**SURVIVAL OF THE BEST: AWARENESS AND**

**PREPAREDNESS BEFORE, DURING AND AFTER A TYPHOON**

A Capstone Project Presented on the Department of Information Technology

School of Arts and Sciences

St. Scholastica’s College, Manila

In partial fulfillment of the requirements for the degree of

Bachelor of Science in Information Technology

With Multimedia Design and Animation

**Regina Grace P. Chung**

**March 17, 2015**

**TABLE OF CONTENTS**

CHAPTER I. INTRODUCTION ……………………………………………………… 3

Background of the Study

Statement of the Problems and its Objectives

Significance of the Study

CHAPTER II. REVIEW OF RELATED LITERATURE ……………………………. 6

CHAPTER III. STUDY FRAMEWORKS …………………………………………... 14

Theoretical Framework

Conceptual Framework

Operational Framework

CHAPTER IV. METHODOLOGY ………………………………………………….. 20

Research Design Methods

Variables and Measures

Research Instruments

Units of Analysis and Sampling

Data Gathering

Data Analysis

Scope and Limitation

Project Development Methodology

REFERENCES ………………………………………………………………………. 24

**Chapter 1. Introduction**

1. **Background of the Study**

A natural disaster is an event with a natural, as opposed to human, cause

that results in large-scale loss of life or damage to property. It could be weather, geology, biology or disease epidemics. In some cases, natural and human factors may combine to produce a disaster. (n.a., 2015)

As many years passed by, many natural disasters happened in many countries such as the Philippines. It comes from the forces of nature or from the actions of every human being. Many people loss the life of their loved ones, loss their properties and even the loss of their own life. Typhoon is the best example of a natural disaster.

Typhoon is a type of a large storm system having a circular or spiral system of violent winds, typically hundreds of kilometers or miles in diameter. “Typhoon” is the name of these storms that occur in the Western Pacific. The physics of typhoons depends on a balance between the low pressure at the center of the storm and the force that comes from the rotation of the earth. (n.a., 2014)

A study by Mclean (2013) found out that given by the scale of typhoon, many individuals are dependent on other people such as government blaming them for failing to provide adequate protection against a typhoon. This puts the people more at risk since they are not prepared to deal with typhoon before they occur, while they occur and after they occur.

1. **Statement of the Problem and its Objectives**

The researcher likes to answer its main research question: “How can the website inform the people about the safety reminders of typhoon?” And the research objectives of this study are the following:

* To develop a website on awareness and preparedness before, during and after a typhoon.
* To help users be inform for an upcoming typhoon.
* To provide steps on how to be prepared before, during and after a typhoon.
* To give ideas on how to be aware for a typhoon.
* To give tips on how to survive a typhoon.

1. **Significance of the Study**

The study will be done for the people to know the importance of

being prepared on a typhoon. Reminders, procedures and tips are present, struggling not only to survive but also to nurture one’s mind on how to be prepared at all times. And through the use of technology, users are informed faster and easier as well.

The researcher’s capstone product could be an instrument to help users be inform for a typhoon. *Survival of the Best: Awareness and Preparedness before, during and after a Typhoon* will help the target audience, people who want to survive, in understanding on how to be aware and prepared before, during and after a typhoon.

The primary concern of this study is to develop a website on how to be aware and prepared for a typhoon to the people who seems to lack the thinking of having the ideas and tips on how to survive a typhoon by making info graphics and animated videos for them to read, watch and learn.

**Chapter 2. Review Related Literature**

The Internet has revolutionized the computer and communications world like nothing before. The Internet is at once a world-wide broadcasting capability, a mechanism for information, dissemination, and a medium for collaboration and interaction between individuals and their computers without regard for geographic location. (Leiner, n.d)

According to Clark, Lynch, Roberts, Wolf and Cerf (n.d) “The Internet today is a wide spread information infrastructure which involves many organization and community” which explains that most of the people today are fond of using the Internet. All of the works and projects in the organizations and community involve the use of Internet. Whatever the people do, wherever the people go Internet is the best way of completing task and to interact with other people.

The Web has changed the world. It has arguably become the most powerful communication medium the world has ever known. Whereas only 25% of the people on the planet are currently using the Web, the website has changed the way we teach and learn, buy and sell, inform and are informed, meet and love and etc. (Leitner, 2010)

Website is the key to an ease of use, reliability to users and clarifying things. It is a very convenient product to be used for the needs of users and to satisfy their perceptions towards a website.

