EFFICACY OF USER SURVEYS IN DESIGNING A UNIVERSITY WEBSITE - A CASE STUDY

Kuldeep Nagi

Fulbright Fellow (USA), Assistant Professor, Assumption University, Bangkok, Thailand
Email: Knagi@au.edu

To cite this document:

Nagi, K. (2018). Efficacy of User Surveys in Designing A University Website- A Case Study. *International Journal of Heritage, Art and Multimedia*, *1*(2), 16-26.

_____

Abstract: A website devoted to an academic institution sometimes fail to address its main purposes. In the process of satisfying the need of all stakeholders- the students, faculty, alumni and outsiders, the elements of web design are compromised to an extent that either the website becomes too complex or it becomes irrelevant. With advances in technology, the role of web designers is also beginning to change from just being creators of a website to the facilitators of crafting a powerful User Experience (UX). The very purpose of an academic website is now burdened with implementing elements of new technologies, such as flashing banners, streaming videos, and other gimmicks. The constant demands brought in by the advent of new tools and technologies and the changing role of designers makes it difficult to focus on the purpose of a website, but there is no choice for them, but to keep experimenting. This paper is based on a random survey of 296 users of a university website to gauge its strengths and weaknesses. This survey resulted in a list of observations and demands, some realistic and many others, exhaustive and impractical. The purpose of this paper is to show that the web design has to focus on its tactical objectives. To meet these goals, this paper also suggests few means and methods for implementing core elements of a website design to boost UX and add value.

_____

Introduction

As a digital medium, a website is far more prone to shifts in its design than any of its traditional forbearers. We are now 18 years into the new century and the evolution of web technologies continues. What is more surprising is the way web designers have continued to cope with the increasing technical challenges and still be able to create and manage websites that are user-friendly, clear, innovative, consistent with the new styles, adaptable to every conceivable device, and just plain beautiful and engaging, all at once. An academic website also has to cater to the increasing demands of the young and savvy users of mobile devices.

In 2017-18 there were many advancements, especially the explosion of mobile usage finally overtaking desktop browsing. It means that in coming years we are going to have to fully utilize the functionality of mobile devices in ways we have never seen before while desktops must continue to evolve to stay relevant. With that in mind, let's take a look at some notable web design trends poised to take over in 2018 and beyond. These trends apply to designing a website (Figure-1), especially a website dedicated to an academic institution. The key elements of a responsive website design consists of 9 critical elements- *drop shadows and depth, colour schemes, particle backgrounds, mobile first, custom illustrations, big bold typography, grid layouts, integrated animations and dynamic gradients.*

Figure-1: Responsive Website Design

Between the bright colours, bold gradients and integrated animations, web designers are gearing up for most exciting years in recent memory. This paper examines the intricacies of web usage in a university, especially as a product and as a service. Using a survey of the 296 users attending an annual seminar, it explores the elements of web design, its strengths and weaknesses. The survey results were also used to modify the components of the web.

Literature review
Two studies conducted in 2001, incorporating over 300 participants, provided ample evidence about web design and distinguished it from the ease of its use or browsing. These studies compared the effects of web design containing simple and global navigation system. In 2001, Ahuja and Weber developed a measure and examined its construct validity in a study of the relationship of perceived disorientation with web designs and user performance in web-based systems. These two researchers concluded that the perceived disorientation measure is simple and quick to administer to users, and suggested that designers will find it useful in assessing and comparing web designs. In 2007 Castaneda et al. empirically examined how Davis's Technology Acceptance Model (TAM) helped managers predict a user's intention to revisit a website and how this habit changed over time as users gained more experience of browsing the web. The novelty of this study consisted in applying TAM to a free-content website while considering the moderating effects of internet and website experience.

