Analyzing the Egyptian News Websites' Layout According to Responsive Web Design

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Abstract

Responsive Web design is a new concept in the world of web design that serves a successful user experience. It is also a concept that develops continuously to cover many aspects. Egyptian News Websites have been tried to keep pace with the increasing use of small screens and smartphones in browsing websites through the development of elements' distribution patterns for interfaces' design. In this study, it was checked the use of RWD of Egyptian news websites as well as It was tested the most six popular news websites in Egypt. The objectives of the current study were to analyze the presence of responsive web design on the Egyptian daily news websites by checking the elements distribution patterns of purposive sample of these websites interfaces on different display screens, and to evaluate the usability of these sites through responsive web design and users feedback. So, a descriptive design was utilize intended to provide a complete picture about that, which was carried out on two levels (User interface analytical study and survey study of the user's opinions). The study results revealed that the majority of users prefer to browse the news websites through the small screens "smart phones on different sizes". And that the users up tell now didn't able to recognize the importance of the Responsive Web Design because most of their dealings with screens were limited in one type. Accordingly, the study was recommended that the design of the Egyptian newspapers should be reviewed in order to comply with all responsive web standards and even be able to realize the new concepts of "Adaptive design" which focuses on the user not the browser.

Keywords: Responsive Web Design (RWD), Egyptian's News Websites, User Interface (UI), Laptop, Tablets & smart phones.

1. Introduction

Nowadays, we can viewed a website on any number of devices that have different screen dimensions, and users need to obtain similar view when surfing around the web, regardless of the device they are using when they getting information from websites created for wide screen computers, accessing the web by mobile phone can be quite uncomfortable. For this reason, there was need to adapt the web content layout for different screen sizes and resolutions [Yadav 2014].

Responsive web design (RWD) is a widely used approach for developing websites that respond to the device being used to access it. After a server recognizes a smartphone, tablet, or PC, it will deliver specified content for each [Sareen 2014].

The wide variety and rapid development of internet-related devices makes it virtually impossible to create customized content on the Internet that can be fully displayed on any device. Accordingly, the concept of responsive web design has evolved, which essentially improves the appearance of web content and creativity for any screen "desk top, tablet, smart phon. Responsive web design (RWD) paints the appearance of web page layout and content for maximum rendering capability [MDG 2012].

In Egypt at the last decade mobile is taking over Internet surfing, And It uses for everything from browsing News Websites, checking emails, browsing social media outlets and doing some online shopping. The World Bank reports that 1.1 billion people across the world have access to high-speed Internet; 5.2 billion own a mobile phone. Egypt is number 19 of top 20 countries around the word in number of internet users (42million) [World Development Report 2016].

- ***Statement of the Problem***

Website user Interface (UI) design's is considered one of the most important factors for the success of this site, which allows the user to use the website easily when browsing through different display screens and provide easy access to content. Therefore, most of the Egyptian news websites started to apply the responsive web design (RWD) to maintain the elements' order of the user interface. Each newspaper website submitted its own design, which requires -identifying of the presence of (RWD) through monitor and analysis of these layouts' and takes the opinion of users from their feedback of using those websites.

2. Objective: This research aims to

- Identifying the presence of responsive web design on the Egyptian news websites by analysing the elements distribution patterns of sample of Egyptian news websites interfaces on different display screens.
- Evaluate the Egyptian news websites' usability through responsive web design and users feedback.

3. Literature review
3.1 Responsive Web Design (RWD)
Responsive web design is an approach to web design aimed at crafting sites to provide an optimal viewing and interaction experience easy reading and navigation with a minimum of resizing, panning, and scrolling across a wide range of devices (from desktop computer monitors to mobile phones).It aims to make a website seem like it was tailor-made for a specific device. You'll see the site exactly as the creators intended you to [Zolciak 2016].

Figure (1) shows that the preview of fluid responsive news website (the guardian) in different states (Auto Size, Tablet & Mobile).

Fig. 1. Preview of fluid responsive website (the guardian) in different states (Auto Size, Tablet & Mobile)
Source:https://www.theguardian.com/international

Responsive web design means supporting all possible screen sizes with the same HTML. This allows the page to reflow all content, images and structure of the site remains the same on any device to match different screen sizes, whether rendered on a small mobile phone or a large desktop monitor [Smashing 2011].

The main idea of RWD and Rich Internet Applications (RIA) is Web for All and Web on Everything-we can say that (RWD is a client-server technology), The essence of this idea is that adapting the content layout is realized with minimum server requests, and enable access to the web content for all existing media [Subić & Krunić & Gemović 2014].

On the other hand, creating different web pages for various devices is a hard work for web designers, and should also be avoided. Together with the development of the media industry (mobile phones, iPads, screens), techniques for adapting web content for different media are developing too [Subić & Krunić & Gemović 2014].

3.2 Adaptive design
Adaptive design is a version of responsive design in which the server detects the capabilities of a client device and only sends content and features that can be appropriately displayed on that device.This technique is sometimes called progressive enhancement. The main advantage of adaptive design is that it solves the problem of slow response times that often plagues responsive design [Budiu 2016].

In addition to, it can be a more pragmatic solution that is cheaper to implement and easier to test thus be appealing if resources are tight. This is especially true when dealing with an existing website, where a complete rewrite is not always feasible [Holst 2012].