**Role of Internet to Users**

There is a study from Carribean Experience Company (2013) that there has been limited use of Internet and other online services in other countries for several years. But as the time goes by, use of the Internet by public is of more recent or modern.

Ibonohail (2011) cited that in today’s Modern world, teenagers and even children patronize the computer, specifically the Internet because it made things easier. By using an Internet to access a website is a big help for people who wants to be updated and to be aware for an upcoming national disaster. The role of the Internet is very useful, especially for the people like the adults, internet users and the teenagers.

**Natural Disasters**

Natural disasters are any catastrophic event that is caused by nature or the natural processes of the earth. The severity of a disaster is measured in lives lost, economic loss, and the ability of the population to rebuild. All natural disasters cause loss in some way. Falling of buildings or trees, freezing to death, being washed away or heat stroke are just some of the deadly effects. It’s clear that natural disasters are a part of life as we know it. However, science is making it more possible to predict, aid is faster at coming, and people are learning how to rebuild safer areas. (n.a., 2011)

Based on the study of University of Texas (2014) “Governments are the key of disaster management” because disasters are the potential cause of economic costs and loss of life, which initiate governments to produce a program to reduce the risk of, prepare for, and how to respond for natural disasters.

**Types of Natural Disaster**

According to Duggal (2014), “For any human being, no other word encapsulates as much horror, misery, helplessness, and doom as there are many types of natural disasters that results as calamities in many parts of the world” explaining that there are different types of natural disasters that occur in different causes. Calamities occur in any part of the world even if you don’t want it to happen because disasters are really unpredictable and uncontrollable.

Natural hazards are naturally occurring physical phenomena caused by events which can be geophysical (earthquakes and floods), climatologically (extreme temperatures, drought and wildfires), meteorological (cyclones and storms/wave surges) or biological (disease epidemics and insect/animal plagues) Technological or man – made hazards (complex emergencies/conflicts, famine, displaced populations, industrial accidents and transport accidents). (n.a, 2012)

Based on the study of American Public Health Association (n.d) Technological or man-made hazards are a range of challenges, such as climate change, unplanned-urbanization, under development/poverty as well as the threat of pandemics that will shape humanitarian assistance in the future. These aggravating factors will result in increased frequency, complexity and severity of disasters.

**Causes of Natural Disasters**

Evans (2011) cited that “Natural disasters fall into three broad cause: first, caused by movements of the Earth, second weather related disasters and consequence of extreme weather events” explaining that those are the main causes of natural disasters that it is easy to blame every disaster on global warming or in a scientific reasons but it occur for purely nature reasons.

**Typhoon**

Typhoon comes with strong wind and torrential rain, and with these brings terrible damage to people. The winds above the ground circulate around the center counterclockwise for a typhoon occurring in the northern hemisphere and clockwise for that occurring in the southern hemisphere. (n.a., 2013)

Typhoon comes from the Cantonese word for “big wind” (dai fung), the word was actually Chinese in origin, it is probably a derivation from the Southern Fukienese pronunciation for “phoon-ty”. Also, comes from the Greek word, typhon (whirlwind, violent storm, tornado). (Metcalf, 2010)

The physics of typhoons depends on a balance between the low pressure at the center of the storm and the Coriolis force that comes from the rotation of the earth. Since the Coriolis force is zero at the Earth’s equator, typhoons can only form at latitudes that are more than about 10 degrees north of south of the Earth’s equator. Due to the Coriolis force, the winds in a typhoon spiral in the counter-clockwise direction in the northern hemisphere when observed from above. The winds spiral in the clockwise direction in the southern hemisphere. (Yule, 2011)

**Difference between Typhoon and Hurricane**

Typhoon and Hurricane are regional names for the same kind of storm. They are both special names given to tropical cyclones that have grown strong enough to have very damaging effects. North Pacific Ocean, the Philippines, experiencing such a tropical storm with sustained winds over 74 mph, then it is called typhoon. A ‘Super Typhoon’ that is equivalent of a very strong category experience in Eastern North Pacific Ocean it is called hurricane. (Comstock, 2014)

