, the use of Web 2.0 technology not only advantages organizations, but benefits their stakeholders simultaneously. There is substantial research identifying and confirming the many benefits of Web 2.0 use, including the following four advantages described by Hinchcliffe (2010):

- 1) Web 2.0 usage improves the effectiveness of internal processes by decreasing operating costs and enhancing productivity.
- 2) Web 2.0 usage leads to improved employee capabilities due to increased accessibility of knowledge.
- 3) Web 2.0 is extremely valuable as a tool for conducting external communications, providing improved avenues for organizations to collaborate with customers and identify their requirements.
- 4) Web 2.0 affords organizations an improved opportunity to offer customized services, enabling innovations on products and services according to customer needs.

The fact that Web 2.0 technologies are being used by both clients and organizations means that organizations have an enormous opportunity to benefit from the massive amount of information being generated by customers on the web. This data can now be captured by organizations and utilized for many purposes, including corporate entrepreneurship (Lim et al., 2011). Duhan and Singh (2014) suggest that Web 2.0 applications are an important factor in successful corporate entrepreneurial and innovative endeavours. Additionally, they recommend that organizations stay continuously updated on Web 2.0 application

developments. Jones (2010) also argues that Web 2.0 is an essential component of maintaining and developing entrepreneurial businesses. Jones and Iredale (2009) demonstrate that organizations use Web 2.0 as an instrument for business and entrepreneurship education. In addition, they argue that Web 2.0 can be used to improve entrepreneurial learning, enhance information exchange between businesses and educational institutions, and promote understanding of real world practices. Collaboration between businesses and educators allows for mutual learning opportunities. Zeng et al. (2015) argue that Web 2.0 usage has a significant influence on organizational performance and demonstrate that innovation plays as a mediating variable. They suggest that Web 2.0 usage increases organizational innovation which in turn will be reflected in improved organizational performance. Moreover, they stressed that adoption of Web 2.0 strategies can allow organizations to gain a competitive advantage in the field. According to prior research (Stepchenkova et al., 2007; Mustak et al., 2013), social networks have become a major source of information and an important component of decision-making for many organizations. (Christofi et al., (2015); Zhou et al., (2005), and Parris et al. (2016)), declare that the implementation of new technology such as social networks has a positive effect on the innovation of products and services and consequently on organizational performance. Many other researchers have agreed that the adoption of Web 2.0 in organizations can improve decision making and product innovation (Marques, 2013; Lim et al., 2010). Bugshan (2015) argues that Web 2.0 is an open source for innovations in products and services. However, the adoption process of new technology is not easy. Organizations may face many challenges when trying to shift to new technological systems, such as coordination, cost estimating, and content development.

Many scholars argue that Web 2.0 technology plays an important role in higher education (Arif & Mahmood; Joint, 2009; Garoufallou & Charitopoulou, 2011; Harinarayana & Raju, 2008; Ketterl et al., 2009; Singh, 2018) argued that web 2.0 technology play important role in higher education. Research suggests that Web 2.0 use in education can enhance the learning process and student performance through improving communication between teachers and students and promoting collaboration, participation, and communication. Web 2.0 applications can be used by universities and learners for communication, assignments, information gathering and sharing, knowledge creation, and to improve work quality. Web 2.0 adoption can also promote organizational sustainability, accomplishment, and excellence through enhancing H.R functions by helping to avoid wasted time, personal conflicts, and information loss (Hale, 2010; Azeem & yasmin, 2016). Srivastava (2012) explains that using Web 2.0 technology can help students and teachers to develop themselves academically, through communication and accumulation of information that enhances their talents and experiences. The main factors determining Web 2.0 adoption in higher education are job environment, changeability, skills, competitiveness, and saving time (Isfandyari-Moghaddam & Hosseini-Shoar, 2014). Aharony (2009) explains that personality characteristics such as computer expertise and motivation can also affect Web 2.0 application adoption in universities. According to Arif & Mahmood (2012), lack of computer literacy, low availability of computers, and internet facilities are important factors that can deter Web 2.0 technology adoption in libraries. Garoufallou & Charitopoulou (2011) argue that knowledge and expertise in Web 2.0 and innovation technology in general impacts the adoption of Web 2.0 in higher education. Salamzadeh et al., (2019) argued that deviation in media audiences which outcome from the convergence in media is one of the sources for growth of start-up the new media enterprises.