Another study conducted by Lee and Tsai (2010) aimed to develop a questionnaire, namely the Technological Pedagogical Content Knowledge-Web (TPCK-W) survey to explore teachers' self-efficacy in terms of their TPCK-W, and additionally, to assess their attitudes toward web-based instruction. This study involved 558 teachers from elementary school to high school level in Taiwan. Older and more experienced teachers were found to have lower levels of self-efficacy with respect to TPCK-W, though teachers with more experience of using the web had higher levels of self-efficacy with respect to TPCK-W. The results indicated a lack of general knowledge about web-related pedagogy among the teachers. In a recent study, Bista Narayan (2018) explains the difference between data science and web development. The data science is the process of analysing data using specialized skills and technology whereas web development is the creation of a website for the internet or intranet using company details, client requirement, and technical skills.

In their paper, Melanie Kellar (2006) and her team conducted a field study in which participants were asked to annotate all web usage with a task description and categorization. Based on their analysis of participants' recorded tasks during the field study, they developed a goal-based classification of information tasks which describes user activities on the Web. These findings have implications for the future design of new and improved web navigation mechanisms. In the beginning of this century, Jaideep Srivastava (2000) and his team at University of Minnesota, Minneapolis, USA, conducted a study about web data mining. In the early stages, web usage was all about using data mining techniques to discover usage patterns. They created a WebSIFT system, a prototype of a web usage mining system. These days there more sophisticated Big Data Analytic tools available to dissect and understand the UX using huge amount of data related to browsing. According to Andy Crestodina (2015) some websites work well with Google Analytics, others don't. As shown in Figure-1 during the first phase of web design process, hundreds of decisions are made. Some of these decisions affect marketing far into the future. Some small web design decisions have a big impact on how we will end up using analytics, especially for academic websites.

According to Jasmine Morgan (2018), in this new century, the web application development is undergoing a significant revolution triggered by the rise of big data analytics. So far, developers have created apps based on focus groups, surveys and educated guesses about the UX. These old ways of working is biased and cannot include the input of a statistically significant number of users. This trend is turning around due to advances in Internet of Things (IoT). Instant and continuous access to the internet has triggered an unprecedented wave of user-generated data that is being turned into actionable insights. Web development teams are now utilizing Artificial Intelligence (AI) to make sense of all these data points and incorporate the findings into apps, starting right from the design phase. This approach will help companies and organization save time and costs by looking at specific UXs, behaviours and preferences of their target groups or users.

Objectives
The main objective of this paper is to examine the usefulness of key components of an academic website. Although Satisfaction Surveys (SS) are quite common and are often used with an intent to get user input to refine many products and services but their actual value ranges from being useful to being insignificant and irrelevant. This study based on data of a snap survey of the 296 users attending an annual seminar explores the elements of web design- its strengths and weaknesses.

Research questions

To explore the efficacy of a user survey in designing a university website, following two research questions were formulated.

RQ-1: Can the User Experience (UX) help in gauging strengths and weaknesses of an academic website?

RQ-2: To what extent the user satisfaction survey can fulfil its set objectives?

Scope of the Research

This research is confined to the study of only one website of the university with links to about 200 web pages describing various academic programs and administrative units. Although this university website is ranked 34 out of 197 in Thailand, its users are mostly its own students, faculty and other stake holders. The scope of the survey related to the web design, its components and usability is also limited to these stake holders.

Methodology

Theoretical Framework

There are several methods of designing a new website. Designers usually start from empty frames of a proposed website and fill them gradually with needed components. Menu items, banners and colour scheme are selected in accordance with the purpose and the functions of a website. In general, a precise framework is followed for designing a quick, efficient, versatile, and an adaptive website. These days a web design will always be focused on the UX. Hence the framework is usually based on four distinct phases-*Research, Design, Validate, and Implement*. The key elements of these 4-phases are described in brief. Figure-1 given below lists these phases.