**Typhoon Yolanda**

Typhoon Yolanda, which struck the central Philippines on November 8, 2013 and the U.S. and international response, Yolanda was one of the strongest typhoons to strike land on record. Over a 16 hour period, the “super typhoon”, with a force equivalent to a category of 5 hurricane and sustained winds of up to 195 mph, directly swept through six provinces in the central Philippines. The disaster quickly created a humanitarian crisis. United Nations agencies reported that 14.1 million people had been affected; assessments revealed that an estimated 1.1 million houses had been damaged and nearly 5.6 million people required food assistance. (n.a., 2014)

**Typhoon Yolanda and its Aftermath**

Lum and Margesson (2013) explained that the speed of the storm as well as advance warning prevented greater flooding and may have saved many lives. However, in some of the hardest hit areas, particularly in Eastern and Western Leyte and Eastern Samar, there appears to have been little defense against Yolanda’s wrath. 90% of structures were heavily damaged, including medical facilities. Many establishments were damaged such as roads, houses, and airport.

The typhoon was the deadliest natural disasters ever recorded in the Philippines. Almost 11.5 million people had been affected by the storm and were evacuated in advance. The estimated number of dead and missing is often fluid and subject to change in days, weeks and months. (Margesson, 2013)

**Preparedness and Awareness**

As cited by Clovis (2011) “Preparedness is defined as actions taken in advance of an emergency to develop operational capabilities and to facilitate an effective response in the event an emergency occurs” means that being prepared at all times is a very important role as a person. To have a intelligent response when there is an emergency or disaster and to develop skills helping others in your own capabilities of being prepared.

Preparedness is important and essential because effective preparedness helps saves lives, reduce injuries, limit property loss and minimize all sorts of disruptions that disasters cause (Drummond, 2014). Most of the victims might have been able to evacuate safety and had received sufficient warning from the authority and they themselves were prepared for such an event. (n.a., 2015)

In the updated article of Simpson (2014), Preparedness are anticipatory activities such as planning, resource identification, warning system, training, risk communication, public awareness, education, and exercising which are undertaken to improve the safety and effectiveness of a community’s response during a disaster. Disaster preparedness that starts at the local level and adopting a consensus building approach is essential to have responsibilities and response to government.

According to (n.a., 2012) “Environmental awareness is to understand the fragility of the environment and the importance of its protection” explaining awareness is how you become aware to your environment not just in the use of media, social networks, etc but also in the way how you give importance to your mother earth. Awareness on a typhoon will let you prepared things and resources in a good way resulting to a successful evacuation for a typhoon and can define how one understands how typhoon form, how strong it is, and what damages it can occur. Citing how fast the typhoon is, when it will hit the country and when it will have its landfall.

**Synthesis**

The study is summarizing on how critics define what natural disaster is and what are their causes. Defining one natural disaster, named as typhoon, and what is the most influential typhoon happened in the Philippines. Preparing and be aware at all times will help users survive and know what the importance of it. The researcher’s capstone project is a website about “awareness and preparedness before, during and after a typhoon”. It is an informative website on how to be informed by the steps in preparing for a typhoon. The researcher wants to help users to be updated and keep in mind on how to be prepared for a disaster.

As years passed by, technology is one way of informing users to be aware and prepared for a typhoon. Through the use of technology, all things will become easier and faster as well. Also, in the use of technology it will save time and effort.

A research gap found by the researcher showing that the past studies did not discuss on how typhoon forms, so that users will become aware for a specific typhoon, whether it is heavy or not. Another research gap discovered by the researcher is that there are no info graphics on how to prepare things before, during and after a typhoon and animated videos on how typhoon forms. The researcher’s capstone product proposal, therefore, addressed the research gaps stated. Thus, *Survival of the Best: Awareness and Preparedness before, during, and after a Typhoon* will have an animated video and info graphics through the content of the researcher’s website.

**Chapter 3. Study Framework**

An IT- related theory that was used for the researcher’s capstone project was Information Richness Theory by Daft and Lengel. According to Time Barrow (2010), “Information Richness is the potential information-carrying capacity of data” which means that information richness is a very good foundation of communication and information processed. Where hierarchically structures are put up into levels from highest to lowest, which is capable of addressing information, effectiveness and feedbacks. How it discusses models of organizational communication and how organizations communicate in the work place and for its specific purposes. Information Richness Theory as defined by Debashish Mandal and Robert J. Mcqueen (2011) “is an access/quality and social interaction may be required to explain the media choice preference”. In terms of richness, social media interface is considered richer than email in its capacity to express by photos, and to transmit web links as a greater use of the tool. It is considered the “command language” for accessing social interaction that leads to the user’s ability to take advantage of this rich media.