Adaptive websites introduce media queries to target specific device sizes, like smaller monitors, tablets, and mobile [Yadav 2014].

3.3 Guidelines to build a responsive web design
To build a responsive web design in terms of front-end layout, it uses these points:
- A flexible grid-based layout: The number of columns of the web page should be adaptive to the screen/window dimensions. Layouts change based on both device characteristics and content can change as well. [Marcotte 2011; Images Guide. 2013; Le Page[a] 2017].
- Flexible images and media (fluid images): Images and videos should dynamically be resized in order to fit the screen width. ." A resolution-adaptable image" will look identical everywhere - it only resizes [Portis 2016], [Marcotte 2011; Guidelines 2016].
- Media queries, a module from the CSS3 specification: Using CSS3 rules for visual effects instead of images. By using media queries, website designers can define certain resolution ranges as conditions to use certain CSS definitions called fixed breakpoints [Marcotte 2011; Images Guide 2013].
- Flexible menus, content and links: The menus and the content have to be displayed according to the interest of the users [Images Guide 2013].

- Adjusting Screen Resolution Link [Smashing 2011].
- Menus, links and buttons have to be bigger on touch screen devices, so it could enable a user friendly environment [Images Guide 2013].
- The space between interactive links has to be sufficiently high in order to avoid an occasional press on small devices like smart phones or tablets [Images Guide 2013].
- The font size and line spacing should be determined to enable easy reading [Images Guide 2013].
- Responsive design will factor in users age, It will not only focus on how the site looks, but also how it works, what type of content it displays, and what users can do with it [Smashing 2011].

3.4 Responsive Web Design Patterns
Responsive web design patterns enables web page layouts to adapt to a variety of screen sizes. They requires a very different way of thinking about layout, so they are quickly developing. There are a lot of patterns on the web, but we can catalogued these patterns for adaptable multi-device layouts and work well across the desktop, laptop and mobile devices into seven patterns: mostly fluid, column drop, layout shifter, tiny tweaks, off canvas, Mondrian, and Basic Gallery. In some cases, a page may use a combination of patterns [Le Page[a] 2017; Wroblewski 2012; CMV 2015].

3.4.1 Mostly Fluid
It is the simplest popular pattern, it consists of a multi-column layout that remains the same size simply adjusting the margins on wider screens. On smaller screens, the fluid grid causes the main content to reflow, while columns are stacked vertically [Wroblewski 2012].

One major advantage of this pattern is that it usually only requires one breakpoint between small screens and large screens, Fig. 2 [Le Page[b] 2017].
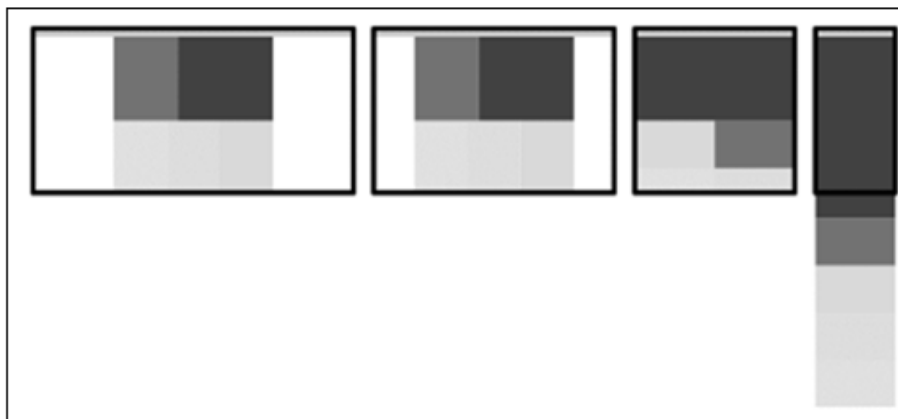

Fig. 2. Preview of "Mostly Fluid" responsive site's layout
Source: https://developers.google.com/web/fundamentals/design-and-ui/responsive/patterns

3.4.2 Column Drop (Column Flip)
It's a fairly complicated transformation but it's quite effective. It depends on multi-column layout and ends up with a single column layout, dropping columns along the way as screen sizes get narrower. Unlike the Mostly Fluid pattern, the overall size of elements in this layout tend to stay consistent. Adapting to various screen sizes instead relies on stacking columns (illustrated below), Fig. 3 [Wroblewski 2012].
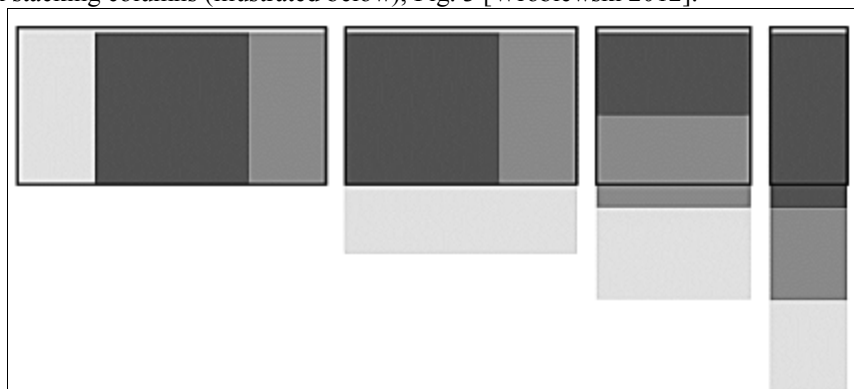

