

## Web 2.0 applications usage: A comparative study between Erbil and Istanbul



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### ABSTRACT

The global usage of Web 2.0 applications is increasing daily. Due to the rapid advancement of the digital revolution, the Web 2.0 applications are currently becoming an essential in our personal and professional lives because of the digital revolution. Most of these applications have user-friendly interfaces that encourage users to become socially active. Therefore, as to gain more understanding of this phenomenon, this research was constructed with the aims to investigate the Internet usage habits in Erbil City, to determine the preferred Web 2.0 applications and compare the results of this research with that of past research done in Istanbul (Turkey). The required data were collected through a survey of close-ended questions. The researchers employed the convenient sampling method in the collection of the data in Erbil city, which summed up to a total of 450 samples. These data were then analyzed and described using SPSS software version 22.0. During the analysis of the data, the frequency and percentage methods were utilized. As a result, it was discovered that Facebook is the most popular Web 2.0 application in both Erbil and Istanbul. However, the findings also show significant differences in the usage of Web 2.0 applications in terms of gender, age, and education level in Erbil.

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### 1. Introduction

The shift in use from Web 1.0 to Web 2.0 has affected the productivity of users significantly. With Web 1.0, users were limited to accessing information without participating in its generation. With Web 2.0, users produce content that they can access globally (Penni, 2017). With Web 1.0 technologies, users were limited to only static pages that lacked any interactivity, compared with the dynamism afforded by Web 2.0 technologies, which brings several possibilities that were impossible with Web 1.0. Users are not just limited to reading as they now individually or collaboratively become creators of information (Hao and Lee, 2015). Moreover, users have become a medium of spreading information through sharing. Information can be shared with friends, family members, workmates, and total strangers (Khatoun, 2016; Sadaf et al., 2016).

Usman and Oyefolahan (2014) noted that no geographical, social, or cultural barriers are encountered in sharing information and experiences. Popular ways that people are using for sharing are: social media, photo, file, and video sharing Websites.

Some examples of Web 2.0 applications are YouTube, Instagram, Twitter, and Facebook, which are noted as powerful media forms and have a significantly huge role in the Internet world (Chen et al., 2012). Such technologies have enabled people to create an online presence that is in sync with activities they are doing when offline. Other terms that are used to refer to Web 2.0 are “reading and writing,” “creating and sharing,” “liking and commenting,” and “customer content creation”.

### 2. Research questions

Researchers in many countries have undertaken numerous studies to understand the rates and motivation of Web 2.0 applications usage. However, empirical evidence on the use of Web 2.0 in Iraq, specifically in Erbil, is lacking, which the current study aims to address. The following are the specific research questions to be examined:

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1. What are the Internet usage patterns in Erbil?
2. What are the percentages of the samples that can be categorized as Beginner, Intermediate, and Advanced users of computer in Erbil?
3. What are the five most used Web 2.0 applications in Erbil?
4. What are the reasons for using Web 2.0 applications?
5. How do gender, age, and education level related to the use of Web 2.0 applications?
6. What are the results of the general comparison between Erbil and Istanbul regarding the Web 2.0 applications usage?

### 3. Literature review

Selwyn (2012) observed that Web 2.0 is a phrase that has acquired great interest globally for several years. Applications developed around the Web 2.0 platform have brought several advantages. First, delivering frequently updated software based on user feedback is possible. Second, data from users and other sources are combined to create a network effect (Thompson, 2007). The user experience greatly improves because users are not just limited to static pages, which were the norm in Web 1.0.

Virkus (2008) argues that Web 2.0 applications present many avenues for connecting, communicating, collaborating, and sharing with others. The use of Web 2.0 applications has spread beyond developed countries to developing nations. However, research on the use of Web 2.0 in developing countries is few (Azab, 2012). The first definition of Web 2.0 was provided in 2005 by O'Reilly when the Internet brought about the use of interconnected services (O'Reilly, 2005; 2007). Other definitions have been provided by Alexander (2006).

The core of Web 2.0 has been referred to as the masses that use the Web, thereby enabling the creation and sharing of content without the boundary of time and geography (Khatoon, 2016; Hao and Lee, 2015; Alexander and Levine, 2008; Grosseck, 2009). Web 2.0 applications have become ingrained in the daily activities of users through the creation of networks that provide free (or low charge) collaborative, user-friendly platforms (Hao and Lee, 2015; Sadaf et al., 2016). These networks are key mediums in the movement of thoughts and information that support creation, distribution, and improvement of content (Yoo and Kim, 2013).