The researcher’s capstone project was putting up an animation video, graphics, texts and pictures to the website. Information richness is a process that provides the medium’s feedback, channels available, and how users able to communicate, such as the media concept used.

Another IT – related theory that was used for the researcher’s project was the Information Theory or Communication Theory.

According to Peter Eckersley (2010), “If we ask whether a fact about a person *identifies* that person, it turns out that the answer isn't simply yes or no” because there is a chance that you can have a closed fact or not to identify somebody’s unique identity. This theory was a simple abstraction of human communication by having source’s information until you communicate to its channel, transmitting it to the mediums and delivering information to the receiver.

From this theory, adults who will view and use the website can help them be informed at all times. The website could be useful not only to adults but also to people who want to be informed about the upcoming typhoon on how to be aware on it and how to be prepared before, during and after the typhoon. Thus, the capstone project has its animated video on how typhoon forms and info graphics for the methods on how to be prepared.

*Theoretical Framework*

Source

-Encoder

Noise

Channel

-Information Richness Theory

-Decoder

Figure 1 . Theoretical Framework

Receiver

The theoretical framework of this study as shown in Figure 1 is composed of Information Richness Theory and Information Theory. The theories that are present in this study are both user, which are based on the needs of the viewers, adults. The source had to have the encoder and the information needed, which gathered from the internet, books, journals and the like. Then, the channel having the information richness inside which carries media such as pictures, videos, etc and the decoder that is the browser used by the user such as Google Chrome, Mozilla Firefox, etc The noise having the language such as Adobe Dream Weaver and Adobe Photoshop, it is broken line because the internet connection might be disconnected or not. Lastly, the receivers who are the users will be informed of all the messages given by the channel. Users are the one who will absorb the message and can deliver it from one user to another.

*Conceptual Framework*

Developer

Internet

Connection

-Rich Website

-Browser

User

Figure 2: Conceptual Framework

The Figure 2 shows the

Figure 2 is the conceptual framework of the researcher’s project. The source will be the developer which will develop the website. Having the richness theory and the browser as channel, whereas richness theory is what the content of the website while the browser is use to view the website. Next, noise will be the internet connection because sometimes there’s a chance to have a connection or not, so it will have the possibility to view the website or not. Lastly, the user will be the receiver they are the ones who will absorb the information from the website.

*Operational Framework*

**OUTPUT**

Survival of the Best – Awareness and Preparedness Before, During, and After a Typhoon

**PROCESS**

* DATA GATHERING
* DESIGN
* Web page layout
* Info graphic on how to be prepared before, during, after a typhoon
* Photos of affected areas during a typhoon
* Animated video
* DEVELOPMENT
* Create info graphic using Adobe Photoshop
* Create animated video in Adobe Flash
* Edit photos using Adobe Photoshop
* Create a layout in Adobe Photoshop
* Coding in Adobe Dream weaver
* Designing website using Adobe Dreamweaver
* Add important information/s to the website
* Ways and tips to be added to the website
* Testing and Debugging
* Hosting Services
* Upload on Web
* Invite Users

**INPUT**

* KNOWLEDGE REQUIREMENTS
* Information about Awareness and Preparedness Before, During, After a Typhoon.
* SOFTWARE REQUIREMENTS
* Adobe Photoshop: was used for making the info graphic and editing photos needed
* Adobe Dreamweaver: was used for the development of the website.
* Adobe Flash: was used for the animated video.
* Web Browsers
* Google Chrome
* Mozilla Firefox
* Internet Explorer
* HARDWARE REQUIREMENTS
* Laptop/Personal Computer
* Internet Connection
* Pen Tablet
* Flash/Hard Drive

**EVALUATION**

Conduct a survey or system evaluation

Figure 3. Operational Framework

For the Figure 3 it is an operational framework. Whereas the input consists of knowledge requirements- information about the awareness and preparedness before, during and after a typhoon, second software requirements needed for the development of the website such as the Adobe Dreamweaver, Adobe Photoshop and Adobe Flash, the web browsers like Google Chrome, Mozilla Firefox and Internet Explorer and lastly, the hardware requirements such as laptop/personal computer, a tool for the making of the website, internet connection, pen tablet and flash drive. For the progress part, gathering of data, design of the web layout, photos and animated videos. Steps are presented for the development of the researcher’s website. Next, the output will release the finish project name as Survival of the Best: Awareness and Prepared before, during and after a typhoon. Lastly, the researcher’s evaluation will conduct a survey to adults.