Fig. 3. Preview of "Column Drop" responsive site's layout
Source: https://www.lukew.com/ff/entry.asp?1514

3.4.3 Layout shifter

It is the most responsive pattern, with the simplest form of adaptation and multiple breakpoints across several screen widths. But this pattern was also the least popular, Fig. 4 [Le Page[b] 2017].
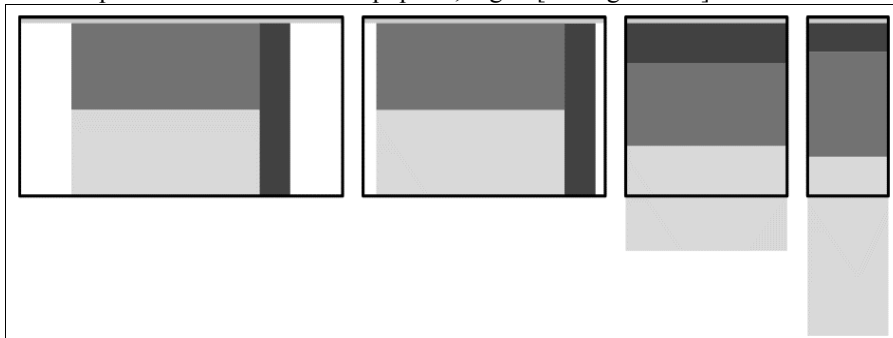

Fig. 4. Preview of "Layout shifter" responsive site's layout, Source:
Source: https://www.lukew.com/ff/entry.asp?1514

3.4.4 Tiny tweaks

It simply makes small changes to the layout, such as adjusting font size, resizing images, or moving content around in very minor ways. It works well on single column layouts such as one page linear websites and text-heavy articles, Fig. 5 [Le Page[b] 2017].
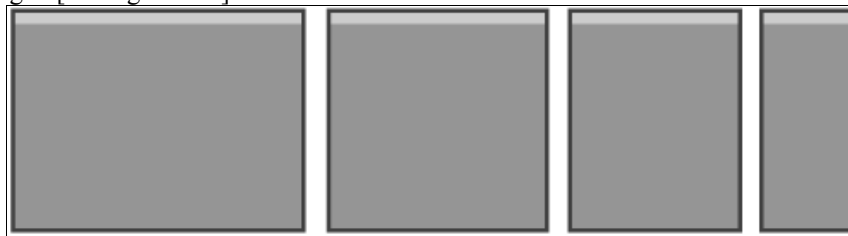

Fig. 5. Preview of "Tiny tweaks" responsive site's layout
Source: https://developers.google.com/web/fundamentals/design-and-ui/responsive/patterns

3.4.5 Off canvas

It places less frequently used content off screen, only showing it when the screen size is large enough, and on smaller screens, content is only a click away, Fig. 6 [Wroblewski 2012].
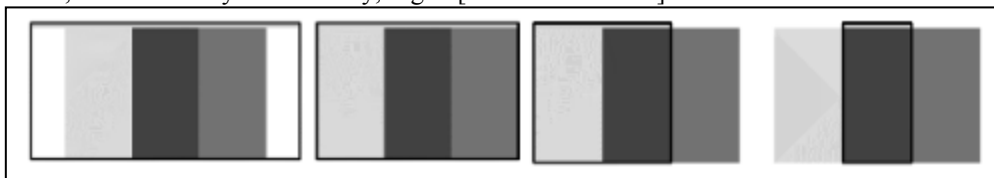

Fig. 6. Preview of "Off canvas" responsive site's layout
Source: https://developers.google.com/web/fundamentals/design-and-ui/responsive/patterns

3.4.6 Mondrian

It uses three simple and large areas of content separated by thick lines. Once it becomes too narrow the widescreen layout adapts and becomes a vertical layout, this is carried out by taking the two smaller boxes on the right and moving them under the large special box. Then this layout breaks down to one standard column where each piece of content is simply stacked under the last in mobile view, Fig. 7 [CMV 2015].
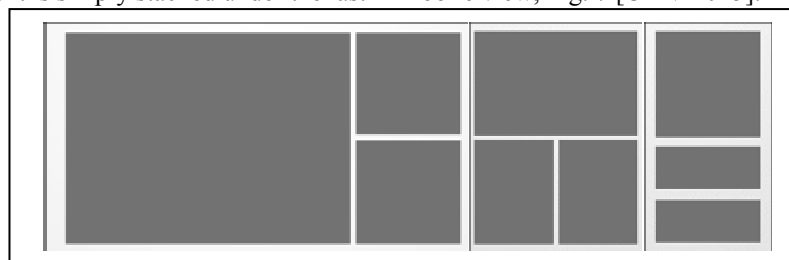

Fig. 7. Preview of "Mondrian" responsive site's layout
Source: https://codemyviews.com/blog/5-really-useful-responsive-web-design-patterns