## 4. Review of the major web 2.0 applications

### 4.1. Wikis

These websites offer users key tools for creating, contributing, editing, and removing contents. Wikipedia an encyclopedia that is freely available in many languages, is an example of a wiki. The content available on Wikipedia has been built up by writers from all over the world. These contents are used for reference, mostly by academicians and researchers,

to expand expertise or immediately gain knowledge. Students also refer to Wikipedia as a learning resource (Gardner, 2008).

### 4.2. LinkedIn and Facebook

These websites enable users to create profiles, view and connect with other users who have profiles, and observe the relation of users. These websites have created large audiences, in which businesses and other entities can advertise. Their structure, as well as the terms that are used to refer to various aspects, are different.

For instance, several differences, which depend on the discretion of the users, are related to profile visibility (Boyd and Ellison, 2007).

(a) LinkedIn: LinkedIn creates valuable work-related connections that enable networking among professionals. LinkedIn provides two features, namely, job listing that shows available vacancies and headhunting. Moreover, LinkedIn provides access to professionals, work related advice, and news.

(b) Facebook: Facebook users have increased to millions, making it the most widely used website (Mazman and Usluel, 2010; Ross et al., 2009). Facebook is used by a wide variety of users, including business organizations, universities, election aspirants, and non-profit agencies, to promote their agenda. Facebook offers organizations a platform for advertising, polls, and creating social applications that help with the interaction of intended groups (Gardner, 2008).

### 4.3. Twitter

Grosseck and Holotescu (2008) defined Twitter as a web service that offers micro-blogging and communication using brief messages that contain approximately 140 characters. Messages can be sent and received on computers and mobile phones; making Twitter a fast and cost-effective way of updating or sending messages to groups. Furthermore, the structure of Twitter enables its users to follow and communicate with one another through brief messages.

Twitter is suitable for professionals and social networking because people with similar interests can be connected (Lucky, 2009). Communication is instant because message sending is real time. Red Cross updates during disasters are an example of Twitter use for messaging (<http://twitter.com/RedCross>). Ban Ki Moon, the eighth secretary general of the United Nations, uses his twitter account (<http://twitter.com/secgen>) to inform his followers when and where meetings are held (Gardner, 2008).

### 4.4. Instagram

Instagram is a photo sharing service that has been widely accepted and used since its creation in

2010. Instagram, as a mobile application, is accessible from smart phones, such as iPhone and android-based phones. Apple provides the Instagram application on its Apple store from where it can be freely downloaded. Android users can also freely download Instagram from the Google Play Store.

In 2013, only three years after its launch, Instagram was estimated to have 100 million users who have shared 4 billion photos. In 2017, the number of active users was estimated at 600 million. This phenomenal increase in the number of users has made Instagram the preferred platform for sharing photos (Salomon, 2013). Instagram users are not limited to photo sharing as they can also tweak photos and share them on social media websites (Kim et al., 2017).

#### 4.5. Google Apps

The Google App is a collection of software tools that support users in activities, such as email and document management. Google Apps are hosted on Google servers, making them accessible from anywhere with Internet access. This method of delivering software over the Internet from a hosted location is referred to as cloud computing or software as a service. Google Apps are available for a variety of functions, such as sending and receiving emails via Gmail, and managing diaries using Google calendar.

Other functions, such as file sharing, are offered by the Google drive. Creating documents, spreadsheets, and presentations similar to Microsoft Office are provided by Google docs. Finally, Google Apps can be used to collect responses, for example, to a survey or a poll, using Google forms (Mansor, 2012).

#### 4.6. 4shared

Sharing of documents, photos, music, and videos over the web is enabled by file sharing websites. 4shared is one of the most popular file sharing websites that provides documents, music files, videos, and photo storage. 4shared users are required to register for an account before storing files online. Uploading, storing, and downloading files of any type are possible in 4shared. Free and paid accounts are offered by 4shared.

With a free account, users are required to login at least once every 180 days to avoid the deletion of stored files. A limit of 2048 MB per file is set by 4shared. An application programming interface (API) is available on the 4shared website for users to apply different services, such as search and login.