*i. Research-*The first phase of web design involves research. The aims of this phase is to gain a clear understanding of the problem the web designer is trying to solve. It is a common belief that establishing good UX begins with understanding the users- their behaviours, needs, motivations, purposes of visiting and browsing a website. User research can take place through interviews, observations, workshops, surveys, or simply by talking to whoever deals with the stake holders on a regular basis. This study is based on a short online survey that was conducted in a university in Bangkok, Thailand.
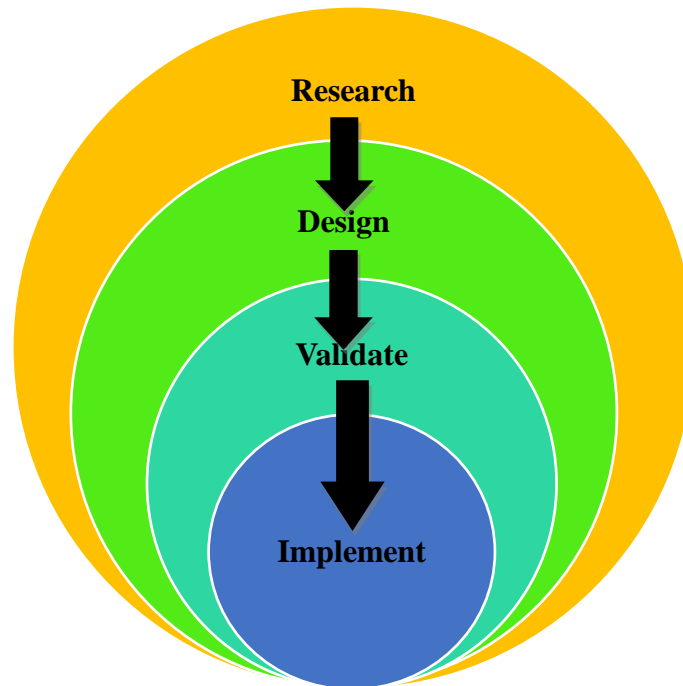
Figure-2: Framework-Four Phases of Web Design

It is a common belief that a quick survey can help in learning more about what the organization is hoping to achieve with their website, how its success should be measured, and how it stands in the user's landscape. It is quite possible that in addition to user surveys, talking to stakeholders and conducting usability audits on the website can provide more information to gauge the usefulness of the websites.

*ii. Design-*This phase of web design focuses on ideation, visualizing solutions, and building prototypes. UX is not just based on how a product looks and feels, but more importantly, how it works. It revolves around functionality and usability. The designers usually takes charge of information architecture (deciding how things should be organized) and interaction design (figuring out what happens next when users click, hover, type, etc.,) of the website. The design phase leads to producing a number of inexpensive, scaled down prototypes of the web site or specific features of the end product. They can be paper prototypes, wireframes, or interactive prototypes, all deliberately created in low-fidelity to delay any conversation relating to branding, visual design (graphics, typography, colour schemes, etc.), and micro-interactions. The design phase usually involves-ideation workshop, card sorting, tree sitemap, workflow diagrams, wireframe, screen flow, and interactive prototypes.

*iii. Validate-*This phase aims to eliminate problems or user difficulties that were unforeseen in previous phases. Usually in this phase, the web prototype is put in front of users, get their feedback, refine them, and repeat the process. User testing helps to identifying the usability issues and uncovering insights. It also reminds the web designers that users may not know what they know, think the way they think, and use the website the way they do. This phase is used to make sure that web design team understand that the trade-offs will likely take place during implementation, and the final product should work for the users, not the other way around. Validation phase usually involves- In-person testing, remote testing, A/B testing, communication checkpoint. A/B testing (sometimes called split testing) is comparing two versions of a web page to see which one performs better.

20

iv. Implement-This last phase focuses on providing support and consultation during the web development process. Since web designers work in a collaborative environment, it is important that they document their work and provide UX specifications, so that other designers can work on the new design and developers can implement them. It is quite obvious that delivering perfect specifications for a website is hard, the gaps must be filled by constant communication and collaboration. If the web design is in parallel with the UX process, it will lead to effective implementation. The designer team make themselves available to answer questions and discover opportunities for improving usability of the website. This last phase usually consists of- Demo, UX specification and post-live usability reviews.