**Chapter 4. Methodology**

1. *Research Design and Methods*

The researcher’s project will be an explanatory concerning about the nature’s natural disasters like typhoon. The aim of this study is to create an interactive and informative website that is very useful for the users. The study will describe how a website informs users on how to be aware and to be prepared for the upcoming typhoon. Methods on preparing before, during and after a typhoon and animated videos that will help users be aware on how typhoon forms. Quantitative method will be acquired on the website, which is a survey that will distribute among adults about a Typhoon. The term survey according to Scheuren (2010), “Survey is used most often to describe a method of gathering information from a sample of individuals” which tells that gathered information from individual is factual information that will describe to a researcher’s questions. It often focuses on opinions that standardized to ensure for its validity and reliability.

1. *Variables and Measures*

The researcher’s project will focus on adults from the perspective and point of view about Typhoon. There is age range from 20 – 30 years old. Lifestyle will be measured for internet users and employees of PAGASA. This will be participating by women and men because the study is open for any gender according to the study’s theme.

1. *Research Instruments*

Survey questionnaires will be used that are consists of questions about typhoon. On how individual is familiar on a typhoon and at least one method will be done by every individual before, during and after a typhoon. Thus, a survey questionnaire will only be distributed among 10 -20 respondents residing mostly in Metro Manila.

1. *Units of Analysis and Sampling*

The study will use individual as its units of analysis. It will focus on every individual who will participate and is willing to share his/her point of view and perspective about a typhoon.

1. *Data Gathering*

The researcher will be conducting a random sampling for every adult that is range by 20 – 30 years old residing in Metro Manila. Questions will be answered by every chosen individual that will be collected and evaluated by the researcher.

1. *Data Analysis*

Data analysis consists of surveys for internet users and employees on PAGASA respondents. The researcher chooses the quantitative method as its research method; descriptive statistics will use to analyze the study variables; frequency counts and percentages will be applied to show the numbers and percentages of the variable’s values.

1. *Scope and Limitations*

The study will be focused on Typhoon only, not other natural disasters; Study also focuses methods on how to be aware and prepared for a typhoon only; Adults age range from 20 – 30 years old only; Internet users and employees of PAGASA only, none other lifestyle required; The intended users and viewers of the researcher’s study is men and women who wants to be inform for a typhoon. Study’s limitation is to develop a website not a mobile application; Adobe Dreamweaver is the only language to be use, not more harder language; Adobe Photoshop and Adobe Flash will be used to edit pictures and animate videos, no other applications required; Study will compose of animated videos, texts and info graphics only, not other creative designs needed; Number of respondents is only 20 because of unavailability of other respondents at the time of the study;

**B. Project Development Methodology:**

The researcher’s project development methodology is to create an informative and interactive website. For the input, information about awareness

and preparedness before, during, after a typhoon is the first requirement.

For the software requirements, Adobe Photoshop will be used for the making of info graphics and for the editing of pictures. Adobe Dreamweaver will be used for the development of the website and Adobe Flash for the use of animated videos. Lastly, browsers to be use are Mozilla Firefox, Google Chrome and Internet Explorer.

For the hardware requirements, laptop/personal computer is the best use for the making of a website. In need also of internet connection and pen tablet for the ease of developing a website. And the last requirement is flash drive, for backing up the files needed for the researcher’s website.

On the other hand, the process, requirements are the data gathering and design which consists of web page layout, info graphics on how to be prepared before, during and after a typhoon, photos on affected areas during a typhoon and animated video.

For the development part, researcher will create info graphic using Adobe Photoshop, researcher will animate video in Adobe Flash, edit photos and create a layout in Adobe Photoshop, coding and designing website using Adobe Dreamweaver, add important information/s to the website, ways and tips to be added to the website, testing and debugging, hosting services, upload on web and invite users for the website.