#### 4.7. Video sharing websites

Video sharing websites allow users to upload, share, and view videos. YouTube and Dailymotion are examples of video sharing websites. These websites have become important Web 2.0 tools

because they allow information and knowledge sharing. YouTube has become the most popular among video sharing websites. Millions of video clips that cover a wide variety of subjects for a wide-range of viewers and site visitors are available on YouTube (Khan, 2017).

YouTube offers many forms of social interaction, such as comments and information queries and sharing (Khan, 2017). Researchers and educators are not lagging in terms of sharing video clips. YouTube EDU (<http://www.youtube.com/edu>) provides video lectures from different learning institutions (Duncan et al., 2013).

#### 4.8. Blogs

Blogs are websites that offer a personal diary platform for users to provide information and discuss subjects of interest (Levy, 2009). Among Web 2.0 tools, blog has the highest growth rate in terms of usage. Blogs are used together with podcasts to make them more powerful. Podcasts are audio or video contents that can be downloaded to portable devices or streamed online (Constantinides and Fountain, 2008).

#### 4.9. Forum

Forums are mainly used for idea and information sharing on common interests (Alonso et al., 2013). Forums are also known as discussion groups, online forums, message boards, and discussion forums. On these platforms, users leave messages that people can respond to. Alternatively, users can read through the forum looking for information of interest (Constantinides and Fountain, 2008).

### 5. Social media use in Turkey: The sample of Istanbul

Kuyucu (2016) conducted a study to examine the social media usage on X and Y generations in Turkey (Istanbul). The survey was participated by 985 candidates from X and Y generations at Istanbul and the survey coverage were on how the candidates actually exploited their social media profiles. Kuyucu (2016) reported on examining the usage of Facebook, Twitter, Instagram and YouTube among Istanbul residents.

The survey consulted citizens of X and Y generations on how they utilize social media platforms while focusing in particular on their habits when using these platforms.

### 6. Research methodology

The data used for this study were collected through a paper-based survey. The residents of Erbil City were the target population of this survey. From this population, a sample was selected and a questionnaire with closed-ended questions was administered to obtain information. The survey

consisted of three sections. The first section gathered information on the demographic characteristics of the respondents. The second section collected information related to the level of computer and Internet use. The third section consisted of questions for identifying the most popular Web 2.0 Apps, the usage objectives, and their rates of use. The questionnaire was created in three languages, namely, English, Arabic, and Kurdish. A cover letter was attached to each questionnaire to explain the objective of this research. SPSS package software version 22.0 was used to analyze and interpret the collected data. Frequency and percentage methods were used during the analysis.

**7. Results for this study**

Researchers in many countries have conducted numerous studies to elucidate the rates and the motivation of Web 2.0 applications usage. However, empirical evidence on Web 2.0 usage in Iraq, specifically in Erbil City, is lacking. Data from 450 participants were gathered to fill this gap.

**7.1. Descriptive statistics**

Table 1 shows that the sample is distributed almost equally between males and females at 48.4% and 51.6%, respectively. Those below 29 years old appear to be the highest age range among the respondents with 60.7%. Besides, most of the respondents, as many as 56.1%, hold a Bachelor Degree as their education level achievement.

**7.2. Internet and computer Usage**

Table 2 shows the answers on the first and second research questions. The highest daily Internet usage frequency is 38.3%, which corresponds to 1 to 2 hours. In terms of the length of Internet use, 1 to 2 years obtained the lowest percentage, while more than 7 years obtained the highest. Meanwhile, computer users at the Intermediate level are comprised of 61.1%, which is the highest for the category of computer users.

**Table 1: Descriptive Statistics**

		Frequency	Percentage %
Gender	Male	218	48.4%
	Female	232	51.6%
Age	Below 29 years old	273	60.7%
	30-39 years old	106	23.6%
	40 years old and above	71	15.8%
Education level	Under Bachelor's degree	137	30.5%
	Bachelor's degree	252	56.1%
	Higher Degree	60	13.4%

**7.3. Usage of Web 2.0 applications**

Table 3 shows the answers for the third research question and illustrates that the five most used Web 2.0 applications are Facebook, YouTube, Instagram, Google Apps, and Twitter respectively.

**7.4. Reasons for using Web 2.0 applications**

Table 4 answers the fourth research question and shows that most of the respondents (45.8%) use Web 2.0 applications for academic work, sharing, and fun, among which sharing is the highest.

**7.5. Usage of web 2.0 applications according to gender**

To assess the relationship between the usage of Web 2.0 applications and gender, the chi-square test of independence is applied to validate the following hypotheses:

$H_0$ : Usage of Web 2.0 applications and gender are independent.