The following sections describe some examples of Web 2.0 technology:

Social Networks

Social network sites like Facebook facilitate communication and distribution of information between friends, family, and strangers. Members can create a personal profile that contains individual information and content such as photos and videos of or by them (Peltier & Naidui, 2012). Boyd and Ellison (2007) define social networks as services provided to individuals allowing the creation of public or private profiles through the web, with the additional ability to add friends to personal pages and connect with others through messaging and viewing information displayed on personal pages. The majority of social network sites are centered on personal ties and meant to be platforms for friends and relatives to connect based on relationships formed in the non-digital world (Chen, 2014). A study by Al Omoush et al. (2012) revealed that motivations and attitudes towards social networks have a significant impact on their usage. Thangiah (2018) argues that social media is a worthy platform for use in education. He asserts that it offers effective tools for students, teachers, and research academics to share and communicate about information without restrictions. Mukhainiet al., (2014) stressed that the use of social networks enhances learning in classrooms by making a massive amount of material on an extensive range of topics accessible to teachers and students. Shim et al. (2011) indicates that interactive learning could encourage self-motivation. Srivastava (2012) argues that teachers and students alike have started using social media extensively to extend the learning process outside of the classroom.

Blogs

Chen (2014) defines blogs as online journals created by individuals through the internet that allow any person to subscribe or comment. Blogs are further described by Kosonen & Kianto (2009) as an opportunity to discuss a particular topic, such as personal ideas or specific events, through the web, in a way that allows the content to be retrieved, modified, and searched through. Recently, blogging has become a popular online communication channel that enables organizations to broadcast their news and innovative ideas. Moreover, blogging has become a multipurpose tool for organization that goes beyond its use as an online newsfeed. Bhatt (2005) refers to blogging as a novel means of gaining information access. Blogs may be a beneficial way for organizational management to disseminate information and knowledge to their employees or customers (Stocker & Tochtermann, 2008). Azizinezhad and Hashemi (2011) argue that the use of blogs in the education system may be an innovative way to enhance learning achievements. However, many teachers resist using blogs in educational settings for many reasons, including lack of motivation and reluctance to change traditional methods.

Wikis

The basic distinction between blogs and wikis is that wikis offer the ability to other users to change, insert, and remove content (Alton et al., 2012). In addition, wikis include a database that enables comparisons between previous and current content. Stieglitz and Dang-Xuan's (2011) argue that many people do not yet realize the benefits of using wikis or blogs, particularly within an organizational setting, and preference is still shown for familiar sharing software within company systems. Moreover, Mansour et al. (2011) indicate that employees and professionals often do not want to share knowledge and expertise with a wide range of viewers, especially within a public and open online platform such as wikis. Therefore, it is important that organization managers create appropriate regulatory systems to establish the infrastructure required for successful implementation of Web 2.0 tools. The adoption of wikis

and other Web 2.0 applications, while offering many potential benefits, can also expose organizations to potential risks. Organizations hoping to implement Web 2.0 applications successfully should take care to follow the recommended best practices for web tool initiatives (Stieglitz & Dang-Xuan's, 2011; Mansour et al., 2011; Baxter, 2014). Alireza et al. (2014) demonstrated some drivers of wiki use by organizations, including ease of use, ability to adjust, impact on building confidence, and saving time and money. Ahmad et al. (2018) demonstrate that wikis are a useful platform for collaborative learning in higher education. They can enable students to engage in cognitive apprenticeship, learning through imitation and action. However, Workman (2008) argues that there are many challenges associated with using wikis in education, such as technical skills and organizational resources.

YouTube

Khan (2014) refers to YouTube as a platform that allows people or businesses to upload and share videos. In 2006 Google purchased YouTube for 1.63 billion US dollar (phrasee.com). Now, YouTube has become one of the most effective means of marketing since it provides free access to more than a billion users around the world. Ledingham (2003) asserts that communication plays an important role in improving connection between organizations and their customers. Consequently, YouTube presents an attractive advertising platform that provides an excellent way to strengthen connections between customers and organizations. One way YouTube does this is through presenting customers with the opportunity to share their opinions through like or dislike reactions to videos. Users can also tag friends, share videos, and post comments that express their views more fully (Bonsón, 2014). DeWitt et al. (2013) confirm that YouTube, as a Web 2.0 tool, can be utilized for education and that it has a mainly positive effect on academic accomplishment. Almurashi (2016) argues that YouTube can play a vital role in enhancing effective teaching and learning in higher education institutions. Whithaus and Neff (2006) found that using YouTube videos to teach can improve interactivity between students. Harrigan et al. (2009), also assert that use of YouTube videos in education has a mainly positive impact on educational attainment.

RESEARCH MODEL AND HYPOTHESES

After reviewing many prior studies related to this field, we propose that eight factors have a direct impact on Web 2.0 use in higher education, as shown in Figure 1. These factors include feeling of need, motivation, working conditions, saving time, organizational resources, changeability, competitiveness, and skills. Moreover, the research model suggests that using Web 2.0 in education has a significant impact on learners' performance.

According to the above literature review and some interviews, we propose the following hypothesis:

H01: Feeling of need has a significant impact on Web 2.0 usage in Jordanian universities' education.

H02: Motivation has a significant impact on Web 2.0 usage in Jordanian universities' education.

H03: Working conditions have a significant impact on Web 2.0 usage in Jordanian universities' education.

H04: Saving time has a significant impact on Web 2.0 usage in Jordanian universities' education.