Analysis and Discussion
Proliferation of World Wide Web has turned UX into a key success factor. It is often gauged from satisfaction surveys. Web usage surveys are one type of data mining, or data gathering technique to discover usage patterns in order to understand and better serve the needs of its users. Website usage data mining consists of three phases- *data collection, data discovery, and data analysis.* This section describes the outcome of these 3 phases in the form a general discussion. Given its potential, the UX data has seen a rapid increase in interest, from both the research and the practitioner communities. All the data analyses presented in this paper have been reproduced using the SPSS® software package.

Nationality
In this survey conducted in August 2017, 76% of the user identified themselves (Table-2) as Thai citizen and 24% as non-Thai or foreigners**.**
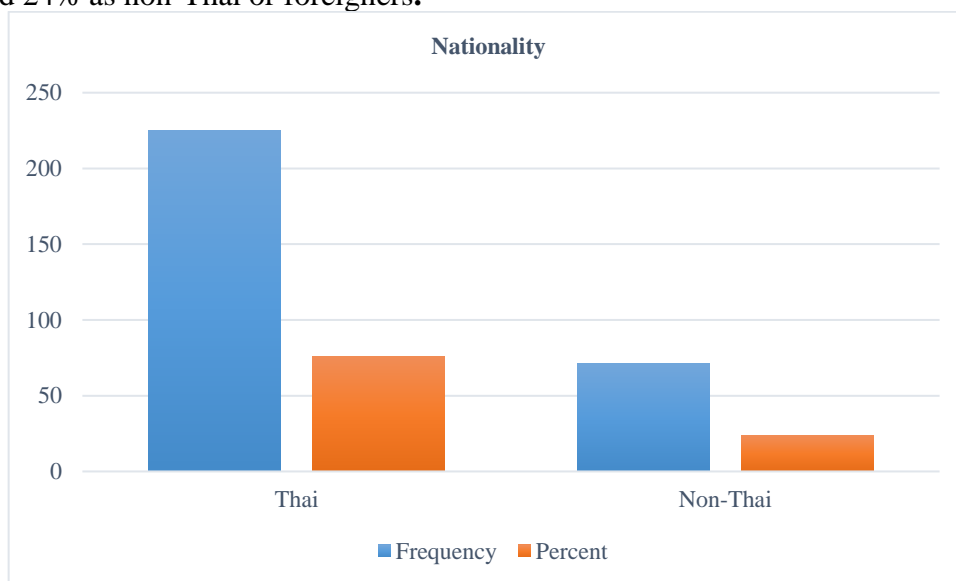

Figure-2: Nationality

Age Group
In this survey 3% of respondent were found (Figure-3) to be below the age of 18. The majority, 32.1% were found to be between the ages of 18-24. Another age group 38-52 was found to be 31.8%. Only 12.2% of the respondents were found to be above the age of 52.
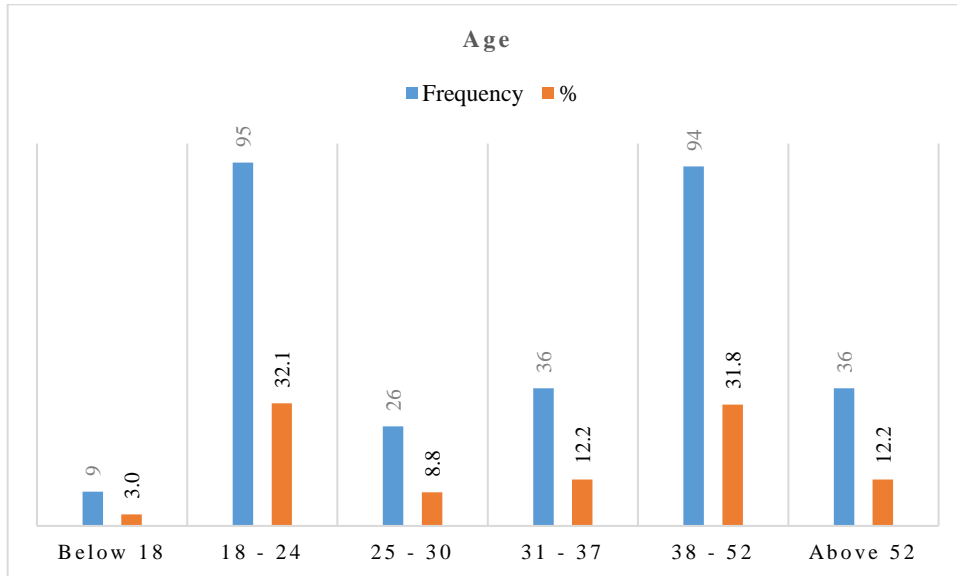
Figure-3: Age Group