$H_a$ : Usage of Web 2.0 applications and gender are not independent.

We can reject the null hypothesis, that is, the use of Web 2.0 applications is significantly different in

terms of gender. The number of male respondents that use Facebook and Twitter are significantly higher than that of the female respondents. The results in Table 5 answer the first part of the fifth research question.

**Table 2: Internet and Computer Usage**

		Frequency	Percentage %
Hours of Internet use per day	1-2 hours per day	171	38.3%
	3-4 hours per day	133	29.8%
	5-6 hours per day	79	17.7%
	More than 7 hours per day	64	14.3%
Length of Internet use	1-2 years	57	13.0%
	3-4 years	113	25.7%
	5-6 years	120	27.3%
	More than 7 years	149	33.9%
Computer usage level	Beginner	62	14.1%
	Intermediate	269	61.1%
	Advanced	109	24.8%

**7.6. Usage of Web 2.0 applications according to age**

To assess the relationship between the usage of Web 2.0 applications and age, the chi-square test of independence is applied to validate the following hypotheses:

**Table 3:** Usage of Web 2.0 applications

	Web 2.0 applications	
	Frequency	Percentage %
Facebook	419	93.3%
YouTube	348	77.5%
Instagram	336	74.8%
Google Apps	275	61.2%
Twitter	156	34.7%
Wikipedia	115	25.6%
4shared	62	13.8%
LinkedIn	60	13.4%
Dailymotion	44	9.8%
Blog	35	7.8%
Forums	27	6.0%

H<sub>0</sub>: Usage of Web 2.0 applications and age are independent.

H<sub>a</sub>: Usage of Web 2.0 applications and age are not independent.

We can reject the null hypothesis, that is, the use of Web 2.0 application varies according to age.

Respondents who are below 29 years old mostly use Facebook and Instagram applications, when compared to other applications, as well as other age groups. The results in Table 6 answer the second part of the fifth research question.

**Table 4:** Reasons for using Web 2.0 applications

	Why do you use Web 2.0 applications?	
	Frequency	Percentage %
I am using it for academic work.	66	14.8%
I am using it for information sharing with my friends.	107	24.0%
I am using it for fun.	68	15.3%
I am using it for all of the above.	204	45.8%

**Table 5:** Usage of Web 2.0 applications according to gender

	Gender			
	Male N = 218		Female N = 232	
	Frequency	Percentage %	Frequency	Percentage %
Facebook	209	96.3%	210	90.5%
LinkedIn	33	15.2%	27	11.6%
Instagram	168	77.4%	168	72.4%
Twitter	93	42.9%	63	27.2%
YouTube	170	78.3%	178	76.7%
Dailymotion	26	12.0%	18	7.8%
Google Apps	124	57.1%	151	65.1%
Wikipedia	60	27.6%	55	23.7%
Blog	21	9.7%	14	6.0%
Forums	16	7.4%	11	4.7%
4shared	32	14.7%	30	12.9%

$\chi^2 (0.05,11) = 31.041, p = .001$

**Table 6:** Usage of Web 2.0 applications according to age

	Age					
	Below 29 years old		30-39 years old		40 years old and above	
	Frequency	Percentage %	Frequency	Percentage %	Frequency	Percentage %
Facebook	256	94.1%	99	93.4%	64	90.1%
LinkedIn	31	11.4%	20	18.9%	9	12.7%
Instagram	223	82.0%	76	71.7%	37	52.1%
Twitter	91	33.5%	46	43.4%	19	26.8%
YouTube	210	77.2%	80	75.5%	58	81.7%
Dailymotion	22	8.1%	16	15.1%	6	8.5%
Google Apps	161	59.2%	66	62.3%	48	67.6%
Wikipedia	67	24.6%	26	24.5%	22	31.0%
Blog	19	7.0%	7	6.6%	9	12.7%
Forums	14	5.1%	7	6.6%	6	8.5%
4shared	38	14.0%	15	14.2%	9	12.7%

$\chi^2 (0.05,22) = 50.721, p = .000$

**7.7. Usage of Web 2.0 applications according to education level**

To assess the relationship between the usage of Web 2.0 applications and education level, the chi-square test of independence is applied to validate the following hypotheses:

H<sub>0</sub>: Usage of Web 2.0 applications and education level are independent.