H05: Organizational resources have a significant impact on Web 2.0 usage in Jordanian universities' education.

H06: Changeability has a significant impact on Web 2.0 usage in Jordanian universities' education.

H07: Competitiveness has a significant impact on Web 2.0 usage in Jordanian universities' education.

H08: Skills have a significant impact on Web 2.0 usage in Jordanian universities' education.

H09: Web 2.0 usage in education has a significant impact on learner performance in Jordanian universities' education.

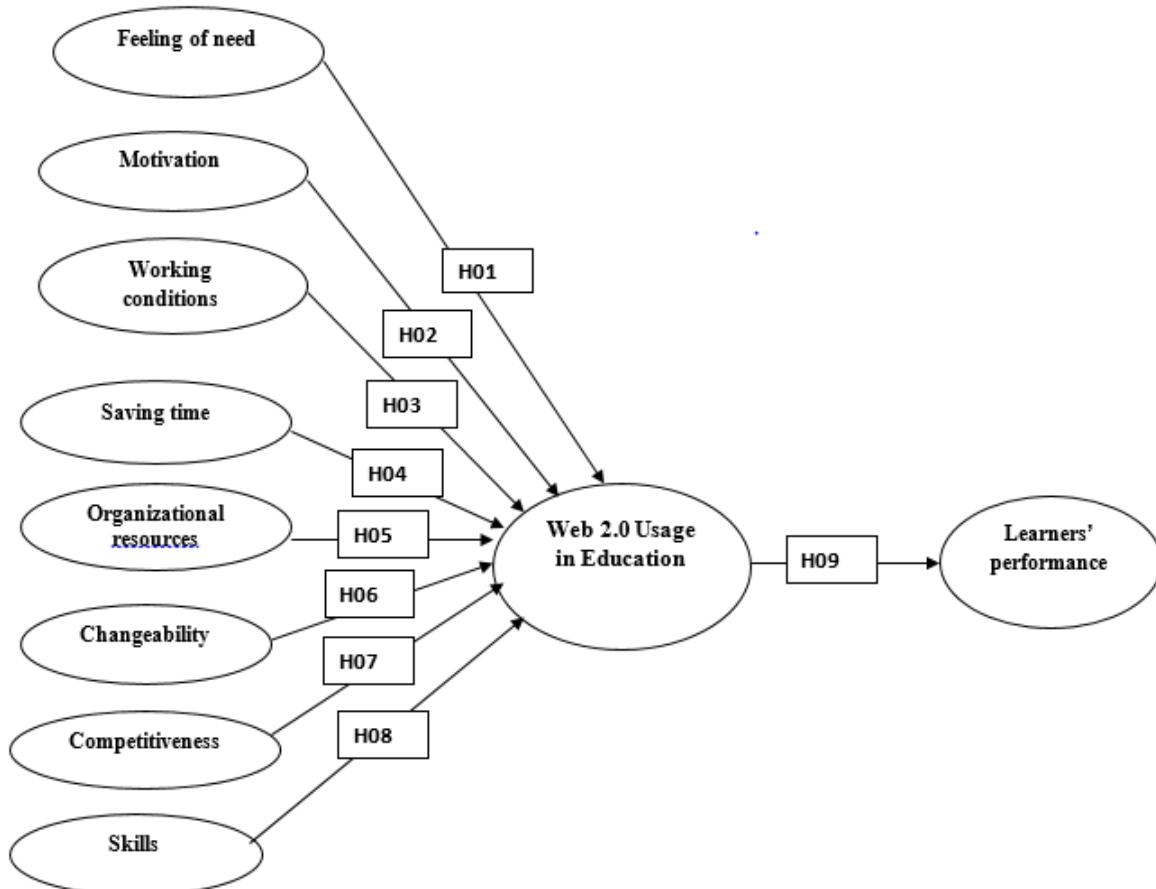


FIGURE 1
PROPOSED STUDY MODEL
RESEARCH METHODOLOGY

Measurement and Instrument Development

The measurement instrument used by this study relies on previous research in the field of technology acceptance models and e-learning drivers. The factors affecting Web2.0 use selected for this study were adopted from Isfandyari-Moghaddam & Hosseini-Shoar (2014), while Web 2.0 usage in education and learners' performance constructs were borrowed from Almekhlafi & Abulibdeh (2018). A self-administered survey was developed to obtain the data required for the study. The survey included 42 items, as shown in Table 1.