3.4.7 Basic Gallery:

It uses three simple and large areas of content separated by thick lines. Once it becomes too narrow the

widescreen layout adapts and becomes a vertical layout, this is carried out by taking the two smaller boxes on the right and moving them under the large special box. Then this layout breaks down to one standard column where each piece of content is simply stacked under the last in mobile view, Fig. 8 [CMV 2015].
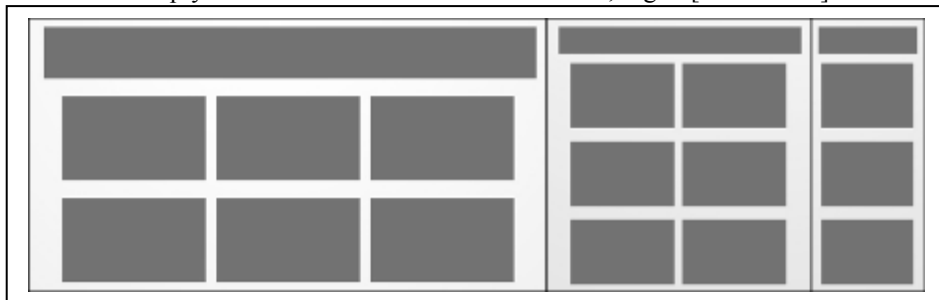

Fig. 8. Preview of "Basic Gallery" responsive site's layout
Source: https://codemyviews.com/blog/5-really-useful-responsive-web-design-patterns

4. Methodology

4.1 Design

Methods used in this study for collecting data was descriptive method, which was carried out on two levels:

- Analytical study: by analysing user Interface (UI) for a sample of the most frequently used of Egyptian newspapers websites'. To determine the behaviour of the web layout content during browse the website interface on different devices screens', for assessing the implementation of RWD.
  RWD had checked on these Websites by using smart phone held in portrait mode for small screen devices, for medium screen devices it had used tablets held in portrait mode and for widescreen displays it had used laptop.
- Survey of the user's opinions: through a field study on a random sample of the Egyptian news websites users to know their preferences towards the design of the sample study websites interfaces. It has been surveyed 153 users, during 30 days started on July 20 and end on August 18. Then the survey forms were analysed, a statistical descriptive measures (Percentages and repetitions) were used to describe and evaluate the Egyptian news websites' usability through responsive web design and users feedback.

4.2 Samples

To represent the Egyptian News Websites, it had been selected six websites according to three criteria:

- News websites includes both types of Egyptian newspapers in terms of Ownership of the newspaper (National Public newspapers and Private Newspapers. As shown in table number (1).
- They provided to various kinds of RWD in Website.
- The rank of Alexa and more visits. As shown in table number (2).

Table 1. Classification of newspaper sites (Selected Sample) according to ownership of the newspaper

N.	Property Type	Egyptian News Websites	Web Site Address	Founding Year
1.	National Public newspapers	Al Ahram	http://www.ahram.org.eg	1876
2.		Al Akhbar	http://akhbar.akhbarelyom.com/	1952
3.		Algomhuria	http://www.algomhuria.net.eg	1953
4.	Private newspapers	Almasry alyoum	http://www.almasryalyoum.com	2004
5.		Youm El Sabaa El	http://www.youm7.com/	2008
6.		El Watan	http://www.elwatannews.com	2012

Table 2. The sample sites ranked relative to others according to the rank of Alexa and more visits

Rank in Egypt	News Websites	Daily Time on Site	Daily Page views per Visitor	% of Traffic From Search	Total Sites Linking In
4	El Youm El Sabaa	8:16	4.12	20.90%	16,168
15	El watan	5:57	3.22	14.50%	5,176
16	Almasry alyoum	3:51	2.27	18.80%	9,822
62	Al Ahram	3:31	2.14	27.60%	12,660
103	Al Akhbar	4:16	2.42	11.40%	3,791
974	Algomhuria	4:03	3.43	22.10%	808

*Date: Monday, July 24, 2017. [Alexa, 2017]

As for the sample of newspaper users, the total number of users was 153 users, and their characteristics are shown in the following figures: (9, 10, and 11).
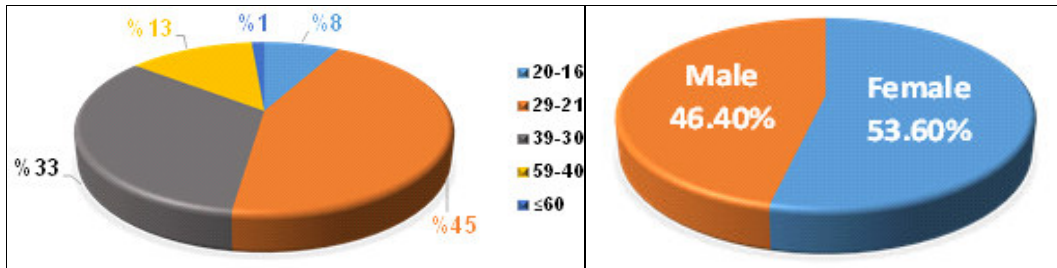