H<sub>a</sub>: Usage of Web 2.0 applications and education level are not independent.

We can reject the null hypothesis, that is, the use of Web 2.0 applications is significantly different among different educational levels. Respondents who possess Bachelor Degree use Facebook and YouTube applications more than other applications when compared to those from other education level groups. The results in Table 7 answer the third part of the fifth question in the research.

**Table 7: Usage of Web applications according to education level**

	Education Level						
	Under Bachelor's degree		Bachelor's degree		Higher degree		
	Frequency	Percentage %	Frequency	Percentage %	Frequency	Percentage %	
Web 2.0 applications	Facebook	125	91.9%	242	96.0%	51	85.0%
	LinkedIn	13	9.6%	34	13.5%	13	21.7%
	Instagram	109	80.1%	186	73.8%	40	66.7%
	Twitter	44	32.4%	88	34.9%	24	40.0%
	YouTube	102	75.0%	203	80.6%	42	70.0%
	Dailymotion	5	3.7%	29	11.5%	10	16.7%
	Google Apps	87	64.0%	149	59.1%	38	63.3%
	Wikipedia	27	19.9%	70	27.8%	18	30.0%
	Blog	7	5.1%	20	7.9%	8	13.3%
	Forums	5	3.7%	15	6.0%	7	11.7%
	4shared	17	12.5%	34	13.5%	11	18.3%

$$\chi^2 (0.05,22) = 48.661, p = .001$$

## 8. Comparison between Erbil and Istanbul in relation to Web 2.0 applications usage

A comparison was made between this research and the past study conducted by [Kuyucu \(2016\)](#). The general results for these two studies were compared. From the samples of 450 participants collected in Erbil, the females make up a percentage of 51.6% and 48.4% for males. On the other hand, the demographic characteristics which are shown in Istanbul from the 985 samples done by [Kuyucu \(2016\)](#), the females represent 43.65% and the remaining 56.35% are males. In general, In Istanbul, the highest number of social media accounts which were owned by both males and females is Facebook. Similar to Erbil city, the results stated that Facebook is the most preferred Web 2.0 applications. However, in Erbil the use of Web 2.0 applications is significantly different in terms of gender. The findings revealed that the number of male respondents that utilize Facebook and Twitter are significantly higher than that of the female respondents. In Istanbul, the analysis of the number of logins to Twitter shows that male users use it more frequently than females, recording a total of more than 10 logins per day. The rate of logins is 5 to 10 times a day and less than 5 times a day is equal with both genders. Interestingly, the analysis on Instagram unveiled that, with respect to logins, females and males are equal with a rate of more than 5 times a day.

However, majority of the participants stated that they do not access YouTube every day. In the case of Istanbul, the results of the Chi-Square Analysis that was performed to determine the statistical significance of these gender differences signified that the differences are rather coincidental. In Istanbul, participants mostly utilize Facebook for the purpose of uploading photos and to get updates of their friends and associates. It was discovered from the investigation that purposes such as making new friends and sharing user's information with friends are of the least of usage. Interestingly, the participants mostly use Twitter as a platform for collecting information on certain matters aside from sharing feelings and opinions. The number of participants that utilize Twitter with the purpose of sharing photos is however very scarce. We observed that the majority of participants' YouTube accounts

are commonly used for listening to music and watching video clips. Users mostly exploit Instagram to view the photos of their friends and sharing their own. Nonetheless, in Erbil city, most of the respondents (45.8%) make use of Web 2.0 applications for academic work, sharing, and fun collectively, among which the objective of sharing becomes the highest percentage. It can be concluded then that this section answers the last research question.

## 9. Conclusion and future studies

According to the results, Facebook is the most popular Web 2.0 application both in Erbil and Istanbul. Furthermore, the usage of Web 2.0 applications in Erbil varies according to gender, age, educational level. On the other hand, it was observed in Istanbul that there is no significant relationship between the social media usage and gender. Although there are some gender-based differences in the frequency of logins to social media accounts, it is not inferable to suggest that "social media habits vary based on the gender" since the differences occur in a coincidental manner. The residents of Erbil and Istanbul spend a significant amount of time on their preferred applications. Due to the high level of interests given to Web 2.0 applications in Erbil, we therefore suggest more researches in the future to examine the opportunity of integrating Web 2.0 applications into higher education system in Erbil. It would be very interesting to observe the results of the mentioned topic with studies done previously in Turkey.

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