After covering the questions about demographics, a series of questions were posed about the purposes of using of the university website. The data collected for a selected number of questions is graphed below. Let us examine few graphs given below in detail. To the question- *"Do you often you use AU website for admission and academic programs information?"* The Figure-4 shows that 61.1% said "Yes" and 38.9% responded "No".
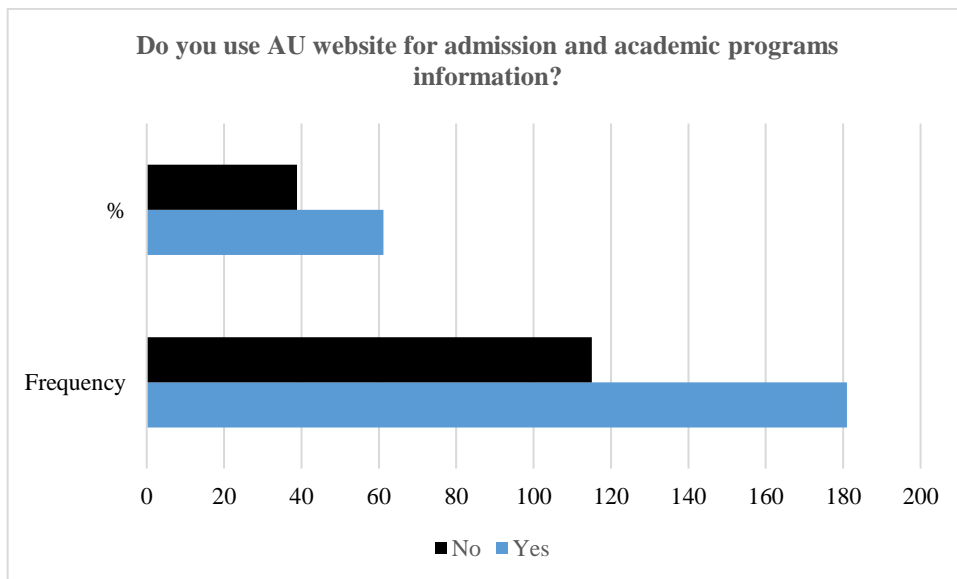

Figure-4: Do you use AU website for admission and academic programs information?