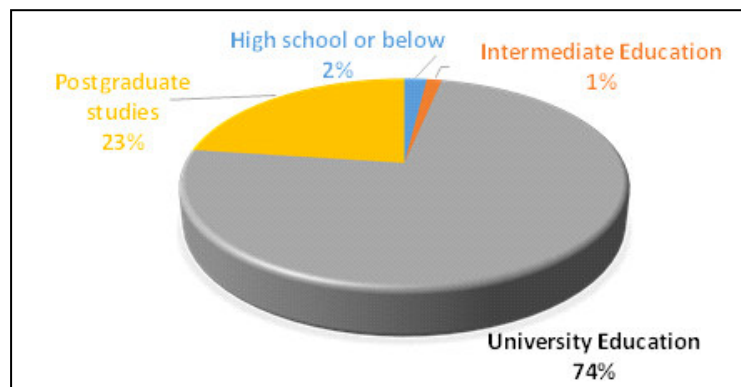Fig. 9. Users' Gender   Fig. 10. Users' Age

Fig. 11. Users' Educational levels

4.3 Tools and Devices

It had used the devices shown in the following table number (3) to take a screenshots to the sites interfaces.

Table 3. Devices used specifications

Devices' Specifications	Samsung Galaxy E700H	Samsung Galaxy Tab E	Toshiba Laptop Portege R830
Screen size	5.5" inches	9.6" inches	15.6 "inch.
Display resolution	720 x 1280 pixels	800 x 1280 pixels	1,366x768 pixels
Pixel density	267 PPI	216 PPI	(dot pitch) 100.45 PPI
Ratio	16:9	4:3	683:384
Operating System	Android version 5.1.1	Android 4.4.2	Windows 7

5. Results

5.1. Results of analytical study

The results of the RWD on the Egyptian News Websites' study indicate that:

All six news websites applied responsive web design (RWD) standards, but according to different layouts as described below in Table number 4:

Table 4. RWD in Egyptian Newspaper Website

Responsive Web Design layout's	NO. of Websites	Percent%	Websites' Name
A.Mostly fluid layout	3	50	Al Akhbar
			El Youm El Sabaa
			El Watan
B.Column drop layout	1	17	Al Ahram
C.Tiny tweaks layout	2	33	Algomhuria
			Almasry alyoum
Total	6	100%	

5.1.1. News Websites with Fluid responsive layout: Three sites were found to represent this layout, they were (Al Akhbar &El Youm El Sabaa and El Watan).They were introduced larger margins, remained the same size of images ,fonts and all design element's' with adjusting the margins on wider screens - figures:12,13&14.

- Al Akhbar: On the laptop (left) the content was formatted across 8 columns then turned into 3 columns on the tablet (middle) and still 3 on smartphones (right), figure 12.

Fig. 12. Preview of fluid responsive site (Al Akhbar) on different screens
Source: http://akhbar.akhbarelyom.com/

It should be noted that the Al Akhbar site was changed its design after the end of the study period as a pilot began in September 2017.

- El Youm El Sabaa: The laptop (left) and the tablet (middle) versions showed the content in 10 columns, then 3 columns on smartphone (right) respectively, Fig. 13.
- El Watan: On the laptop (left) the content was formatted across 8 columns then turned into 4 columns on the tablet (middle) then it became 3 columns on smartphone (right), Fig. 14.

Fig. 13. Preview of fluid responsive site (El Youm El Sabaa) on different screens
Source:http://www.youm7.com/

Fig. 14. Preview of fluid responsive site (El Watan) on different screens
Source:http://www.elwatannews.com

5.1.2. News Websites with "Column Drop" layout: This layout was applied by only (Al Ahram) web site - Fig. 15.

- Al Ahram news website with Column Drop layout it simply stacks the columns vertically as the window

width becomes too narrow for the content on full-width multi-column layouts. On the laptop (left) the content was formatted across 8 columns then turned into 2 columns on the tablet (middle) and it became one column on smartphone (right).

Fig. 15. Preview of Column Drop responsive site (Al Ahram) on different screens
Source:http://www.ahram.org.eg

5.1.3. News Websites with "Tiny tweaks" layout: Two sites were found to represent this layout, they were (Algomhuria & Almasry alyoum) - Fig. 16&17. They doesn't change as the screen size changes. As the screen width gets larger, the font & images size and all (UI)'s objects are padding. Web sites designs were rescaled automatically to fit the small screens. So, the design in wider screens shrunk only when it was viewed in the small screens, without any needing for scrolling on a mobile version. So, the user could easily zoom in and out as necessary.

Fig. 16. Preview of Tiny tweaks responsive site (Algomhuria) on different screens
Source:http://www.algomhuria.net.eg

Fig. 17. Preview of Tiny tweaks responsive site (Almasry alyoum) on different screens
Source:http://www.almasryalyoum.com

5.2. Results of field study

Results of users' questionnaire analysis were shown in fowling figures from figure no.18 to no.26:

5.2.1. Percent of users interested in browsing newspapers websites:

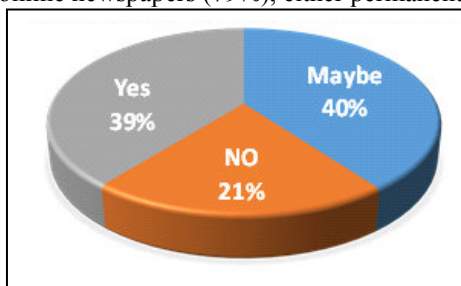Most users interested in browsing online newspapers (79%), either permanently or sometimes, Fig. 18.