TABLE 1
CONSTRUCTS OF RESEARCH MODEL

Factors affecting Web 2.0 use	Code	Measurement Items
Feeling of need	F1	I feel satisfied when providing education to my students through Web 2.0 applications.
	F2	I feel familiar with Web 2.0 applications and believe using them in the educational process is important for universities.
	F3	I am ready to learn updated and related Web 2.0 applications.
	F4	Participation in workshops and conferences helps improve the effectiveness of the use of Web 2.0 in university education.
Motivation	M1	Using Web 2.0 applications to communicate with students increases my acceptance of these applications.
	M2	The speedy access and presentation of information through the use of Web 2.0 applications increases my acceptance of these applications.
	M3	Using Web 2.0 applications throughout the learning process increases my job satisfaction.
	M4	There is a motivated environment within the university to embrace technological innovation in the educational process.
Working conditions	W.C1	Feeling safe when providing education to my students through Web 2.0 technology increases my acceptance of these applications.
	W.C2	Lecturers who have technology skills can use Web 2.0 applications effectively.
	W.C3	My work environment encourages using Web 2.0 applications in the educational process.
	W.C4	The university's adoption of e-learning technology using Web 2.0 applications increases my acceptance of these applications.
Saving time	S1	By adopting Web 2.0 applications in the educational process, the teacher and learner save time.
	S2	Using Web 2.0 applications in the educational process helps me acquire and distribute information quickly to students.
	S3	The use of Web 2.0 applications in the educational process increases the satisfaction of learners.
Organizational resources	O.R1	Availability of technological infrastructures (computers, internet) makes me more likely to adopt Web 2.0 applications in the educational process.
	O.R2	The budget for technology innovation increases my acceptance of Web 2.0 applications.
	O.R3	Information technology administrators at my university influence the adoption of Web 2.0 applications.
Changeability	C1	The use of Web 2.0 applications in the educational process is necessary to achieve the goals of the university.
	C2	I think that changes towards more use of modern technology in education is a positive thing.
	C3	If the administration begins to change towards the intensive use of technology in education, I will be proactive towards this change.
Competitiveness	Co1	I believe that using Web 2.0 technology in the educational process will give students a competitive advantage over others.
	Co2	I believe that using Web 2.0 technology in the educational process will give my university an advantage over other universities.
	Co3	I believe that using innovative technology will provide a competitive advantage.

Skills	Sk1	I believe having English language skill affects the adoption of Web 2.0 applications.
	Sk2	I believe having the skill to use modern technology affects the adoption of Web 2.0 applications.
	Sk3	I believe that academic specialization affects the adoption of Web 2.0 applications.
Web 2.0 usage in education		
	Wue1	I use online journal services such as blogs in the learning process.
	Wue2	I use video sharing services such as YouTube in the learning process.
	Wue3	I use photo sharing services such as Instagram in the learning process.
	Wue4	I use file-sharing services such as Google Drive and Dropbox in the learning process.
	Wue5	I use content-sharing services such as Wikis in the learning process.
	Wue6	I use social networking services such as Facebook and LinkedIn in the learning process.
	Wue7	I use Web 2.0 as an opportunity to exchange knowledge
Learners' performance		
	LP1	Using Web 2.0 applications improves students' practical abilities.
	LP2	Using Web 2.0 applications improves students' academic skills and knowledge.
	LP3	Using Web 2.0 Improve the technological skills required in today's world
	LP4	Using Web 2.0 applications improves students' communication abilities.
	LP5	Using Web 2.0 applications Improve learner's presentation skills.
	LP6	Using Web 2.0 applications improves students' academic achievement.
	LP7	Using Web 2.0 applications helps learners express their creativity.
	LP8	Using Web 2.0 applications increases innovative thinking of learners.

Questionnaire Distribution

Two universities were chosen in the Jordanian capital, Amman, one government (Al-Balqa Applied University) and the other private (Middle East University). The reason for choosing these two universities was to express their desire to cooperate with the researcher and to ensure the accuracy of the data collected a random sample method was used where 200 questionnaires were distributed to faculty members. 189 questionnaires were retrieved and evaluated and there were valid for statistical analysis.

DATA ANALYSIS AND RESULTS

Structural Equation Modelling (SEM), using PLS software, was used to evaluate the fitness of the model and to investigate study hypotheses. The result of factor loading shows that four items did not meet the required value (more than 0.5). These items were M3, W.C4, Wue3, and LP1, which were consequently excluded from the study analysis. Figure 2 shows that all items included in the analysis were appropriate and exceeded the cut value (0.5). Moreover, consistency and convergent validity were confirmed based on Cronbach's alpha, Rho A, Composite Reliability (CR) and (AVE), as shown in Table 2.