To the question "*Do you use AU website for research and publication?"* (Figure-5) the majority (84.4%) said "No", surprisingly, in spite of being a higher education institution, only 15.2% responded "Yes."
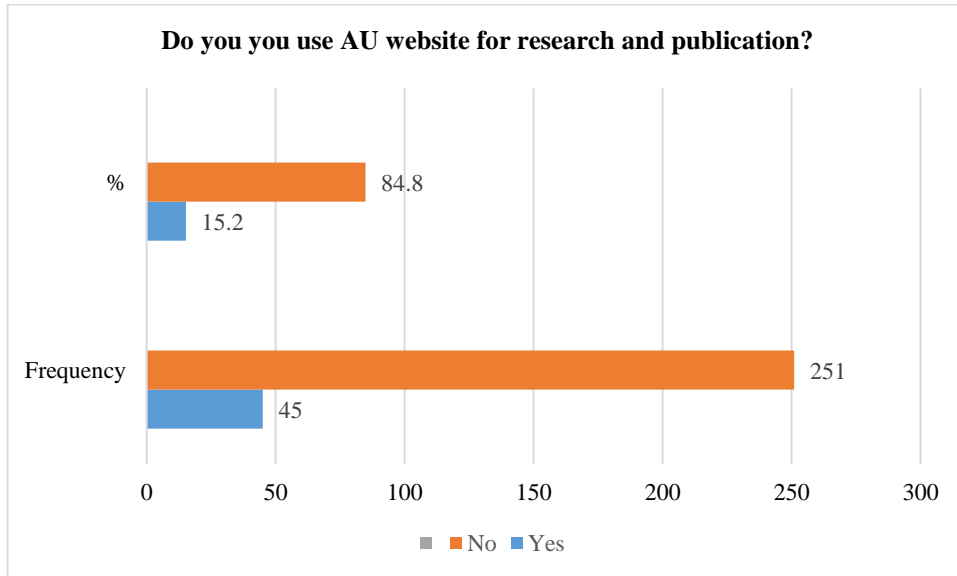
Figure-5: Do you use AU website for research and publication?

To the question *"Do you use AU website for teaching and learning?"* the response was not surprising. As shown in Figure-6, out of 296 only 93 said "Yes" and about 20 users responded "N0".
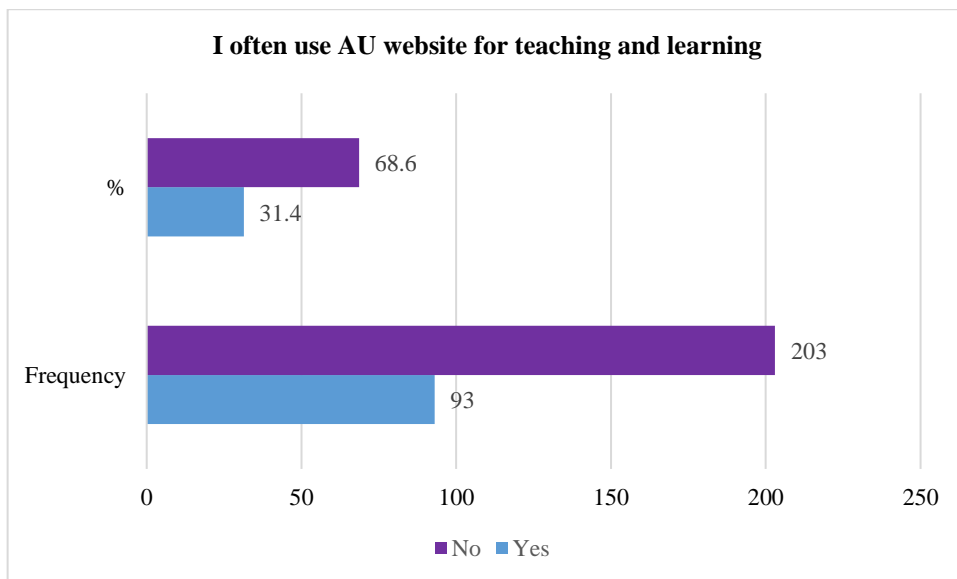

Figure-6: I often use AU website for teaching and learning

About Web Design
The 8 questions listed in Table-1 were setup and assessed using Likert scale. The main purpose of these questions was to find how the various elements or components of the web were being used. Table-1 given below lists these 8 questions and corresponding data obtained from the survey using 5-point Likert Scale.