Fig. 18. Percent of users interested in browsing newspapers websites

5.2.2. Repetition of visiting various newspapers websites:

Slightly less than half of the users (46%) are browsing news websites at intervals time, indicating that they are not interested in getting news from those sites, Fig. 19.
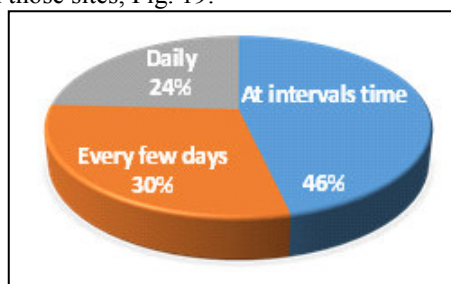
Fig. 19. Repetition of visiting various newspapers websites

5.2.3. Browsing the Egyptian news websites from different display screens:

The vast majority of users use the smart phone to browse newspaper sites (86%), either through it only (59%) or using it with other devices (27%). While it found that the minority is using only the personal computer (9.20%). It is remarkable that the use of the tablet was very weak (11.80%), Fig. 20.
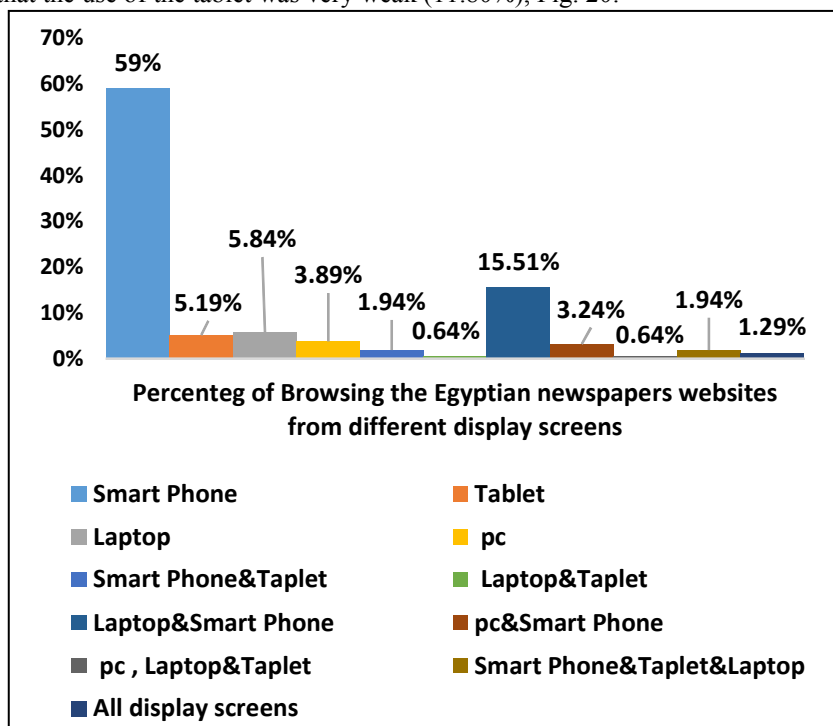

Fig. 20. Browsing the Egyptian news websites from different display screens

5.2.4. The difference in the websites' user interface during the different displays:

Nearly one-third of users agree -with varying degrees (18% strongly agree &14% agree) - that there is difference in the websites' user interface during the different displays. In contrast to that, nearly quarter of the users (24%)

don't find this difference. This indicates that most of users don't know well the concept of the RWD until now, Fig. 21.
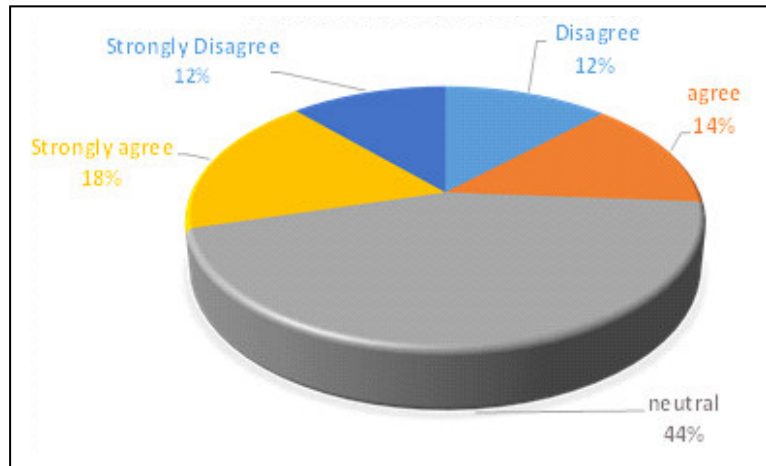

Fig. 21. The difference in the websites' user interface during the different displays