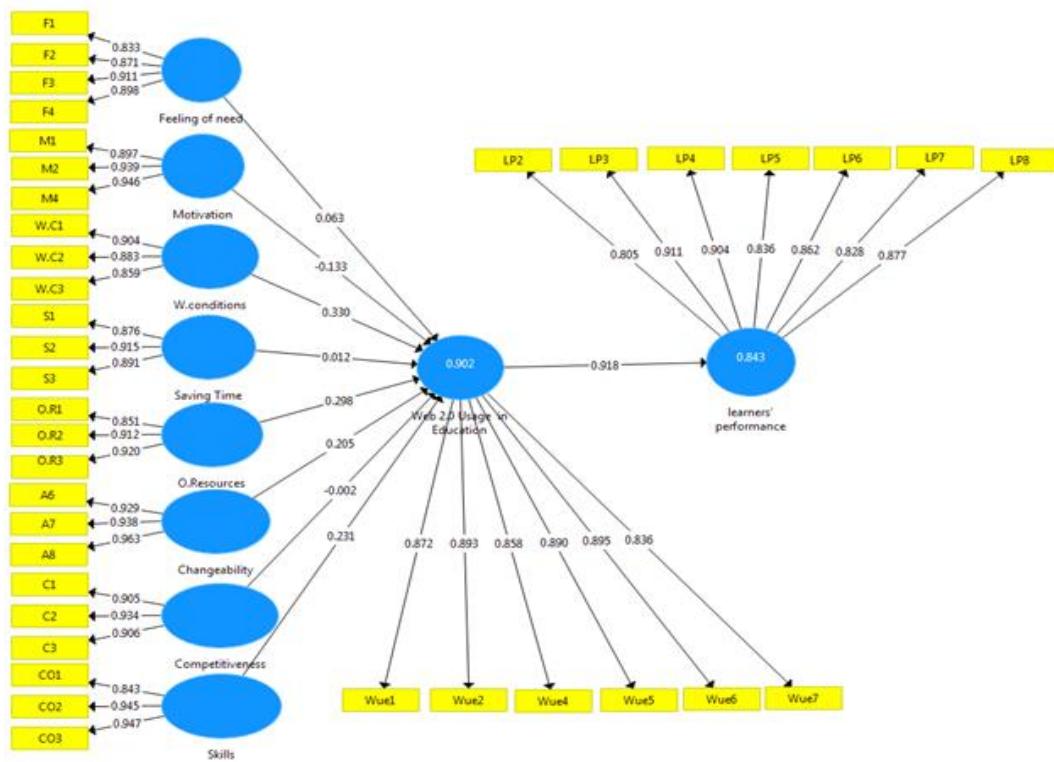


FIGURE 2
TESTED RESEARCH MODEL

TABLE 2
VALIDITY AND RELIABILITY

Construct	AVE	Composite Reliability	Cronbach's Alpha
Feeling of need (F)	0.772	0.931	0.881
Motivation (M)	0.861	0.939	0.919
Working Conditions (W.C)	0.767	0.912	0.858
Saving Time (S)	0.800	0.913	0.878
Organizational Resources(O.R)	0.802	0.913	0.877
Changeability(C)	0.892	0.941	0.928
Competitiveness(CO)	0.823	0.913	0.893
Skills(S)	0.823	0.917	0.899
Web 2.0 Usage in Education(WUE)	0.763	0.921	0.918
learners' performance (LP)	0.741	0.9292	0.931

To ensure the data was accurate, a discriminant validity test was used. The results of the test show that the square roots of the AVE values of all the constructs are superior to the inter-construct correlations as shown in Table 3.

TABLE 3
DISCRIMINANT VALIDITY

Constructs	F	M	W.C	S	O.R	C	S	WUE	LP
Feeling of need	0.944								
Motivation	0.803	0.915							
Working Conditions	0.878	0.836	0.889						
Saving Time	0.809	0.823	0.854	0.928					
Organizational Resources	0.834	0.819	0.847	0.857	0.890				
Changeability	0.822	0.801	0.832	0.844	.887	0.895			
Competitiveness	0.810	0.772	0.862	0.819	0.857	0.895			
Skills	0.802	0.816	0.871	0.852	0.814	0.879	0.913		
Web 2.0 Usage in Education	0.844	0.801	0.805	0.901	0.885	0.842	0.881	0.902	
learners' performance	0.806	0.817	0.879	0.814	0.824	0.881	0.862	0.881	0.861

Assessing the Structural Model and Testing the Research Hypotheses

Figure 2 shows the significance of the paths and the predictive power of the model. Table 4 shows the results of hypotheses testing.

**TABLE 4
THE PATH COEFFICIENT AND HYPOTHESES RESULTS**

H#	Path Coefficient (β)	T Statistics	P value	The results
H1	0.063	0.528	0.598	Not Supported
H2	-0.133	1.337	0.182	Not Supported
H3	0.330**	3.240	0.001	Supported
H4	0.012	0.136	0.892	Not Supported
H5	0.298**	3.180	0.002	Supported
H6	0.205**	2.551	0.011	Supported
H7	-0.002	0.023	0.982	Not Supported
H8	0.231**	2.210	0.028	Supported
H9	0.918**	55.580	0.000	Supported

As shown in Table 4, five paths were deemed significant, indicating that their five associated hypotheses are supported (H3, H5, H6, H8 and H9). The results show that working conditions have a significant impact on Web 2.0 usage in education (the path coefficients of relationships is 0.33, with t value 3.24 and P value 0.001). Organizational resources also demonstrated a significant impact on Web 2.0 usage in education (the path coefficients of relationships is 0.298, with t value 3.18, P value 0.002). In addition, changeability showed a significant impact on Web 2.0 usage in education (the path coefficients of relationships is 0.205, with t value 2.551 and P value 0.011). The final factor that demonstrated a significant impact on Web 2.0 usage in education was skills (the path coefficients of relationships is 0.231, with t value 2.210 and P value 0.028). The R^2 value was 0.902, meaning that these factors, working conditions, organizational resources, changeability, and skills, have explained 0.65% of Web 2.0 usage in education. Moreover, the results show that using Web 2.0 applications in

education has a significant impact on learner performance (the path coefficients of relationships is 0.918, with t value 55.580 and P value 0.000). The R² value was 0.843, meaning that Web 2.0 use in education has explained 0.843% of learners' performance.