Table-1: Descriptive stat about 8 questions related to website components

Descriptive Statistics						
	N	Minimum	Maximum	Mean	Std. Deviation	Interpretation
Information provided are well designed and organised	296	1	5	3.55	.952	Agree
Gives useful information for study and campus life	296	1	5	3.45	.919	Agree
The home page has good arrangement of content	296	1	5	3.49	.985	Agree
All menu items are easy and fast to access information	296	1	5	3.38	1.041	Neutral
Font size,color schemes, and style are appropriate, easy to read, and look nice	296	1	5	3.76	.882	Agree
It has all the necessary external links that I need	296	1	5	3.17	.986	Neutral
It has clear contact information for users	296	1	5	3.49	.998	Agree
Has all options to provide comments, suggestions etc.	295	1	5	3.21	1.021	Neutral
Valid N (listwise)	295					

The values given in the Mean column ranges from 3.17 to 3.76 out of 5 (Table-1) and are important. The average of all 8 values equals 3.4418. From this mean value of 3.4418 (Table-2), we can safely conclude that the 8 features of the website had a slightly positive influence in shaping the UX. This low value also forced the web designers to find ways to enhance UX by looking into the suggestions made by the users in the very last section of the survey. These results answer the first research question.

Table-2: Average of 8 items
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Average of the 8 items	296	1.11	5.00	3.4418	.78540
Valid N (listwise)	296				

User Satisfaction- Quantity, Quality or Value
Although most surveys do provide data along with a wish list, comments and suggestions from users, but often, they are not a serious indicator for determining the value of a website. The UX is important, but a set of likes and dislikes is not enough to guide the process of web design. To the users of a website, quality is personal or subjective, as they usually know what they want, and what they like- at least when they browse a website or see it. So, may be, UX may not necessarily reflect on the value a website provides. It is entirely possible that users may not like what they see. But the next question is- should the UX be the main focus of designing a user satisfaction survey? Through her own work Arora Harley (2018) asserts that it is important for translating UX issues found in analytics into user research. Analytics tell us what users are doing, but not why they are doing it? Pairing analytics and user research will provide us with clearer answers. Wooten and Ulrich (2017) found that in many innovation settings, ideas are generated over time and managers face a decision about if and how to provide in-process feedback to the idea generators about the quality of submissions or suggestions. They also found out that, under directed feedback, the variance in quality of suggestions (likes and dislikes) declines as the contest

progresses. Tourangeau et al. in 2007 reviewed the growing literature on responsive and adaptive designs for surveys. The issues limiting the effectiveness of survey designs included weak predictive auxiliary variables, ineffective interventions and slippage in the implementation of interventions in the field. These problems are not, however, unique to responsive or adaptive design of surveys. They gave recommendations for improving such survey designs and for improving the management of data collection efforts in the current environment for conducting online surveys. It is important to remember that the proliferation of tools and technologies have made it very easy to conduct online surveys but because of fast pace of web browsing, cognitive engagement of respondents dilutes to an extent that they do not have time and patience to comprehend complex ideas and issues. Hence the strategic value and purpose of a website should be the main focus of design. More so, if the website is not being provided for marketing or for conducting eCommerce. Theresa Fessenden (2018) found in her research that the people scroll a website vertically more than they used to, but new eye tracking data shows that they will still look more above the page fold than below it.

According to Heeringa et al. (2017) the surveys do not provide a complete picture of the preferences and drawbacks of its users. Usually, the understanding of the UX and the extent to which that it meets their expectations is usually less accurate. This deduction from the survey data again answers the first research question- Can User Experience (UX) help in gauging strengths and weaknesses of the academic website? If we are serious about the importance of satisfied users of a website, we got to have objective measures of the extent to which we are succeeding. Feedback from users is very useful, but it won't be objective. Monitoring feedback is essential, but it won't be representative. Not all dissatisfied users of a particular website complain, and even if they did, a complaints measure provides no indication of the extent to which users are satisfied and retain users who are not complaining.