5.2.5. Evaluating website's user interface (UI) compatibility with the different screens:

El Youm El Sabaa website takes the highest approval rate for (UI) compatibility with different screens (11.76% very strong, 37.25% strong), followed by El Akhbar (11.11., 28.1%), Almasry alyoum (11.11, 26.79%), Al Ahram (8.49, 26.14%) and El Watan (11.76, 22.87%) respectively, with small differences, while Algomhuria website comes at the last (653, 17.64%), Fig. 22.
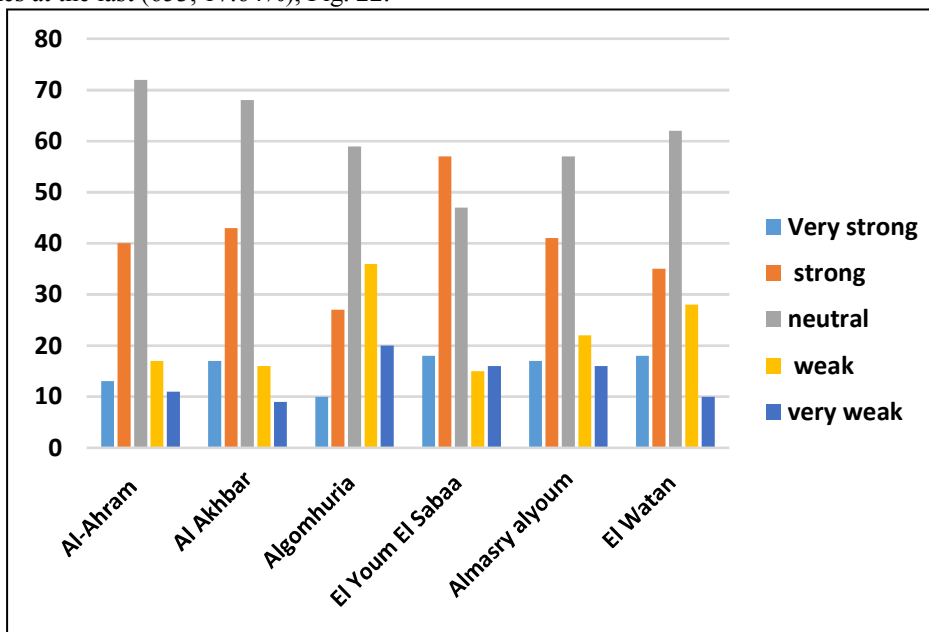

Fig. 22. Evaluating website's (UI) compatibility with different screens

5.2.6. Users' preference for User Interface's layout on the different screens:

The majority of users prefer to view user interface's layout of El Youm El Sabaa website on all screens at close rates (65.70% smart Phone, 60.10% tablet &59.40% Laptop/ pc). The Smartphone interface was the top preference. While Al-Ahram is ranked second but with the highest preference for the laptop interface (46.2%) and less preference for the smartphone (31.50%). Algomhuria website was the least preferred sites for its various user interfaces, (13.30% smart Phone, 14.70% tablet &14.70% Laptop/ pc) Fig. 23.
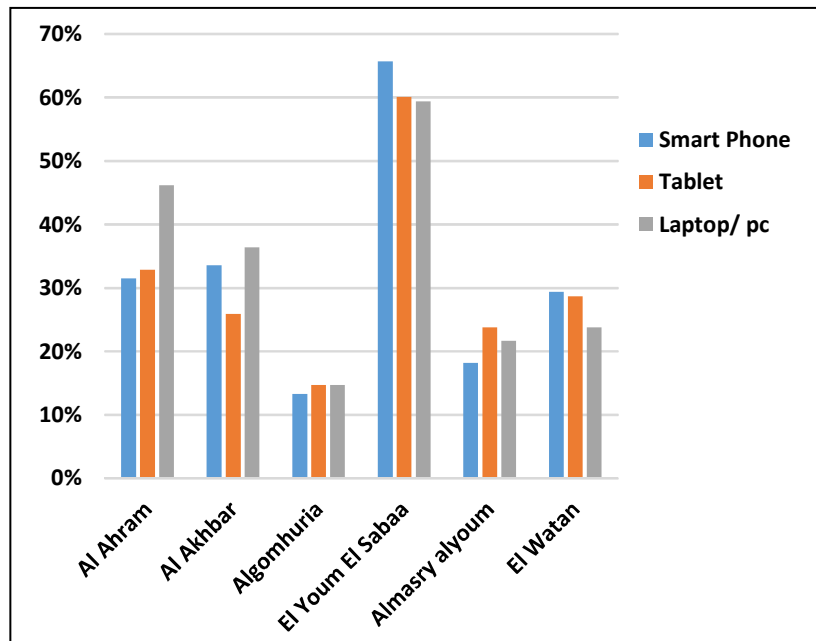
Fig. 23. Users' preference for User Interface's layout on the different screens

5.2.7. Websites that display well without losing the consistency of its elements on different browsers:

More than half of the users agreed that El Youm El Sabaa website is the best site, it doesn't lose the consistency of its elements on different browsers (54.90%). At the second rank, El Akhbar site has (37.90%) then Al-Ahram (36.60%) respectively and finally came the site of Algomhuria (13.70%), Fig. 24.
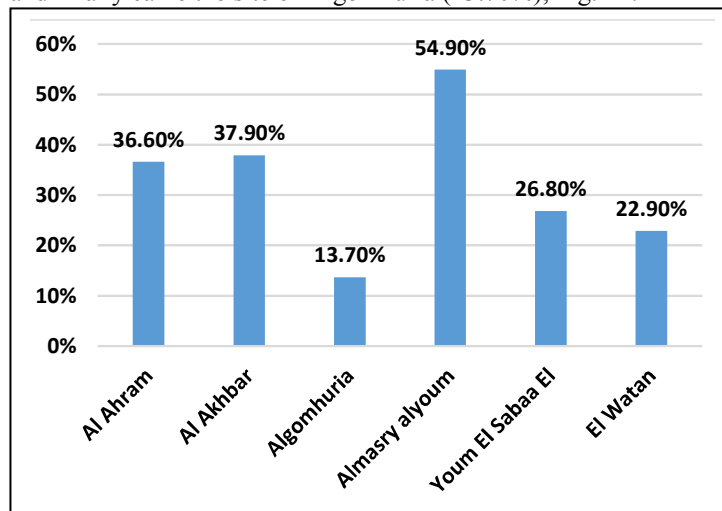