DISCUSSION, CONCLUSIONS AND IMPLICATIONS

Usage of Web 2.0 applications are widespread in higher education in the developing world. The utilization of this technology enables learner-centric approaches and benefits students by offering improved research and communication skills as well as increased electronic participation. Given the importance of Web 2.0 in education and its advantages, this study sought to establish a) the extent of Web 2.0 usage in higher education in the Hashemite Kingdom of Jordan, b) the most important factors affecting its adoption, and c) its impact on learner performance.

This study shows that usage of Web 2.0 applications in higher education was at a middle level despite intensive personal usage of such applications by average Jordanians. The study identifies four factors that have significant impact on Web 2.0 technology usage: namely, working conditions, organizational resources, changeability, and skills. These results are consistent with (Arif & Mahmood, 2012; Isfandyari-Moghaddam & Hosseini-Shoar, 2014). Therefore, it is advisable that universities take these factors into consideration to increase Web 2.0 adoption.

Universities that wish to increase Web 2.0 adoption should focus on improving organizational resources such as an increased budget and/or enhanced IT infrastructures including modern computers, high-speed internet, PDA systems, and IT administrators' capabilities. Moreover, working conditions must be improved through the adoption of modern technologies, which requires adopting an appropriate strategy to implement such technologies and setting rules that encourage the adoption process. As change from traditional processes to newer technology often faces resistance, universities must manage the transition to such applications by motivating their users and explaining the technology's potential advantages and benefits. Finally, skills play an important role in Web 2.0 adoption; as such, teachers and students' skills in English language and/or Web 2.0 application usage (ex: YouTube, Wiki, Blogs, RSS, etc.) should be enhanced by continuous training.

The results of this study further show that using Web 2.0 applications in higher education has a significant positive impact on learner performance. Moreover, the results further show that many academics in Jordan are of the opinion that using Web 2.0 applications in higher education has a significant positive impact on learner performance". The result is consistent with Almekhlafi & Abulibdeh (2018). Positive benefits these applications provide include increased creative thinking, communication capabilities, knowledge, and educational attainment of technical skills. Such benefits would also contribute to the adoption of e-government applications in Jordan, which still face many obstacles from user's including weak technological skills, resistance to change, and lack of awareness of potential benefits. Finally, it is necessary for universities and educational institutions to increase their efforts to adopt web-based e-learning platforms to increase their efficiency and effectiveness, the result of this study are of significance to both educational and industrial sectors. As a conclusion, a perception of the factors affecting Web 2.0 adoption will not only assist in rising the basics of a sound implementing this technology, but also allow for enhanced preparation towards using Web 2.0 in Jordanian universities.

In light of the results of the study, we offer the following recommendations for universities:

1. Provide the IT infrastructure (internet, computers, and software) necessary to adopt Web 2.0 applications.
2. Train teachers to use Web 2.0 applications correctly and effectively.
3. Stay educated on modern technology updates and adopt the most recent Web 2.0 applications available.
4. Conduct follow-up research in this field to identify other factors that may impact the adoption of Web 2.0 applications.

Future areas for research associated to Web 2.0 adoption include examinations of the impact of another factors and make a comparison studies with another glob universities. The main limitation of this study was conducted in Jordan universities, so it could be done in others country.