In their work, Hill and Brierley (2003) mentioned that it is a well-established fact that satisfied customers do change their minds over time. Hence only objective and accurate measure of user satisfaction survey provides some indication of future loyalty. In this context, user satisfaction surveys can enable us to make changes in our products and services. There are two main factors that determine the accuracy of a survey based study. The first factor is asking the right questions (Figure-2) and the second factor is asking them to the right people- a sample of users that accurately reflects the customer or user base. Hence three things decide the accuracy of a sample. It must be representative, it must be randomly selected and it must be large enough. Usually after analysing the survey data and producing a report, feedback should be provided swiftly to all stake holders. This study is short on feedback. Hence it fails to reap full benefits of the efforts put in conducting the survey. Only if stake holders fully understand the survey results and their implications, the survey would lead to effective action be taken. This conclusion answers the second research question- *To what extent the user satisfaction surveys fulfil its set objectives?"*

Conclusion
In the last 2 years the topics of big data and computationally intensive data analytic have exploded in business sector as well as in academia and scientific research, leaving many of us wondering what the future role will be for survey methodologies, and statistics in particular. However, the data collected by traditional method of conducting user surveys is just a means, and not an end in itself. Website design is a complex as well as a very dynamic process. Hence it should be based on more sophisticated and precise data analytic tools. These days website design based on its usage data may be more important and useful than a short user satisfaction survey. As early as in 2013 Cardello clarified that in order to make the most of analytics data,

UX professionals need to integrate this data where it can add value to qualitative processes instead of distract resources. Hence, it will be prudent to focus on the main objectives and value of a university website than to constantly respond to fluctuating demands based on UX.

References

Ahuja, J. S., & Webster, J. (2001). Perceived disorientation: an examination of a new measure to assess web design effectiveness. *Interacting with Computers, 14*(1), 15-29.

Bista, N. (2018). Difference between Data Science and Web Development. Retrieved from https://www.educba.com/data-science-vs-web-development/

Cardello, J. (2013). Three Uses for Analytics in User-Experience Practice. Retrieved from https://www.nngroup.com/articles/analytics-user-experience/

Castaneda, A., Muñoz-Leiva, F., & Luque, T. (2007). Web Acceptance Model (WAM): Moderating effects of user experience. *Information & Management, 44*(4), 384-396.

Crestodina, A. (2015). Web Design vs. Analytics. Retrieved from https://www.orbitmedia.com/blog/web-design-analytics/

Fessenden, T. (2018). Scrolling and Attention. Retrieved from https://www.nngroup.com/articles/scrolling-and-attention/

Harley, A. (2018). Turning Analytics Findings into Usability Studies. Retrieved from https://www.nngroup.com/videos/turning-analytics-findings-usability-studies/

Heeringa, S., West, B., & Berglund, P. (2017). *Applied Survey Data Analysis* Vol. 2. (pp. 590).

Hill, N., & Brierley, J. (2003). *How to Measure Customer Satisfaction*

Lee, M.-H., & Tsai, C.-C. (2010). Exploring teachers' perceived self-efficacy and technological pedagogical content knowledge with respect to educational use of the World Wide Web. *Instructional Science, 38*(1), 1-21. doi:https://doi.org/10.1007/s11251-008-9075-4

Melanie, K., Carolyn, W., & Michael, S. (2006). A Goal-based Classification of Web Information Tasks. *Proceedings of the American Society for Information Science and Technology, 43*(1), 1-22. doi:doi:10.1002/meet.14504301121

Morgan, J. (2018). How is data science transforming web development? Retrieved from http://dataconomy.com/2018/05/how-is-data-science-transforming-web-development/

Srivastava, J., Cooley, R., Deshpande, M., & Tan, P.-N. (2000). Web usage mining: discovery and applications of usage patterns from Web data. *SIGKDD Explor. Newsl., 1*(2), 12-23. doi:10.1145/846183.846188

Tourangeau, R., J., M. B., Sharon, L., & Jane, L. (2017). Adaptive and responsive survey designs: a review and assessment. *Journal of the Royal Statistical Society: Series A (Statistics in Society), 180*(1), 203-223. doi:doi:10.1111/rssa.12186

Wooten, J. O., & Ulrich, K. T. (2017). Idea Generation and the Role of Feedback: Evidence from Field Experiments with Innovation Tournaments. *Production and Operations Management, 26*(1), 80-99. doi:doi:10.1111/poms.12613