Fig. 24. Percentage of displaying Websites without losing the elements' consistency on different browsers

5.2.8. The effect of website layout's compatibility with different displays on the users' interaction with it:

The majority of users agree that, the compatibility of the website interface with the different displays affects the interaction of users with the website each time they use it (31.50% strongly agree, 22.20% agree, 34.60% neutral), Fig. 25.
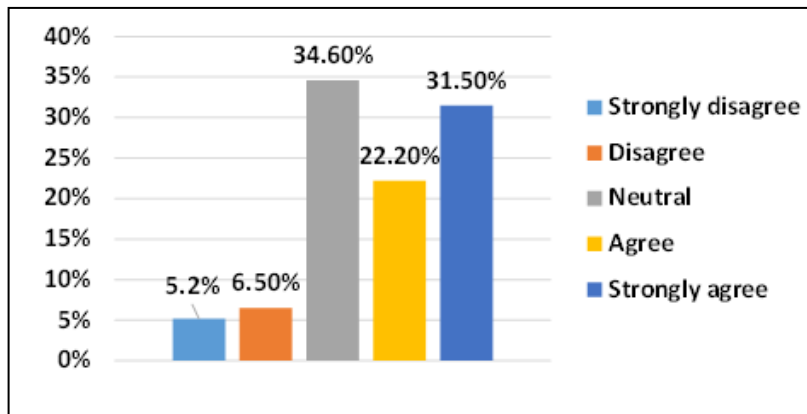
Fig. 25. The effect of website layout's compatibility with different displays on the users' interaction with it

5.2.9. Organize and display of website content and its readability and brows ability:

The majority of users agree that, websites' contents readability and brows ability on the different screens were affected by displaying and organizing websites' contents (19% strongly agree, 26.10% agree, 41.10% neutral), Fig. 26.
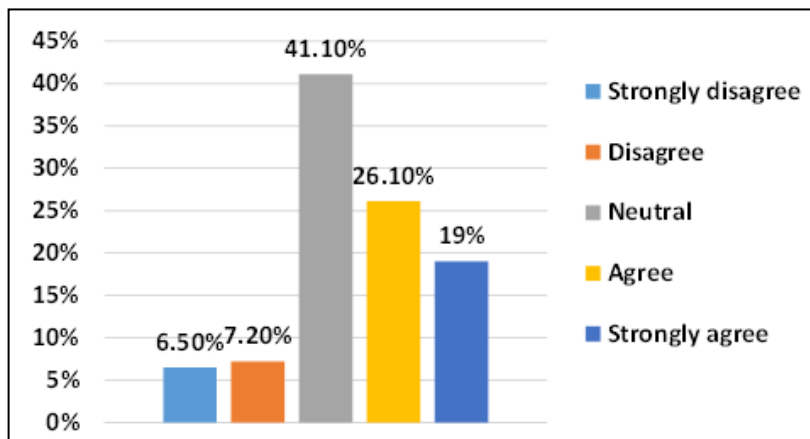

Fig. 26. The effect of displaying and organizing websites' contents on their readability and brows ability on the different screens

6. Conclusion and Discussion

The results of the analytical and survey studies proved that:

- All Egyptian news websites layout's in RWD corresponded with the different screen displays, websites' content readability, and brows ability.
- RWD was taking good place on the Egyptian News Websites' design. Since most of them are fluid responsive sites, this could be one of the reasons for big popularity of El Youm El Sabaa and El Watan websites according to the rank of Alexa of more visits [Alexa 2017].
- Each interface layout's augments the original design with only the style changes to enhance the layout and size of the device.
- In All news websites there were a proper access to the site on different screens accessibility.
- The majority of Egyptian users prefer to browse the news websites through the small screens "smart phones and tablets on different sizes", because their experience on mobile devices is now better and faster than on PC or laptop.
- Most news websites displayed well without losing the consistency of its elements on different browsers.
- The most of the Egyptian users up tell now didn't able to recognize the importance of the Responsive Web Design because most of their dealings with screens were limited in one type.
- Applying the responsive web design on the Egyptian news websites was able to improve the user experience quality of website for all kind of users, because it provided different solutions for a wider range of devices.

Accordingly, the study recommended that; the design of the Egyptian news websites should be reviewed in order to comply with all responsive web standards and even be able to realize the new concepts of web design - Adaptive design – which focuses on the user not the browser. So, it must be taken in consideration the different age of newspapers' users to adapt content automatically based on them and to suit the needs of different target

groups.

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