REFERENCES

- Aharony, N. (2009). Web 2.0 use by librarians. *Library & Information Science Research*, 31(1), 29-37.
- Ahmad, S., AbuBakar, A., & Ahmad, N. (2018). Social media adoption and its impact on firm performance: the case of the UAE. *International Journal of Entrepreneurial Behavior & Research*, 25(1), 84-111.
- Al Omoush, K., Yaseen, S., & Alma'aithah, M. A. (2012). The impact of Arab cultural values on online social networking: The case of Facebook. *Computers in Human Behavior*, 28, 2387-2399.
- Almekhlafi, A., & Abulibdeh, E. (2018). K-12 teachers' perceptions of Web 2.0 applications in the United Arab Emirates?, *Interactive Technology and Smart Education*, 15(3), 238-261.
- Almekhlafi, A. G., & Almeqdadi, F. A. (2010). Teachers' perceptions of technology integration in the United Arab Emirates school classrooms. *International Journal of Research Studies in Educational Technology*, 6(1), 165-175.
- Almurashi, W. (2016). The effective use of Youtube videos for teaching English language in classrooms as supplementary material at Taibah University in Alula. *International Journal of English Language and Linguistics Research*, 4(3), 32-47.
- Chua, A. Y. K., Goh, D. H., & Ang, R.P. (2012). Web 2.0 applications in government web sites: Prevalence, use and correlations with perceived web site quality. *Online Information Review*, 36(2), 175-195.
- Arif, M., & Mahmood, K. (2012). The changing role of librarians in the digital world Adoption of Web 2.0 technologies by Pakistani librarians. *The Electronic Library*, 30(4), 469-479.
- Azizinezhad, M., & Hashemi, M. (2012). The use of blogs in teaching and learning translation. *Procedia-Social and Behavioral Sciences*, (28), 867-871.
- Barnes, D., Clear, F., Dyerson, R., Harindranath, G., Harris, L., & Rae, A. (2012). Web 2.0 and micro-businesses: an exploratory investigation. *Journal of Small Business and Enterprise Development*, 19(4), 687-711.
- Baro, E., Edewor., N., & Sunday, G. (2013). Web 2.0 tools: A survey of awareness and use by librarians in university libraries in Africa. *The Electronic Library*, 32(6), 864-883.
- Baxter, G., & Connolly, T. (2014). Implementing Web 2.0 tools in organizations: feasibility of a systematic approach. *The Learning Organization*, 21(1), 6-25.
- Balaguer, P. A. (2016). Linking education and business across geography of erasmus+ improving relationships between vocational training and job market. *Journal of Entrepreneurship, Business and Economics*, 4(1), 73-84.
- Boyd, D., & Ellison, N. (2007). Social network sites: definition, history, and scholarship. *Journal of Computer-Mediated Communication*, 13(1), 210-230.
- Bhatt, J. (2005). Blogging as a tool: innovative approaches to information access. *Library Hi Tech News*, 22(9), 28-32.
- Bonsón, E., Bednarova, M., & Escobar Rodríguez, T. (2014). Corporate YouTube practices of Euro zone companies. *Online Information Review*, 38(4), 484-501.
- Bugshan, H. (2015). Open innovation using Web 2.0 technologies. *Journal of Enterprise Information Management*, 28(4), 595-607.
- Christofi, M., Leonidou, E., Vrontis, D., Kitchen, P., & Papasolomou, I. (2015). Innovation and cause-related marketing success: a conceptual framework and propositions. *Journal of Services Marketing*, 29(5), 354-366.
- DeWitt, D., Alias, N., Siraj, S., & Yaakub, M. (2013). The potential of Youtube for teaching and learning in the performing arts. *Procedia-Social and Behavioral Sciences*, (103), 1118-1126.