For the output, the success of the develop website that will named as *Survival of the Best: Awareness and Preparedness before, during and after a Typhoon.*

For the last part of developing a project is the evaluation that the researcher will conduct a survey on adults ranging from 20 – 30 years old.

**References**

Weather Phenomena (n.d). *Weather Phenomena*. Retrieved from:

http://www.cwb.gov.tw/V7e/knowledge/encyclopedia/ty001.htm

What is Typhoon? (2014). *What is Typhoon?* Retrieved from:

http://www.cwb.gov.tw/V7e/knowledge/enyclopedia/me024.htm

Natural Disasters (2015). *Natural Disasters*. Retrieved from:

http://www.basicplanet.com/natural-disasters/

Mclean (2013). *Typhoon Ondoy Case Study*. Retrieved from:

http://mcleankids.wikifoundry.com/page/Typhoon+Ondoy

+Case+Study

Cheng, S. (2013). *Crisis Communication Failure: A Case Study Typhoon.* Retrieved from:

http://ccsenet.org/journal/index.php/ass/article/viewFile/25270/15710

Clark, D. & Lynch, D. & Roberts, L. & Wolf, S. & Cerf, V. (n.d). Brief *History of the Internet*. Retrieved from: http://www.internetsociety.org/internet/what-

internet/history-internet/brief-history-internet

Leitner (2010). History of the Internet. Retrieved from:

http://webfoundation.org/about/vision/history-of-the-web/

Duggal, K. (2014). *Top 10 Common Natural Disasters that Affect People.* Retrieved from: http://listdose.com/top-10-common-natural-disasters-that-affect-

people/

University of Texas (2014). *Institutional Capacity for Natural Disasters: Case Studies in Africa*. Retrieved from: http://reliefweb.int/report/world/institutional-

capacity-natural-disasters-case-studies-africa

Natural Disaster Facts (2011). *Natural Disaster Facts*. Retrieved from:

https://kidskonnect.com/science/natural-disasters/

Evans, M. (2014). *Natural Disasters*. Retrieved from:

http://www.earthtimes.org/encyclopaedia/environmental-issues/natural-

disasters/

Weather Phenomena Typhoon (2013). *Weather Phenomena: Typhoon*. Retrieved from: http://www.cwb.gov.tw/V7e/knowledge/encyclopedia/me024.htm

Metcalf (2010). *Typhoon and its Cantonese origins*. Retrieved from:

http://www.amoskwok.com/2010/03/typhoon-and-its-cantonese-

origins.html

Etymology ofTyphoon (2010). *Etymology of Typhoon*. Retrieved from:

https://ewonago.wordpress.com/tag/origin-of-the-word-typhoon/

American Public Health Association (n.d). Types of Disasters and Their Consequences. Retrieved from:

http://www.medscape.com/viewarticle/513258\_2

Comstock, J. (2014). *What is the Difference between a Typhoon and a Hurricane?* Retrieved from: http://climatechange.cornell.edu/what-is-the-

difference-between-a-typhoon-and-a-hurricane/

Fakhrul’-Razi, A. (2011). *Community Preparedness for Typhoon disaster: A Case Study.* Retrieved from:

http://search.proquest.com/docview/874429399/507FDF44FE3E4E4E42P

Q/4?accountid=34320

Lum, T., & Margesson, R. (2014). *Typhoon Haiyan: US and International Response to Philippine Disaster*. Retrieved from:

http://search.proquest.com/docview/1622681509/AFAFB64696CB4A97PQ

/5>accounted=34320

De Jesus, J & San, T. (2013). *Tips to keep you and your family safe*. Retrieved from:

http://newsinfo.inquirer.net/521567/tips-to-keep-you-and-your-families-safe-

during-supertyphoon-yolanda

N.a. (2013). *Promoting use of the Internet in the Disaster Management Community: The Carribean Experience*. Retrieved from:

http://www.mona.uwi.edu/cardin/virtual\_library/docs/1051/doc10113-

contenido.pdf

Environmental Awareness(2012). *Environmental Awareness*. Retrieved from:

http://www.pachamama.org/environmental-awareness

Typhoon (2013). *Typhoon*. Retrieved from:

http://www.yourdictionary.com/typhoon

Fritz S. (2010). *What is a Survey?* Retrieved from:

http://www.amstat.org/sections/srms/pamphlet.pdf