- Duhan, P., & Singh, A. (2014). Enterprise 2.0: a boon or bane for entrepreneurial and innovative expenditures?, *Journal of Innovation and Entrepreneurship*, 3(15), 1-19.
- Garoufallou, E., & Charitopoulou, V. (2011). The use and awareness of Web 2.0 tools by Greek LIS students. *New Library World*, 112(11), 490-498.
- Hale, G. E. (2010). *Making whiteness: the culture of segregation in the South, 1890-1940*. Knopf Doubleday Publishing Group.
- Harinarayana, N., & Raju, N. (2010). Web 2.0 features in university. *The Electronic Library*, 28(1), 69-88.
- Harrigan, P., Ramsey, E., & Ibbotson, P. (2009). Investigating the e-CRM activities of Irish SMEs. *Journal of Small Business and Enterprise Development*, 16(3), 443-465.
- Hinchcliffe, D. (2010). Why all the fuss about Web 2.0? *Infonomics*, 24(1), 26-31.
- Peltier, J., & Naidu, G. (2012). Social networks across the SME organizational lifecycle. *Journal of Small Business and Enterprise Development*, 19 (1), 56-73.
- Joint, N. (2009). The Web 2.0 challenge to libraries. *Library Review*, 58(3), 167-175.
- Jones, B., & Iredale, N. (2009). Entrepreneurship education and Web 2.0. *Journal of Research in Marketing and Entrepreneurship*, 11(1), 66-77.
- Jones, B. (2010). Entrepreneurial marketing and the Web 2.0 interface. *Journal of Research in Marketing and Entrepreneurship* 12(2), 143-152.
- Kachelhofer, A., & Khine, M. S. (2009). Bridging the digital divide, aiming to become lifelong learners. *Proceedings IFIP Advances in Information and Communication Technology*.
- Ketterl, M., Mertens, R., & Vornberger, O. (2009). Bringing Web 2.0 to web lectures. *Interactive Technology and Smart Education*, 6(2), 82-96.
- Kosonen, M., & Kianto, A. (2009). Applying wikis to managing knowledge—a socio-technical approach. *Knowledge and Process Management*, 16(1), 23-29.
- Ledingham, J. A. (2003). Explicating relationship management as a general theory of public relations. *Journal of Public Relations Research*, 15(2), 181-198.
- Lim, S., Saldaña, Z., & Saldaña, P. (2011). Do market oriented firms adopt Web 2.0 technologies? An empirical study in hospitality firms. *International Entrepreneurship and Management Journal*, 7, 465-477.
- Lim, S., Trimi, S., & Lee, H. H. (2010). Web 2.0 service adoption and entrepreneurial orientation. *Service Business*, 4(3), 197-207.
- Azeem, M., & Yasmin, R. (2016). HR 2.0: linking Web 2.0 and HRM functions. *Journal of Organizational Change Management*, 29(5), 686-712.
- Mansour, O., Abusalah, M., & Askenas, L. (2011). Wiki-based community collaboration in organizations”, C&T ’11. *Proceedings 5th International Conference on Communities and Technologies*, 79-87.
- Marques, D., Saldaña, A., & Vila, J. (2013). What are the relationships among Web 2.0, market orientation and innovativeness? *Kybernetes*, 42(5), 754-765.
- Isfandyari-Moghaddam, A., & Hosseini-Shoar, M. (2014). Factors affecting Web 2.0 adoption: a case study. *Program: electronic library and information systems*, 48(1), 2-15.
- Mukhaini, E., Al-Qayoudhi, D., & Al-Badi, A. (2014). Adoption of social networking in education: a study of the use of social networks by higher education students in Oman. *Journal of International Education Research*, 10(2), 143-154.
- Mustak, M., Jaakkola, E., & Halinen, A. (2013). Customer participation and value creation’s systematic review and research implications. *Managing Service Quality*, 23(4), 341-359.
- Parris, D., Bouchet, A., Peachey, J., & Arnold, D. (2016). Change is hard: overcoming barriers to service innovation. *Journal of Services Marketing*, 30(6), 615-629.
- Salamzadeh, A., Kawamorita Kesim, H., & Karami, M. (2019a). Media business models: A holistic approach. *Proceedings of the 2nd International Conference of Research in Innovation and Technology*, 550-562.
- Salamzadeh, A., Radovic Markovic, M., & Masjed, S. M. (2019b). The effect of media convergence on exploitation of entrepreneurial opportunities. *AD-minister*, (34), 59-76.
- Shim, J., Dekleva, S., Guo, C., & Mittleman, D. (2011). Twitter, Google, iPhone/iPad, and Facebook (TGIF) and smart technology environments: How well do educators communicate with students via TGIF? *Communications of the Association for Information Systems*, 29(1), 657-672.
- Singh, M. (2018). Adoption of Web 2.0 tools in higher education in India: a study. *Global Knowledge, Memory and Communication*, 67(4), 297-315.
- Srivastava, P. (2012). Social networking & its impact on education-system in contemporary era. *International Journal of Information Technology Infrastructure*, 1(2), 11-18.
- Stepchenkova, S., Mills, J. E., & Jiang, H. (2007). Virtual travel communities: self-reported experiences and satisfaction”, in Sigala, M., Mich, L. and Murphy, J. (Eds), *Information and communication technologies in tourism 2007*, Springer, 163-174.

- Stieglitz, S., & Dang-Xuan, L. (2011). Adoption and use of corporate wikis in German small and medium-sized enterprises. *Proceedings AMCIS*, 235.
- Stocker, A., & Tochtermann, K. (2008). Investigating weblogs in small and medium enterprises: an exploratory case study. In Flejter, D., Grzonkowski, S., Kaczmarek, T., Kowalkiewicz, M., Nagle, T., Parkes, J. (Eds), *BIS Workshop Proceedings*, 95-107.
- Stocker, A., Dosinger, G., Us Saeed, A., & Wagner, C. (2007). The three pillars of 'corporate Web 2.0': a model for definition. *Proceedings of I-Media'07 and I-Semantics'07*.
- Thangiah, R. (2018). Social media on education. *Proceedings of Impact of Social Media on Education in the Present Scenario*, 45-48.
- Tyagi, S. (2012). Adoption of Web 2.0 technology in higher education: A case study of universities in the National Capital Region, India. *International Journal of Education and Development using ICT*, 8(2), 28-43.
- Whithaus, C., & Magnotto Neff, J. (2006). Contact and interactivity: Social constructionist pedagogy in a video-based, management writing course. *Technical Communication Quarterly*, 15(4), 431-456.
- Workman, J. (2008). Wikis in the classroom: opportunities and challenges. *Marketing Education Review*, 18(1), 19-24.
- Zeng, S., Gonzalez, J., & Lobato, C. (2015). The effect of organizational learning and Web 2.0 on innovation. *Management Decision*, 53(9), 2060-2072.
- Zhou, K. Z., Yim, C. K., & Tse, D. K. (2005). The effects of strategic orientations on technology and market-based break through innovations. *Journal of Marketing*, 69(2), 42-60.